



# Bangladesh Medical Journal

Official Organ of Bangladesh Medical Association

Vol. 47 No. 1

January 2018

<b>Original Articles</b>	Page
Spectrum of hypocalcaemia after thyroid surgery in Dhaka Medical College Hospital <i>Chowdhury AK, Fakir AY, Islam MN, Abedin SAMA, Arafat MS, Saha BK</i>	1
Heart failure in children: co-morbidities and hospital outcome <i>Mukib ABM, Khanam W, Sanin KI, Habib R, Faisal OK, Rahman M</i>	6
Physical activity and menopausal symptoms <i>Khan BEZ, Rahman AM, Begum N, Halim KS, Muna AT, Mostary KF, Islam MS</i>	11
Risk factors for central venous catheter related bloodstream infection: a multicenter study of intensive care unit and haemodialysis unit <i>Afroz Z, Jobayer M, Mian MF, Ahamed F, Rahman M, Anwar S, Miah MRA</i>	18
Postoperative complications of inguinal hernia surgery <i>Ashrafuzzaman M, Bhattacharjee A</i>	22
Pattern of road traffic injuries and disability burden among accident victims <i>Mostary KF, Halim KS, Rahman MM, Islam MS, Muna AT, Khan BEZ</i>	28
Study of obstructive jaundice in adult: association between clinical diagnosis and operative findings <i>Masum MG, Jahan ABMS, Rabbani MRH, Chowdhuray F, Hossain MF, Islam MM</i>	33
Unmet need of contraceptives amongst the married women of reproductive age group: a study in a coastal belt of Bangladesh <i>Dutta P, Debnath SC, Ghosh K</i>	37
<b>Case Reports</b>	
Bell's palsy due to congenital cholesteatoma of petrous apex: a case report <i>Zulkifli MFB, Saim LB</i>	41
<b>Obituary News</b>	44

## Editorial Board

<b>Chairman</b>	:	Dr. Syed Atiqul Haq
<b>Executive Editor</b>	:	Dr. A.K.M. Mosharraf Hossain
<b>Managing Editor</b>	:	Dr. Kazi Shafiqul Halim (Zimmu)
<b>Assistant Editors</b>	:	Dr. S.M. Mustafa Zaman (Babul) Dr. Mamun Al Mahtab (Shwapnil) Dr. Ataul Haque Dr. Abu Shahin

## Members

Dr. Mir Misbahuddin	Dr. Md. Faisal Hasbun
Dr. Mohammad Shahidullah	Dr. Shekhar Kumar Mondal
Dr. Julfiqar Rahman Khan	Dr. Kallol Dey
Dr. Abu Naser Rezbi	Dr. Khandaker Al-Mamun
Dr. Anisur Rahman Anjum	Dr. Mehedi Hasan
Dr. Manzur Hussain	Dr. Dipali Paul
Dr. Md. Nazrul Islam	Dr. Quazi Abul Azad
Dr. Mustafizur Rahman	Dr. Md. Nasir Uddin Mithu
Dr. Md. Nazrul Islam	Dr. Md. Nazmul Hasan
Dr. Abdullah Al Mamun	Dr. Md. Saifullah Russel
Dr. Sharif Shah Jamal	Dr. Sharmina Jalil
Dr. Abu Masud Md. Noorul Karim	Dr. Mustafa Jalal Mohiuddin
Dr. Sushanta Barua	Dr. Md. Ehteshamul Huq Chowdhury
Dr. Antu Bhattacharja	

## Publishing Division

<b>Managing Editor</b>	:	Dr. Kazi Shafiqul Halim (Zimmu)
<b>Assistant Managing Editors</b>	:	Dr. Md. Nazmul Islam (Munna) Dr. Tanvir Islam Dr. Sharif Md. Noman Khaled Chwdhury

## Members

Dr Habibur Rahman (Dulal)	Dr. Md. Hafizur Rahman
Dr Sarfaraj Khan	Dr. Saiful Hoque Talukder
Dr. Anamul Rashid Chowdhury	Dr. Pallab Kumar Saha
Dr. Rezwanul Kabir Titu	Dr. Sheikh Shahed Rahman
Dr. Mustafa Arif	Dr. Sheikh Bodiuzzaman
Dr. Mizanur Rahman Juwel	Dr. Md. Mahbubur Rahman (Babu)
Dr. Noor Alam	Dr. Md. Sk. Shahid Ullah
Dr. Mahmudur Rahman	Dr. Krisma Rani Majumder
Dr. Mohammad Kamruzzaman Sarker	Dr. Farzana Alam (Toon)
Dr. Md. Shariful Matin	Dr. Mst. Manjuman Ara Sarker
Dr. Shafayat Mohammad Shantanu	Dr. Rahat Bin Habib
Dr. Faroque Md. Mohsin	Dr. Noor Riffat Ara
Dr. Md. Harun-Or-Rashid	Dr. Naimul Hasan Plabon
Dr. Shahed Imran	Dr. Saidul Hossain Pial



## BMA Executive Committee for The Year 2017-2018

Sl.	Name	Name of Post
1.	Dr. Mustafa Jalal Mohiuddin	President
2.	Dr. Kanak Kanti Barua	Vice President (Dhaka City)
3.	Dr. Jamal Uddin Khalifa	Vice President (Dhaka Division)
4.	Dr. Md. Kamrul Hassan (Salim)	Vice President (Barisal Division)
5.	Dr. Sheikh Mohammed Shafikul Azam	Vice President (Chittagong Division)
6.	Dr. Sk. Baharul Alam	Vice President (Khulna Division)
7.	Dr. Md. Mostafa Alam (Nannu)	Vice President (Rajshahi Division)
8.	Dr. Md. Delwar Hossain	Vice President (Rangpur Division)
9.	Dr. Murshed Ahmed Chowdhury	Vice President (Sylhet Division)
10.	Dr. A N M Fazlul Hoq Pathan	Vice President (Mymensingh Division)
11.	Dr. Md. Ehteshamul Huq Choudhury	Secretary General
12.	Dr. Mohd. Zahid Hussain	Treasurer
13.	Dr. Md. Kamrul Hasan (Milon)	Joint Secretary General
14.	Dr. Md. Tarique Mehedi Parvez	Organizing Secretary
15.	Dr. Shahryar Nabi (Shakil)	Scientific Secretary
16.	Dr. Md. SK. Shahid Ullah	Office Secretary
17.	Dr. Md. Mahbubur Rahman (Babu)	Publicity & Public Relation Secretary
18.	Dr. Sohel Mahmud	Social Welfare Secretary
19.	Dr. Purabi Rani Debnath	Cultural & Entertainment Secretary
20.	Dr. Kazi Shafiqul Halim (Zimmu)	Library & Publication Secretary
21.	Dr. Md. Abul Hashem Khan	International Affairs Secretary
22.	Dr. Mohammed Salim	Member, Central Executive Committee
23.	Dr. Md. Abdul Aziz	Member, Central Executive Committee
24.	Dr. Md. Moniruzzaman Bhuiyan	Member, Central Executive Committee
25.	Dr. Mohammad Mushtuq Husain	Member, Central Executive Committee
26.	Dr. Md. Jamal Uddin Chowdhury	Member, Central Executive Committee
27.	Dr. Md. Shafiqur Rahman	Member, Central Executive Committee
28.	Dr. Md. Sharfuddin Ahmed	Member, Central Executive Committee
29.	Dr. Qazi Shahidul Alam	Member, Central Executive Committee
30.	Dr. Md. Abu Raihan	Member, Central Executive Committee
31.	Dr. M Nazrul Islam	Member, Central Executive Committee
32.	Dr. Zahurul Huq Sachchu	Member, Central Executive Committee
33.	Dr. Md. Abu Yusuf Fakir	Member, Central Executive Committee
34.	Dr. Ehsanul Kabir Joglul	Member, Central Executive Committee
35.	Dr. Md. Zulfikar Ali (Lenin)	Member, Central Executive Committee
36.	Dr. Uttam Kumar Barua	Member, Central Executive Committee
37.	Dr. Chitta Ranjan Das	Member, Central Executive Committee
38.	Dr. Md. Jabed	Member, Central Executive Committee
39.	Dr. Hasanur Rahman	Member, Central Executive Committee
40.	Dr. Md. Babrul Alam	Member, Central Executive Committee
41.	Dr. Hossain Muhammad Mustafijur Rahman	Member, Central Executive Committee
42.	Dr. Muhammad Harun-Ar-Rashid	Member, Central Executive Committee
43.	Dr. Mahmud Hasan	Member, Central Executive Committee
44.	Dr. M Iqbal Arslan	Member, Central Executive Committee
45.	Dr. Syed Atiqul Haq	Chairman, Bangladesh Medical Journal & Member, Central Executive Committee
46.	Dr. Rokeya Sultana	Member, Central Executive Committee
47.	Dr. Badiuzzaman Bhuiyan (Dablu)	Member, Central Executive Committee
48.	Dr. Kamrul Hasan Khan	Member, Central Executive Committee
49.	Dr. Momenul Haq	Member, Central Executive Committee
50.	Dr. Md. Shahidullah Sikder	Member, Central Executive Committee
51.	Dr. Pabitra Kumar Debnath	Member, Central Executive Committee

## Information for Authors

### Submission of manuscripts:

Papers are accepted for publication with an understanding that they are submitted solely to the Bangladesh Medical Journal and are subject to peer review and editorial revision. Statement and opinions expressed in the papers, communications and letters herein are those of author(s) and not necessarily of the editors or publishers. Three hard copies along with a soft copy should be sent to the executive editor of Bangladesh Medical Journal, BMA Bhaban, 15/2, Topkhana Road, Dhaka-1000.

Bangladesh Medical Journal publishes the following:

Full papers, review articles, letters to the editors, debate and opinion papers, editorials, on being a doctor, medical news, medical jokes/poem.

Letters to the editor – letters are invited that discuss, criticize or develop themes on national or international issues related to doctors, medical science or medical profession. Clinical observations, original research presented in a research letter format or case reports or series may be included in letters to the editors. Comments on papers published in Bangladesh Medical Journal are also encouraged. Acceptance will be at the discretion of the editorial board, and editorial changes may be required. Wherever possible, letters from responding authors will be included in the same issue.

Form of full papers submitted for publication:

Full papers should be no more than 4000 words. The onus of preparing a paper in a form suitable for sending to press lies with the author. Authors are advised to consult a current issue in order to make themselves familiar with the journal regarding typographical and other conventions, layout of tables etc. Authors are encouraged to consult the latest guidelines produced by the International Committee of Medical Journal Editors (ICMJE), which contains a lot of useful generic information about preparing scientific papers ([http://www.icmje.org/manuscript\\_a.html](http://www.icmje.org/manuscript_a.html)) Manuscripts should be typed on one side of white good quality A4 size paper, with wide margins of at least 2cm and using double space throughout, the preferred font being Garamond size 12. Words at the end of lines should not be hyphenated unless hyphens are to be printed. Page numbering is required. Spelling should generally be that of the Concise Oxford Dictionary, 11th ed. Oxford: Clarendon press. Each component of the manuscript should begin on a new page in the sequence of title page, abstract, text, reference, tables and legends for illustration. The title page should include the title of the paper, name of the author(s), and name of the department(s) to which the work should be attributed. The first six authors of a work should be named, followed by “et al.” if there are more than six.

The unstructured abstract of 150 words should follow the title page. It should provide the context or background for the study and should state the study's purpose, basic procedures (selection of study subjects or laboratory animals, observational and analytical methods), main findings (giving specific effect size and their statistical significance, if possible), and principal conclusion.

The text should be presented in the form of Introduction, Methods, Results and Discussion.

### References:

These should be given in the text using the Vancouver system. They should be numbered consecutively in the order in which they first appear in the text using superscript. If a reference is cited more than once the same number should be used each time. References cited only in tables and figures and not in the text should be numbered in sequence from the last number used in the text and in the order of mention of the individual tables and figures in the text. At the end of the paper, on a page(s) separate from the text, references should be listed in numerical order. The journal adheres closely to the Vancouver style of references (see [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html), updated 2013).

Sample references are given below –

#### 1. Standard Journal Article

List the first six authors followed by et al:

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N Engl J Med.* 2002 Jul 25; 347(4): 284-7

As an option, if a journal carries continuous pagination throughout a volume (as many medical journals do) the month and issue number may be omitted:

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N Engl J Med.* 2002; 347:284-7

More than six authors:

Rose ME, Huerbin MB, Melick J, Marion DW, Palmer AM, Schiding JK, et al. Regulation of interstitial excitatory amino acid concentrations after cortical contusion injury. *Brain Res.* 2002;935(1-2):40-6

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

Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N Engl J Med.* 2002 Jul 25;347(4):284-7. PubMed PMID: 12140307

Organization as author:

Diabetes Prevention Program Research Group.

Hypertension, insulin, and proinsulin in participants with impaired glucose tolerance. *Hypertension*. 2002;40(5):679-86 No author given:

21st century heart solution may have a sting in the tail. *BMJ*. 2002;325(7357):184

Volume with supplement:

Geraud G, Spierings EL, Keywood C. Tolerability and safety of frovatriptan with short- and long-term use for treatment of migraine and in comparison with sumatriptan. *Headache*. 2002;42 Suppl 2:S93-9.

Issue with supplement:

Glauser TA. Integrating clinical trial data into clinical practice. *Neurology*. 2002;58(12 Suppl 7):S6-12.

Article published electronically ahead of the print version: Yu WM, Hawley TS, Hawley RG, Qu CK. Immortalization of yolk sac-derived precursor cells. *Blood*. 2002 Nov 15; 100(10):3828-31. Epub 2002 Jul 5.

2. Books and Other Monograph Personal author(s):

Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. *Medical microbiology*. 4th ed. St. Louis: Mosby; 2002.

3. Other Published Material MaterialNewspaper article:

Tynan T. Medical improvements lower homicide rate: study sees drop in assault rate. *The Washington Post*. 2002 Aug 12; Sect. A:2 (col. 4).

Dictionary and similar references:

Dorland's illustrated medical dictionary. 29th ed. Philadelphia: W.B. Saunders; 2000. Filamin; p. 675.

4. Unpublished Material (In press or Forthcoming;)

Tian D, Araki H, Stahl E, Bergelson J, Kreitman M. Signature of balancing selection in Arabidopsis. *Proc Natl Acad Sci U S A*. Forthcoming 2002.

5. Journal Article on the Internet

Abood S. Quality improvement initiative in nursing homes: the ANA acts in an advisory role. *Am J Nurs* [Internet]. 2002 Jun [cited 2002 Aug 12];102(6):[about 1 p.]. Available from: <http://www.annals.org/cgi/reprint/145/1/62.pdf>

Tables :

Table should have brief title for each, should be numbered consecutively using Roman numerals and be cited in the text in consecutive order. Internal horizontal and vertical rules should not be used.

Illustration :

All drawings should be made with black Indian ink on white paper. Photographs and photomicrographs should be supplied as glossy black and white prints unmounted. All photographs, graphs and diagrams should be referred to as figures numbered consecutively in the text in Arabic numerals.

Abbreviation :

Except for units of measurement, abbreviations are discouraged. Consult scientific style and forma. The CBE manual for authors, editor and publishers (Sixth edition New York: Cambridge University Press, 1994) for lists of standard abbreviation. The first time an abbreviation appears, it should be preceded by the words for which it stands.

Drug names :

Generic name should generally be used. When proprietary brands are used in research, include the brand name in parentheses in the methods section.

Permission :

Materials taken from other source must be accompanied by a written statement from both author and publishers giving permission to the journal for reproduction. Obtain permission in writing from at least one author of papers that is still in press, unpublished data and personal communications.

The editor of Bangladesh Medical Journal reserves the customary right to style and if necessary shortens the material accepted for publication and to determine the priority and time of publication. Editor assumes that the manuscript submitted by the author is based on honest observations. It is not a task of the editor to investigate scientific fraud paper.

## Original Article

Spectrum of Hypocalcaemia after Thyroid Surgery in  
Dhaka Medical College Hospital\*Chowdhury AK<sup>1</sup>, Fakir AY<sup>2</sup>, Islam MN<sup>3</sup>, Abedin SAMA<sup>4</sup>, Arafat MS<sup>5</sup>, Saha BK<sup>6</sup>

## Abstract

*Hypocalcaemia is not a uncommon complication after thyroid gland surgery. The extent of surgery and expertise are the vital factors to determine the spectrum of hypocalcaemia. This study was done to observe the spectrum of hypocalcaemia after different extent of thyroid gland surgery. A total of 70 consecutive patients were enrolled in the study by purposive sampling who received treatment for thyroid disorder in department of ENT and Head Neck Surgery, Dhaka Medical College Hospital, Dhaka, Bangladesh. They underwent different extent of thyroid surgery from January, 2017 to June, 2017. A prospective study was conducted for this 6 months period. A pre-structured, interview and observation based, peer reviewed data collection sheet was prepared. Data regarding sociodemographic, clinical, surgical and outcome profile were recorded. Data were compiled, edited and analyzed with SPSS version 23. Data were presented as mean and standard deviation, frequency percentage and median with range. The mean age of the respondents was 46.79±6.79 years (age range: 36-73 years.). Male to female ratio was 1:2.3. All the patients underwent total, near total, subtotal and*

*completion thyroidectomy. 35(50%) and 28 (40%) patients underwent surgery due to papillary thyroid carcinoma and multinodular goiter respectively. Total of 30 patients developed hypocalcaemia. Among them, 22(73.33%) developed asymptomatic or mild hypocalcaemia which subsequently developed symptomatic hypocalcaemia (26.67%). Out of these 30 patients, 15(50%) and 10 (33.33%) patients developed hypocalcaemia intraoperative (20 minutes after surgery) and after 24 hours after surgery respectively. Serum calcium level significantly decreases after total thyroidectomy and most critical time is the first 24 hours of post thyroidectomy period.*

**Keywords:** Hypocalcaemia, thyroid disorder, thyroidectomy.

## INTRODUCTION

Hypocalcaemia following thyroid surgery is a common complication which may be transient or permanent.<sup>1</sup> It may be termed as 'Post thyroidectomy hypocalcaemia'. Despite careful surgery, 25% patients usually experience this complication.<sup>2</sup> Among them 30% usually experience arrhythmia, transient hypocalcaemia on first postoperative day.<sup>3</sup> The permanent hypocalcaemia are recognized as the post thyroidectomy hypocalcaemia which requires calcium supplementation even after one year of surgery.<sup>4</sup>

This complication may occur due to several factors including injury, devascularization of the parathyroid glands and accidental resection of parenchyma along with incidental parathyroidectomy.<sup>5</sup> The arrhythmia and several other factors like patient's age (higher incidence among younger age) and gender (women being more prone to calcium and vitamin D deficiency than men) are also attributable factors. These patients may present with numbness of distal extremities, circumoral paresthesias and/or carpopedal spasm, seizure, laryngospasm and arrhythmia.<sup>6,7,8</sup> Hospital stay may also be prolonged due to hypocalcaemia.<sup>9</sup>

According to the definition of hypocalcaemia serum calcium level must be below 2 mmol/L in case of post thyroidectomy hypocalcaemia.<sup>10</sup> Perioperative hemodilution may be responsible for early post thyroidectomy hypocalcaemia.<sup>11</sup>

1. \* Dr. Anup Kumar Chowdhury, Registrar, Dhaka Medical College Hospital Email: dranupkc@yahoo.com, Phone: 01712711899
2. Dr. Abu Yusuf Fakir, Professor & Head, Department of ENT, Dhaka Medical College Hospital
3. Dr. Md. Nazmul Islam, Professor Department of ENT, Dhaka Medical College Hospital
4. Dr. Syed A. M Asfarul Abedin, Associate professor, Department of ENT, Brahmanbaria Medical College Hospital.
5. Dr. Mohammad. Shaharior Arafat, Consultant, Dhaka Medical College Hospital
6. Dr. Bishwojit Kumar Saha, Registrar, Dhaka Medical College Hospital

\* For correspondence



This study evaluated the frequency of development of hypocalcaemia after thyroid surgery.

## MATERIALS AND METHODS

This study was conducted in the department of Otolaryngology & Head Neck Surgery, Dhaka Medical College Hospital, Dhaka from January 2017 to July 2017. It was a prospective study. The sample size was 70. Initially, patients admitted for thyroid surgery were enrolled in the study by purposive sampling. Thereafter, those who fulfilled the inclusion criteria were included in the study. Here only total, near total, subtotal or completion thyroidectomy cases were included. On the other hand, lobectomy, hemithyroidectomy and patients who failed to attend follow up on regular basis, were excluded from the study.

Patients were stratified into the 'hypocalcemic' and 'normocalcaemic' groups depending on whether they had postoperative calcium level less than 2.00 mmol/L.<sup>10</sup> Mean±SD of intraoperative, after 24 hours and after 48 hours calcium level were 2.1±0.1, 2.2±0.2, and 2.1±0.1 mmol/L respectively.

A pre-structured, peer reviewed and observation based data collection sheet was prepared to collect data. Data regarding sociodemographic, clinical, biochemical, radiological, surgical and post surgical variables were recorded, managed and analyzed.

SPSS (Statistical Packages for Social Science) (version 23.0; SPSS, Chicago) was used for data analysis. Continuous data are represented as mean±standard deviation. To compare continuous variables, mean age and mean operating time were tested using an independent t-test. Chi-square test was used for categorical variables. P value was significant at <0.05.

## RESULTS

Table-1 shows baseline characteristics of the patients. Mean age of the patients was 46.79±6.79 years. Male and female patients were 21(30%) and 49(70%) respectively. Male to female ratio was 1:2.3. Most of the patients (75.71%) were from middle class. Only 11 (15.71%) patients came from poor class. Rest of the patients (8.57%) belonged to affluent class. Mean serum calcium level on admission was 2.2±0.2 (mean±SD).

Table-I: Baseline characteristics of the patients underwent thyroid surgery (N=70)

Baseline characteristics	Values
Age (Mean±SD) (in years)	46.79±6.79
Age range (in years)	36 – 73
Sex distribution	
Male	21 (30%)
Female	49 (70%)
Sex ratio (M:F)	1:2.3
Income status	
Poor class	11 (15.71%)
Middle class	53 (75.71%)
Affluent class	6 (8.57%)
Educational status	
Illiterate	6 (8.57%)
Literate	2 (2.85%)
Educated	62 (88.57%)
Habit	
Smoking	19 (27.14%)
Tobacco chewing	22 (31.42%)
Alcohol	1 (1.42%)
Smoking + Tobacco chewing	3 (4.28%)
No addiction	25 (35.71%)
Occupation	
Business	7 (10%)
Service holder	16 (22.85%)
Day Labourer	8 (11.42%)
Garments worker	37 (52.85%)
Others	2 (2.85%)
Associated Medical conditions	
Diabetes mellitus	17 (24.29%)
Hypertension	13 (18.57%)
Heart disease	1 (1.43%)
Cerebrovascular disease	0 (0%)
Impaired renal function	0 (0%)
Diagnosis of thyroid disease	
Papillary carcinoma	35 (50%)
Multi nodular goitre	28 (40%)
Fallicular carcinoma	4 (5.71%)
Medullary carcinoma	2 (5%)
Hashimoto's thyroiditis	1 (1.43%)
Incidence of hypocalcaemia	42.86%
Gross calcium level on admission (mean±SD) (mmol/L)	2.2±0.2
Range (mmol/L)	2 – 2.6

Table-2 shows that 22(73.33%) patients were found as asymptomatic or with mild hypocalcaemia whereas rest 8(26.67%) of the patients were found with symptomatic hypocalcaemia. Among these 8 patients, 6(75%) had moderate hypocalcaemia and 2(25%) patients were with severe hypocalcaemia

Table-II: Distribution of severity of hypocalcemic patients (n=30)

Severity of hypocalcaemia	Frequency (%)
Asymptomatic/ Mild hypocalcaemia	22 (73.33%)
Symptomatic hypocalcaemia	8 (26.67%)
Moderate	6/8 (75%)
Severe	2/8 (25%)
Total	30 (100%)

Table-3 shows that out of 30 patients, 15(50%) were diagnosed after 20 minutes of resection (intraoperative period). Other 10(33.33%) and 5(16.67%) patients were found with hypocalcaemia after 24 hours and 48 hours of surgery respectively.

Table-III: Distribution of postoperative hypocalcaemia developing time (n=30)

Developing time of hypocalcaemia	Frequency (%)
Intraoperative (20 minutes after surgery)	15 (50%)
After 24 hours of surgery	10 (33.33%)
After 48 hours of surgery	5 (16.67%)
Total	30 (100%)

Table-4 shows different indications of thyroid surgery where patients developed postoperative hypocalcaemia. Among them the highest incidence of hypocalcaemia was found in papillary thyroid malignancy (43.33%) followed by multinodular goiter (33.33%). Hashimoto's thyroiditis contributed to the lowest number (3.33%).

Table-V: Serum calcium (Ca ++ ) level (mmol/L) all patients (n=70)

Serum calcium level	Mean±SD(mmol/L)	Range
Preoperative calcium	2.2 ± 0.2	2.0-2.6
Intraoperative calcium (20 minutes after surgery)	2.0 ± 0.2	1.6-2.5
After 24 hours (of surgery) Calcium	2.0 ± 0.3	1.5-2.5
After 48 hours (of surgery) Calcium	2.0 ± 0.2	1.5-2.6

Table-IV: Distribution of patients in relation to different thyroid diseases and surgery (n=70)

Diagnosis	Extent of surgery	Percentage
Papillary thyroid carcinoma (n=35)		
Total	24 (68.57%)	9 (37.5%)
Completion	11 (31.43%)	4 (36.36%)
Multinodular goitre (n=28)		
Total	24 (85.71%)	8 (33.33%)
Near total	4 (14.28%)	2 (50%)
Follicular carcinoma (n=4)		
Total	4 (100%)	4 (100%)
Medullary (n=2)		
Total	2 (100%)	2 (100%)
Hashimoto's thyroiditis (n=1)		
Total	1 (100%)	1 (100%)

Figure-1 shows that postoperative hypocalcaemia was found in 30 patients. Of them 24 (80%) patients had total thyroidectomy

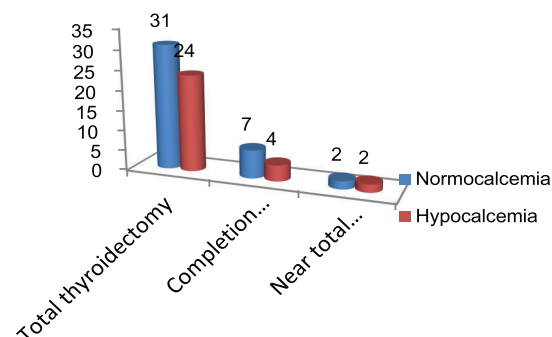


Figure-1: Distribution of postoperative serum calcium status depending on type of thyroid surgery (n=70)

Table-5 shows that level of serum calcium during preoperative, peroperative and postoperative period.

Table-VI: Comparison of intraoperative, after 24 hours and after 48 hours calcium (Ca++) level between hypocalcaemia and normocalcaemia patients (n=70)

Serum calcium level (mmol/L)	Mean±SD		P-value
	Hypocalcaemia pt. (mmol/L) (n=30)	Normocalcaemia pt. (mmol/L) (n=40)	
Intraoperative calcium	1.9 ± 0.2	2.1 ± 0.1	0.001 <sup>s</sup>
After 24 hours calcium	1.8 ± 0.2	2.2 ± 0.2	0.001 <sup>s</sup>
After 48 hours calcium	1.8 ± 0.1	2.1 ± 0.1	0.001 <sup>s</sup>

S=Significant p value reached from unpaired t-test. p value is significant at <0.05

Table-VI shows intraoperative and postoperative serum calcium levels. Out of 70 patients, 40 maintained normal serum calcium level. Only 30 patients showed altered level of serum calcium during intraoperative and post operative periods.

## DISCUSSION

Gourgiotis S et al. in their study showed that incidental parathyroidectomy during thyroid surgery is 8-21.6%.<sup>12</sup> It causes permanent hypocalcaemia which requires calcium supplementation for longer period. On the contrary, temporary or transient hypocalcaemia is limited to the first week following surgery.<sup>13</sup> Several factors like definition of hypocalcaemia, the type of thyroid disease and the surgical technique for thyroidectomy are responsible to determine the exact post thyroidectomy hypocalcaemia.<sup>14</sup> Some authors deal with symptomatic hypocalcaemia whereas some others include asymptomatic biochemical hypocalcaemia associated with transient hypoparathyroidism.<sup>15</sup> To focus our study, we assumed serum calcium level <2.0mmol/L as hypocalcaemia.<sup>10</sup>

In this study, a total 70 cases were evaluated. The mean age of the patients was 40.15 ±13.18 years which is consistent with the study of Qari FA.<sup>16</sup> In this study, 21 were male and 49 were female. The male-female ratio was 1:2.3 which is consistent with the studies of Dedivitis RA.<sup>17</sup> Hypocalcaemia is more common in female after total thyroidectomy. In our study, hypocalcemic patients were 30 in numbers, of which 30.0% were male and 70.0% were female. Females are more prone to develop hypocalcaemia. Our findings are consistent with the findings of Fahmy FF.<sup>18</sup>

Hypocalcaemia was found in 43.63% cases after total thyroidectomy which is consistent with the findings of Abboud B.<sup>19</sup> Asymptomatic hypocalcaemia was found in 73.33% patients which is consistent with the findings of Markuszewska MP and Gac EP et al.<sup>20,21</sup>

Diseases of thyroid gland is a contributing factor of developing post-thyroidectomy hypocalcaemia. Cancer, Hashimoto's thyroiditis, and Graves' disease are high risk disease processes that cause more post-thyroidectomy hypocalcaemia. Higher incidence of hypocalcaemia with verve malignant 25% and toxic goitre 11.4% than that in simple nodular goitre 3.6%. High incidence of hypocalcaemia in thyrotoxicosis was also noted by Lindblom P et al.<sup>11</sup> In this study, hypocalcaemia developed in 43.33% papillary carcinoma patients, 33.33% in multinodular goitre patients, 13.33% in follicular carcinoma patients, 6.67% in medullary carcinoma patients, and 3.33% in Hashimoto's thyroiditis patients. Our findings are consistent with the findings of Lindblom P et al.<sup>11</sup>

Postoperative hypocalcaemia may have a delayed onset.<sup>22</sup> The lowest calcium levels are typically recognized 24 to 48 hours after thyroidectomy though hypocalcaemia may be delayed.<sup>20</sup> It is usually evident in the first 24 hours.<sup>23</sup> Out of 30 hypocalcemic patients 15 patients developed hypocalcaemia intraoperatively, 10 developed after 24 hours of surgery and 5 developed after 48 hours of surgery which is consistent with the findings of Markuszewska MP et al and Leahu A et al.<sup>20,23</sup> The mean difference of intraoperative, after 24 hours and 48 hours calcium level were statistically significant (p<0.05) between patients with hypocalcaemia and patients with normocalcemia in unpaired t test.

## CONCLUSIONS

Serum calcium level significantly decreases after total thyroidectomy and most critical time is the first 24 hours of post thyroidectomy period.<sup>20</sup> Hypocalcaemia developed more in female and in malignant thyroid diseases.<sup>11</sup> If clinical sign symptoms of hypocalcaemia are not developed in this period, patient is considered safe. This can help patients to be discharged early as well as close monitoring of serum calcium level and thereby early calcium supplementation.

Finally, we can conclude that hypocalcaemia after thyroid surgery mostly depends on skill and experience of surgeons and availability of logistic support in operation theatre.

## REFERENCES

1. Sokouti Ma, Montazeri Va, Golzari Sb The Incidence of Transient and Permanent Hypocalcaemia after Total thyroidectomy Int J Endocrinol Metab 2010; 1: 7-12.
2. Sakorafas GH, Stafyla V, Bramis C, Kotsifopoulos N, Kolettis T, Kassaras G. Incidental parathyroidectomy during thyroid surgery: an underappreciated complication of thyroidectomy. World J Surg 2005;29(12):1539-43.
3. El-Ghareeb MH. Postthyroidectomy Hypocalcaemia. Egyptian Journal of Surgery Vol. (23), No. (1), Jan., 2004. 94-99
4. Turnali S, Niyazi K, Ozgen K. Permanent hypocalcaemia in patients operated thyroid cancers. Indian J Otolaryngol Head Neck Surg 2009; 61: 280-5.
5. Dongbin Ahn, Jin Ho Sohn, Jae Hyug Kim, Ji Young Park, Junesik Park. Inadvertent Parathyroidectomy during Thyroid Surgery for Papillary Thyroid Carcinoma and Postoperative Hypocalcaemia. J Korean Thyroid Assoc. 2012;5(1):65-72.
6. Bhattacharyya N, Fried M. Assessment of the morbidity and complications of total thyroidectomy. Arch Otolaryngol Head Neck Surg 2002; 128: 389-92.
7. Pesce CE, Shiue Z, Tsai HL. "Postoperative hypocalcaemia after thyroidectomy for Graves' disease," Thyroid, vol. 20, no. 11, pp. 1279-1283, 2010.
8. Harris VW, Jan DBS. Postoperative hypoparathyroidism: Medical and surgical therapeutic options. Thyroid 2009; 19: 967-973.
9. Islam MS, Paul D, Sultana T, Rahman MQ, Rehena Z, Ahmed ANN. Evaluation of Serum Calcium Level Measurement in Total Thyroidectomy Patients - A Prospective Study in Tertiary Hospitals. Bangladesh J Med Biochem 2011; 4(1): 4-9.
10. Sitges-Serra A, Ruiz S, Girvent M, Manjon H, Duenas JP, Sancho JJ. Outcome of protracted hypoparathyroidism after total thyroidectomy. BJ Surg 2010; 97: 1687-1695.
11. Lindblom P, Westerdahl J, Bergenfelz A. Low parathyroid hormone levels after thyroid surgery: A feasible predictor of hypocalcaemia. Surgery 2002; 131: 515-520.
12. Gourgiotis S, Moustafellos P, Dimopoulos N, Papaxoinis G, Baratsis S, Hadjiyannakis E. Inadvertent parathyroidectomy during thyroid surgery: the incidence of a complication of thyroidectomy. Langenbecks Arch Surg 2006;391(6):557-60.
13. F. Pattou, F. Combemale, S. Fabre, B. Carnaille, M. Decoulx, J.L. Wemeau, A. Racadot, C. Proye, Hypocalcaemia following thyroid surgery: incidence and prediction of outcome. World J. Surg. 1998;22, 718-724.
14. Puzziello A, Rosato L, Innaro N, Orlando G, Avenia N, Perigli G, Calò PG. Hypocalcaemia following thyroid surgery: incidence and risk factors. A longitudinal multicenter study comprising 2,631 patients. 2014;45(2).
15. Zambudio AR, Rodry'guez J, Riquelme J, Soria T, Canteras M, Parrilla P, Prospective study of postoperative complications after total thyroidectomy for multinodular goiters by surgeons with experience in endocrine surgery. Ann. Surg. 2004;24, 18-25.
16. Qari FA. Estimation of ionized calcium levels after thyroidectomy at King Abdul Aziz university hospital (Jeddah). Pak J Med Sci 2004; 20: 325-330.
17. Deditis RA, Pfuertzenreiler Jr EG, Nardi CEM, Duque de Barbara EC. Prospective study of clinical and laboratorial hypocalcaemia after thyroid surgery. Braz J Otorhinolaryngol 2010; 76: 71-77.
18. Fahmy FF, Gillett D, Lolen Y, Shotton JC. Management of serum calcium levels in post thyroidectomy patients. Clin Otolaryngol 2004; 29: 735-739.
19. Abboud B, Sleilaty G, Zeineddine S, Braidy C, Aouad R, Tohme C, Noun R, Sarkis R. Is therapy with calcium and vitamin D and parathyroid autotransplantation useful in total thyroidectomy for preventing hypocalcaemia?. Head Neck 2008; 30: 1148-1154.
20. Markuszewska MP, Kobiela J, Stefaniak T, Andrzej J. Lachinski AJ, Sledzinski Z. Postoperative PTH measurement as a predictor of hypocalcaemia after thyroidectomy. Polski, Przegląd Chirurgiczny 2010; 82:24-28.
21. Gac EP, Cabané TP, Amat VJ, Huidobro GF, Rossi FR, Rodríguez FF, Ferrada VC, Cardemil RF. Incidence of hypocalcaemia after total thyroidectomy. Rev Med Chil 2007; 135: 26-30.
22. Nahas ZS, Farrag TY, Lin FR, Belin RM, Tufano RP. A safe and cost effective short hospital stays protocol to identify patients at low risk for the development of significant hypocalcaemia after total thyroidectomy. Laryngoscope 2006; 116: 906-910.
23. Leahu A, Carroni V, Biliotti G. Calcium level, a predictive factor of hypocalcaemia following total thyroidectomy. J de Chirurgie, 2009; 5: 148-152.



Original Article

## Heart Failure in Children: Co-morbidities and Hospital Outcome

\*Mukib ABM<sup>1</sup>, Khanam W<sup>2</sup>, Sanin KI<sup>3</sup>, Habib R<sup>4</sup>, Faisal OK<sup>5</sup>, Rahman M<sup>5</sup>

### Abstract

*Heart failure in children is a serious condition, causes substantial morbidity and mortality. Sufficient data regarding various aspects of heart failure in children is not available in our country. This cross sectional study was conducted on 101 patients admitted with the diagnosis of heart failure at ICMH, and NICVD from July 2014 to March 2015 with the aim to identify the co-morbidities and hospital outcome of heart failure in infants and children.*

*In this study most of the patients (53.46%) were infants. Congenital structural heart lesions were found in 67(76.2%) cases. VSD was most common found in 42.5% cases, followed by ASD (31.6%) and PDA (24.7%). Cardiomyopathy (DCM) was diagnosed in 11 (10.9%) cases and 10 patients (9.9%) had valvular defect due to rheumatic recurrence. Anaemia was most common (78.2%) co-morbidity in all age group. Pneumonia was more common (74%) in infants. Total 14 patients (13.9%) died in hospital though getting adequate medical support. This study recommends that diagnosis and treatment of co-morbidities along with appropriate management of acute heart failure is crucial to reduce the mortality and morbidity.*

**Keywords:** Heart failure, co-morbidities, hospital outcome.

### INTRODUCTION

Paediatric heart failure is an important cause of childhood mortality and morbidity.<sup>1</sup> Like the other part of the world, Bangladesh is passing through an epidemiological transition.

Burden of infectious diseases are coming down and non-communicable diseases are on the rise.<sup>2</sup> The incidence of new onset heart failure was found 0.87 per 100,000 population less than 16 years of age.<sup>3</sup>

There is high prevalence and importance of comorbidities in congestive heart failure. Anemia is prevalent in all age groups and is associated with a higher hospitalization rate.<sup>4</sup> Patients with congenital heart disease are prone to malnutrition and growth failure.<sup>5</sup>

In Bangladesh, there is limited study about cardiac diseases in children, and most of them are regarding congenital heart diseases and did not give emphasis on heart failure. As heart failure in children is a serious health concern,<sup>6</sup> proper recognition, treating the causes and co morbidities can help to reduce the mortality in paediatric age group.

### MATERIALS AND METHODS

This was a cross sectional study conducted in patient department of Paediatrics, Institute of Child and Mother Health (ICMH), Matuail, Dhaka-1362 and In patient department of Paediatrics, National Institute of Cardiovascular Diseases (NICVD), Shere-E-Bangla Nagar, Dhaka over a period of one Year 3 months (April 2014 to June 2015).

A total 101 cases were studied who fulfilled the following criteria- Age less than 15 years including neonate and having clinical features<sup>11</sup> consistent with heart failure. Total 4 patients were excluded who needed cardiac surgery.

Hospital outcome was measured in 3 category as - Improvement (discharged with advice), No significant improvement (including referred to other hospital for better management, Leave against medical advice), and Death in the hospital. Duration of hospital stay was also recorded. Ancillary tests like the complete blood count, chest X-ray, electrocardiography and echocardiography were done as required for each subject. Other tests necessary for treatment, diagnosis of other comorbidities was also performed as per need of individual patient.

A pre- tested, semi- structured questionnaire was used to collect data. Data analysis was done using SPSS version 22.

1. \*Dr. ABM Mukib , Junior Consultant, Pediatrics, UHC, Belabo, Norshingdi. E-mail: mukib\_dmc@yahoo.com
2. Prof. Khanam W, Professor, Pediatrics, Institute of Child and Mother Health (ICMH), Matuail, Dhaka.
3. Dr. Kaji Ishtiaq Sanin, Research Assistant, ICDDR, Mohakhali, Dhaka.
- \*4. Dr. Rahat Bin Habib, Junior Consultant, Pediatrics, UHC, Keranigonj, Dhaka.
5. Dr. Omar Khaled Faisal, Medical Officer, SCANU, ICMH, Dhaka
6. Dr Mizanur Rahman, Medical Officer, SCANU, ICMH, Dhaka

\* For correspondence

A Pearson chi-square test was computed to assess the association of severity of heart failure and hospital outcome. The level of significant was chosen to be  $<0.05$ .

#### Operational Definitions:

**Heart Failure:** According to Orowrr<sup>11</sup> children who satisfied at least three of the following criteria were diagnosed to have heart failure.

- Significant Tachycardia** for age (heart rate  $>160$ /min in infancy,  $>140$ /min at 2 years,  $>120$ /min at 4 years and  $>100$ /min above 6 years). In patient with fever, an allowance of 10 beat/min was made for each 1 degree centigrade increase of temperature above normal
- Significant Tachypnea** for age (respiratory rate  $>60$  cycles/min in newborn,  $>40$ /min in  $<24$  months,  $>30$ /min in 2–5 years,  $>28$ /min in 5–10 years, and  $>25$  min/1 in  $>10$  years)
- Cardiomegaly** (displaced apex beat with a central trachea or cardiothoracic ratio in chest X-ray  $>60\%$  in  $<5$  years and  $>50\%$  in  $>5$  years)

- Tender Hepatomegaly** of at least 3 cm size below the right costal margin.

**Co-morbidity:** In our study, any medical condition along with heart failure existing simultaneously regardless of their causal relationship in the same patient was considered as co-morbidity.<sup>8</sup>

In this study, co morbidities were diagnosed by presence of both clinical features and relevant radiological features (Consolidation in CXR for pneumonia, pulmonary TB, hyperinflation and hyper translucency for bronchiolitis), and/or laboratory and biochemical reports (decrease hemoglobin level according to age sex for anaemia, karyotyping for diagnosis of down syndrome, Bone marrow finding for ALL, hematuria and hyperkalemia for AGN).

#### RESULTS

In this study minimum age of patient was 1.2 months and maximum age was found 148 months. Majority of the patients were infants comprising 53.4% and 30 children (29.7%) were from 13 months to 60 months age group. Only 16.8% were from above 60 months age group. Other socio-demographic characteristics are shown in Table – I.

Table – I: Socio-demographic characteristics of studied children (N=101)

Variables		*Institute - 1 (n=46)	*Institute - 2 (n=55)	Total n=101(100)
*Age in month (M $\pm$ SD)	Up to 12 months	32 (69.5)	22 (40.0)	54 (53.4)
	> 12 to 60 months	10 (21.7)	20 (36.3)	30 (29.7)
	> 60 to 180 months	4 (8.6)	13 (23.6)	17 (16.8)
	Total	16.1 ( $\pm$ 23.9)	45.5 ( $\pm$ 55.8)	32.1( $\pm$ 46.5)
Sex	Male	21 (45.6)	22 (40.0)	43 (42.6)
	Female	25 (54.6)	33 (60.0)	58 (57.4)
Average Monthly family Income **	<8000	8 (17.3)	11 (20.0)	19 (18.8)
	8000-18000	32 (69.5)	37 (67.2)	69 (68.3)
	>18001 – 30000	5 (10.8)	6 (10.9)	11 (10.9)
	30001 – 54000	1 (2.2)	1 (1.8)	2 (1.98)
Residence	Urban	8 (17.3)	9 (16.4)	17 (16.8)
	Rural	33 (71.7)	40 (72.8)	73 (72.3)
	Slum	5 (10.8)	6 (10.9)	11 (10.9)
Total		46 (45.5 )	55 (54.5)	101 (100)

\*Values expressed as n(%) in parentheses or M $\pm$ SD, as appropriate; M, mean; SD, standard deviation,

\*Institute – 1 – Institute of Child and Mother Health(ICMH), Matuail, Dhaka.

Institute - 2 – National Institute of Cardiovascular Diseases(NICVD), Sher-E-Bangla Nogor, Dhaka.

According to necessities echocardiogram was done in 88 patients. In other cases the clinical diagnosis was other than heart disease like – Acute leukemia (ALL), Hereditary haemolytic anaemia (HHA), Acute glomerulo- nephritis (AGN) etc.

Congenital structural defect was found in 67(76.2%) cases. VSD was most common – 43 (42.5%) followed by ASD 32(31.6%) and next common was PDA that is 25(24.7%). Cushion defect was found in 8 children whereas patent foramen ovale and single ventricle was present in 3 (2.9%) children separately. But 37 (36.6%) patient had multiple defects (Table-II).

Other than cardiac problems, many children had non-cardiac co morbidities along with heart failure, shown in Table – III. Anaemia was most common (78.2%) co-morbidity in all age group. Pneumonia was more common in infants (74%) than the other age group.

Twelve (12) patient having Down Syndrome and 1 child with Edward syndrome admitted with heart failure. Two infants had pulmonary TB, and 2 adolescent had acute glomerulo-nephritis. Failure to thrive was very common.

Table-II : Distribution of Cardiac Problems of Studied Children (N = 101)

Findings	Age Category			Total n=101 (100)
	Up to 12 m(n=54)	>12 upto 60m(n=30)	>60 m(n=17)	
<b>Congenital Structural defect</b>	42 (77.7)	23 (73.3)	2 (11.7)	67 (66.2)
a) VSD	26 (48.1)	15 (50.0)	2 (11.7)	43 (42.5)
b) ASD	19 (35.1)	13 (43.3)	0	32 (31.6)
c) PDA	20 (37.0)	5 (16.6)	0	25 (24.7)
d) Cushion defect	4 (7.4)	4 (13.3)	0	8 (7.9)
e) Patent foramen Ovale	2 (3.7)	1 (3.3)	0	3 (2.9)
f) Single ventricle	0	3 (9.9)	0	3 (2.9)
g) Co-aorta	1 (1.8)	1 (3.3)	0	2 (1.9)
h) Multiple defect	22 (40.7)	15 (50.0)	0	37 (36.6)
i) Dextrocardia	1 (1.8)	0	0	1 (0.9)
<b>Acquired heart disease</b>	5 (4.9)	6 (5.9)	15 (14.8)	26 (25.7)
a) Valvular defect due to rheumatic recurrence	0	0	10(58.8)	10 (9.9)
b) DCM	3 (5.5)	5 (16.6)	3 (17.6)	11(10.9)
c) Endocarditis (vegetation in chamber)	0	0	2 (11.7)	2(1.9)
d) Myocarditis	0	1 (3.3)	1 (5.8)	2(1.9)
e) Arrhythmia	3 (5.5)	0	0	3 (2.9)
<b>Other findings</b>				
a) Pericardial effusion	0	0	3 (17.6)	3(2.9)
b) Shunt	38 (70.3)	19 (63.3)	2 (11.7)	59(58.4)
c) Pulmonary hypertension	26 (48.1)	19 (63.3)	6 (35.2)	51 (50.5)

Table – III : Distribution of Children with Non-Cardiac Co-morbidities (N=101)

Co-morbidities	Age Category			Total n=101(100)
	Up to 12 m (n=54)	>12 up to 60 m (n=30)	>60 m(n=17)	
Pneumonia	40 (74.0)	17 (56.6)	1 (5.8)	58 (57.4)
Anaemia	43 (79.6)	22 (73.3)	14 (82.3)	79 (78.2)
Failure to thrive	26 (48.1)	19 (63.3)		45 (44.5)
Down Syndrome	9 (16.6)	3 (10.0)	0	12 (11.8)
AGN	0	0	2 (11.7)	2 (1.98)
TB	2 (3.7)	0	0	2 (1.98)
a) Hereditary hemolytic anaemia	1 (1.8)	0	0	1 (0.99)
b) ALL	1 (1.8)	0	0	1 (0.99)
c) Bronchiolitis	5 (9.2)	0	0	5 (4.90)

Table -IV: Distribution of Studied Children on the Basis of Cause of Death in the Hospital (N=14)

Comorbidities	Up to 12 m (n=9)	>12 up to 60 m (n=2)	>60 m(n=3)	Total n=14 (100)
Congenital heart disease	6 (66.6)	2 (100)	0	8 (57.1)
Pneumonia	6 (66.6)	2 (100)	0	8 (57.1)
Myocarditis	0	0	1 (33.3)	1 (7.1)
Pulmonary TB	2 (22.2)	0	0	2 (14.3)
AGN	0	0	2 (66.6)	2 (14.3)

Among the total death case, 9 (64.28%) were infant. Congenital cardiac lesions were present in six patients (42.8%), among them 4 patients had multiple defects (Table – IV). Respiratory tract infection including pneumonia (8 cases) and PTB (2 cases) were present in 71.4% children who died. Failure to thrive was very common finding (50%) among the patient who died.

## DISCUSSION

In this study, most of the study populations (53.5%) were infants. A similar study conducted in some tertiary paediatric centers at Belgium, Germany and Nigeria also found heart failure occurring during infancy in 58.1%,<sup>9</sup> 70.6%,<sup>10</sup> and 58.7%,<sup>11</sup> cases respectively. Mean age of children in this study was 32.12 months with a SD of 46.5 months which is close to the finding in another study where they got mean age 24±36.1 months.<sup>11</sup>

This study supports the observation that congenital heart disease is the most common causative factor of HF during infancy and that is 66.2% as a whole and in infants it is 77.7% that is very similar (82.27%) to the finding of Webster et al<sup>12</sup> whereas in the study by Martial M massin<sup>9</sup> found 51.6% cases of heart failure with congenital heart disease.

Among the various structural cardiac defects VSD was most common (44.9%) followed by ASD (35.9%) and PDA (25.6%). This finding is similar to a multicenter study in our country on congenital heart disease by Hussain et al.<sup>13</sup> In another study in our country,<sup>14</sup> it was found that among the congenital heart diseases VSD and PDA were most common cause of heart failure needing hospitalization.

In this study it was found that 26 (25.7%) cases had acquired heart disease like - Rheumatic valvular heart disease (9.9%), cardiomyopathy (10.9%), endocarditis (1.9%) and myocarditis (1.9%), which is similar to a study by Martial M massin<sup>9</sup>, where they found 18.5% with acquired heart disease. But rhythm disturbance was much higher (10.4%) in comparison to our (2.9%) finding.

Anaemia was most common (78.2%) in this study which is much higher than the findings by A.F Adekanbi et al<sup>11</sup> where they found 46% with severe anaemia followed by lower respiratory tract infection (40.4%) whereas in this study we found pneumonia much higher percentages (57.4%).

In this study total 14 patients died giving a mortality rate 13.86% which is very similar to the outcome of a study conducted at Belgium by M. Martial where they got 14% children having heart failure died.<sup>9</sup> Among the total death case, 9 (64.28%) were infant. That finding is very similar to the finding of an epidemiological study on congestive heart failure in children in Germany.<sup>10</sup>

## CONCLUSIONS

Heart failure in infants and children is a very serious disease with a high mortality in our setting. Infants were the majority who suffered largely due to congenital structural heart lesion. Diagnosis and treatment of co-morbidities along with appropriate management of acute heart failure is crucial to reduce the mortality and morbidity.

## REFERENCES

1. Kantor PF, Loughheed J, Dancea A, McGillion M, Barbosa N, Chan C, et al. Presentation, diagnosis, and medical management of heart failure in children: Canadian Cardiovascular Society guidelines. Canadian Journal of Cardiology. 2013;29(12):1535-52.
2. MOHFW. Strategic plan for Surveillance and Prevention of Noncommunicable Disease in Bangladesh 2007-2010. Dhaka: Government of People's Republic of Bangladesh; 2007.
3. Andrews RE, Fenton MJ, Ridout DA, Burch M. New-Onset Heart Failure Due to Heart Muscle Disease in Childhood A Prospective Study in the United Kingdom and Ireland. Circulation. 2008;117(1):79-84.
4. Mueller GC, Schlueter EL, Arndt F, Dodge-Khatami A, Weil J, Mir TS. Prevalence of anemia in children with congestive heart failure due to dilated

- cardiomyopathy. International journal of pediatrics. 2012;36(5):136-39.
5. Varan B, Tokel K, Yilmaz G. Malnutrition and growth failure in cyanotic and acyanotic congenital heart disease with and without pulmonary hypertension. Archives of disease in childhood. 1999;81(1):49-52.
6. Lipshultz SE, Sleeper LA, Towbin JA, Lowe AM, Orav EJ, Cox GF, et al. The incidence of pediatric cardiomyopathy in two regions of the United States. New England Journal of Medicine. 2003;348(17):1647-55.
7. Orowrr A. Studies on heart failure in Sagamu. Nigerian Journal of Paediatrics. 1993;20(2):29-34.
8. Jakovljevic M, Ostojic L. Comorbidity and multimorbidity in medicine today: challenges and opportunities for bringing separated branches of medicine closer to each other. Psychiatr Danub. 2013;25(Suppl 1):18-28.
9. Massin MM, Astadicko I, Dessy H. Epidemiology of heart failure in a tertiary pediatric center. Clinical cardiology. 2008;31(8):388-91.
10. Sommers C, Nagel B, Neudorf U, Schmaltz AA. Congestive heart failure in childhood. An epidemiologic study. Herz. 2005;30(7):652-62.
11. Adekanmbi A, Ogunlesi T, Olowu A, Fetuga M. Current trends in the prevalence and aetiology of childhood congestive cardiac failure in Sagamu. Journal of tropical pediatrics. 2007;53(2):103-6.
12. Webster G, Zhang J, Rosenthal D. Comparison of the epidemiology and co-morbidities of heart failure in the pediatric and adult populations: a retrospective, cross-sectional study. BMC cardiovascular disorders. 2006;6(1):23.
13. Hussain M, Tahura S, Hussain MZ, Fatema NN, Razzaque S. Pattern of Congenital Heart Disease in Bangladesh: A Multi-center Study. Ds (Child) HJ. 2011;27(1):5-11.
14. Kabiruzzaman M, Malik F, Ahmed N, Badiuzzaman M, Choudhury S, Haque T, et al. Burden of Heart Failure Patients in a Tertiary Level Cardiac Hospital. Journal of Bangladesh College of Physicians and Sur.



## Physical Activity and Menopausal Symptoms

\*Khan BEZ<sup>1</sup>, Rahman AM<sup>2</sup>, Begum N<sup>3</sup>, Halim KS<sup>4</sup>, Muna AT<sup>5</sup>, Mostary KF<sup>6</sup>, Islam MS<sup>7</sup>

## ABSTRACT

*Menopause is an inevitable stage of every woman's life. This cross sectional study was conducted to assess the relationship between physical activity and menopausal symptoms from January to December 2017. By convenient sampling total 213 post menopausal women were interviewed from Mirpur, situated at the northern part of Dhaka. Five most prevalent menopausal symptoms were joint and muscular pain (90.1%), anxiety and sleep disturbance (80.3%), chest discomfort as well as physical and mental exhaustion (78.9%). Most of the respondents were physically active (63.4%), few were inactive (1.9%) and 34.7% respondents were Health Enhancing Physical Activity (HEPA)*

*active. The mean of total Metabolic Equivalent of Task (MET)-minute per week was  $2713.46 \pm 1152.24$  minutes. Menopausal symptoms retrieved from Menopause Rating Scale were assessed according to physical activity level. Physical and mental exhaustion was found statistically significant ( $p=0.04$ ) with the higher proportion reported in divorced and widowed (90.5%). Significant relationship between psychological subscale and educational status was seen ( $p=.03$ ). There was significant association between dryness of vagina and educational status ( $p<0.01$ ). Physical and mental exhaustion and heart problems were found to be significantly higher among working women ( $p<.05$ ). The relationship between BMI (Body Mass Index) and hot flash was found statistically significant ( $p<0.001$ ). Significant statistical difference also was found between irritability and increase in BMI ( $p <0.001$ ). Hot flash ( $p=0.001$ ) and depression ( $p=0.002$ ) were found to be statistically significant in relation with tobacco use. Uro genital symptoms ( $p=.03$ ), hot flash ( $p=0.01$ ) and depression ( $p=0.009$ ) were found to be statistically significant in relation with history of chronic disease. Only urinary problems were found statistically significant with HRT use. ( $p >.05$ ). Anxiety was found statistically significant ( $p=.04$ ) with highest proportion found in HEPA active women (89.2%). Proportion of sleep problems (100%), physical and mental exhaustion (100%), bladder problems (urinary incontinence) (75%), joint and muscular discomfort (100%) were more in inactive than minimally active and HEPA active women but the relationships were not statistically significant ( $p>.05$ ). The result indicates that physical activity may have some role in reducing menopausal symptoms.*

*Keywords: Physical activity, Body mass index, Menopausal symptom.*

## INTRODUCTION

The word Menopause derived from the Greek word *men-* (month) and *pausis* (cessation), can be defined as the end of the woman's fertile life resulting from loss of ovarian follicular function.<sup>1</sup> The age at natural menopause occurs is between the ages of 45 and 55 for women worldwide.<sup>2</sup>

An unprecedented number of women will experience menopause in the next decade and approximately 40 million

1. \*Dr. Bushra-E-Zannat Khan, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka. Email : bushra.khaled487@gmail.com.
2. Prof. Dr. Md. Anisur Rahman, Professor and Head (Ex), Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
3. Prof. Dr. Md. Nadira Begum, Professor, Department of Gynaecology and Obstetrics, Jalalabad Ragib Rabeya Medical College and Hospital, Sylhet.
4. Dr. Kazi Shafiqul Halim, Associate Professor, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
5. Dr. Atiya Tasnim Muna, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
6. Dr. Kazi Fardana Mostary, Medical Officer, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
7. Dr. Md. Safikul Islam, Medical Officer, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

\*For Correspondence

women will experience menopause in the world. In 1990 it was estimated that there were 467 million post menopausal women worldwide. It is thought that this will increase over 1200 million by 2030.<sup>2</sup> Bangladesh; one of the most populous countries in the world will also have increased number of menopausal women in the next decade.

Menopause causes a change in hormone level, which in turn causes an increased chance of chronic conditions such as, cancer, type-2 diabetes, osteoporosis and cardiovascular diseases<sup>1</sup> that hamper the overall quality of life.

Women may experience the following changes i.e. hot flushes, sweating, chest discomfort, sleep problems, depressive mood, irritability, anxiety, physical and mental exhaustion, sexual problems, bladder problems (urinary incontinence etc), dryness of vagina and joint and muscular discomfort.<sup>3</sup>

Hormone replacement therapy is recognized as an effective remedy for improving symptoms.<sup>1</sup> As there are some cancer risks associated with HRT, physical activity has been suggested as an alternative to ameliorate women's quality of life during menopausal transition and beyond. General population trials and reviews have found physical activity to have a beneficial effect on cognitive functioning, depression, sleep patterns, bone density and cardiovascular diseases.<sup>4</sup> physical activity can be considered as an alternative option for alleviating psychological, vasomotor, somatic and sexual symptoms.<sup>1</sup>

WHO recommendation on physical activity for health is throughout a week, adults should do at least an equivalent combination of moderate and vigorous intensity physical activity achieving at least 600 MET-minutes.<sup>2</sup> Performing daily physical activity might be the best recommendation for women in middle ages to protect their health status.

## MATERIALS AND METHODS

This study was carried out to find out the association between physical activity and menopausal symptoms in urban women. A community based cross sectional study was conducted from January to December 2017. The study included 213 post menopausal women by convenient sampling, residing in different areas of Mirpur, Dhaka. Women of surgical menopause and severely ill patients were excluded. Data was collected about socio demographic status, physical activity, menopausal symptoms from face to face Interview of the respondents using a semi-structured pre-tested questionnaire in Bengali, which was developed using selected variables according to the specific objectives. Medical records regarding chronic diseases were reviewed. Height of

the respondents was measured in centimeters by measuring tape and weight in kilogram by Camry weighting machine. Information about the menopausal symptoms in menopausal women was collected by Menopause Rating Scale (MRS) and about physical activity pattern of menopausal women by International Physical Activity Questionnaire (IPAQ).

**Menopause Rating Scale (MRS):** The MRS scale was developed and validated from a research network i.e. Organon Germany, Infratest Munich, Universities of Muenster and Berlin, ZEG Berlin. The scale has three dimensions, i.e. psychological (composed of depression, irritability and aggressiveness, anxiety, physical and mental exhaustion), somato-vegetative (composed of hotflash and night sweating, heart discomfort, sleep disturbance, joint and muscular discomfort), and urogenital subscale (composed of sexual problems, bladder problems, dryness of vagina) containing total 11 symptoms. Each of the eleven symptoms are ranged from 0 (no symptom) to 4 scoring points (severe symptom) depending on the severity of the complaints. The composite scores for each of the three dimensions are based on adding up the scores of the items of the respective dimensions. The total score of the MRS ranges between 0 (asymptomatic) and 44 (highest degree of complaints).<sup>3</sup>

**International Physical Activity Questionnaire (IPAQ):** An international measure for physical activity was developed in Geneva in 1998 and extensive reliability and validity testing was undertaken across 12 countries (14 sites). The motive of the questionnaires is to provide common instruments to obtain internationally comparable data on health-related physical activity in adults of 15-69 years. The International Physical Activity Questionnaires- Long (IPAQ) assesses separate domain specific scores for walking, moderate-intensity and vigorous-intensity activity within each of the work, transportation, domestic chores and gardening (yard) and leisure-time domains. Computation of the total scores for the long form summation of the duration (in minutes) and frequency (days) for all the types of activities in all domains.<sup>5</sup>

Data were processed and analyzed by using software SPSS, version 16.0. Both descriptive and inferential analysis was done according to the objective of the study. The level of significance was set at 0.05.

Prior to commencement of the study, the research protocol was approved by the Ethical Review Board (ERB) of National Institute of Preventive and Social Medicine (NIPSOM). The objective of the study with its procedure, methods, risks and

benefits were explained to the respondent in easily understandable language and informed written consent was taken from each respondent as well as legal authority. It was assured that all information and records would be kept confidential.

## RESULTS

Table I shows the socio demographic and health related characteristics of 213 post menopausal women. Mean age of the respondent was 56.38 ( $\pm 5.25$ ) years. Most of the respondents were Muslims (85.9%) and housewives (91.1%). Most of the respondents were married (80.3%) and 43% completed higher secondary and above.

Most of the respondents were physically active (63.4%), few were inactive (1.9%) and 34.7% respondents were HEPA active. The mean of total MET-minute per week was  $2713.46 \pm 1152.24$  minutes. Minimum MET-minutes of activity of the respondents were 360 MET-minute per week and maximum were 8635.50 MET-minutes per week.

Majority of the respondents (54.5%) had no habit of consuming tobacco and the rest (45.5%) consumed smokeless tobacco. More than half of the respondents (55.9%) were suffering from chronic diseases. The result shows that few respondents (4.2%) had history of taking hormone replacement therapy.

Table I: Socio demographic and Health related characteristics (n=213)

Variables		n	%	Mean $\pm$ SD
Age Religion	Islam	183	85.9	
	Hinduism	28	13.1	
	Christianity	2	1.0	
Marital Status	Married	171	80.3	56.38 ( $\pm 5.25$ ) years
	Divorced and widowed	42	19.7	
Educational level	Illiterate	21	9.6	
	Upto Primary	22	10.3	
	Primary to higher secondary	79	37.1	
	Higher secondary and above	91	43	
Employment status	Working	19	8.9	
	Non working	194	91.1	
Age at menopause Exercise participation	Inactive	4	1.9	47.39 $\pm$ 2.587 years 2713.46 $\pm$ 1152.24 minutes
	Minimally active	135	63.4	
	HEPA-active	74	34.7	
Body mass index	Underweight	2	.09	
	Normal	71	33.1	
	Overweight	45	21.1	
	Pre obese	70	32.9	
	Obese	25	12	
Chronic diseases	Yes	119	55.9	
	No	94	44.1	
Smoking status	Yes	97	45.5	
	No	116	54.5	
HRT usage	Yes	9	4.2	
	No	204	95.8	



Table II: Menopausal symptoms as assessed by the MRS in total and according to physical activity level (n=2131)

Menopausal symptoms		Physical Activity (%)		
		Inactive	Minimally active	HEPA active
Hot flash	Present	50	62.2	70.3
	Absent	50	37.8	29.7
p value			0.42	
Chest discomfort	Present	75	79.3	78.4
	Absent	25	20.7	21.6
p value			0.94	
Sleep problem	Present	100	80	79.7
	Absent	0	20	20.3
p value			1.00	
Depressive mood	Present	75	77.8	74.3
	Absent	25	22.2	25.7
p value			0.83	
Irritability	Present	75	81.5	67.6
	Absent	25	18.5	32.4
p value			0.06	
Anxiety	Present	75	75.6	89.2
	Absent	25	24.4	10.8
p value			0.04*	
Exhaustion	Present	100	74.8	58.4
	Absent	0	25.2	41.6
p value			0.14	
Sexual problems	Present	0	31.9	24.3
	Absent	100	68.1	75.7
p value			0.27	
Bladder problems	Present	75	23	25.7
	Absent	25	77	74.3
p value			0.07	
Dryness of vagina	Present	50	51.1	55.4
	Absent	50	48.9	44.6
p value			0.84	
Joint symptoms	Present	100	90.4	89.2
	Absent	0	9.6	10.8
p value			0.88	
Psychological	Present	100	97.8	97.3
	Absent	0	2.2	2.7
p value			0.93	
Somatic	Present	100	97	98.6
	Absent	0	3	1.4
p value			0.64	
Urogenital	Present	75	76.3	68.9
	Absent	25	23.7	31.1
p value			0.45	
Total	Present	100	98.5	97.3
	Absent	0	1.5	2.7
p value			0.64	

\*indicates statistically significant

The nutritional status was categorized into underweight, normal, overweight, pre-obese, obese and morbid obese according to the Asian classification of nutritional status. Majority of the respondents (33.1%) were within normal range of Body Mass Index (BMI). 32.9% of the respondents were pre-obese, 21.1% were overweight and 12% were obese.

The prevalence of menopausal symptoms as evaluated by Menopause Rating Scale (MRS), the most prevalent menopausal symptoms were joint and muscular pain (90.1%) followed by anxiety and sleep disturbance (80.3%), heart discomfort and physical and mental exhaustion (78.9%). These were followed by depression and irritability and aggressiveness (76.5%), hot flash (64.8%), dryness of vagina (52.4%), sexual problems (28.6%) and bladder problems (25%). (Figure 1)

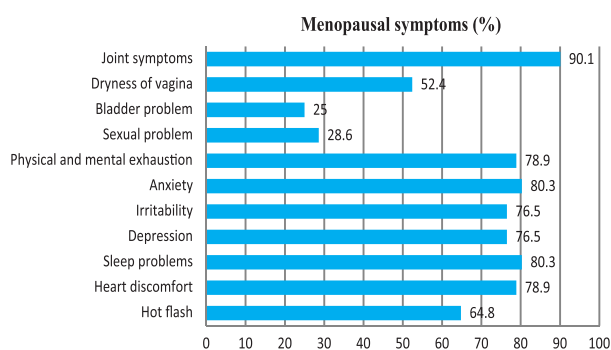


Figure-1: Menopausal symptoms experienced by the respondents

In case of inferential analysis, to assess the relationship Chi-square test was done. Menopausal symptoms experienced by the respondents had no relation with increase in age of the respondents and increase in age at menopause ( $p > .05$ ). Physical and mental exhaustion was found statistically significant ( $p=0.04$ ) with the higher proportion reported in divorced and widowed (90.5%). There was a significant relationship between psychological subscale and educational status where the proportion of psychological symptoms in women who completed above secondary education was relatively less (94.5%) than women who never attended school (100%) and who completed upto secondary education (100%) ( $p=.03$ ). There was significant association between dryness of vagina and educational status ( $p<0.01$ ). Physical and mental exhaustion and heart problems were found to be significantly higher among working women ( $p<0.05$ ).

The prevalence of menopausal symptoms retrieved from MRS was assessed according to physical activity level. Only anxiety was found statistically significant ( $p=.04$ ). Respondents classified as inactive according to IPAQ, had to experience more psychological, somatic and urogenital symptoms than respondents who were minimally active and HEPA active. No significant statistical relation was observed between physical activity and MRS subscales ( $p > .05$ ). (Table II)

The relationship between BMI (Body Mass Index) and hot flash was found statistically significant ( $p<0.001$ ). Significant statistical difference also was found between irritability and increase in BMI ( $p < 0.001$ ).

Hot flash ( $p=0.001$ ) and depression ( $p=0.002$ ) were found to be statistically significant in relation with tobacco use. Urogenital symptoms ( $p=.03$ ), hot flash ( $p=0.01$ ) and depression ( $p=0.009$ ) were found to be statistically significant in relation with history of chronic disease. Only urinary problems were found statistically significant with HRT use. ( $p > .05$ ).

## DISCUSSION

In Bangladesh, as there are a few studies regarding menopause and its consequences, this field is unexplored mostly. So the suffering of the menopausal women in Bangladesh is still untold and untreated. This study will provide preliminary information regarding menopause and determine the relationship between improving menopausal symptoms and a non pharmacological intervention like physical activity. The result of the study can be the basis of future nationwide study on menopause and its related factors in Bangladesh.

The age at menopause varies from 42 – 53 years and the mean age at menopause was found to be  $47.39 \pm 2.587$  years. Another study in Kushtia Bangladesh showed, the mean age at menopause in this study was  $51.14 \pm 2.11$  years<sup>6</sup> which were slightly higher. But the study findings were quite similar to studies done in Singapore (49.1 years)<sup>7</sup> and Thailand (48.7 years).<sup>8</sup>

The prevalence of menopausal symptoms as evaluated by Menopause Rating Scale (MRS), the most prevalent menopausal symptoms were joint and muscular pain (90.1%), anxiety and sleep disturbance (80.3%), chest discomfort and physical and mental exhaustion (78.9%). The five most common menopausal symptoms found in another study conducted in Bangladesh were: Feeling tired (92.90%), headache (88.80%), joint and muscular discomfort (76.20%), physical and mental exhaustion (60.90%) and sleeplessness (54.40%).<sup>6</sup> A study carried out

on multi racial women showed that African- American women reported that hot flash is the most frequent (45.6%) followed by Caucasians (31.2%), Hispanic (35.4%), Chinese (20.5%) and Japanese (17.6%).<sup>9</sup>

The study result showed that, most of the respondents were physically active (63.4%), few were inactive (1.9%) and 34.7% respondents were HEPA active. A large number of respondents were housewife in the current study and they have reported to be engaged in physical activities for a considerable duration of time throughout the day. As a result most of the respondents were found physically active. This result was not similar to Non Communicable Disease risk factors survey Bangladesh 2010 where 20.2% females fell in to moderate physical activity category and 52.8% fell in to high physical activity category.<sup>10</sup>

The study result showed menopausal symptoms experienced by the respondents had no significant statistical relation with increase in age at menopause ( $p > .05$ ) which was dissimilar to a study findings stating that joint and muscular symptoms and hot flash were significantly associated with late menopause.<sup>11</sup>

Prevalence of total menopausal symptoms was highest among those women who were inactive (100%) than those who were minimally active (98.5%) and those who were HEPA active (97.3%). The difference was found statistically not significant. ( $p > .05$ ). Respondents classified as inactive according to IPAQ, had to experience more psychological, somatic and urogenital symptoms than respondents who were minimally active and HEPA active. No significant statistical relation was observed between physical activity and MRS subscales ( $p > .05$ ). In a study conducted on Turkish women, there was a significant relationship between the level of physical activity and total menopausal symptoms and all three MRS subscales.<sup>12</sup>

Among eleven menopausal symptoms, only anxiety was found statistically significant ( $p = .04$ ). A study on Turkish women revealed statistical significant relationship between level of physical activities and some of the menopausal symptoms (sleep problems, joint and muscular discomfort, sexual problems and dryness of vagina) ( $p < 0.05$ ) where the proportion of these symptoms were more in women who were physically inactive. This finding was consistent with the current study findings.<sup>12</sup> Another study of West Midland, UK showed significant statistical relationship between exercise participation and some of the menopausal symptoms (depression, anxiety and somatic symptoms. No difference was recorded in case of vasomotor symptoms (hot flashes,

night sweat etc). Women who were regularly active reported better quality of life than women who were not regularly active.<sup>4</sup>

The study findings are different in perspective of different study population as there is difference between pattern of physical activity in different culture, communities and countries. In western world, performing regular physical exercise like cycling, swimming, playing games, jogging in parks are known as a part of women's life at all ages. But in countries like Bangladesh, women aged above 40 are more engaged to their daily household chores and child care. So determining the relationship between physical activity and menopausal symptoms were influenced by these factors.

Significant statistical differences were found between irritability, hot flash and increase in BMI ( $p < 0.001$ ). Another study showed that obese women reported higher vasomotor symptoms (hot flashes and night sweats) and somatic symptoms than women of normal weight.<sup>4</sup> In relation with the present study, findings were not similar.

Urogenital symptoms ( $p = .03$ ) were found statistically significant which is inconsistent with another study that stated the total MRS score as well as three subscales were determined to be significantly lower in women with no history of chronic disease.<sup>12</sup>

Only urinary problems were found statistically significant with HRT use. This was due to the lower prevalence of HRT use, for which association between lower prevalence and menopausal symptoms could not be properly obtained. Another study showed in women who have a history of HRT use, somato vegetative subscale were found to be significantly higher compared to those who never used HRT ( $p = .047$ ).<sup>12</sup>

## CONCLUSIONS

The current study showed that most of the menopausal symptoms were not significantly associated with physical activity. As we have selected the respondents from one area, it is logical not to extrapolate these data to populations in order to avoid selection bias. Health and well being of post menopausal women should be evaluated in broader spectrum by the government and private sectors in Bangladesh to take necessary preventive and curative measures.

## REFERENCES

1. Stojanovska L, Apostolopoulos V, Polman R, Borkoles E. To exercise, or, not to exercise, during menopause and beyond. *Maturitas*. 2014 Apr 1;77(4):318-23.

2. World Health Organization. Research on the menopause in the 1990s: report of a WHO scientific group.
3. Berlin Centre for Epidemiology and Health Research. The Menopause Rating Scale (MRS). Available from <http://www.menopause-rating-scale.info/about.htm>. 2008.
4. Daley A, MacArthur C, Stokes-Lampard H, McManus R, Wilson S, Mutrie N. Exercise participation, body mass index, and health-related quality of life in women of menopausal age. *Br J Gen Pract*. 2007 Feb 1;57(535):130-5.
5. The international physical activity questionnaire. Available from <http://www.ipaq.ki.se/ipaq.htm>. October 2002.
6. Rahman S, Salehin F, Iqbal A. Menopausal symptoms assessment among middle age women in Kushtia, Bangladesh. *BMC research notes*. 2011 Dec;4(1):188.
7. Peeyananjarassri K, Cheewadhanaraks S, Hubbard M, Zoa Manga R, Manocha R, Eden J. Menopausal symptoms in a hospital-based sample of women in southern Thailand. *Climacteric*. 2006 Jan 1;9(1):23-9.
8. Boulet MJ, Oddens BJ, Leher P, Vemer HM, Visser A. Climacteric and menopause in seven South-east Asian countries. *Maturitas*. 1994 Oct 1;19(3):157-76.
9. Gold EB, Sternfeld B, Kelsey JL, Brown C, Mouton C, Reame N, Salamone L, Stellato R. Relation of demographic and lifestyle factors to symptoms in a multi-racial/ethnic population of women 40–55 years of age. *American journal of epidemiology*. 2000 Sep 1;152(5):463-73.
10. Moniruzzaman M, Zaman MM, Islalm MS, Ahasan HA, Kabir H, Yasmin R. Physical activity levels in Bangladeshi adults: results from STEPS survey 2010. *public health*. 2016 Aug 1;137:131-8.
11. Ahmed K, Jahan P, Nadia I, Ahmed F. Assessment of menopausal symptoms among early and late menopausal midlife Bangladeshi women and their impact on the quality of life. *Journal of menopausal medicine*. 2016 Apr 1;22(1):39-46.
12. Tan MN, Kartal M, Guldal D. The effect of physical activity and body mass index on menopausal symptoms in Turkish women: a cross-sectional study in primary care. *BMC women's health*. 2014 Dec;14(1):38.

Original Article

## Risk Factors for Central Venous Catheter Related Bloodstream Infection: A Multicenter Study of Intensive Care Unit and Haemodialysis Unit

\*Afroz Z<sup>1</sup>, Jobayer M<sup>2</sup>, Mian MF<sup>3</sup>, Ahamed F<sup>4</sup>, Rahman M<sup>5</sup>, Anwar S<sup>6</sup>, Miah MRA<sup>7</sup>

### Abstract

*The clinical condition of the patient, type of central venous catheter (CVC), site and duration of CVC placement are the factors affecting the risk of infection. The aim of this study was to examine and find out the risk factors of CVC related blood stream infections (CVC-BSI). This cross sectional study was carried out in the Department of Microbiology and Immunology of Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh during the period of July 2011 to June 2012. One hundred patients who were admitted in ICU of BSMMU and ICU and haemodialysis unit of Dhaka Medical College Hospital (DMCH) having central venous catheter, were enrolled in the study. The rate of CVC-BSI was 11% and the incidence was observed to be 11.14/1000 catheter days. Both CVC-BSI and CVC colonization were higher in trilumen than in bilumen central venous catheter. CVC-BSI rate was 12.79%*

*in trilumen whereas there was no CVC-BSI in patient with bilumen catheter. The mean duration from CVC insertion to development of CVC-BSI was 14 days, CVC colonization was 8.41 days and noninfected CVC was 6 days. CVC-BSI and CVC colonization were most common in right femoral vein where CVC-BSI was 18.52% and CVC colonization was 59.26%, whereas no CVC-BSI was found in right internal jugular vein. Risk factors for CVC-BSI included type of CVC, site of CVC placement, duration of catheterization were not found statistically significant in this study. CVC-BSI and CVC colonization were higher in trilumen catheter and rate raised with increased duration of placement and highest number of CVC-BSI and colonization was found in right femoral vein.*

**Keywords:** Risk factors, CVC, ICU, haemodialysis unit.

### INTRODUCTION

From the skin insertion site of central venous catheter (CVC), the organisms migrate down the external surface of the CVC to colonize the distal tip of the catheter and produce bloodstream infection (BSI).<sup>1</sup> Intravenous catheter use for more than seven days duration is a risk factor for infection.<sup>2</sup> Haematogenous colonization and contaminated infusion set are the other routes of CVC colonization and CVC-BSI.<sup>1</sup>

Different studies have focused on various risk factors related to the acquisition of CVC related infection. The type of CVC, site and duration of CVC placement could be the potential risk factors for CVC-BSI.<sup>3</sup> Multilumen CVCs have been associated with a high risk of infection than single lumen CVCs.<sup>4</sup> Insertion of a CVC into the femoral vein or internal jugular vein rather than the subclavian vein may carry a higher risk of CVC-BSI probably because of higher risk of cutaneous colonization at the insertion sites.<sup>5,6</sup> Prolonged CVC insertion may be another factor as there is higher chance of CVC colonization and contamination of CVC due to handling.<sup>2</sup>

This study was designed to assess the risk factors for CVC-BSI in patients with a central venous catheter admitted in intensive care unit (ICU) of Bangabandhu Sheikh Mujib Medical University (BSMMU) and ICU and haemodialysis unit of Dhaka Medical College Hospital (DMCH), Dhaka, Bangladesh.

1. \*Dr. Zeenat Afroz, Lecturer, Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh. Email: zeenatafroz35@gmail.com
2. Dr. Mohammad Jobayer, Medical officer, Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh.
3. Dr. Md Ferdous Mian, Assistant Professor, Critical Care Unit, National Institute of Neurosciences and hospital, Dhaka, Bangladesh.
4. Dr. Farook Ahamed, Lecturer. Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh.
5. Dr. Mizanur Rahman, Assistant Professor, Department of Microbiology, Dhaka Medical College, Dhaka, Bangladesh.
6. Dr. Shaheda Anwar, Assistant Professor, Department of Microbiology and Immunology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.
7. Dr. Md Ruhul Amin Miah, Professor, Department of Microbiology and Immunology, Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

\*For correspondence:



## MATERIAL AND METHODS

This study was conducted during the period of July 2011 to June 2012. All laboratory works were performed in the Department of Microbiology and Immunology of BSMMU, Dhaka, Bangladesh.

**Study population:** Patients who had clinical signs and symptoms of septicemia after having the CVC insertion 48 hours after admission in ICU of BSMMU or ICU and haemodialysis unit of DMCH, Dhaka.

**Sample size:** A total of 100 patients admitted in ICU and Department of Nephrology (64 patients from ICU and 36 from Nephrology) were enrolled in this study.

About 8 ml of blood was collected simultaneously from the CVC line and peripheral vein. After inoculation of blood into paired blood culture vials (BACTEC 9240) they were brought to the laboratory as soon as possible and incubated in automated blood culture machine (BACTEC, Dickinson and Company, Maryland, USA). All samples were incubated at 37°C upto culture positivity and the vials were discarded if no growth was detected within seven days.

CVC-BSI was detected by Differential time to positivity (DTP) method as described by Raad et al.<sup>7</sup> After organism identification antimicrobial sensitivity test was performed by disc diffusion method using Kirby-Bauer technique.<sup>8</sup> CVC-BSI rate was determined by the following method as mentioned by Salomao et al.<sup>9</sup>

CVC-BSI rate = Total no. of CVC-BSI / Total no. of CVC days X 1000.

## Ethical consideration:

This study was approved by Ethical Clearance Committee (ERC) of BSMMU. Informed written consent was taken from the patient or their guardians before collection of blood samples. The anonymity of the participants and confidentiality of information was maintained strictly.

## Statistical analysis

Frequency distribution was calculated. Cross tabulation and statistical significance were analyzed by using chi-square test.

## RESULTS

Potential risk factors for CVC-BSI were assessed in this study. Of the 100 recruited patients 83 were male and 17 were female and the mean age was 38 years. CVC-BSI was diagnosed in 11%, CVC colonization in 43% patients.

Mean duration of CVC-BSI was 14 days (12-63 days); 45.5% CVC-BSI occurred during 11-20 days of CVC placement. Majority of the CVC remained sterile during 3-10 days of CVC placement. Mean duration of CVC colonization was 8.41 days (6-31 days) and noninfected CVC was 6 days (3-14 days) (Table-I).

Both CVC-BSI and CVC colonization were higher in trilumen than in bilumen central venous catheter. CVC-BSI rate was 12.79% in trilumen whereas there was no CVC-BSI in patient with bilumen catheter. CVC colonization was 44.19% in trilumen but it was 35.71% in bilumen catheters used. The difference of positivity between the trilumen and bilumen catheter was not statistically significant (Table- II).

Table-I: Study patients according to duration of CVC placement (n = 100)

Category	Mean in days (range)	Cases by duration of CVC placement (days)			
		3-10	11-20	21-30	>30
CVC-BSI (n=11)	14(12-63)	0(0)	5(45.5)	4(36.4)	2(18.2)
CVC colonization (n=43)	8.41(6-31)	13(30.2)	21(48.8)	7(16.3)	2(4.6)
Noninfected CVC (n=46)	6(3-14)	33(71.7)	13(30.2)	0(0)	0(0)

Table-II: CVC-BSI and CVC colonization in catheter with multiple lumens (n = 100)

Catheter	CVC-BSIn(%)	CVC colonizationn(%)	Non-infected CVCn(%)
Bilumen (n=14)	0 (0)	5 ( 35.71)	9 (64.29 )
Trilumen (n=86)	11 (12.79)	38 (44.19)	37 (43.02 )

Out of 27 central venous catheters inserted in femoral vein, 18.52% were associated with CVC-BSI and 59.26% had CVC colonization. Among 59 CVC in subclavian vein, 10.17% were associated with CVC-BSI and 37.29% were associated with CVC colonization. No CVC-BSI was diagnosed in patients with CVC in internal jugular vein and 35.71% were associated with CVC colonization (Table-III).

Table-III: CVC-BSI and CVC colonization according to different CVC insertion sites (n = 100)

	Right femoral vein (n=27)	Right subclavian vein (n=59)	Right internal jugular Vein (n=14)
CVC-BSI (n=11)	5(18.52%)	6(10.17%)	0(00%)
CVC colonization (n=43)	16(59.26%)	22(37.29%)	5(35.71%)

## DISCUSSION

Central venous catheter related risk factors of CVC-BSI, such as type of catheter, site of CVC insertion, duration of CVC placement were analyzed in this study. It was found that when duration of CVC placement is longer there is an increased chance of development of blood stream infection. Duration of CVC placement was a significant factor for a CVC-BSI<sup>10</sup> and additional days of hospital stay have been associated with higher BSI rates.<sup>11,12</sup> The mean duration of CVC placement was 14 days in developing CVC-BSI, 8.41 days in CVC colonization and 6 days in non-infected CVC in this study. Similar results were observed in different studies; in Brazil, Bicudo et al reported that duration of CVC placement was 14 days in CVC-BSI and 9 days in non-infected CVC.<sup>4</sup> Mean duration of CVC placement was 11.6 days in CVC-BSI, 7.1 days in non-infected CVC found by Holton et al in Canada.<sup>10</sup>

In this study all CVC-BSI occurred after 11 days of CVC insertion and no CVC remained noninfected after 20 days of insertion. Bicudo et al in their study concluded that a patient who had CVC for longer than 13 days presented progressive risk for infection of approximately three times higher in relation to a patient who had the CVC for less than 13 days.<sup>4</sup> Long term use of CVC increases patient's colonization potential by microorganisms secondary to increasing CVC manipulation. Such associated factors can also increase the risk of acquiring CVC-BSI.<sup>4</sup> This data gives

an idea about how many days a CVC can be placed in a patient, so that CVC-BSI occurring due to long duration of insertion can be prevented.

All the cases of CVC-BSI were found in tri-lumen catheter and CVC colonization were also higher in tri-lumen than in bi-lumen catheter. Bicudo et al reported that CVC-BSI were associated with different types of catheter inserted and several studies demonstrated that chance of CVC-BSI increases when the number of lumen of catheter increases which coincides with the findings of this study.<sup>13,14</sup>

The location of CVC insertion is an important risk factor for the development of CVC-BSI<sup>15</sup>. Among patients with CVC in femoral vein, 18.52% were associated with CVC-BSI but 10.17% of the subclavian vein and no CVC-BSI was diagnosed in patient with CVC in internal jugular vein. However this finding was not statistically significant. In their study, Bicudo et al and Goetz et al have demonstrated that patients with CVC in right femoral vein were more subjected to CVC-BSI and CVC-colonization.<sup>4,16</sup> The rate of CVC-BSI and CVC colonization in right femoral vein in this study correlated with the finding of Merrer et al in France who have reported that insertion at the femoral site increased the risk of infection and the infection were recorded in 19.8% of the femoral catheters.<sup>5</sup> Reasons for infection and colonization may be favored by several factors such as approximation of the site to genital and anal region, probably because of the higher density of local skin flora in the groin area,<sup>17</sup> difficulties in CVC immobilization and dressing, higher skin temperature.<sup>11,18</sup>

No CVC-BSI was diagnosed in patients in with CVC inserted in right internal jugular vein, though CVC colonization was 35.71%. The reason might be due to the fact that all the patients with jugular venous catheter were from Nephrology department used for dialysis and these catheters were all biluminal. Overall prevalence of CVC-BSI was higher in ICU than in haemodialysis unit in this study.

## CONCLUSIONS

It may be concluded that central venous catheterization with a trilumen catheter rather than bilumen in femoral vein is a potential risk factor for infection and the risk of infection increases with the longer duration of catheter insertion. The data may suggest that to avoid CVC-BSI, duration of placement of CVC should not exceed 14 days and CVC insertion in femoral vein should be avoided.

## ACKNOWLEDGEMENT

We acknowledge ICU of Bangabandhu Sheikh Mujib Medical University and ICU and the Department of Nephrology of Dhaka Medical College Hospital for providing the sample collection facilities.

## Conflict of Interest

We do not have any potential conflicts of interest.

## REFERENCES

1. Pittet D, Tarara RND, Richard P, Wenzel RP. Nosocomial bloodstream infection in critically ill patients' excess length of stay, extra costs, and attributable mortality. *JAMA* 1994; 271: 1598-1601
2. Geest SVD. Catheter-related infections, a diagnostic problem. *Neth J Crit Care* 2007; 11: 260-4.
3. O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, et al. Healthcare Infection Control Practices Advisory Committee. Guidelines for the prevention of intravascular catheter-related infections. Centers for Disease Control and Prevention. *MMWR Recomm Resp* 2002; 51: 1-29.
4. Bicudo D, Batista R, Furtado GH, Sola A, De Medeiros EAS. Risk factors for catheter-related bloodstream infection: a prospective multicenter study in Brazilian intensive care units. *Braz J Infect Dis* 2011; 15: 328-31.
5. Merrer J, De-Jonghe B, Golliot F, Lefrant JY, Raffy B, Barre E, et al. Complications of femoral and subclavian venous catheterization in critically ill patients: a randomized controlled trial. *JAMA* 2001; 286: 700-7.
6. Charalambous C, Swoboda SM, Dick J, Perl T, Lipsett PA. Risk factors and clinical impact of central line infections in the surgical intensive care unit. *Arch Surg* 1998; 133: 1241-6.
7. Raad I, Hanna HA, Alakech B, Chatzinikolaou I, Johnson MM, Tarrand J. Differential time to positivity: a useful method for diagnosing catheter-related bloodstream infections. *Ann Intern Med* 2004; 140: 18-25.
8. Bauer AW, Kirby WMM, Sherris JC, Turck M. Antibiotic susceptibility testing by a standardized single disc method. *Am J Clin Pathol* 1966; 36: 493-6.
9. Salomao R, Rosenthal VD, Grimberg G, Nouer S, Blecher S, Buchner-Ferreira S, et al. Device-associated infection rates in intensive care units of Brazilian hospitals: findings of the International Nosocomial Infection Control Consortium. *Pan Am J Public Health* 2008; 24: 195-202.
10. Holton D, Panton S, Conly J, Embree J, Taylor G, Thompson W, et al. Central venous catheter-associated bloodstream infections occurring in Canadian intensive care units: a six-month cohort study. *Can J Infect Dis Med Microbiol* 2006; 17: 169-6
11. Eggimann P and Pittet D. Critical care reviews. Infection control in the ICU. *Chest* 2001; 120: 2059-93.
12. Mitt P, Adamson V, Loivukene K, Lang CK, Telling AK, Paaro DK, et al. Epidemiology of nosocomial bloodstream infections in Estonia. *J Hosp Infect* 2009; 71: 365-70.
13. Moretti EW, Ofstead CL, Kristy RM, Wetzler HP. Impact of central venous catheter type and methods on catheter-related colonization and bacteremia. *J Hosp Infect* 2005; 61: 139-45.
14. Templeton A, Schlegel M, Fleisch F, Rettenmund G, Schöbi B, Henz S, et al. Multilumen central venous catheters increase risk for catheter-related bloodstream infection: prospective surveillance study. *Infect* 2008; 36: 322-7.
15. Lorente L, Henry C, Martin MM, Jiménez A, Mora ML. Central venous catheter-related infection in a prospective and observational study of 2595 catheters. *Crit Care* 2005; 9: 631-5.
16. Goetz AM, Wagener MM, Miller JM, Muder RR. Risk of infection due to central venous catheters: effect of site of placement and catheter type. *Infect Control Hosp Epidemiol* 1998; 19: 842-5.
17. Bozzetti F, Terno G, Camerini E, Baticci F, Scarpa D, Pupa A. Pathogenesis and predictability of central venous catheter sepsis. *Surg* 1982; 91: 383-9.
18. Moro ML, Vigano EF, Cozzi LA. Risk factors for central venous catheter related bloodstream infection: in surgical and Intensive care units. The Central venous catheter related infections study group. *Infect Control Hosp Epidemiol* 1994; 15: 253-64.



Original Article

## Postoperative Complications of Inguinal Hernia Surgery

\*Ashrafuzzaman M<sup>1</sup>, Bhattacharjee A<sup>2</sup>

### Abstract

*Inguinal hernia surgery is a common operation. It has some negative deviation in its postoperative course. Some immediate and chronic complication can make the doom like situation for both patients and surgeons. Regarding the etiology of these complications; debate still exists. Two main objectives of the study was to determine the frequency of postoperative complications of inguinal hernia surgery as well as their level of severity. The study was conducted among the patients admitted at department of Surgery in Rajbari District Hospital. The study period was 24 months; started from January 2015 to December 2016. The patients were enrolled by purposive sampling. A pre-structured, peer-reviewed data collection sheet was used as a tool to record data regarding socio-demographic clinical, surgical and post operative profile. After taking informed written consent all patients were sent for the pre-anesthetic check up. Lichtenstein tension free mesh hernioplasty was done by consultant surgeon. Injection ceftriaxone single dose i/v was used as prophylactic antibiotic. Here in all cases prolene mesh was used manufactured by Jhonson & Jhonson. Data were compiled, edited, analyzed and plotted into tabular and figure form. Out of 124 patients, 37.09% from 21-30 years age group whereas 29.83% from 31-40 years age group. The mean age was 28.79±7.16 years (age range: 17-69 years). Out of 124 patients 34.67% were day laborer, 23.39% were transport laborer and 16.93% were service holder. Among them 26.61% patients admitted as emergency cases and rest 73.38% was admitted as routine cases. After surgery, 26(20.97%) patients experienced post operative complication. Among them 8(30.76%), 6(23.07%) and*

*12(46.15%) had early, medium and late complications respectively. Besides, 12(46.15%) were categorized as Clavien-Dindo Grade-I whereas 10(38.46%) were categorized as Grade-II 2(7.69%) patients each were categorized as IIIa and IIIb. Emergency admission (46.15%) was the major risk factor. Higher ASA grade, emergency admission, pre-existing pain, severe depression, pre-existing uncontrolled DM and some drugs as such as clopidogrel and aspirin are the significant preoperative risk factors. Pre-existing uncontrolled DM and drug effects can not be corrected in case of emergency surgery.*

**Keywords:** Inguinal Hernia, Hernioplasty.

### INTRODUCTION

Inguinal hernia repair is one of the commonest surgeries throughout the world. Approximately 20 million inguinal hernia surgery are performed each year worldwide.<sup>1</sup> In the “pre-mesh” era, recurrence rate was the single most vital endpoint. After introduction of mesh use in routine hernia surgery in 1980’s, the threshold of “acceptable” recurrence rate has been slashed considerably. In 1990’s several risk factors were recognized that are responsible for chronic pain. Since then chronic pain after inguinal hernia surgery popularly termed as ‘inguinodynia’ has drawn the notice of surgeons.<sup>2</sup> However, laparoscopic techniques are associated with lower risk of inguinodynia.<sup>3</sup> Inguinodynia is nothing but an experience and as such subjective feeling that compels a person underwent inguinal surgery recently to seek medical attention.<sup>4</sup> This condition may happen in 0.7-36.7% cases<sup>5</sup> and among them 3% people experience severe inguinodynia.<sup>5,6</sup> Complications of inguinal hernia surgery may be co notated as an uncommon course of disease accompanied by particular symptoms. Some underlying illness and/or the treatment of illness may be responsible for developing the complications. The severity of complications may be classified according to Clavien-Dindo Classification Scale.<sup>7</sup> It is a 7 point scale that can be used for surgical complication severity that was first proposed in early 2000.

Besides, only hernia surgery complications can be classified as early, medium and late. Pain, bleeding, urinary retention,

1. \*Dr. Md. Ashrafuzzaman, MBBS, MS (Surgery). Senior consultant (Surgery), Razbari District Hospital, Razbari. Call: 01912-656814
2. Dr. Avisak Bhattacharjee MBBS, FCPS (Surgery), FMAS (India), MPH (Epidemiology), PhD Research Fellow; Department of Surgical Oncology, NICRH, Mohakhali, Dhaka-1212.

\*For Correspondence

anesthesia related complications can be discussed under 'early complications'. Seroma and wound infection can be categorized as 'medium complications'. Chronic pain (inguinodynia) and testicular atrophy can be exemplified as 'late complications'.<sup>8</sup>

Major wound infection is fortunately an infrequent occurrence as hernia surgery is a clean surgery. It is more common in case of strangulated inguinal hernia. Obesity, prolonged duration of operation and use of local anesthesia are the common contributing factors for wound infection. Improper hemostasis and inadvertent surgery are responsible for seroma and hematoma. These early complications may also lead to wound infection.<sup>8</sup> Postoperative hydrocele may occur due to redundant large portion of sac that is kept in situ.<sup>9</sup> The systemic complications were beyond scope of this research.

The aim of this study was to determine the frequency of postoperative complications of inguinal hernia surgery as well as their level of severity.

## MATERIALS AND METHODS

The study was conducted at the department of Surgery in Rajbari District Hospital. All the patients underwent inguinal hernia repair were enrolled in the study by purposive sampling. The study period was 24 months started from January 2015 to December, 2016. All patients were explained regarding the surgery and the research. After taking informed written consent the patients were sent to the department of Anesthesia with necessary investigations for the pre-anesthetic check up. Here the patients underwent Lichtenstein tension free mesh hernioplasty under spinal anesthesia. All the patients received single dose injectable antibiotic Ceftriaxone. The prolene mesh manufactured by Jhonson and Jhonson was used for every patient. A pre-tested, peer reviewed, interview and observation based data collection sheet was prepared. Data regarding socio-demographic, clinical, operative and post operative profiles were recorded. Data were compiled, edited, managed and analyzed. The mean of age, duration of symptoms were determined. Chi-square test and student's t test were done for data analysis in case of categorical and quantitative values respectively. The p value was significant at <0.05. All data entry and analysis were done with the help of statistical package for social science (SPSS) version 23.

## RESULTS

Out of 124 patients 37.09% from age group 21-30 years, 29.83% were from 31-40 years age group and 15.32% were from <20 years age group. The mean age of the patients was  $28.79 \pm 7.16$  years (mean age: 17-69 years). Only 6(4.83%) patients were female among 124 patients. Rest 118(95.16%) were male. The male to female ratio was 19.6:1.

Table-I: Patient's demographic and baseline characteristics (n=124)

Demographic & Baseline characteristics	Values
Age distribution	
<20	19(15.32%)
21 – 30	46(37.09%)
31 – 40	37(29.83%)
41 – 50	5(4.03%)
>50	17(13.7%)
Mean age $\pm$ SD (in years)	28.79 $\pm$ 7.16
Age range (in years)	17 – 69
Sex distribution	
Male	118 (95.16%)
Female	6 (4.83%)
Sex ration M:F	19.6:1
Occupation status	
Day labourer	43(34.67%)
Transport worker	29(23.39%)
Service holder	21(16.93%)
Business	16(12.9%)
Others	15(12.09%)

Out of 124 patients 34.67% were day labourer 23.39% were transport worker, 16.93% were service holder, 12.9% were businessperson and rest 12.09% were included as 'others'. Here 'others' denotes the unemployed, retired persons, students and housewife's.

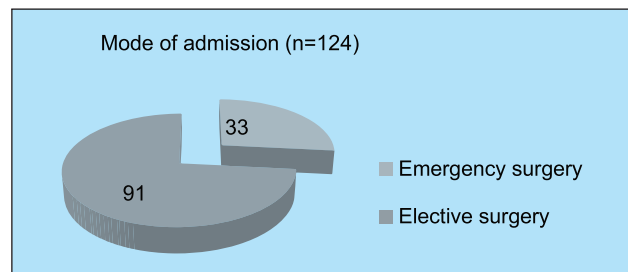
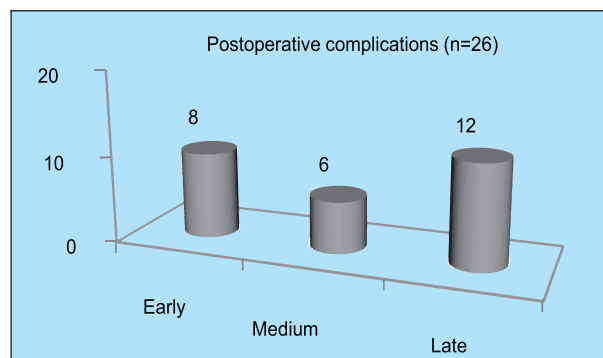


Figure-1: Distribution of patients according to mode of admission (n=124)

Out of 124 patients 33(26.61%) patients admitted as emergency patients whereas rest 91(73.38%) underwent surgery as elective cases.



\*\*2 patients experienced early complications followed by medium complication.

Figure-2: Distribution of patients according to postoperative complications (n=26)

Out of 124 patients only 26(20.97%) experienced postoperative complications. Among them 8(30.76%) had early complications, 6(23.07%) had medium complications and 12(46.15%) had late complications.

Table-II: Distribution of patients according to specific complications (n=26)

Complications	Frequency (%)
Early (n=8)	(n=26)
Post spinal headache	3(11.53%)
Hematoma	1(3.84%)
Urinary retention	4(15.38%)
Medium wound infection	2(7.69%)
Seroma	4(15.38%)
Late inguinodynia	10(38.46%)
Testicular atrophy	1(3.84%)
Postoperative Hydrocele	1(3.84%)

Out of 26 patients 38.46% experienced inguinodynia, 15.38% had urinary retention and seroma each. 11.53% patients had early pain, post spinal headache each. Here 2 patients who experienced hematoma and post spinal

headache in early period also had wound infection and seroma in later period respectively.

Grading according to Clavien -Dindo classification

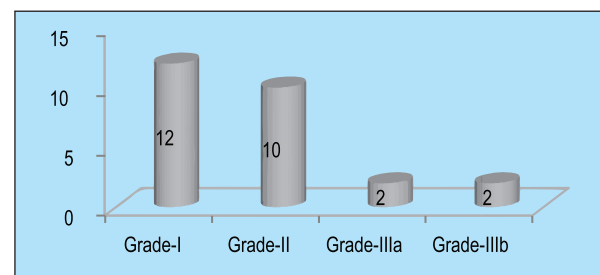


Figure-3: Distribution of patients according to Clavien-Dindo classification (n=124)

Out of 26 patients 12(46.15%) were categorized as Grade-I, 10(38.46%) were categorized as Grade-II and 2 (7.69%) were categorized as Grade-IIIa and 2 (7.69%) were categorized as Grade-IIIb each according to Clavien-Dindo classification of post operative complications of inguinal hernia surgery.

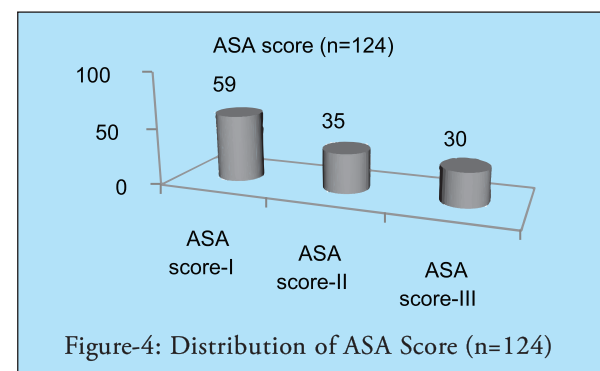


Figure-4: Distribution of ASA Score (n=124)

ASA score I was graded in case of 59(47.58%) patients, II was graded in 35(28.22%) cases and III was graded in 30(24.19%) patients.

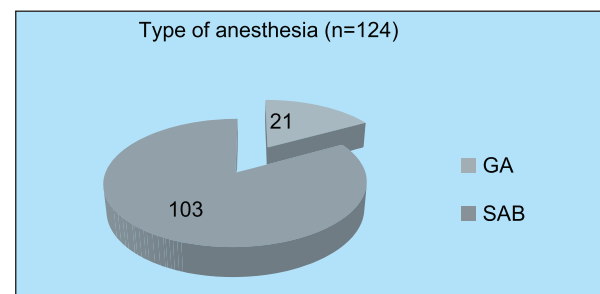


Figure-5: Distribution of patients according to type of anesthesia (n=124)

Out of 124 patients 103(83.06%) underwent surgery under subarachnoid block and rest 21(16.93%) patients underwent surgery under general anesthesia due to some systemic limitations.

Table-III: Distribution of risk factors in complicated cases (n=26)

Risk factors	Frequency (%)
Early age (<50)	11 (42.30%)
ASA grade III	8 (30.76%)
Emergency admission	12 (46.15%)
General anesthesia	6 (23.07%)
Pre-existing pain	4 (15.38%)
Severe depression	3 (11.54%)
Drug-Clopidogrel, Aspirin	1 (3.85%)
Pre-existing uncontrolled DM	1 (3.85%)

\*ASA-American Society of Anesthesiology

\*In a few cases multiple risk factors were present.

Out of 26 patients experienced complications 46.15% admitted as emergency cases, 42.30% low age, manifested 30.76% were ASA grade III and 23.07% underwent surgery by general anesthesia.

## DISCUSSION

Post operative complications after inguinal hernia surgery is a bitter experience for general surgeons. The multiple risk factors are responsible for the versatile dimension of post operative complications. Early age as a risk factor for postoperative pain is well known.<sup>10</sup> In our study, the mean age of the patients was  $28.79 \pm 7.16$  years (age range: 17-69 years). We have identified 26 complications of different verities in our study. Among these 26 patients, 11(42.30%) had the age below 50 years. Henceforth, our study results were partially agreed by a similar previous study.<sup>11</sup>

Nilsson et al.<sup>12</sup> stated that the most relevant risk factors for 30 day morbidity after hernia repair are localization of hernia (femoral vs inguinal), patient age, ASA score, mode of admission (emergency vs elective surgery) and type of anesthesia. Our study was conducted upon only inguinal hernia surgery. As a result, Nilsson et al first risk factor is excluded. It was mentioned before the low age is a risk factor which was also agreed by Nilsson et al.<sup>12</sup>

Here, we observed 30.76% cases were ASA grade III who suffered from post operative complications.

Post operative chronic pain is a distressful condition for patient. Here the second victim is the surgeon as because the patient always communicates to him for getting relief. This pain causes social disability, interferes walking, standing and sitting too. Nielsen and Poobalan reported 11.3% and 14.2% patients respectively with social disability in their studies.<sup>11,13</sup> On the contrary, Condon<sup>14</sup> disagreed with their findings as he reported that chronic pain may not occur more than 1%. This study reports 38.46% of total post operative complications was chronic pain which was supported by Nielsen and Poobalan's report.<sup>11,12</sup>

Courtney et al.<sup>15</sup> finds that a high level of preoperative pain indicates an increased risk of long term post operative pain. In this study, we have found that 15.38% of total complications population had this sort of pre-existing pain. This might suggest that the hernia disease was already complicated prior to surgery in some patients, stretching, entrapment, and/or inflammation of local nerves are conceivable mechanisms, but psychological susceptibility or increased pain sensitivity may also play a role. Moreover, the pain prior to the operation may also have originated from other conditions than the hernia and will then persist after the operation. There is another possibility that is inter individual variations in the manner of communicating subjective feelings may have affected the observed relationship.

In this study we have recognized post spinal headache, hematoma, urinary retention and acute pain as early complications; wound infection and seroma as medium complications and inguinodynia and testicular atrophy as late complications.

Another post surgical complication classification was followed here. This classification is popularly known as Clavien-Dindo classification. This classification system has come from the backdrop of negative outcome of surgery.

Every surgery may have a positive and a negative outcome. Negative outcome consists of complications, failure to cure and sequele<sup>16</sup>. Complications may be defined as any deviation from the normal postoperative course. The complications of surgery was re-write by Daniel Dindo and his colleagues in 2004<sup>7</sup> that was termed as Clavien-Dindo classification. In our study, we have reported only grade I, II, IIIa and IIIb of this classification.

Table-IV: Classification of Surgical Complications<sup>7</sup>

Grade	Definition
Grade I	Any deviation from the normal postoperative course without the need for pharmacological treatment or surgical, endoscopic, and radiological interventions. Allowed therapeutic regimens are: drugs as antiemetics, antipyretics, analgetics, diuretics, electrolytes, and physiotherapy. This grade also includes wound infections opened at the bedside
Grade II	Requiring pharmacological treatment with drugs other than such allowed for grade I complications. Blood transfusions and total parenteral nutrition are also included
Grade III	Requiring surgical, endoscopic or radiological intervention
Grade IIIa	Intervention not under general anesthesia
Grade IIIb	Intervention under general anesthesia
Grade IV	Life-threatening complication (including CNS complications)* requiring ICU management
Grade IVa	Single organ dysfunction (including dialysis)
Grade IVb	Multiorgan dysfunction
Grade V	Death of a patient
Suffix "d"	If the patient suffers from a complication at the time of discharge (see examples in Table 2), the suffix "d" (for "disability") is added to the respective grade of complication. This label indicates the need for a follow-up to fully evaluate the complication.

\*Brain hemorrhage, ischemic stroke, subarachnoidal bleeding, but excluding transient ischemic attacks. CNS, central nervous system; IC, intermediate care; ICU, intensive care unit.

According to our study, seroma and hematoma required intervention that was not under general anesthesia (IIIa). Hematoma was found in the patient who underwent emergency surgery and was a common user of clopidogrel and aspirin. For chronic pain and wound infection, we had to intervene 2 cases under general anesthesia (IIIb). In infected case, we had to remove mesh under general anesthesia. Rest of the cases were treated with or without pharmacological agents. It is noteworthy here that some pharmacological agents are allowed in grade I we have got 46.15% grade I, 38.46% grade II and 7.69% grade IIa and b each. In our context, 84.6% (Clavien-Dindo grade I and II) were manageable by conservative means. In the other part of coin it was observed that 15.39% required intervention (Clavien-Dindo grade  $\geq$  III). It was almost agreed by Dirk Weyhe and his colleagues.<sup>1</sup>

In a district hospital of Bangladesh it is very tough to provide quality surgery due to the limitations of versatile logistic supports. It was tried up to the level best to perform quality surgery here. But though we had to admit some post surgical complications in case of inguinal hernia repair of which statistics were world standard. Like other settings, chronic pain here has cut the maximum figure as complication.

## CONCLUSIONS

Higher ASA grade, emergency admission, pre-existing pain, severe depression, pre-existing uncontrolled DM and some drugs as such as clopidogrel and aspirin are the significant preoperative risk factors in this study.

## REFERENCES

1. Weyhe D, Tabriz N, Sahlmann B, Verena-Nicole Uslar. Risk factors for perioperative complications in inguinal hernia repair – a systematic review. *Innov Surg Sci* 2017; aop.
2. Franneby U, Sandblom G, Nordin P, Nyren O, Gunnarsson U. Risk factors for long-term pain after hernia surgery. *Annals of surgery*, 2006;244(2):212-9.
3. Eklund A, Montgomery A, Bergkvist L, Rudberg C. Lichtenstein inguinal hernia repair. *The British journal of surgery*, 2010;97(4):600-8.
4. The International Association for the Study of Pain <http://www.iasp-pain.org/>: the International Association for the Study of Pain [cited 2017 2017-02-20].
5. Kingsnorth AN, Bowley DM, Porter C. A prospective study of 1000 hernias: results of the Plymouth Hernia Service. *Ann R Coll Surg Engl* 2003; 85: 18-22.



6. Bay-Nielsen M, Perkins FM, Kehlet H and Danish Hernia Database. Pain and functional impairment 1 year after inguinal herniorrhaphy: a nationwide questionnaire study. *Ann Surg* 2001; 233: 1-7.
7. Dindo D, Demartines N, Clavien P-A. Classification of surgical complications: a new proposal with evaluation in a cohort of 6336 patients and results of a survey. *Ann Surg* 2004;240:205-13.
8. Norma SW, P. Ronan OC, Andrew WM. Bailey & Love's-Short practice of surgery. 27<sup>th</sup> edn. CRC Press (Taylor & Francis Group); 2018;1034.p.
9. Ray D. Gaines. Complications of Groin Hernia Repair: Their Prevention and Management. *Journal of the National Medical Association*, vol. 70, no. 3, 1978.
10. Nienhuijs, S.W., et al., Randomized trial comparing the Prolene Hernia System, mesh plug repair and Lichtenstein method for open inguinal hernia repair. *Br J Surg*, 2005. 92(1): p. 33-8.
11. Poobalan, A.S., et al., Chronic pain and quality of life following open inguinal hernia repair. *Br J Surg*, 2001. 88(8): p. 1122-26
12. Nilsson H, Angeras U, Sandblom G, Nordin P. Serious adverse events within 30 days of groin hernia surgery. *Hernia* 2016;20:377–85.
13. Bay-Nielsen M, Perkins FM, Kehlet H. Pain and functional impairment 1 year after inguinal herniorrhaphy: a nationwide questionnaire study. *Ann Surg*. 2001;233:1-7.
14. Condon RE. Groin pain after hernia repair. *Ann Surg*. 2001;233:8.
15. Courtney CA, Duffy K, Serpell MG, et al. Outcome of patients with severe chronic pain following repair of groin hernia. *Br J Surg*. 2002; 89:1310-1314.
16. Clavien P, Sanabria J, Strasberg S. Proposed classification of complication of surgery with examples of utility in cholecystectomy. *Surgery*. 1992;111:518-26.

Original Article

## Pattern of Road Traffic Injuries and Disability Burden among Accident Victims

\*Mostary KF<sup>1</sup>, Halim KS<sup>2</sup>, Rahman MM<sup>3</sup>, Islam MS<sup>4</sup>, Muna AT<sup>5</sup>, Khan BEZ<sup>6</sup>

### Abstract

Worldwide road traffic injuries cause more than 1.2 million deaths every year and alarming rise has been observed in road accidents in Bangladesh over the past few years. A cross-sectional study was carried out from January to December 2017 to determine the pattern of road traffic injuries with disability burden among accident victims. 190 respondents were selected from Center for the rehabilitation of the paralyzed (CRP) at Savar and Mirpur in Dhaka by purposive sampling. Data was collected by face to face interview by using semi-structured pre-tested questionnaire. A large number of accident victims in this study were male (79.5%), Muslim (93.2%), married (85.3%) with middle age group (35.8%). Most of the accident victims came from rural area (62.6%) and place of most accident occurred in subway (73.1%). Highest number of accident occurred by motorized two wheels (47.3%). Fracture (48.9%) were most common types of injury among accident victims and affected part were most commonly the extremities (32.9%) and injury category were maximum injury (38.9%). Years of life lived with disability was highest in spinal cord injury (172.36). Among those who were in middle age group, suffered longer than other injury with years of

life lived with disability. It found people who were injured from motorized two wheels had suffered longer years lived with disabilities of life than other types of vehicle injury (82.02). The result indicates the pattern of injuries and accident victims who were lived with disability for long time.

**Keywords:** Road traffic accident, CRP, YLD.

### INTRODUCTION

Road traffic accident (RTA) may be defined as an event that occurs on a way or street open to public traffic, resulting in one or more person being injured or killed where at least on moving vehicle, pedestrian, animal, road debris or other stationary obstruction, such as a tree or utility pole. RTA is one of the leading causes of deaths that occurs in the developing countries.<sup>1</sup> Disability may result from the interaction between persons with impairments and attitudinal and environmental barriers, hindering their full and effective participation in society on an equal basis with others. According to WHO and World Bank (2011), disabilities include:

- Activity limitations- difficulties in executing activities of daily living, e.g. walking or eating;
- Participation restrictions- problems with involvement in any area of life, e.g. facing discrimination in employment or transportation.

Every year 1.24 million people die due to road traffic injuries in addition to 20-50 million non-fatal injuries occurring around the world.<sup>4</sup> Road traffic injury is also recognized as a major contributor to disability ranging from brief short-term impairments to serious lifelong conditions. Road traffic injuries ranked as the 10th highest cause of the loss of Disability Adjusted Life Years (DALYs) worldwide; where it was the 5th ranked cause in Southeast Asia in 2010.<sup>5</sup>

As there are some limitations and difficulties in measuring non-fatal outcomes of injuries, the prevalence estimates of post-crash disability vary dramatically - from 2% to 87%.<sup>6</sup> Studies in Thailand, the Netherlands and South Africa showed that long-term disabilities due to road crashes accounted for 68-76% of all years lived with a disability, even though only 1-2% of injuries result in lifelong impairment.<sup>7</sup> People, become disabled due to road crashes may experience inequality in accessing health care, education, job opportunities and disability assistance.<sup>6</sup> Such as the employment rate among persons of working age with disabilities (44%) is much less

1. \*Dr. Kazi Fardana Mostary, Medical Officer, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka. E-mail: drkazimostary@gmail.com
2. Dr. Kazi Shafiqul Halim, Associate Professor, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
3. Dr. Mohammad Mohibur Rahman, Junior Consultant (Orthopedics), Upazilla Health Complex, Lalmohon, Vola.
4. Dr. Md. Safikul Islam, Medical Officer, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
5. Dr. Atiya Tasnim Muna, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.
6. Dr. Bushra-E-Zannat Khan, Department of Epidemiology, National Institute of Preventive and Social Medicine (NIPSOM), Mohakhali, Dhaka.

\* For correspondence

than for people without disabilities (75%) across 27 developed countries in the list of the Organization for Economic Co-operation and Development (OECD) member countries.<sup>6</sup> According to WHO, the economic burden due to road traffic accidents of developing countries is 2-3% of GDP.

There were 2,958 deaths in Bangladesh in 2009, 15% being females 41% of the deaths were pedestrians. Estimated GDP loss due to RTA was 1.6%. Accident Research Institute of BUET and WHO claims that every year about more than 50000 injured by road traffic accident. According to UNICEF, roughly 38000 children become orphans every year because of road traffic fatalities.

A high growth in urbanization and motorization can be identified as one of the important factors leading to the higher number of road traffic accidents. In recent studies found that the annual urban growth rate in Bangladesh stood at 4% in 2010, whereas the present growth in motor vehicle stands at 8%. Consequently the road systems are experiencing severe congestion, physical deterioration and safety problems. According to a World Bank report, only 40% of the main roads (National highway and the district roads) are in good condition.<sup>8</sup>

#### MATERIALS AND METHODS

A cross sectional study was conducted at Centre for the Rehabilitation of the Paralyzed (CRP), Mirpur and Savar in Dhaka for the period of January to December 2017. The study populations were both male and female victims due to RTA. By purposive sampling, total 190 respondents were selected. A pretested, semi-structured questionnaire was used for data collection which contains question regarding socio-demographic status, their medical history and a scale named The Maximum Abbreviated Injury Scale (MAIS).<sup>9</sup>

The MAIS is an anatomical-based coding system created by the association for the advancement of automotive medicine to classify and describe the severity of injuries. It respects the threat of life associated with the injury rather than the comprehensive assessment of the severity of the injury. MAIS is one of the most common anatomical scale for traumatic injury. The score limit of scale is 0 to 77 and injury severity is categorized as minor, moderate, serious, severe, critical and maximum in accordance to their score. A 7 digit code is used to describe the injury as type of injury, location of injury and severity of injury. YLDs were calculated for each victim by multiplying the type of injury with the disability weight and average duration of that injury.

Data were collected by face to face interview and record review. Data were processed and analyzed by using software SPSS, version 23.0. Both descriptive and inferential analysis were done according to the objective of the study. The level of significance was set at 0.05.

Prior to commencement of the study, the research protocol was approved by the Ethical Review Board (ERB) of National Institute of Preventive and Social Medicine (NIPSOM).

#### RESULTS

A cross sectional study was conducted among 190 respondents of Centre for the Rehabilitation of the Paralyzed (CRP), Mirpur and Savar in Dhaka to find out the pattern of road traffic injuries and disability burden (years of life lived with disability) among accident victims. In this study, 97.5% of respondents were male and 21.5% were female; 93.2% were Muslim and 6.8% were in other religion; 85.3% were married and 14.7% were unmarried; the highest number of the patients were with 30-39 age group (37.90%) and the other age groups were distributed as within 20-29 years (28.42%) and rest were age group 40-49 years (23.68%), age group 60-69 years (7.37%), age group 10-19 years (2.63%). Minimum age group of the respondents were 0-9 years and maximum age of the respondents were 60-69 years. The mean age of the respondents were 35.83 ( $\pm 9.69$ ) and 62.6% of respondents were from urban area. Monthly income of the family was 18615.78 $\pm$ 6830.89 BDT. Majority of the accidents occurred on Tuesday (22.6%) and Wednesdays (17.4%) while less number of accidents were reported on Saturdays (9.01%) and Sundays (10.0%).

The study revealed that 47.9% of accident occurred while motorized two wheels riding, 16.3% were suffered as pedestrians, 14.7% occurred while three wheels vehicles riding, 13.2% occurred while four wheels vehicles riding and 7.4% were occurred by bicycles. Among the respondents, 83.8% suffered from RTA accident for 1-5 years, 9.6% for 6-10 years, 2.2% for 11-15 years and 1.4% for 16-20 years. Among all of the RTA patient's, 48.9% suffered from fracture, 20% from cut wound, 15% with dislocation, 10% with internal hemorrhage and 5% from blunt injury.

Out of 190 RTA respondents, distribution of affected part of the body given below (Table-I)

Table I: Distribution of RTA patients affected part of the body (n=190)

Affected part	Frequency (f)	Percent (%)
Head	15	7.5
Face	5	2.5
Neck	10	5.0
Thorax	20	10.0
Abdomen	9	4.9
Spine	40	20.0
Extremity	65	32.9
Pelvis	25	12.9



Among the respondents, one third had maximum Injury (38.9%) and the lowest (0.00%) had minor injury (Table-II).

Table II: Injury Severity Score Category (n=190)

Injury Score	Severity Category	Frequency	Percentage
1.	Minor	0	0.00
2.	Moderate	1	0.53
3.	Serious	44	23.16
4.	Severe	34	17.89
5.	Critical	37	19.47
6.	Maximum	74	38.9

YLD (years of life lived with disability) among RTA patients: The mean of YLD of respondents was  $8.68 \pm 16.57$ . Among them who suffered from spinal cord injury (YLD=172.36) are more than other RTA injuries. The YLD of other injuries were finger amputation-1.17, muscle injury-0.06933, hand injury-0.36, hip injury-0.81, foot injury-0.49, scapula and humerus injury-1.28, one arm amputation-4.589, one leg amputation-5.63, severe chest injury-2.96883, neck injury-1.00, face injury-0.78, skull injury-4.13, two leg amputation-14.2267, nerve injury-3.77, two arm amputation-9.71867, knee injury-1.95, pelvis injury-8.5712, minor and moderate traumatic brain injury-9.856, severe traumatic brain injury-28.4527.

YLD with injury severity categories: In this study YLD score of the respondents was maximum among maximal injured ( $19.083 \pm 10.84$ ) and lowest among minor injured (0) (Table-III).

Table III: YLD with Injury Severity Category (n=190)

Severity	YLD per injury			Number of injuries	Percent
	Average	Median	$\pm$ SD		
Minor	0	0		0	0.00
Moderate	0.032	0.032		1	0.53
Serious	1.306	0.624	$\pm 1.70$	44	23.16
Severe	2.637	1.23	$\pm 4.45$	34	17.89
Critical	1.866	0.994	$\pm 1.86$	37	19.47
Maximal	19.083	10.84	$\pm 22.70$	74	38.95
Total				190	100.00

YLD with age category among the respondents were given below (Table-IV):

Table IV: YLD with Age Category

Injury Type	Age group						YLD against injury
	10-19 years	20-29 years	30-39 years	40-49 years	50-59 years	60-69 years	
Finger amputation	0	0.27	6.766	0	0	0	1.17
Muscle injury	0	0.048	0.128	0	0	0.24	0.06933
Hand injury	0.672	0.826	0.168	0.28	0	0.224	0.36
Hip injury	0.864	1.056	1.184	1.346	0	0.384	0.81
Foot injury	0.286	1.716	0.468	0.456	0	0	0.49
Scapula and humerus injury	0	3.185	0.42	4.06	0	0	1.28
One arm amputation	0	2.73	5.304	13.884	0	5.616	4.589
One leg amputation	0	3.9	9.438	14.82	0	5.616	5.63
Severe chest injury	0	5.123	5.546	2.914	0	4.23	2.96883
Neck injury	0	1.566	1.66	2.784	0	0	1.00
Face injury	2.01	0	0	0	0	2.68	0.78
Skull injury	0	4.686	7.171	12.922	0	0	4.13
Two leg amputation	0	0	36.96	24.64	0	23.76	14.2267
Nerve injury	0	2.034	5.876	7.91	0	6.78	3.77
Two arm amputation	0	4.92	10.588	32.964	0	9.84	9.71867
Knee injury	0	4.16	2.6	0.78	0	4.16	1.95
Pelvis injury	0	16.016	12.28	14.56	0	8.992	8.5712
Minor and moderate traumatic brain injury	2.772	19.404	23.562	9.702	0	3.696	9.856
Spinal cord injury	0	120.768	369.408	544.018	0	0	172.366
Severe traumatic brain injury	0	35.672	26.754	108.29	0	0	28.4527

This study revealed that different types of vehicles with their YLD described given below (Table-V).

Table-V: Deferent types of vehicles with YLD

Vehicle type	Frequency (f)	Percent (%)	YLD
Pedestrians	32	16.3	15.22
Motorized two wheels	91	47.9	82.02
Three wheels	28	14.7	38.95
Four wheels	25	13.2	33.08
Bicycles	14	7.4	14.30

## DISCUSSION

This was a cross sectional study carried out on 190 road traffic accident victims. Respondents were selected purposively from Centre for rehabilitation of the paralyzed (CRP) at Mirpur and Savar in Dhaka. This study aimed to determine the pattern of injuries and disability burden (YLD) among accident victims. In this study two third of the patients were male (79.5%) which is similar to the study done in India.<sup>1</sup> This higher percentage of males can be attributed to high mobility of males and their high exposure to road. Mean age of the respondents were  $35.83 \pm 9.69$ , the highest number of the victims age group was (30-39) years that is (37.90%). This showed that the people of Bangladesh are most active and productive in this age group who are involved in RTAs which add a serious economic loss of the community. This study also showed that there were less number of accidents in the age group of 10-19 and 60-69. The reason may be that children are taken care of by elders and less exposed to vehicles. Lower cases of RTAs in group 60-69 years could be due to less mobility of people of that group in Bangladesh. In this study the average monthly family income was TK  $18615 \pm 6830.89$ . About three fourth, 72.6% patients had monthly income between 10,001-20,000 BDT and this was similar to other study.<sup>1</sup> this could be due to higher proportion of the middle class relying on motorized two wheels that are more vulnerable to accidents. In this study, motorized two wheelers riders constituted 47.9% of the RTA cases and another 16.3% were pedestrians, 14.7% three wheelers, 13.2% four wheelers and 7.4% bicycle riders. Similar observation was reported in other studies.<sup>1</sup> The study revealed that majority 83.8% of RTA patient were suffering from the injury for 1-5 years and rest are 9.6% suffered from accident 6-10 years, 2.2% were suffered from accident 11-15 years, 1.4% patient suffered from accident 16 to 20 years. Low income people live in poverty cannot afford the cost of treatment of the accident because it is long term

treatment procedure. Fracture was the most common type of injury (48.9%) followed by cut wound/laceration (20%) and internal hemorrhage (10%) among RTA cases. Similar trend has been reported in India.<sup>1</sup> Extremities were most common site (32.9%) of injury followed by spine (20%), pelvis (12%), thorax (10%), head (7.5%), neck (5%) and face (2.5%). These findings were similar to study done in India.<sup>10</sup> This study showed mean YLD 8.67 ( $\pm 16.56$ ) the accident victim suffered from spinal cord injury YLD was higher (172.36) than other types of RTA injuries and other findings as followed severe traumatic brain injury YLD 28.45, two leg amputation YLD 14.22, two arm amputation and minor and moderate traumatic brain injury YLD 9.85, pelvic injury YLD 8.57, one leg amputation YLD 5.63. YLD were higher that means burden of those injuries patient in the family, society and nation. The study revealed that the patient who were maximal injury category his/her YLD (38.95) was higher than other injury category. That means YLD not depend on injury severity.<sup>11</sup> In this study, the victims age group 20-29 were more YLD than other age group. Bangladesh is a developing country, this age group people were most demanding in our country. The victim who had injured from motorized two wheelers had higher YLD (82.02). This study estimated the severity differences of injuries for different modes of transport and expressed these differences in YLD. On an average two times difference was observed in YLDs due to lifelong injuries depending on the mode of transport while injured. So, the results of this study can be used to predict the health consequences of transport mode. As far known, this is the first analysis in road accident research on the association between MAIS and YLD. Both methods have been developed for different purposes. MAIS is an indicator of acute severity, while YLD takes into account short and long term disability flowing injury. Therefore, a high MAIS does not necessarily result in high burden of disease, as confirmed by this study result. Some injuries may be very severe at the moment of the injuries (leading to high MAIS), but do not necessarily lead to high disability if the patient rehabilitates completely after the acute phase. Alternatively using YLD as indicator for road safety performance as input for policy making should be considered.

## CONCLUSIONS

This study provides information that road traffic accidents were common in middle age group, suffered mostly from two wheelers motorized vehicle and YLD were highest among respondents suffered by spinal cord injury. So, this findings will contribute to the development of policy making leading

towards a safer system for all road users, including persons with disabilities.

## REFERENCES

1. Jaiswal K, Kumar S, Sant SK, Singh AK, Kumar A, Singh A. Injury pattern of road traffic accident cases in a rural hospital of central Uttar Pradesh. *International Journal of Medical Science and Public Health*. 2015 Oct 1;4(10):1347-50.
2. Mertens DM, Sullivan M, Stace H. Disability communities: Transformative research for social justice. *The Sage handbook of qualitative research*. 2011;4:227-42.
3. Biyanwila J. Poverty and Disability in the Global South.
4. World Health Organization. World health statistics 2010. World Health Organization; 2010.
5. Murray CJ, Vos T, Lozano R, Naghavi M, Flaxman AD, Michaud C, Ezzati M, Shibuya K, Salomon JA, Abdalla S, Aboyans V. Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *The lancet*. 2012 Dec 15; 380 (9859):2197-223.
6. World Health Organization. World Bank. World report on disability. 2011 Jun; 206.
7. Haagsma JA, Polinder S, Lyons RA, Lund J, Ditsuwana V, Prinsloo M, Veerman JL, van Beeck EF. Improved and standardized method for assessing years lived with disability after injury. *Bulletin of the World Health Organization*. 2012 Jul;90(7):513-21.
8. Rahman T. Road Accidents in Bangladesh: An Alarming Issue.
9. Polinder S, Haagsma J, Bos N, Panneman M, Wolt KK, Brugmans M, et al. Burden of road traffic injuries: Disability-adjusted life years in relation to hospitalization and the maximum abbreviated injury scale. *Accident Analysis & Prevention*. 2015 Jul 1;80:193-200.
10. Bayan P, Bhawalkar JS, Jadhav SL, Banerjee A. Profile of non-fatal injuries due to road traffic accidents from a industrial town in India. *International journal of critical illness and injury science*. 2013 Jan;3(1):8.
11. Mishra B, Sinha ND, Sukhla SK, Sinha AK. Epidemiological study of road traffic accident cases from Western Nepal. *Indian journal of community medicine: official publication of Indian Association of Preventive & Social Medicine*. 2010 Jan;35(1):115.

## Original Article

## Study of Obstructive Jaundice in Adult: Association Between Clinical Diagnosis and Operative Findings

\*Masum MG<sup>1</sup>, Jahan ABMS<sup>2</sup>, Rabbani MRH<sup>3</sup>, Chowdhury F<sup>4</sup>, Hossain MF<sup>5</sup>, Islam MM<sup>6</sup>

## Abstract

Obstructive jaundice is a condition in which there is blockage of the flow of bile out of the liver. To find out the correlation between clinical diagnosis and operative findings of patients having obstructive jaundice. This prospective observational study was conducted at the Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from January 2008 to April 2009. Fifty clinically diagnosed obstructive jaundice cases were enrolled in this study. A detailed history was taken and thorough physical examination was done. Also necessary haematological, biochemical, radiological and other special investigations were carried out. In this study, mean age of the patients was 42.9 years and male to female ratio was 1:1.17. The most frequent cause was choledocholithiasis (40%), stricture of CBD (6.0%), retained stone (14.0%), parasitic obstruction (4.0%), carcinoma (30.0%) and other cause (6.0%). Serum bilirubin level was below 10mg/dl in all cases of stricture of CBD. It was above 15mg/dL in cases of carcinoma head of the pancreas. The rise of Serum alkaline phosphates level was up to 3 folds in cases with choledocholithiasis, biliary stricture and pancreatic head malignancy. The average rise in other cases was 1 to 2 folds. Sensitivity and specificity of pre operative clinical diagnosis of

choledocholithiasis, carcinoma and retained stone was 86.4 & 96.4%, 92.3 & 91.9% and 71.4 & 95.3% respectively. Pre operative clinical diagnosis of obstructive jaundice is a good diagnosis tool in diagnosis of causes of obstructive jaundice.

**Keywords:** Obstructive jaundice, choledocholithiasis, biliary stricture.

## INTRODUCTION

Jaundice is a yellowish staining of the skin, sclera, and mucous membranes by bilirubin, a yellow-orange bile pigment. The discoloration typically is detected clinically once the serum bilirubin level rises above 3 mg per dL (51.3  $\mu$ mol per L).<sup>1</sup>

In medical and surgical practice jaundice is a common problem.<sup>1</sup> Though it can often be correctly anticipated clinically but usually biochemical and radiological imaging investigations are required for confirmation. It may be due to a variety of causes and is broadly divided into obstructive (surgical) and non obstructive (medical) categories.<sup>2</sup>

The surgical jaundice can be caused by the obstruction of the bile duct as with gall stones, strictures, malignancy, such as cholangiocarcinoma and carcinoma head of pancreas & periampullary carcinoma. Various rare causes like Choledochal cyst; Caroli's syndrome and primary and metastatic liver tumors have also been reported.<sup>1,2,3</sup>

The symptoms of obstructive jaundice include jaundice with or without pain, dark urine, pruritis, pale stools, weight loss and anorexia.<sup>1,2</sup>

In most cases a firm diagnosis can be achieved by taking careful history and doing thorough physical examination. Liver function test along with some relevant biochemical tests will increase this rate of accuracy. In general, patients with benign disease have less hyperbilirubinemia than those with malignant obstruction.<sup>4</sup> The transaminases (AST & ALT) may abruptly rise many fold above normal and decrease rapidly once the obstruction is relieved.<sup>4</sup>

The radiological investigations available for the diagnosis of obstructive Jaundice can be categorized into noninvasive

1. \*Dr. Mohammad Golam Masum, Specialist, Surgery Dept., Square Hospital Limited, Dhaka. Email: mgmmasum@yahoo.com
2. Dr. A B M Sarwar Jahan, Consultant (Anes & Analgesia & Critical Care), BSMMU, Dhaka
3. Dr. Md. Rezwanul Haque Rabbani, MS Resident (Urology), Sir Salimullah Medical College & Mitford Hospital, Dhaka
4. Dr. Fayed Chowdhury, Register, Surgery Dept., Shaheed Suhrawardy Medical College & Hospital, Dhaka.
5. Dr. Mohammed Faroque Hossain, Medical Officer, Dept. of Plastic Surgery, Dhaka Medical College Hospital, Dhaka
6. Dr. Md. Majedul Islam, Specialist, Surgery Dept. Square Hospital Limited, Dhaka

\* For correspondence

ultrasonography, CT scan & MRCP and invasive ERCP and PTC.<sup>5</sup> Ultrasonography identifies bile duct obstruction accurately though results are largely operator dependent. It is usually the preferred initial investigation because of less expensive, readily available and non invasive.<sup>5,6</sup> Computed tomography (CT) can differentiate between intra- and extra-hepatic obstruction with high accuracy.<sup>5,7</sup> ERCP (Endoscopic Retrograde Cholangiopancreatography) and PTC (Percutaneous transhepatic cholangiography) provide direct visualization of the level of obstruction and ERCP is considered gold standard in evaluation of obstructive jaundice.<sup>5,8,9</sup> But both procedures are invasive.

The aim of this study was to find out the association between clinical diagnosis and operative findings of patients having obstructive jaundice.

## MATERIALS AND METHODS

This was a prospective observational study conducted at the Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka over a period of 16 months from January 2008 to April 2009. A total of fifty clinically diagnosed obstructive jaundice caeses were enrolled in this study. A detailed history was taken and thorough physical examination was done. Subsequently necessary haematological, biochemical, radiological and other special investigations were carried out. Ultrasonography was done in every case, ERCP was done in most of the cases and CT scan was done only in suspected malignant conditions. With all possible means a preoperative diagnosis was established. All patients were catheterized to monitor urinary output during operation and adequate hydration was maintained to keep urinary output >0.5 ml/Kg body wt/hour. Per operative findings were recorded.

## RESULTS

Mean age of the patients was 42.9 years with a systemic error of mean was 1.61 in this study (Table I). Out of all patients 46.0% were male and 54.0% were female (Table II). The most frequent cause was choledocholithiasis, comprising 40% of all cases. Other causes were stricture of CBD (6.0%), retained stone (14.0%), parasitic obstruction (4.0%), carcinoma (30.0%) and other cause (6.0%) (Table III). Percutaneous transhepatic cholangiopancreatography (PTC) was done in 4 cases. Total 27 patients underwent ERCP. Three patients underwent ERCP. Total 16 cases underwent CT scanning (Table IV). Serum bilirubin was understandably raised in every patient but the degree of

elevation was found different in different cases. In all cases of stricture of CBD the level of S. Bilirubin was below 10mg/dl. On the other hand in all cases of carcinoma head of the pancreas the level was above 15mg/dl. Like serum bilirubin serum alkaline phosphates level was also raised in every cases. The rise was up to 3 folds, on average, in cases with choledocholithiasis, biliary stricture and pancreatic head malignancy. The average rise in other cases was 1 to 2 folds. Serum SGPT was raised, not in all cases, mild to moderately (Table V). Sensitivity and specificity of pre operative clinical diagnosis of choledocholithiasis, carcinoma and retain stone was 86.4 & 96.4%, 92.3 & 91.9% and 71.4 & 95.3% respectively (Table VI).

Table I: Distribution of the patients by age and sex (n=50)

Age	Frequency	Percent
Up to 40	18	36.0
41-50	20	40.0
>50	12	24.0

Mean age ( $\pm$ SD) = 42.9 $\pm$ 11.61

Table II: Sex distribution of the patients (n=50)

Sex	Frequency	Percent
Male	23	46.0
Female	27	54.0

Table III: Distribution of the patients by clinical diagnosis (n=50)

Clinical diagnosis	Frequency	Percent
Choledocholithiasis	20	40.0
Stricture of CBD	3	6.0
Retained Stone	7	14.0
Parasitic obstruction	2	4.0
Carcinoma head of pancreas	15	30.0
Other	3	6.0

Table- IV: Results of imaging done in study cases (n=50)

Investigations	No. of patients	Percentage
USG	50	100.0
PTC	4	8.0
ERCP	27	54.0
Both PTC and ERCP	3	6.0
CT scan	16	32.0



Table V: Results of liver function test among study population.

Disease	S. Bilirubin	Alk. Phosphates	S. GPT	S. Albumin		Prothrombin time	
				Decreased	Normal	Increased	Normal
Choledocholithiasis	↑	↑↑↑	↑	2	18	5	15
Stricture of CBD	↑	↑↑↑	↑	2	1	2	1
Retained stone	↑	↑↑↑	↑	5	2	4	3
Parasitic obstruction	↑↑↑	↑↑	↑	0	2	1	1
Carcinoma	↑↑	↑↑↑	↑	4	11	5	10
Other	↑↑	↑	↔	1	3	1	3

Legend: For S. Bilirubin ↑ = 3-10 mg/dl

↑↑ = 11-15 mg/dl

↑↑↑ = >15 mg/dl

For Alkaline Phosphates and SGPT No. of arrow indicates No. of times increased.

Table- VI: Per operative findings in study cases

Investigations	Number of patients	Percentage
Choledocholithiasis	20	40.0
Carcinoma	15	30.0
Retain stone	7	14.0
Stricture of CBD	3	6.0
Parasitic obstruction	2	4.0
Other causes	3	6.0

Table VII: Correlation of clinical diagnosis and per operative findings in the diagnosis of choledocholithiasis, carcinoma and retain stone

	TP	FP	FN	TN	Sn	Sp	PPV	NPV	Accuracy
Choledocholithiasis	19	1	3	27	86.4	96.4	95.0	90.0	92.0
Carcinoma	12	3	1	34	92.3	91.9	80.0	97.1	92.0
Retained stone	5	2	2	41	71.4	95.3	71.4	95.3	92.0

## DISCUSSION

This prospective observational study was conducted to find out the correlation between clinical diagnosis and operative findings of patients having obstructive jaundice. In this study, mean age of the study subjects was  $42.9 \pm 11.61$  years which was lower than study subjects of Roy et al.<sup>10</sup> Obstructive jaundice was found more common among the female patients which was consistent with the study of Roy et al.<sup>10</sup> The most frequent cause of obstructive jaundice was

choledocholithiasis (40%) followed by carcinoma (30.0%), retained stone (14.0%), stricture of CBD (6.0%), parasitic obstruction (4.0%), and other cause (6.0%). Most common benign cause was choledocholithiasis.<sup>10-13</sup> Among the malignancy cases, Carcinoma head of pancreas was common.<sup>10,11,13</sup> Carcinoma (Ca) of the head of pancreas was commonest aetiology 37/110 (33.63%) followed by Choledocholithiasis 32/110 (29%).<sup>12</sup> In this study, benign obstructive jaundice was the most common cause of

obstructive jaundice, Bekele et al.<sup>14</sup> reported benign obstructive jaundice as the most common cause of obstructive jaundice.

Sensitivity and specificity of pre operative clinical diagnosis of choledocholithiasis, carcinoma and retain stone was 86.4 & 96.4%, 92.3% & 91.9% and 71.4 & 95.3% respectively. The sensitivities of USG, CT, MRCP and ERCP in the diagnosis of benign disease were 85.3%, 84.6%, 92.3% and 100%, respectively, whereas specificities were 88.4%, 94.2%, 86% and 100%, respectively. Sensitivities for diagnosis of malignant disease were 88.4 %, 94.2 %, 86 % and 100% for USG, CT, MRCP and ERCP respectively whereas specificities were 85.3%, 85%, 92% and 100%.<sup>12</sup>

## CONCLUSIONS

The commonest cause of obstructive jaundices was found choledocholithiasis and Ca-Head of the pancreas. Sensitivity of clinical diagnosis of Carcinoma was found better than clinical diagnosis of choledocholithiasis and retained stone but specificity of clinical diagnosis of carcinoma was found worse than clinical diagnosis of choledocholithiasis and retain stone.

## REFERENCES

1. Roche SP, Kobos R. Jaundice in the Adult Patient Am Fam Physician. 2004 Jan 15;69(2):299-304.
2. Beers MH, Berkow R. Hepatic and biliary disorders. In: Beers MH, Berkow R, eds. The Merck Manual of Diagnosis and Therapy, 17th ed. Whitehouse Station, NJ: Merck & Co; 1999.
3. Qin LX, Tang ZY. Hepatocellular carcinoma with obstructive jaundice: diagnosis, treatment and prognosis. World J Gastroenterol 2003 Mar 15;9(3): 385-391.
4. Johnston DE. Special considerations in interpreting liver function tests. Am Fam Physician. 1999;59:2223-30
5. Martin DE, Laasch HU. The biliary tract. In: Grainger RG, Allison D eds. Grainger & Allison's Diagnostic Radiology – A textbook of medical imaging, 4th ed. Churchill Livingstone, Harcourt publishers limited, London: 2001.
6. Admassie D, H/Yesus A, Denke A. Validity of ultrasonography in diagnosing obstructive jaundice. East Afr Med J 2005;82:379-381.
7. Pasanen PA, Partanen K, Pikkarainen P, Alhava E, Pirinen A, Janatuinen E. Diagnostic accuracy of ultrasound, computed tomography, and endoscopic retrograde cholangiopancreatography in the detection of obstructive jaundice. Scand J Gastroenterol. 1991 Nov;26(11):1157-64.
8. Acalovschi M. Cholangiocarcinoma: risk factors, diagnosis and management. Rom J Intern Med 2004;42:41-58.
9. Siddique K, Ali Q, Mirza S, Jamil A, Ehsan A, Latif S, Malik AZ. Evaluation of the aetiological spectrum of obstructive jaundice. J Ayub Med Coll Abbottabad. 2008 Oct-Dec;20(4):62-6.
10. Roy BC, Hanifa MA, Alam MS, Naher S, Sarkar P. Etiological Spectrum of Obstructive Jaundice in a Tertiary Care Hospital. Global Journal of Medical Research. 2015 Nov 10.
11. Chalya PL, Kanumba ES, Mchembe M. Etiological spectrum and treatment outcome of Obstructive jaundice at a University teaching Hospital in northwestern Tanzania: A diagnostic and therapeutic challenges. BMC research notes. 2011 May 23;4(1):147.
12. Verma S, Sahai S, Gupta P, Munshi, S Verma, P Goyal. Obstructive Jaundice-Aetiological Spectrum, Clinical, Biochemical And Radiological Evaluation At A Tertiary Care Teaching Hospital. The Internet Journal of Tropical Medicine. 2010; 7( 2).
13. Khanzada TW, Samad A, Memon W, Kumar B. Etiological spectrum of obstructive jaundice. Journal of Postgraduate Medical Institute (Peshawar-Pakistan). 2011 Aug 13;22(2).
14. Bekele Z, Yifru A. Obstructive jaundice in adult Ethiopians in a referral hospital. Ethiop Med J 2000; 38: 267-75.

Original Article

# Unmet Need of Contraceptives Amongst the Married Women of Reproductive Age Group: A Study in a Coastal Belt of Bangladesh

Dutta P<sup>1</sup>, \*Debnath SC<sup>2</sup>, Ghosh K<sup>3</sup>

## Abstract

*This cross-sectional study was conducted with an objective to assess the unmet need of contraceptives among married women of reproductive age at Assasuni Upazila (coastal area) in Satkhira District during the period from January to December 2016. A total of 222 participants (married women) were included in the study. The mean ( $\pm$  SD) age of the respondents was  $27.9 \pm 6.2$  years and about half (45.9%) of the respondent's marriage age were between 15 and 17 years. Most of the (85.6%) women were housewives and more than half (50.9%) belongs to a nuclear family. Most of the respondents (94.6%) were not currently pregnant and about one-fourth (25.7%) of them experienced with previous pregnancies. About ninety percent of the outcomes of last pregnancy were live-births. More than two-thirds (80.2%) were using contraceptives. More than two-fifth of the respondents was using the oral pill and 17.6% of their husband's using condoms as a contraceptive. Among 222 respondents, 13.5% had the unmet need of contraceptives. Unmet need comprises who were not using any method of contraception due to husband's opposition, did not know, opposition from other family members and no menstruation after last childbirth, (6.3%, 5.0%, 1.3% and 0.9%, respectively). Unmet need of contraceptive is high despite an extensive family planning program in Bangladesh. It is necessary for the governments to come up with strategies, which can reduce unmet needs of contraceptive, especially among coastal area.*

**Keywords:** Unmet need; contraceptives, reproductive age, coastal belt.

## INTRODUCTION

Unmet need among women in the reproductive age, that are sexually dynamic, do not want any child or wish to delay

their childbirth, do not use any contraceptive methods or usage of outdated contraceptive approaches.<sup>1</sup> Many women of reproductive age and their spouses are sexually energetic rather wanted to avoid childbirth whether they are not using any contraceptive method. These women are considered to have unmet need of contraceptives.<sup>2</sup>

Unmet need does not necessarily mean that contraceptives are not available, it may also mean that women lack of information or that the quality of services on offer does not encourage the necessary self-reliance or that women themselves have little say in the matter.<sup>3</sup> Most of the married women want to use the contraceptive methods but are unable to use because of lack of knowledge, current problem, fear of side-effects, spiritual cause, lack of family planning worker, and inadequate supply and great cost.<sup>4</sup>

The population under unmet need include women using an ineffective method or incorrectly using a method or most likely using an unsafe method.<sup>5</sup> Unmet need does not necessarily mean that contraceptives are not available, it may also mean that women lack of information or that the quality of services on offer does not inspire the necessary confidence or that women themselves have little say in the matter.<sup>5,6</sup> Reduction in the unmet needs for contraceptives can progress upon the reproductive, maternal, newborn and child health services.<sup>6</sup>

In Bangladesh, the unmet need of contraceptives remain still high among the reproductive women. The unmet need has declined from 22 percent in 1994; 15 percent in 2004 to 17 percent in 2007.<sup>7</sup> Unmet need decreased to 14 percent in 2011.<sup>7</sup> Unmet need for contraceptives in Bangladesh has decreased from 14 percent in 2011 to 12 percent in 2014.<sup>7,8</sup> The Health Population Nutrition Sector Development Programme (HPNSDP) has set as a target reducing unmet need for contraceptive services to 9 percent by 2016.<sup>9</sup>

Unmet needs of contraceptives have multiple disadvantages for both the individual and society, it is necessary for the governments to come up with strategies, which can reduce unmet needs.<sup>10</sup> For reducing, the unmet there should be proper understanding if different covariates associated with unmet need.<sup>11</sup> Maximum of the studies on unmet need of

1. Dr. Palas Dutta, Medical Officer, MCH-FP, Upazila Health Complex, Shyamnagar, Satkhira, Bangladesh. Email: sumonphysio@gmail.com, Phone: 8801710385416
2. \*Dr. Sumon Chandra Debnath, Nutrition Specialist, Humanitarian Crisis Management Programme, BRAC, Cox's Bazar, Bangladesh.
3. Kinkar Ghosh, Ex. Regional Surveillance Officer (Kala-azar), WHO, Bangladesh.

\* For correspondence

contraceptives in Bangladesh focuses upon the rural settings at individual and household level. Therefore, this study was undertaken with an objective to assess the unmet need of contraceptives among the married women of reproductive age group in a coastal area.

## MATERIALS AND METHODS

### Study design and settings:

This cross-sectional study was carried out to determine the prevalence of unmet need for contraceptives among the married women of reproductive age living in a coastal area of Assasuni Upazila under Satkhira District of Bangladesh. The study was conducted during the period from January to December 2016.

### Participants:

All currently married reproductive age (15-49 years) women who were living in Assasuni Upazila were included in this study. The criteria for exclusion were: Women not yet sexually active aged 15-49 years, women from another area and women of childbearing age who were mentally incapacitated. In each household, all eligible and consenting participants were enrolled into the study.

**Sample size and sampling:** The sample size calculation was performed considering a confidence level of 95%,  $Z = 1.96$ ,  $d = 0.05$ , prevalence of the unmet need of family planning 12%<sup>8</sup>, and by using the formula  $n = [Z^2pq/d^2]$ , the sample size was calculated as 163. A total of 222 eligible woman were included in the study.

### Statistical analysis:

The study data were collected, checked, edited for consistency, processed and analyzed generally by means of SPSS program version 20.0. Data was summarized using frequency tables, means, and standard deviations.

### Ethical issues:

Ethical clearance was granted by the Institutional Review Board (IRB) of the National Institute of Preventive & Social Medicine (NIPSOM), Dhaka, Bangladesh. Informed consent was granted by the participants before commencing the study.

## RESULTS

Two hundred and twenty two married women in reproductive age group were interviewed. The mean age and age at marriage were  $27.9 \pm 6.2$ ,  $16.2 \pm 2.3$  years, respectively. About 85.0% were educated up to high school or above; 15.3 per cent were illiterate. On the contrary, 20.7 percent husbands were illiterate; and about 42.0% were involved in business and day labour. Maximum (85.0%) women were

housewives and around 51.0% were from nuclear families. The average ( $\pm$  SD) monthly income was  $7427.9 \pm 5924.0$  Taka in which more than one third of the respondents had a monthly income below 5000 Taka [Table I].

Table- I: Socio-demographic variable of the study sample (n= 222)

Characteristics	n	%
Age group (years)		
≤20	36	16.2
21 to 25	58	26.1
26 to 30	53	23.9
≥ 31	75	33.8
Mean (age) ± SD	27.9 ± 6.2	
Age at marriage (years)		
≤14	51	23.0
15 to 17	102	45.9
18 to 20	62	27.9
≥ 21	7	3.2
Mean (age at marriage) ± SD	16.2 ± 2.3	
Educational status		
Illiterate	34	15.3
Literate	188	84.7
Husband's education		
Illiterate	46	20.7
Literate	176	79.3
Occupation		
Housewives	190	85.6
Not-housewives	32	14.4
Husbands' occupation		
Day-labour	94	42.3
Business	93	41.9
Service	23	10.4
Others	12	5.4
Family type		
Nuclear family	113	50.9
Joint family	109	49.1
Monthly family income (taka)		
<5000	60	27.0
5000-10000	134	60.4
>10000	28	12.6
Mean (income) ± SD	7427.9 ± 5924.0	

Regarding pregnancy and past obstetric history, 5.4% of women gave a history of current of pregnancy. However, about 3.6% respondents were never pregnant, while 31.1% experienced pregnancy once, 39.6% twice and another one-fourth experienced more than two pregnancies [Table II].

Table II: Pregnancy and past obstetric history of the study participants

Variable	n	%
Current pregnancy		
Yes	12	5.4
No	210	94.6
Frequency of past pregnancies		
Never pregnant	8	3.6
Once	69	31.1
Twice	88	39.6
> 2 times	57	25.7
Outcome of last pregnancy		
Live-birth	199	93.2
Still-birth	6	2.7
Neonatal death	3	1.4
MR/abortion	6	2.7

Out of the 222 respondents, 80.2% of respondents stated clearly that they are currently using contraceptive methods and most commonly used method was oral pill (41.4%) followed by condom (17.6%). Currently a handful of respondents (20%) are not using any modern contraceptive methods. The main reasons for not using contraception among coastal women are shown in the Table III. Husband's opposethe use of contraceptive to wife (6%)was the leading reason cited by coastal women. Among the coastal women 5% did not the use of any contraceptiveand was not aware about any method of contraception [Table III].

Table III: Utilization of contraceptives among the study respondents

Variable	n	%
Currently using contraceptives methods (n=222)		
Yes	178	80.2
No	44	19.8
Types of contraceptives methods currently in use (n=178)		
Calendar/rhythm	17	7.7
OCP	92	41.4
Condom	39	17.6
Sub-dermal implant	6	2.7
Injectable	8	3.6
Permanent	13	5.8
Others	3	1.4
Main reasons for not using contraceptives (n=44)		
Not aware	11	5.0
Husband's Opposition	14	6.3
Opposition from other family member	3	1.3
No menstruation after last child birth	2	0.9
Want child	2	0.9
Currently pregnant	12	5.4

Unmet need for family planning in this study group was 13.5% which depicted in the figure -1. The main cause for not to use were husbands and family members oppose[Figure 1].

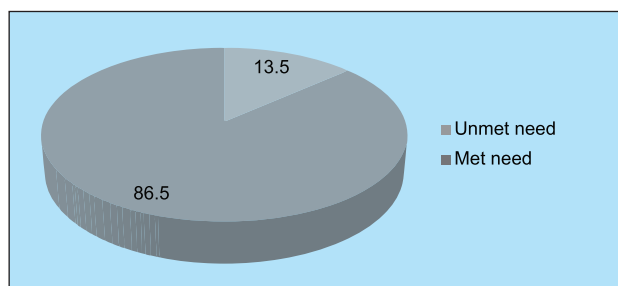


Figure 1: Unmet need for family planning among the study group

## DISCUSSION

The present study was conducted to estimate the proportion of women who are not practicing contraception but need to use. Findings indicate that nearly 14% of the married women of reproductive age have an unmet need for family planning in a coastal area.

Out of 222 women of reproductive age group, 80.0% couples were using contraceptives. The most popular contraceptive method was the pills (41%) followed by about 18%condoms and about 6% permanent methods. This is similarly reported by other studies conducted by Ferdousi et al.<sup>12</sup>and Kandel<sup>13</sup>and may be probably due to the fact that it is effective and reliable and more advertised among young unmarried women which constitute the bulk of the respondents in this study. In BDHS surveys, overall 62% of currently married Bangladeshi women age 15-49 were found currently using a contraceptive method of which 54% used modern methods<sup>8</sup>. The pill is by far the most widely used method (27%), followed by injectable (12%). Among the married women 8% of them currently use a long-acting or permanent method such as female sterilization, implants, and IUDs. Traditional methods are used by 8% of women, of which the majority (6%) use periodic abstinence.<sup>8</sup>

The present study found about 14% unmet need for family planning, which is much higher than the national figures.<sup>7,8</sup> According to Bangladesh Demographic and Health Survey, unmet need decreased from 14% in 2011 to 12% in 2014.<sup>8,9</sup>However, it is inconsistent with previous research findings from Bangladesh.<sup>10,12</sup>

The study attempted to investigate the reason of unmet need for family planning among 222 women who had an intention



to use any method but in reality they were not using the same. Many studies, including the present one have also revealed that apart from the external influences at the socio-cultural and policy levels that affect a women's contraceptive behavior, factors influencing the unmet contraceptive need vary at the individual as well as the regional level and are of practical significance in the light of policy implications.<sup>14,15</sup>

## CONCLUSIONS

To sum up it can be said that the contraceptive usage and unmet need remain substantially high among coastal women in Bangladesh. More emphasis is required among the women who are younger and highly productive, residing in the rural and geographically inaccessible areas, where the issue of unmet needs was higher. It is important to focus on the high unmet need for family planning and contraceptives among coastal women in Bangladesh, with an inclusive policy focusing on its poorest section.

## REFERENCES

1. Wubegzier M, Alemayehu Determinants of low contraceptives use and high unmet need in Butajira Division, South Central Ethiopia. Mekonnen and Worku Reproductive Health. 2011; 8:37.
2. Park K. Park's Textbook of preventive and social medicine. 19th ed. Jabalpur: 2007. p.406.
3. United Nations Population Fund (UNICEF). Improving Reproductive Health, UNFPA, New York. The Unmet Need for Family Planning 2009. Available from [www.unicef.org/pon95/fami0007].
4. Andurkar S, Yadav V, Dalvi S. Study of unmet need of contraceptives among married women of reproductive age in urban health central field practice area of Govt. Medical College, Aurangabad. Indian J Public Health. 2006;50:456.
5. Nelson SM, Telfer EE, Anderson RA. The ageing ovary and uterus: New biological insights. Human Reproduction Update. 2012; 19(1):23-29.
6. Skiles MP, Cunningham M, Inglis A, Wilkes B, Hatch B, et al. The effect of access to contraceptive services on injectable use and demand for family planning in Malawi. International perspectives on sexual and reproductive health. 2015; 41: 20-30.
7. Bangladesh Demographic and Health Survey (BDHS). National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. Bangladesh Demographic and Health Survey 2011. Dhaka.
8. Bangladesh Demographic and Health Survey (BDHS). National Institute of Population Research and Training (NIPORT), Mitra and Associates, and ICF International. 2013. Bangladesh Demographic and Health Survey 2014. Dhaka.
9. Ministry of Health and Family Welfare (MOHFW) [Bangladesh]. 2011. Strategic Plan for Health, Population and Nutrition Sector Development Program (HPNSDP) 2011-2016. Dhaka, Bangladesh: MOHFW.
10. Islam R, Islam AZ, Rahman M. Unmet need for family planning: experience from urban and rural areas in Bangladesh. Public Health Research. 2013;3: 37-42.
11. Roy BR, Yasmeen F, Ali SMK. Adolescent pregnancy and use of contraceptive methods in coastal area. Daffodil International University Journal of Allied Health Science. 2015; 2(2): 33-38.
12. Ferdousi S, Jabbar M, Hoque S, Karim S, Mahmood A, Ara R, Khan N. Unmet need of family planning among rural women in Bangladesh. Dhaka Med Col Jour. 2010; 19(1).
13. Kandel NR. Unmet Need for Contraception and its Associated Factors among Married Women of Reproductive Age in Simichaur VDC of Gulmi District. Health Prospec. 2012; 11:11-14.
14. Ahmed NR. Family size and sex preferences among women in rural Bangladesh. Family Planning. 1981; 12(3): 100-109.
15. Choudhury RH. The influence of female education, labor force participation, and age at marriage on fertility behavior in Bangladesh. Social Biology. 1984; 31(1-2):57-9.

## Case Report

### Bell's Palsy due to Congenital Cholesteatoma of Petrous Apex: A Case Report

\*Zulkifli MFB<sup>1</sup>, Saim LB<sup>2</sup>

#### Abstract

*Congenital cholesteatoma (CC) is a rare disease, it accounts for 2-5% of all cholesteatomas [2] most common site being middle ear. Case report: We reported a case of 23-year-old female presented with progressive left sided facial asymmetry for 4 years and progressive hearing loss in the left ear for 2 years. She had normal left tympanic membrane and complete left lower motor neuron facial nerve palsy. High resolution computed tomography with contrast temporal bone showed extensive bony destruction, petrous apex and soft tissue lesion.*

*Patient then proceed with transmastoid translabyrinthine approach. Diagnosis of cholesteatoma confirmed by histopathological examination (HPE).*

*Congenital cholesteatoma of petrous apex is a rare case. It is a challenge to diagnose congenital cholesteatoma pre-operatively without specific radiological sign.*

*This is because the disease is generally difficult to differentiate with mucocoele and cholesterol granuloma on CT scan. Therefore, intraoperative diagnosis more accurate rather than the preoperative diagnosis.*

**Keywords:** Bell's palsy, congenital cholesteatoma, petrous apex.

#### INTRODUCTION

Congenital cholesteatoma is one of the rare diseases of temporal bone. However, this disease rarely involves the petrous apex. In addition, it needs to be differentiated from the cerebello-pontine angle lesion and the petrous apex's lesions such as acoustic neuroma, epidermis cyst, mucocoele, arcanoid cyst and cholesterol granuloma. Generally, the incidence involving congenital cholesteatoma is estimated to be around 2-5 percent of all the cases involving

cholesteatoma, where the reported ratio of male to female predominance is 3:1 (2). Moreover, even in a normal temporal bone, it has been discovered that the congenital cholesteatoma can occur even in the absence of otorrhea. The first symptom of the disease is the facial nerve deficit then the unilateral sensorineural hearing loss (2). In order to investigate various lesions which are involving the cerebello-pontine angle, computed tomography (CT) scan is recommended and it is one of most important investigative tool. However, cholesteatoma is very difficult to diagnose because it does not have CT scan's specific radiological sign. At the age of 23 years, especially in female patients, petrous apex's congenital cholesteatoma cases are very rare (8). There are several surgical approaches for petrous lesion. The middle cranial fossa approach is preferred by neurosurgeons, and the transmastoid translabyrinthine approach is preferred by otologists.

#### CASE SUMMARY

A 23-year-old female patient presented with progressive left sided facial asymmetry in the past 4 years to complete facial nerve palsy and progressive hearing loss left ear in the past 2 years.

Initially, she was treated at peripheral clinic as Bell's palsy. After 1 year, she noticed that facial asymmetry worsening. So, she decided to seek treatment at a bigger hospital, only then patient was referred to us after high resolution CT and MRI mastoid with suspicious of cholesteatoma.

Complete Ear Nose Throat evaluation revealed normal tympanic membrane left side with complete left lower motor facial nerve palsy and severe sensorineural hearing loss in the left ear on pure tone audiogram.

Cerebellar sign was negative. High resolution CT and Magnetic resonance imaging (MRI) temporal bone revealed sclerosis of the mastoid bone with loss of mastoid air cells due to chronic mastoiditis. Soft tissue lesion and some fluid in the left middle ear and the attic of the tympanic canal. The left eustachian tube also occluded with soft tissue lesion or secretion and does not enhance with intravenous contrast. There is bony erosion in the tegmen tympani and expansion of the petrous bone. [Fig.-1, Fig.-2] This finding suggest cholesteatoma in the left middle ear with erosion of the

1. \*Dr. Muhd Faiz Bin Zulkifli, Department of Otorhinolaryngology- Head and Neck Surgery, KPJ Healthcare University College, Malaysia. Email:irshadianz@yahoo.com
2. Dr. Lokman Bin Saim, Ear, Nose and Throat – Head and Neck Consultant clinic, KPJ Tawakkal Specialist Hospital/ KPJ Healthcare University College, Malaysia

\*For Correspondence

petrous bone and involvement of the left facial nerve canal. Patient then proceeded for transmastoidtranslabyrinthine approach.

Intraoperative finding showed that cholesteatoma occupying petrous apex of temporal bone, dura, tegmen tympani and superior posterior cranial fossa exposed. Long process of incus, stapes and oval window eroded. Tympanic part of facial nerve damaged. Neuroma at proximal part of chorda tympani noticed. Temporomandibular joint exposed. In this patient, we did not try for nerve repair or grafting as symptom of facial paralysis persist more than 6 months. Cholesteatoma completely removed. Diagnosis of cholesteatoma confirmed by HPE taken intra operative.

Post-operative patient was kept in ward for 2 days for intravenous antibiotic and close monitor.

Repeat check CT scan planned after 6 months.

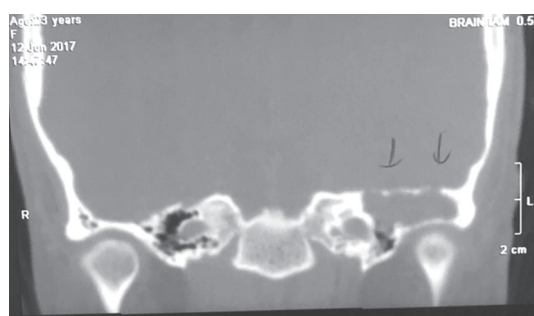


Fig.1 CT mastoid. Shows bony expansion of the petrous bone with soft tissue lesion in the tympanic cavity and attic.

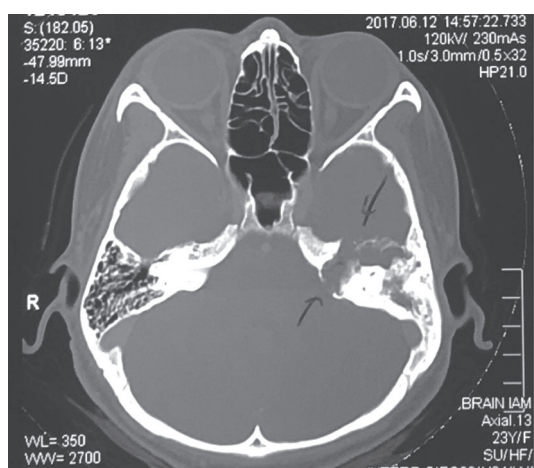


Fig.2. MRI brain and IAM. Shows bony expansion of the petrous bone with soft tissue lesion in the tympanic cavity and attic.

## DISCUSSION

The diagnosis of Bell's palsy is often regarded as a diagnosis of exclusion, thus all patients must be checked thoroughly to find the cause.<sup>1</sup> In this case, the patient has congenital cholesteatoma of petrous apex. This disease can be either acquired or congenital. However, it is believed that the congenital cholesteatoma of petrous apex is caused by the resting squamous cell.<sup>2</sup> The disease described as congenital when it manifests itself without a past history of trauma or infection with intact and located behind the tympanic membrane.<sup>3</sup> This disease is destructive in nature, most of congenital cholesteatoma appear to be asymptomatic and appear to be innocuous keratin pearl. In severe conditions, they can enlarge and caused serious complications that include the ossicular destruction, base of skull complications and facial paralysis.<sup>3</sup> Patients suffering from congenital cholesteatoma often have symptoms which are dependent on the direction of the extension of the disease. Those who are suffering from posterior mesotympanum lesions, usually anticipated that conductive deafness will be present owing to the ossicles' earlier erosion.<sup>4</sup>

As mentioned earlier, it is a challenge to diagnose congenital cholesteatoma by using radiological investigation. This is because the disease is generally difficult to differentiate with mucocoele and cholesterol granuloma on CT scan. Therefore, this case preferred intra operative diagnosis rather than the pre-operative one due to such challenges.<sup>5</sup>

To remove the cholesteatoma of the petrous apex, transmastoid translabyrinthine method is the most basic technique to be considered, with or without transcochlear technique. However, these techniques cannot adequately remove cholesteatoma that is located deep down the petrous apex, which is fixed firmly onto the middle cranial fossa dura. In this case, the middle cranial fossa approach can be effective method.<sup>5</sup>

In our case, we proceeded with transmastoid translabyrinthine approach to remove the entire disease deep down the middle of the cranial fossa dura. This is possible through performing the partial labyrinthectomy. However, we are not considering for cochlea's preservation and the vestibular function during the removal extensive cholesteatoma of petrous apex.

In cases where damage to the facial nerve in the extensive cholesteatoma of petrous apex, the existing literature seem to favor sacrificing the facial nerve having the residual function needed for complete removal.<sup>6</sup>

## CONCLUSIONS

It is however not recommended to completely obliterate the cavity because there could be residual cholesteatoma as well

its complications such as the rupture of dura, jugular valve and the internal carotid artery. If cholesteatoma recurs, it would be difficult to investigate it in the obliterated cavity through CT and MRI<sup>7</sup>.

Regular follow up and 6 monthly MRI planned for this patient.

#### REFERENCES

1. Yetter, M. F., Ogren, F. P., Moore, G. F., & Yonkers, A. J. (1990). Bell's palsy: a facial nerve paralysis diagnosis of exclusion. *The Nebraska medical journal*, 75(5), 109-16.
2. Torun F, Taficiolu A, Tuna H. Primary petrous apex cholesteatoma: A case report. *Turk Neurosurg* 2004; 14:28-32.
3. Braganza RA, Kearns DB, Bilateral congenital cholesteatomas. *AM J Otol*1993;14:191-93.
4. Karmarker S, Bhatia S, Khashaba A, Saleh E, Russo ,Sanna M. Congenital cholesteatomas of the Middle Ear: A Different Experience. *AM J Otol* 1996; 17: 288-92.
5. Achilli V, Danesi G, Caverni L, Richichi M. Petrous apex arachnoid cyst: A case report and review of the literature. *Acta Otorhinolaryngol Ital* 2005;25:296-300.
6. Komune S, Nakagawa T, Haruta A, Matsuda K, Tono T. Management of cholesteatoma in the petrous apex. *Skull Base Surg* 2000;10:47-51.
7. Yanagihara N, Nakamura K, Hatakeyama T. Surgical management of petrous apex cholesteatoma: A therapeutic scheme. *Skull Base Surg* 1992;2:22-7.
8. Horn KL. Intracranial extension of acquired aural cholesteatoma. *Laryngoscope* 2000;110:761-72.

### Obituary news January-2018

BMA would like to express deep condolence on deaths of the following notable physicians in recent past:

Sl. No.	Name	Age	Name of District	Date of Death
1	Dr. Bidthud Kumar Biswas	-	Rajbari	01/10/2017
2	Dr. Nittananda Shil Ex- Professor, Blood Transfusion Dept. BSMMU	-	Dhaka	05/10/2017
3	Dr. Abul Khayer Bhuiyan	69	Noakhali	19/10/2017
4	Dr. Ramij Uddin	96	Munshiganj	22/10/2017
5	Dr. Forhad Alam NICVD	-	Dhaka	05/12/2017
6	Dr. Abu Hena Mohammad Mahbu b-Ul- Mawla Chowdhury, Ex-Principal, Jeshore Medical College	55	Jessore	28/12/2017
7	Dr. M.A. Mannan Astd. Director, Patuakhali Sasdar Hospital	58	Patuakhali	15/01/2018
8	Dr. Md. Abul Hossain Ex-Sinior Consultant Surgery, General Hospital, Sirajganj.	56	Sirajganj.	-
9	Dr. Md. Kabi Abul Hasem Ex- Consultant, Surgery Dept. Dinajpur General Hospital. Dinajpur.	-	Dinajpur	-
10	Dr. Koalandar Miah Ex. Director, DG Health	-	-	-
11	Dr. Rokeya Parveen Gynecologist	83	-	-
12	Mohonmala Das Mother of Ex- Office Secretary Dr. Chitta Ranjan Das	91	-	15/01/2018

May Allah bless the departed souls. Our heartiest commiseration to the deceased's family, our prayers are with them during this difficult moment of their life.