

# MH Samorita Medical College Journal

## Editorial

- The Alarming Rise of Ischemic Heart Disease in Young Individuals: Shaping the Present for a Brighter Future 47  
*Iqbal SMM*

## Original Articles

- Factors Influencing Job Satisfaction among Healthcare Providers in a Specialty Department: A Cross-Sectional Study 49

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# MH Samorita Medical College Journal

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# MH Samorita Medical College Journal (MH Samorita Med Coll J)

## INFORMATION FOR AUTHORS

### Manuscript Preparation and Submission

#### Guide to Authors

MH Samorita Medical College Journal provides rapid publication (twice in a year) of articles in all areas of different subjects. The Journal welcomes the submission of manuscripts that meet the general criteria of significance and scientific excellence.

The manuscripts should be submitted addressing Editor-in-Chief.

The Journal of MH Samorita Medical College only accepts manuscripts submitted as triplicate hard copy with a soft copy.

Papers must be submitted with the understanding that they have not been published elsewhere (except in the form of an abstract or as part of a published lecture, review, or thesis) and are not currently under consideration by another journal (**International or National**) or any other publisher.

The submitting (Corresponding) author is responsible for ensuring that the submitting article has been signed by all the co-authors. It is also the authors' responsibility to ensure that the articles emanating from a particular institution are submitted with the approval of the necessary institutional requirement. Only an acknowledgment from the editorial board officially establishes the date of receipt. Further correspondence and proofs are sent to the corresponding author(s) before publication unless otherwise indicated. It is a condition for submission of a paper that the authors permit editing of the paper for readability. All enquiries concerning the publication of papers should be addressed to Editor-in-Chief (MH Samorita Med Coll J)

#### The cover letter

Cover letter is expected to be submitted along with manuscript. Use the cover letter to explain why the paper should be published in the Journal of MH Samorita Medical College. The cover letter should include the corresponding author's full address, telephone/ fax numbers and e-mail address.

#### Ethical aspects

- Ethical aspect of the study is considered very carefully at the time of assessment of the manuscript.
- Any manuscript that includes table, illustration or photograph that have been published earlier should accompany a letter of permission for re-publication from the author(s) of the publication and editor/ publisher of the Journal where it was published earlier.
- Permission of the patients and/or their families to reproduce photographs of the patients where identity is not disguised should be sent with the manuscript. Otherwise the identity would be blackened out.

#### Conditions for submission of manuscript

- All manuscripts are subject to peer-review.
- Manuscripts are received with the explicit understanding that they are not under simultaneous consideration by any other publication.
- Submission of a manuscript for publication implies the transfer of the copyright from the author to the publisher upon acceptance. Accepted manuscripts become the permanent property of the MH Samorita Medical College Journal (MHSMCJ) and may not be reproduced by any means in whole or in part without the written consent of the publisher.
- It is the author's responsibility to obtain permission to reproduce illustrations, tables etc. from other publications.

#### Article Types

Four types of manuscripts may be submitted.

**Editorials:** It should preferably cover a single topic of common interest.

**Original Articles:** These should describe new and carefully confirmed findings, and experimental procedures should be given in sufficient detail for others to verify the work and its volume should **not exceed 5000 words** or equivalent space including title, summary/abstract, main body, references, table(s) and figure(s).

**Review Articles:** Submissions of reviews covering topics of current interest are welcome and encouraged. Reviews should be concise and no longer than 4 to 6 printed pages (about 12 to 18 manuscript pages) and should **not exceed 5000 words**. It should be focused and must be up to date.

**Case Reports:** This should cover uncommon and/or interesting cases and should **not exceed 1000 words** or equivalent space.

### **Review Process**

All manuscripts are initially screened by editor and sent to selective reviewers. Reviewers are requested to return comments to editor within 3 weeks. On the basis of reviewers' comments the editorial board decides whether the articles are accepted or send for re-review the manuscripts. The MH Samorita Med Coll J editorial board tries to publish the manuscript as early as possible fulfilling all the rigorous standard journal needs.

## **I. Preparing a Manuscript for Submission to MH Samorita Med Coll J**

Editors and reviewers spend many hours reading and working on manuscripts, and therefore appreciate receiving manuscripts that are easy to read and edit. The following information provides guidance in preparing manuscripts for the journal.

### **I A. Preparation of manuscript**

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

#### **Preparation**

1. Manuscript should be written in English and typed on one side of A4 (290 x 210cm) size white paper.
2. Margin should be 5 cm for the header and 2.5 cm for the remainder.
3. Style should be that of modified Vancouver.
4. Each of the following section should begin on separate page :
  - Title page
  - Abstract
  - Main body/Text: Introduction, Materials and Methods, Results, Discussion and conclusion (For an original article/ Systematic review)
  - Acknowledgement
  - References

- Tables and legends

Pages should be numbered consecutively at the upper right hand corner of each page beginning with the title page.

### **I A. 1. General Principles**

- The text of observational and experimental articles is usually (but not necessarily) divided into the following sections: Introduction, Materials and Methods, Results, and Discussion( so-called "IMRAD" structure is a direct reflection of the process of scientific discovery.
- Long articles may need subheadings within some sections (especially Results and Discussion) to clarify their content. Other types of articles, such as case reports, reviews, and editorials, probably need to be formatted differently.
- Authors need to work closely with editors in developing or using the publication formats and should submit supplementary electronic material for peer review.
- Double-spacing all portions of the manuscript – including the title page, abstract, text, acknowledgments, references, individual tables, and legends – and generous margins make it possible for editors and reviewers to edit the text line by line and add comments and queries directly on the paper copy.
- If manuscripts are submitted electronically, the files should be double-spaced to facilitate printing for reviewing and editing.
- Authors should number on right upper all of the pages of the manuscript consecutively, beginning with the title page, to facilitate the editorial process.

### **I A. 2. Title Page**

The title page should have the following information:

- The title should be brief, relevant and self explanatory. It should reflect the content of the article and should include all information that will make electronic retrieval of the article easy. Subtitles should not be used unless they are essential.
- Title should not be phrased as questions.
- The names of the authors should appear below the title that should include full names of all authors (**no initial**).

**Example:** Md MA Hamid (**correct form**); Hamid MA (**incorrect**).

The affiliations and full addresses of all authors should be mentioned in the title page.

- Contact information for corresponding authors: The name, mailing address, telephone and fax numbers, and e-mail address of the author responsible for correspondence about the manuscript.
- The name and address of the author to whom requests for reprints should be addressed or a Statement that reprints are not available from the authors.
- Source(s) of support in the form of grants, equipment, drugs, or all of these.

### I A. 3. Abstract

**Original Article:** Structured abstracts are essential for original research. Structured abstract includes introduction, objective(s), materials and methods, results and conclusion. Should be limited to 250 words. The abstract should provide the introduction of the study and blinded state and should mention the study's purpose, basic procedures including selection of study subjects or laboratory animals, main findings (giving specific effect sizes and their statistical significance, if possible) and the principal conclusion. Because abstracts are the only substantive portion of the article indexed in many electronic databases, and the only portion that many readers read, it should accurately reflect the content of the article; so, authors need to be careful about that.

**Review Article:** is expected to contain background, objective(s), main information and conclusion in brief form. Without any subheading the content should be described in a single paragraph.

**Case Study:** needs to have background, case summary and conclusion. The content should be described in a single paragraph.

Do not put references in the abstract.

### I A. 4. Main body

#### I A. 4 a) Original article

The body of the text should be divided into the following sections: i) Introduction, ii) Materials and methods, iii) Results, iii) Discussion and iv) Conclusion.

##### i) Introduction

Should not exceed **500 words**. This section includes background of the problem (that is, the

nature of the problem and its significance). It should be very specific, identify the specific knowledge in the aspect, reasoning and what the study aim to answer. Only pertinent primary references should be provided and no data or conclusions should be included from the work to be reported. **Justification** of the study and its **objective(s)** should be mentioned at the end of this section. All information given in this section must have references that to be listed in the reference section.

##### ii) Materials and methods

The Methods section should be written in such way that another researcher can replicate the study. The type of study (study design), study period, sampling technique, sample size, study population, data collection technique and tool as well as data handling, processing and data analysis should be briefly mentioned in this section.

##### ii a) Selection and Description of Participants

Describe selection of the observational or experimental participants (patients or laboratory animals, including controls) clearly, including eligibility (inclusion) and exclusion criteria and a description of the source population. Because the relevance of such variables as age and sex to the object of research is not always clear, authors should explain their use when they are included in a study report—for example, authors should explain why only participants of certain ages were included or why women were excluded etc. The guiding principle should be clarity about how and why a study was done in a particular way. When authors use such variables as race or ethnicity, they should define how they measured these variables and justify their relevance.

##### ii b) Technical Information

- Describe methods, apparatus (give the manufacturer's name and address in parentheses), and procedures in sufficient detail to allow others to reproduce the results.
- Cite references to established methods, including statistical methods. Provide references and brief descriptions for methods that have been published but are not well-known.



- Describe new or substantially modified methods, give the reasons for using them, and evaluate their limitations.
- Identify precisely all drugs and chemicals used, including generic name(s), dose(s), and route(s) of administration.
- For a systematic review article include a section describing the methods used for locating, selecting, extracting, and synthesizing data. These methods should also be summarized in the abstract.

#### ii c) Statistics

- Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results. When possible, quantify findings and present them with appropriate indicators of measurement error or uncertainty (such as confidence intervals).
- Cite references for the design of the study and statistical methods (standard for the work) when possible.
- Define statistical terms, abbreviations, and most symbols.
- Specify the computer software used.

#### iii) Results

Results should be described in past tense.

- Present results in logical sequence in the text, tables, figures and illustrations, giving the main or most important findings first. Maintain the sequence of results with the specific objectives selected earlier.
- Do not repeat all the data in the tables or illustrations in the text; emphasize or summarize only the most important observations.
- When data are summarized in the result section, give numeric results not only as derivatives (for example, percentages) but also as the absolute numbers from which the derivatives were calculated, and specify the statistical methods used to analyze them.
- Restrict tables and figures to those needed to explain the argument (relevant to objectives) and to assess supporting data. Use graphs as an alternative to tables with many entries; do not

duplicate data in figures (graphs/ charts) and tables. **Example:** Age range of the studied respondents should be appeared **either in table or in figure.**

- Avoid nontechnical uses of technical terms in statistics, such as “random” (which implies a randomizing device), “normal,” “significant,” “correlations,” and “sample.”

#### iv) Discussion

The discussion must be described in **past tense.** This section should reflect the author’s comments on the results.

- Emphasize the new and important aspects of the study and the conclusions that follow them in the context of the totality of the best available evidence.
- Do not repeat in detail data or other information given in the Introduction or the Results section.
- For experimental studies, it is useful to begin the discussion by briefly summarizing the main findings, then explore possible mechanisms or explanations for those findings.
- Compare and contrast the results with other relevant studies and potential argument for discrepancy and consistency should be given here.
- State the limitations of the study, and explore the implications of the findings for future research and for clinical practice.
- Link the conclusions with the goals of the study but avoid unqualified statements, not adequately supported by the data.
- In particular, avoid making statements on economic benefits and costs unless the manuscript includes the appropriate economic data and analyses.

#### v) Conclusion

It should be described in **present tense.** Conclusion should be the main message and the authors' impression from the results of the study. The article should be concluded briefly (**not more than 100 words**). Recommendation(s) can also be included in this section which should not exceed 30 words.

#### **I A. 4 b) Review article**

For a systematic review or meta-analysis the body of text should be divided into the following sections (Like an original article): i) Introduction, ii). Materials and methods, iii) Findings/Results, iii a) Main information about the topic, iv) Discussion and v) Conclusion. For a general review article section No. ii (Materials and methods) and iii (Findings/Results) iv) (Discussion) are not relevant. So, for a general review article section No. i). Introduction, iii a). Main Information about the Topic and v). Conclusion are required.

**i) Introduction:** should not exceed **500 words**. This section will include background of the topic. At the end of the review, why the author want to publish the topic on the article ie., the objective should be mentioned.

**ii) Material and methods:** How the review was done, what sorts of articles were searched, how they were searched, the total number of articles reviewed should be mentioned here. This section is not required for a general review article.

**iii) Results/findings:** The findings on the topic after reviewing the articles should be compiled, analysed and described here like an original research article. This section is not required for a general review article.

**iii a) Main Information about the Topic:** The main information about the topic should be described and discussed elaborately with the help of published literatures in this section but the subtitles should be relevant to the topic(Title) for a general review article. This section may not be required for a systematic review or meta-analysis.

**iv) Conclusion:** The article should be concluded briefly (**not more than 100 words**).

#### **I A. 4 c) Case Report**

The body of the text should be divided into the following sections: i) Introduction, ii) Case Report (Description of the case), iii) Discussion and iv) Conclusion.

**i) Introduction:** A brief description should be given on the topic of the case with the help of published literatures.

#### **ii) Case Report**

- The findings (history, clinical examination and investigations) should be described here.
- Management (if any) can also be given.

#### **iii) Discussion**

- The discussion should be started by briefly summarizing the main findings of the case reported, then possible explanations for those findings should be explored.
- The findings of the case should be compared with other relevant studies and potential argument for discrepancy and consistency should be given here.

#### **iv) Conclusion**

- The article should be concluded briefly (**not more than 100 words**).
- The main findings of the reported case should be emphasized which the readers can consider as a clue to suspect a diagnosis for a rare case in future.

#### **I A. 5. Acknowledgement**

Acknowledge advisor(s) and/or any one who helped the researcher(s)

- Technically
- Intellectually
- Financially

#### **I A. 6. References**

##### **I A. 6 a) General Considerations related to References**

- Although references to review articles can be an efficient way to guide readers to a body of literature, review articles do not always reflect original work accurately. Readers should therefore be provided with direct references to original research sources whenever possible.
- Abstracts should not be used as references. References to papers accepted but not yet published should be designated as “in press” or “forthcoming”; authors should obtain written permission to cite such papers as well as verification that they have been accepted for publication.
- Information from manuscripts submitted but not accepted should be cited in the text as “unpublished observations” with written permission from the source.
- Citing a “personal communication” should be avoided unless it provides essential information not available from a public source, in which case the name of the person and date of



communication should be cited in parentheses in the text. For scientific articles, obtain written permission and confirmation of accuracy from the source of a personal communication. Some but not all journals check the accuracy of all reference citations; thus, citation errors sometimes appear in the published version of articles. To minimize such errors, references should be verified using either an electronic bibliographic source, such as PubMed or print copies from original sources.

- Authors are responsible for checking that none of the references cite retracted articles except in the context of referring to the retraction. For articles published in journals indexed in MEDLINE, the ICMJE considers PubMed the authoritative source for information about retractions.

#### I A. 6 b) Reference Style and Format

##### ➤ Reference Style

Author should follow **Vancouver style**.

- **Reference list** should appear at the end of the article and should be numbered consecutively in the order as they are cited in the text, which is done by **superscript** (single press of 'ctrl shift +') in numerical form (**citation number**).
- When **multiple references** are cited at a given place in the text, use a **hyphen** to join the first and last numbers that are **inclusive**. Use **commas** (without spaces) to separate **non-inclusive** numbers in a multiple citation.  
**Example:** 2,3,4,5,7,10,12 are abbreviated to **(2-5,7,10,12)**.
- **Do not** use a hyphen if there is no citation numbers in between 2 numbers that support your statement.  
**Example:** 1-2 (**in correct form**). 1,2(**correct form**)
- As a general rule, citation numbers in the text should be placed **outside full stops and commas**, inside colons and semicolons (applicable for any part of the document).  
**Example:** Masud Alam,<sup>1</sup> Selim Khan<sup>2</sup>  
**Example:** Over the past decades public health relevance of mental health condition 'in children and adolescents has been of growing concern'.<sup>1-3,5,6</sup>
- Identify references in text, tables, and legends by Arabic numerals in superscript.

- References cited only in tables or figure legends should be numbered in accordance with the sequence established by the first identification in the text of the particular table or figure.

##### ➤ Reference Format

#### 1. Citing a Book

The essential details required are (in order):

##### 1.1 Name/s of author/s, editor/s, compiler/s or the institution responsible.

- Where there are **6 or less authors** you must list **all authors**.
- Where there are **7 or more authors**, only the **first 6 are listed** and add **"et al"** (after a **comma**).
- Put a comma and 1 space between each name. The last author must have a full-stop after their initial(s).

**Format:** surname (**1 space**) initial/s (**no spaces or punctuation between initials**) (**full-stop OR if further names comma, 1 space**)

**Example:** Smith AK, Jones BC, Bloggs TC, Ashe PT, Fauci AS, Wilson JD, et al.

- **When author/s is/are editor/s :** Follow the same methods used with authors but use the word **"editor"** or **"editors"** in full after the name/s. The word editor or editors must be in small letter. (**Do NOT** confuse with "ed." used for edition.)

**Example:** Millares M, editor. Applied drug information: strategies for information management. Vancouver (WA): Applied Therapeutics Inc; 1998.

##### Sponsored by institution, corporation or other organization (including PAMPHLET)

**Example:** Australian Pharmaceutical Advisory Council. Integrated best practice model for medication management in residential aged care facilities. Canberra: Australian Government Publishing Service; 1997.

##### 1.2. Title of publication and subtitle if any

- Italics or underlining should be avoided.
- Only the first word of the titles (and words that normally begin with a capital letter) should be started with capital letter (except proper noun).

**Format:** title (**full-stop, 1 space**)

**Example:** Harrison's principles of internal medicine.

**Example:** Physical pharmacy: physical chemical principles in the pharmaceutical sciences.

**Example:** Pharmacy in Australia: the national experience.

### 1.3. Edition (other than the first)

Number of edition **other than first one** should be mentioned as **2nd, 3rd, 10th ed.**

**Example:** Blenkinsopp A, Paxton P. Symptoms in the pharmacy: a guide to the management of common illness. 3rd ed. Oxford: Blackwell Science; 1998.

### 1.4. Place of publication (if there is more than one place listed, use the first one)

- The place name should be written in full.
- If the place **name is not well known**, add a comma, 1 space and the state or the country for clarification. For places in the USA, add after the place names the 2 letter postal code for the state. This must be in upper case. eg. Hartford (CN): (where CN=Connecticut).

**Format:** place of publication (**colon, 1 space**)

**Example:** Hartford (CN):

**Example:** Texas (NSW):

**Example:** Kyoto (Japan):

### 1.5. Publisher

The publisher's name should be spelled out in full.

**Format:** publisher (**semi-colon, 1 space**)

**Example:** Australian Government Publishing Service;

**Example:** Raven Press;

**Example:** Williams & Wilkins;

### 1.6. Year of publication

**Format:** year (full-stop, add 1 space if page numbers follow).

**Example:** 1999.

**Example:** 2000. p. 12-5.

### 1.7. Page numbers (if applicable).

- Abbreviate the word "page" to "p."

**Note:** do not repeat digits unnecessarily

**Format:** p (full-stop, 1 space) page numbers (full-stop).

**Example:** p. 122-9 (correct); p. 122-129 (incorrect).

**Example:** p. 1129-57 (correct); p. 1129-157 (incorrect).

**Example of citing a book:** Lodish H, Baltimore D, Berk A, Zipursky SL, Matsudaira P, Darnell J. Molecular cell biology. 3rd ed. New York: Scientific American; 1995.

(Name/s. Title. Edition (other than first). Place of publication: Publisher; year of publication. p. Page no)

### 2. Citing a Chapter in an Edited Book (to which a number of authors have contributed)

- Name/s of author of the chapter
- Title of chapter followed by, In:
- Editor
- Title of book
- Series title and number (if part of a series)
- Edition (if not the first edition)
- Place of publication (if there is more than one place listed, use the first named)
- Publisher
- Year of publication
- Page numbers

(Title of Chapter. In: Editor(s). Title of book and number. Edition (other than first). Place of publication: Publisher; year of publication. p. Page no)

### Example of citing a chapter in an edited book:

Porter RJ, Meldrum BS. Antiepileptic drugs. In: Katzung BG, editor. Basic and clinical pharmacology. 6th ed. Norwalk (CN): Appleton and Lange; 1995. p. 361-80.

### 3. Citing a Journal Article from a Print source

The essential details required are (in order):

- **Name/s of author/s of the article.**  
See step 1 of "Citing a book" for full details.
- **Title of article.**  
See step 2 of "Citing a book" for full details.

### Example: Validation of an immunoassay for measurement of plasma total homocysteine.

- **Name of journal (abbreviated).**
  - Abbreviate the name of the journal according to the style used in Medline.
  - A list of abbreviations can be found at: <http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?db=journals>

**Note:** No punctuation marks are used in the abbreviated journal name.

**Format:** journal title abbreviation (1 space)

**Example:** Bang J Psychiatry

- **Year of publication (month or day should be omitted).**

**Format:** year (semi-colon, one space)

**Example:** 1996; 12(5): 127-33.

- **Volume number (and issue/part)**

**Format:** volume number (colon, one space)

**Example:** 1996; 12(5): 127-33. Or  
1996; 18: 1237-8.

- **Page numbers**

**Note:** Do not repeat digits unnecessarily

**Format:** page numbers (full-stop)

**Example:** 5310-5.

**Example of citing a journal:** Russell FD, Coppel AL, Davenport AP. In vitro enzymatic processing of radiolabelled big ET-1 in human kidney as a food ingredient. *Biochem Pharmacol* 1998; 55(5): 697-701.

*Name(s). Title. Name of the Journal Year of publication; Volume Number (Session/Issue Number): Page Number.*

- **No author given in article**

**Example:** Coffee drinking and cancer of the pancreas [editorial]. *BMJ* 1981; 283: 628.

- **Journals with parts and/or supplements**

#### **Examples**

- **Volume with supplement**

*Environ Health Perspect* 1994; 102Suppl 1: 275-82.

- **Issue with supplement**

*SeminOncol* 1996; 23(1 Suppl 2): 89-97.

- **Volume with part**

*Ann ClinBiochem* 1995; 32(Pt 3): 303-6.

#### **4. Citing a Journal Article from Internet and Other Electronic Sources**

This includes software and internet sources such as web sites, electronic journals and databases.

The **basic form** of the citations **follow the principles listed for print sources** (see above).

In the case of sources that may be subject to alteration it is important to acknowledge the **Date The Information Was Cited**. This is particularly true for web sites that may disappear or permit changes to be made and for CD-ROMS that are updated during the year.

##### **4.1. Citing a Journal Article from the Internet**

**Note:** Follow the same procedure for citing print journals as for electronic journals regarding date, volume pages and journal title

**Format:** Author/s (full-stop after last author, 1 space) **Title of article** (full-stop, 1 space)

**Abbreviated title of electronic journal** (1 space) **[serial online]** (1 space) **Publication year**

(1space) **month(s)** - if available (1 space) **[cited year month (abbreviated) day]** - in square brackets (semi colon, 1 space) **Volume number** (no space) **Issue number** if applicable in round brackets (colon) **Page numbers or number of screens** in square brackets (full-stop, 1 space) **Available from** (colon, 1 space) **URL:URL address underlined**

#### **Examples:**

- Morse SS. Factors in the emergence of infectious disease. *Emerg Infect Dis* [serial online] 1995 Jan-Mar [cited 1999 Dec 25]; 1(1):[24 screens]. Available from:URL: <http://www/cdc/gov/ncidoc/EID/eid.htm>
- Garfinkel PE, Lin E, Goering P. Should amenorrhoea be necessary for the diagnosis of anorexia nervosa? *Br J Psych* [serial online] 1996 [cited 1999 Aug 17]; 168(4):500-6. Available from: URL:<http://biomed.niss.ac.uk>

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A list of references contains details of those works cited in the text.

The references are listed in the same numerical order as they appear in the body of the text

1. Getzen TE. Health economics: fundamentals and flow of funds. New York (NY): John Wiley & Sons; 1997.
2. Millares M, editor. Applied drug information: strategies for information management. Vancouver, WA: Applied Therapeutics, Inc.; 1998.
3. Australian Government Publishing Service. Style manual for authors, editors and printers. 5th ed. Canberra: Australian Government Publishing Service; 1994.
4. Australian Pharmaceutical Advisory Council. Integrated best practice model for medication management in residential aged care facilities. Canberra: Australian Government Publishing Service; 1997.
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### I A. 7. Conflict of interest

All authors are requested to disclose any actual or potential conflict of interest including any financial, personal or other relationships with other people or organizations.

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### I A. 8 a) Tables

- In tables, capture information concisely and display it efficiently.
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- Try to limit the number of tables/figures.
- Type or print each table with double-spacing on a separate sheet of paper. Number tables consecutively in the order of their first citation in the text and supply a brief title for each.
- Do not use internal horizontal or vertical lines. Give each column a short or an abbreviated heading. Authors should place explanatory matter in footnotes, not in the heading. Explain all nonstandard abbreviations in footnotes, and use the following symbols, in sequence:  
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Figures should be either professionally drawn and photographed, or submitted as photographic-quality digital prints. In addition to requiring a version of the figures suitable for printing, (for example, JPEG / GIF).

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- Measurements of length, height, weight, and volume should be reported in metric units (meter, kilogram, or liter) or their decimal multiples.
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If you have submitted mentioning document (1, 2, 3) above, when you first submit your article but if there is change in the authorship or related then you have to re-submit it.

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- Not more than 200 words for case reports and 250 words for original articles
- Structured abstract including introduction, methods, results and conclusion are provided for an original article and introduction, case report and conclusion for case reports.
- Key words provided – arrange them in alphabetical order should be 3-5 in number.

- **Introduction**

- Word limit 150 -200 words
- Pertinent information only

- **Material and Methods**

- Study Design
- Duration and place of study
- Ethical approval
- Patient consent
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- **Results**

- Clearly present the data
- Avoid data redundancy

- **Discussion**

- Avoid unnecessary explanation of someone else' work unless it is very relevant to the study
- Provide and discuss with the literatures to support the study with references.
- Mention about limitation of the study

- **Conclusion**

- Give your conclusion
- Any recommendation

- **Acknowledgement**

- Acknowledge any person or institution who have helped for the study

- **Reference**

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- Tables
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**MH Samorita Med Coll J 2022; 5(2): 47-91**

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# The Alarming Rise of Ischemic Heart Disease in Young Individuals: Shaping the Present for a Brighter Future

Iqbal SMM

The consequences of premature coronary artery disease (CAD) are alarming. Although atherosclerotic cardiovascular disease (ASCVD) events have been declining in older adults, these statistics have not been extended to younger adults<sup>1</sup>. In fact, acute myocardial infarction (AMI) rates have increased among young adults age 35 to 54 years, particularly in women<sup>2</sup>. So more attention needs to be paid to this younger population.

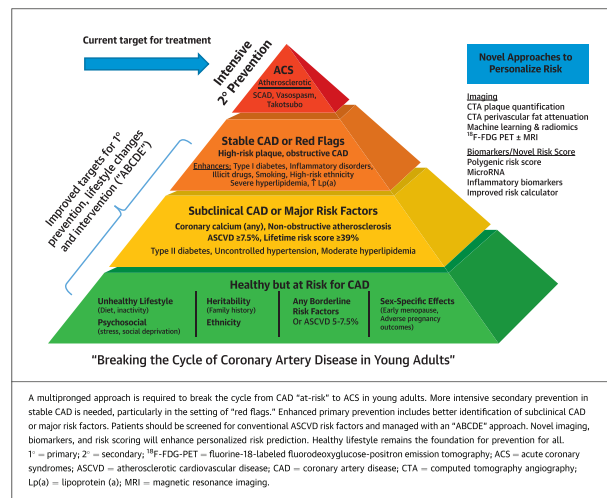
Although any CAD before age 55 years for men or 65 years for women is called “premature,” it is particularly alarming when CAD occurs in the young, defined as onset before age 45 years. CAD in young adults carries a poor long-term prognosis, and as many as 4% to 10% of AMI events occur in this age group<sup>3</sup>. It is important to better understand conventional and unique risk factors to prevent ASCVD events in this population. Identifying the young, healthy adults who are at risk for CAD remains challenging due to the limitations in risk calculators, the limited sensitivity for established screening modalities, and the insufficient observational data for this age group.

For adults age 20 to 59 years, a lifetime risk score can be calculated from the ACC/AHA Risk Estimator, to promote intensification of lifestyle measures<sup>4</sup>. The 2019 ACC/AHA guidelines identified “risk-enhancing factors” for adults age 40 to 75 years that would upgrade risk estimates and favor initiation and intensification of statin therapy in primary prevention, such as the presence of family history of premature ASCVD, inflammatory and autoimmune disorders, HIV infection, chronic kidney disease, history of preeclampsia, South Asian ethnicity, and elevated lipoprotein(a)<sup>4</sup>.

Determination of the presence of atherosclerosis in younger adults is very important. Both invasive and noninvasive imaging can be used to identify atherosclerosis burden and progression. The 2019 ACC/AHA guidelines state that it is reasonable to use coronary artery calcium (CAC) assessment by non-

contrast computed tomography (CT) to determine risk estimation<sup>4</sup>. The presence of CAC ranged from 10% to 34% in young adults carried a significant increased risk for future cardiovascular and all-cause mortality<sup>5,6</sup>.

In prior studies of symptomatic middle- to older-aged adults undergoing CCTA, the presence of nonobstructive, noncalcified high-risk plaques, and obstructive CAD all correlated with an increased risk of future MACE and mortality<sup>7</sup>. Most importantly, demonstration of atherosclerosis by CCTA has been associated with increased implementation of preventive lifestyle modifications and pharmacotherapies (e.g., statin, aspirin, antihypertensive therapy).



**Fig-1:** Breaking the cycle of coronary artery disease in young adults

Looking to the future, the key to aging well is to start young<sup>8</sup>. Breaking the cycle of CAD in young adults needs a multipronged approach (Figure 1). This approach involves recognizing young adults at risk (including those with “red flags”) to improve targets and adherence to established prevention approaches.

(MH Samorita Med Coll J 2022; 5(2): 47-48)

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MH Samorita Hospital & Medical College

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# Factors Influencing Job Satisfaction among Healthcare Providers in a Specialty Department: A Cross-Sectional Study

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## Abstract

**Introduction:** Job satisfaction of professionals affects health, advancement, performance, and development, as well as the institution, employer, or organization. Healthcare professionals who are satisfied with their job have a higher probability of delivering excellent healthcare. In Bangladesh, the challenges of public health highlight the importance of having a competent healthcare workforce to provide an improved quality healthcare service.

**Objectives:** The objective of this study was to evaluate the degree of job satisfaction and identify the factors that contribute to it among healthcare providers employed in the Bone Marrow Transplant unit of DMCH.

**Materials and methods:** This cross-sectional study was conducted for the period of six months, from July to December 2014. The study population was all the healthcare professionals at the BMT unit of DMCH, Bangladesh. and consisted of doctors (n=20), nurses (n=15), and laboratory technicians (n=5). A semi structured self-administered questionnaire was used to collect the preliminary data. All ethical issues were maintained strictly.

**Results:** Most (95.0%) of the study respondents were at or below the age of 40 years with a mean ( $\pm$ SD) of 30.1 ( $\pm$ 7.92) years. Most of them were female (52.5%), and lab technician, nurse and doctors had a frequency of 12.5%, 37.5%, and 50.0% respectively. Among the study participants, 65.0% were satisfied with their jobs, 35% were dissatisfied. Statistically significant association was found between sex ( $p=0.011$ ) and profession ( $p < 0.001$ ) with level of job satisfaction among respondents.

**Conclusion:** Job satisfaction is important for healthcare professionals, patients, and institutions. Satisfied professionals provide better care, while low job satisfaction leads to turnover and decreased access to care. Individual, job-related, and workplace factors influence job satisfaction.

**Keywords:** Job satisfaction, BMT unit, Bangladesh, Healthcare providers.

(MH Samorita Med Coll J 2022; 5(2): 49-54)

## Introduction:

Job satisfaction of professionals affects health, advancement, performance, and development, as well as the institution, employer, or organization.<sup>1</sup> Behavioral and social science studies suggest that job contentment and performance are inseparably connected.<sup>2</sup> Employee's job satisfaction is affected by the nature of

job. Independence, a clear purpose and outcome, relevance to their role, and regular feedback make employees happier. It can be said that organizational stress lowers job satisfaction considerably.<sup>3</sup> Research conducted in 1911 was the inspiration for the development of both the idea of job satisfaction and the method of measuring it.<sup>4</sup> Followed by, a research on the

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degree of job satisfaction among healthcare professionals in the United States concentrated on laboratory staff in 1971.<sup>5</sup> Since then, a number of studies on Job satisfaction of healthcare providers (HCP) have been carried out in different parts of the world. Overall health and well-being of the organization as well its employee heavily rely on job satisfaction.<sup>6</sup>

Studies have revealed that healthcare professionals who are satisfied with their job, and work in favorable environments have a higher probability of delivering excellent healthcare,<sup>7</sup> resulting in increased patient satisfaction<sup>8-11</sup> and improved adherence to medical instructions.<sup>12</sup> Consequently, it helps in the retention of healthcare professionals within the field.<sup>13,14</sup> Low levels of job satisfaction among health workers can lead to higher turnover rates, which in turn can disrupt the delivery of treatment and limit access to healthcare. Various individual factors, including age, gender, marital status, and years of work experience, can influence job satisfaction. Similarly, job-related factors such as specialization, patient interactions, and work engagement can also impact overall job satisfaction.<sup>15</sup> Additional elements of the job, including job description, job stability, and income level, as well as characteristics of the workplace, such as the facility type, management style, opportunities for professional growth, teamwork, and availability of resources, can also have an influence. These factors may be associated with the overall work environment.

In Bangladesh, the challenges of public health highlight the importance of having a competent healthcare workforce to provide an improved quality healthcare service. Ensuring uniform and high-quality training of the healthcare providers is crucial for attaining excellent medical care.<sup>16</sup> Unfortunately in Bangladesh, there is not enough HCPs to meet the demand, and the working environment is difficult. This causes a strain in the job satisfaction, and also makes it impossible to provide high-quality medical care.

A historical landmark was achieved with the introduction of the first Bone-Marrow Transplant (BMT) unit by Dhaka Medical College Hospital (DMCH) in March 2014.<sup>17</sup> A total number of 10 patients underwent transplantation since its journey in 2014. However, with proper logistics and machineries, the Unit is capable of conducting almost double the number of BMTs.<sup>18</sup> DMCH which is the oldest and most well-known tertiary level hospital in the country is under the jurisdiction of the Government of Bangladesh (GOB). HCPs working in this department undergo vigorous training, are stationed there as per government decree. BMT unit provide care to the patients, notably with AML (Acute Myeloid Leukaemia) and Multiple Myeloma.

In Bangladesh, annually about 200,000 new cancer cases are added each year and 150,000 suffer death.<sup>19</sup> Considering the advanced nature of the BMT unit at DMCH and the extensive duties carried out by doctors, nurses, and other healthcare personnel, one can easily comprehend the frequency with which these medical professionals encounter various stressful circumstances in fulfilling their professional obligations. The objective of this study was to evaluate the degree of job satisfaction and identify the factors that contribute to it among healthcare providers employed in the BMT unit of DMCH. The findings of this study will aid in devising appropriate interventions to improve job satisfaction and subsequently enhance work productivity among healthcare professionals in the future.

### Materials and Methods:

*Study settings and subjects:* This cross-sectional study was conducted for the period of six months, from July to December 2014. The study population were all the healthcare professionals at the BMT unit of DMCH, Bangladesh.

*Sample size and sampling technique:* The sample size of the study was 40. All the HCPs from the BMT unit were included in the study, and consisted of doctors (n=20), nurses (n=15), and laboratory technicians (n=5).

*Data collection method and instruments:* A semi structured self-administered questionnaire was used to collect the preliminary data. Data were collected by the authors.

*Measurement:*

*Level of job satisfaction:* A single item was used to measure the outcome of variable, i.e. study participants' level of job satisfaction (What is your level of job satisfaction?). It was measured as a binary variable (1=Dissatisfied, 2=Satisfied).

### Data management:

Data quality assurance measures were implemented at both the field and central levels to ensure the accuracy and reliability of the data. The principal investigator had control over the safekeeping of the data. Rigorous checks were conducted to verify the relevance and consistency of the collected data. Any incomplete or missing data was identified, resolved, and verified. The data were coded, categorized, cleaned, and subsequently entered into jamovi version 2.3.26 for data analysis.<sup>20</sup>

### Statistical methods:

Data for individual variables were summarized using frequency distribution and focused on mean and



standard deviation, while findings were presented in percentage. The relationships between respondents' socio-demographic characteristics and level of satisfaction were analyzed using Chi-squared test. Normality of two continuous variables (monthly income and duration of training) was tested via the Shapiro-Wilk test and Non-parametric test (Mann-Whitney U test) was used where applicable. A p-value <0.05 was considered statistically significant. All statistical tests were two-sided and performed at a significance level of  $\alpha=0.05$ .

### Results:

In general, most of the study respondents (95.0%) were at or below the age of 40 years and the rest (5.0%) fell above the age of 40 years with a mean ( $\pm$ SD) of 30.1 ( $\pm$ 7.92) years. Most of the study participants were female (52.5%) with, and 47.5% were male healthcare

providers. Regarding profession, lab technician, nurse and doctors had a frequency of 12.5%, 37.5%, and 50.0% respectively. Based on the level of education, most of the study participants were graduates (55.0%) followed by the postgraduate and diploma health workers of 30.0% and 15.0% respectively. Most of the healthcare workers (57.5%) of BMT unit had monthly income at or below 20,000 BDT while 37.5% had an income ranging 21,000-30,000 BDT and only a 5.0% had income at or above 31,000 BDT with a mean ( $\pm$ SD) of 22175 ( $\pm$ 4248) Tk. Most of the healthcare providers (72.5%) had work experience at or above 9 months, while 27.5% had experience at or below 8 months. Most of the HCPs (62.5%) received national training, followed by local training (37.5%). The training lasted for a mean ( $\pm$ SD) of 4.15 ( $\pm$ 1.94) months. Among the study participants, 65.0% were satisfied with their jobs and 35% were dissatisfied (Table 1).

**Table-1: Demographic characteristics of healthcare providers working at BMT unit of DMCH (n=40)**

Characteristics	Frequency (f)	Percentage (%)	Sharpiro-wilkW (p-value)
<b>Age</b>			
≤40 years	38	95.0	0.667 (< .001)
>40 years	2	5.0	
Mean ( $\pm$ SD)	30.1 ( $\pm$ 7.92)		
<b>Sex</b>			
Male	19	47.5	
Female	21	52.5	
<b>Profession</b>			
Lab Technician	5	12.5	
Nurse	15	37.5	
Doctor	20	50.0	
<b>Level of education</b>			
Diploma	6	15.0	
Graduate	22	55.0	
Post graduate	12	30.0	
<b>Monthly Income (In Tk)</b>			
≤20000	23	57.5	0.77 (<.001)
21000-30000	15	37.5	
>=31000	2	5.0	
Mean ( $\pm$ SD)	22175 ( $\pm$ 4248)		
<b>Duration of work</b>			
≤8 months	11	27.5	%
>=9 months	29	72.5	%
<b>Location of training</b>			
Local	15	37.5	%
International	25	62.5	%
<b>Duration of training (in months)</b>			
Mean ( $\pm$ SD)	4.15 ( $\pm$ 1.94)	0.681 (<	.001)
<b>Level of satisfaction</b>			
Satisfied	25	65.0	%
Dissatisfied	15	35.0	%

Mann-Whitney U test was conducted to examine the differences on monthly income and duration of training according to the level of job satisfaction. Significant differences were not found among the two categories of participants (Dissatisfied and satisfied) (Table 2).

A chi-square test of significance was used to examine the association between selected characteristics and

level of job satisfaction. Significant association was found between sex ( $p=0.011$ ) and profession ( $p < 0.001$ ) with level of job satisfaction among respondents. However, no statistically significant association was found between age, level of education, duration of work, location of training with level of job satisfaction (Table 3).

**Table 2: Association between monthly income and duration of training with level of job satisfaction**

Categories	Group	Median	U	p-value
Monthly income	Satisfied (n=25)	20000	128	0.077
	Dissatisfied (n=15)	20000		
Duration of training	Satisfied (n=25)	6	142.5	0.164
	Dissatisfied (n=15)	2		

U: Test statistic from Mann-Whitney U test.

**Table 3: Association between selected independent variables and level of job satisfaction**

Characteristics	Level of satisfaction		p-value
	Satisfied	Dissatisfied	
Age	1.000*		
≤40 years	24 (96	%)	14 (93 %)
>40 years	1 (4	%)	1 (7 %)
Sex	0.011		
Male	8 (32	%)	11 (73 %)
Female	17 (68	%)	4 (27 %)
Profession	<0.001*		
Lab Technician	3 (12	%)	2 (13%)
Nurse	15 (60	%)	0 (0 %)
Doctor	7 (28	%)	13 (87%)
Level of education	0.668*		
Diploma	4 (16	%)	2 (13 %)
Graduate	15 (60	%)	7 (47%)
Post graduate	6 (24	%)	6 (40%)
Duration of work	0.065*		
d" 8 months	4 (16	%)	7 (47%)
e" 9 months	21 (84	%)	8 (53%)
Location of training	0.354		
Local	8 (32	%)	7 (47%)
International	17 (68	%)	8 (53%)

p\* = p-value from Fisher's exact test.

**Discussion:**

The study aimed to explore the level of job satisfaction among healthcare providers in a specialized unit of a tertiary level hospital in Bangladesh along with associated factors that may have an impact on the level of job satisfaction. It was found that, 65% of the participants were satisfied in their current position and 35% were dissatisfied.

A study conducted in the USA found that, majority of the participants are satisfied with their jobs (64%) and only 7% are dissatisfied. This finding corresponds to the findings of the current study in terms of satisfaction.<sup>21</sup> Another study conducted in Bangladesh among the Healthcare Professionals of Combined Military Hospitals also reported similar findings.<sup>22</sup> One reason may be that despite the pressure of the job, working and helping patients with serious illness often provides a sense of achievement.

In our present study, we found that job satisfaction is higher in younger age group (<40 years aged). It may be due to the higher probabilities of attaining opportunities at mid age than that of the old age. However, the study findings contradict the finding of another study conducted in Bangladesh on two leading specialized private hospitals.<sup>23</sup> This contradiction may arise due to contextual difference as our study was conducted among government employees. Health Care Providers from private hospitals earn more in the start of their carrier than their government counterparts.

Female participants showed higher satisfaction level than their male counterpart, which was found to be statistically significant ( $p=0.005$ ). It may be due to, traditionally in our country, women are less likely to change work and are satisfied with the minimum requirement.<sup>23</sup>

Regarding educational level, most of the participants were graduates which corresponds to a study conducted in the endoscopy unit in Korea.<sup>24</sup> The reason behind this may be due to the fact that, in our country, the ratio of doctors, nurses and technicians heavily favors the nurses (41:51:7),<sup>25</sup> followed by doctors. Government doctors and nurses are, in general, graduates. Hence, the participants of this study are mostly graduates.

The study had several limitations. The sample size was small and thus the result of the study can't be generalized. Additionally, the cross-sectional nature

of the study meant that causal association between independent and dependent variables can not be ascertained. Moreover, no scale was used to measure the level of job satisfaction; rather, a single item question was used to measure job satisfaction.

The study is also with some strengths. As BMT was a relatively new procedure during the time of the study, it provides valuable insights on the job satisfaction among the first batch of HCPs working in such a unit. Also, the study enrolled lab technicians, nurses and doctors to paint a complete picture of the scenario.

**Conclusion:**

Job satisfaction is important for healthcare professionals, patients, and institutions. Satisfied professionals provide better care, while low job satisfaction leads to turnover and decreased access to care. Individual, job-related, and workplace factors influence job satisfaction. This study evaluated job satisfaction among healthcare providers in Bangladesh and identified contributing factors to inform interventions.

**Ethical Consideration**

Before commencing the study, ethical clearance was obtained from the Institutional Review Board (IRB) of NIPSOM.

**Declaration of interest**

The author has no relevant conflicts of interest to declare.

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# Serum SGPT Level in Dengue Patient- A Lab Based Observational Study

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## Abstract:

**Introduction:** Dengue fever is a re-emerging, seasonal mosquito borne arbo-viral illness. The virus seems to have some hepatotoxic effects. Affliction of liver in the form of derangements in the liver function tests is common and may include mild elevations in serum bilirubin, elevated transaminases specially SGPT and derangements in serum albumin. Although asymptomatic in most cases, clinical manifestations like jaundice and acute liver failure (ALF) may occasionally complicate the clinical picture. Indeed, dengue has been implicated as an important cause of ALF in endemic countries.

**Objective:** The present study aimed to focus on assessing SGPT level in diagnosed Dengue patients.

**Materials and Methods:** This observational study was conducted on 110 Dengue patients from October to December 2021. OPD and admitted patients with serologically confirmed Dengue viral infection in MH Samorita medical College and Hospital were enrolled in the study. SGPT level was measured.

**Results:** Among 110 diagnosed Dengue patients, 40.9% had normal SGPT values, 59.1% had raised values. Maximum patients (67.3%) were below 30 years followed by 21.8% patients who had age 31-40 years. Mean age of the patients was  $32.02 \pm 14.875$ . Most of the patients 82(74.5%) were male and 28(25.0%) were female. The male:female ratio was 3:1. Majority of the patients (69.1%) were diagnosed by NS1, 10.9% patients by IgM, 7.3% patients by IgG, 9.3% patients by both NS1 and IgG and 3.6% patients were diagnosed by IgG and IgM.

**Conclusion:** Liver involvement is common in adult Dengue patients. SGPT can be a useful early marker to assess complications of Dengue fever, so that outbreak, morbidity and mortality can be minimized.

**Keywords:** Dengue Fever; Liver; SGPT; Acute Liver Failure; Transaminases.

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## Introduction:

Dengue or "break bone fever" is considered as one of the important causes of febrile illness in the tropical and subtropical region. Second only to malaria, dengue is a common mosquito-transmitted disease, and currently, it is the most common cause of arboviral disease globally<sup>1</sup>. It is an endemic disease in South East Asian countries especially in Bangladesh. Globally the incidence of Dengue has grown dramatically high in the recent years. According to estimates of the World Health

Organization (WHO), about 50 million cases of dengue fever occur annually worldwide and 2.5 billion people are at risk.<sup>2</sup>

Dengue virus has four serotypes (DENV 1, DENV 2, DENV 3 and DENV 4). It is transmitted by the bite of infected female mosquitoes of the genus *Aedes aegypti* and *Aedes albopictus*. This disease causes varying clinical symptoms from mild asymptomatic illness to fatal dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).<sup>3</sup> Fever, headache, myalgia/

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arthralgia, nausea, vomiting and maculopapular rashes are the clinical symptoms of classical dengue fever.<sup>4</sup> The diagnosis can be done with different biomarkers. They include isolation of virus in culture or mosquitoes or detection of viral genomic RNA, capture and detection of viral products (NS1 protein) or the host immune response to viral infection (measurement of virus specific immunoglobulin M and G (IgM and IgG)).<sup>5</sup>

A significant rising IgM levels 3-5 days after the onset of symptoms shows a primary infection. This can persist for 1-3 months. In secondary infection there will be elevated levels of IgG at 6-15 days of appearing symptoms and IgM can also be detected in secondary infection.<sup>6</sup> As per the World Health Organization (WHO) Dengue case definition in acute febrile illness two blood samples to be collected. First sample in 1-5 days of onset of symptoms and second sample 6-14 days after the onset of symptoms during the convalescent phase.<sup>7</sup>

An analysis of these patients revealed that in addition to the classical features of fever, bodyache, rash, thrombocytopenia and bleeding tendency, there were other features such as liver dysfunction including a preferential rise of SGPT, hepatomegaly, splenomegaly, ascites and gallbladder wall edema are also common phenomenon.<sup>8</sup>

SGPT, stands for Serum Glutamic Pyruvic Transaminase, also called ALT (Alanine Amino Transferase) is a nonfunctional plasma enzyme found in the liver cells exclusively. The SGPT levels usually peak between day 7-10 after onset of symptoms and normalize within three weeks. It is effective for diagnosing acute hepatocellular destruction.<sup>9</sup>

The hepatic histopathological findings of centrilobular necrosis, fatty alterations, and hyperplasia of Kupffer cells and monocyte infiltration of portal tract have also been noted in patients with dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).<sup>10</sup> They are prone to an increased risk of bleeding tendency due to deranged liver function. Thus, severe dengue can be potentially life-threatening.

The inclusion of liver function test specially SGPT as a standard of care for the management of dengue fever may improve patient's prognosis. There is paucity of related data conducted at tertiary care teaching

hospital in Bangladesh. Hence, the present study was envisaged with an objective to measure serum SGPT level in diagnosed dengue patients.

#### Materials and Methods:

This observational study was conducted on 110 cases of diagnosed Dengue patients who visited OPD or admitted at MH Samorita Hospital and Medical College, Tajgaon, Dhaka from October to December 2021. The diagnosis of Dengue infection was confirmed by serology. Then the serum samples were processed for SGPT (serum glutamic pyruvic transaminase) and assay was carried out by automated electrical impedance. The patients presenting with coinfections were excluded from the study. All the data were subjected to statistical analysis using mean and standard deviation.

Inclusion criteria: Confirmed cases of Dengue who visited OPD or were admitted in this hospital during study period.

Exclusion criteria: Viral hepatitis, drug induced hepatitis, alcoholic hepatitis and heart failure cases.

#### Results:

**Table-1: Age distribution of study patients (n=110)**

Age group (years)	Frequency	Percentage
<30	74	67.3
31-40	24	21.8
>40	12	10.9
Total	110	100.0
Mean ± SD	32.01±12.58	

Maximum patients (67.3%) had age below 30 years followed 21.8% patients had age 31-40 years. Mean age of the patients was 32.02±14.875 years.(Table -1)

**Table-2: Sex distribution of study patients (n=110)**

Sex	Frequency	Percentage
Male	82	74.5
Female	28	25.0
Total	110	100.0
Male: Female	3:1	

Among a total of 110 patients, 82(74.5%) were male and 28(25.0%) female. The male: female ratio was 3:1.(Table-2)

**Table-3: Distribution of study patients by type (n=110)**

Patients type	Frequency	Percentage
Indoor patients	30	27.3
Outdoor patients	80	72.7
Total	110	100.0

Most of the patients (72.7%) were enrolled from outdoor patients and 27.3% patients from indoor patients. (Table-3)

**Table 4: Distribution of the dengue patients by sero diagnosis (n=110)**

Sero diagnosis	Frequency	Percentage
NS1	76	69.1
IgG	8	7.3
IgM	12	10.9
NS1 + IgG	10	9.1
IgG +IgM	4	3.6
Total	110	100.0

In this study, total 110 Dengue positive (Tested as per day of fever according to NVBDCP guidelines) were included and analyzed. If the patient presented within 5 days of fever, NS1 was tested and irrespective of results Dengue IgM was tested after 5 days of fever during treatment. But those who presented late, only Dengue IgG were tested. Maximum patients (69.1%) were diagnosed by NS1, 10.9% patients by IgM, 7.3% by IgG, 9.3% patients by both NS1 + IgG and 3.6% patients were diagnosed by IgG + IgM. (Table-4)

**Table 5: Distribution of the dengue patients by SGPT level (n=110)**

SGPT level	Frequency	Percentage
Normal (male <40 U/L, female <31 U/L)	45	40.9
Raised (male >40 U/L, female >31 U/L)	65	59.1
Total	110	100.0
Mean $\pm$ SD, Range (min-max)	111.1 $\pm$ 150.9, (14-657)	

The normal range of SGPT for male was up to 40 U/L and for female was up to 31 U/L. With regard to

SGPT, 59.1% had raised and 40.9% had normal values. The mean SGPT was 111.1 $\pm$ 150.9 U/L, minimum 14 U/L and maximum 657 U/L. (Table-5)

### Discussion:

Dengue virus infection is most common arthropod born viral infection in human and present with diverse clinical spectrum which varies from asymptomatic, mild undifferentiated fever, dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS).<sup>11</sup> Dengue viruses is an RNA virus with an envelope and is icosahedral in shape. The structural proteins encoded by the Dengue virus are capsid, precursor membrane, and envelope [E]. The virus also encodes for seven non-structural (NS) proteins, one of which (NS1) has found use as a diagnostic antigen in initial phases of the disease. The E glycoprotein plays a crucial role in the biology of the Dengue virus, starting from receptor binding to immune response.<sup>12</sup>

With Dengue infection, high level of viremia is associated with involvement of different organs like liver, brain, kidney etc<sup>13</sup>. The liver is the commonest organ to be involved in dengue. Hepatic manifestations are either a result of direct viral toxicity or dysregulated immunologic injury in response to the virus. The spectrum of involvement includes asymptomatic elevation of hepatic transaminases to occurrence of severe manifestation in form of Acute Liver Failure (ALF).<sup>1</sup>

Hepatic dysfunction is a crucial feature seen in Dengue virus infection. Hepatocytes and Kupffer cells are prime targets for Dengue virus infection, as confirmed in biopsies and autopsies of fatal cases<sup>1</sup> For infecting cells, the major rate limiting step is the viral attachment to the receptors present on surface of host cell. The E protein helps in the attachment of the virus to hepatocytes.<sup>14</sup> Heparan Sulphate plays a pivotal role for the intrusion of the Dengue Virus into liver (HepG2) cells.<sup>15</sup> The G2 phase cells are more prone to infectivity and enhance virus replication. It has been assumed that the binding of Dengue virus onto hepatocytes is facilitatory, one binding promotes the binding of successive particles, similar to binding of oxygen on hemoglobin. After binding of the virus, internalization is by either direct fusion or endocytosis. The entry pathway may either be mediated through the presence of receptors or even in their absence. An eventual outcome of hepatocyte infection by Dengue Virus is cellular apoptosis. After apoptosis, what stays of the

cells are the Councilman Bodies.<sup>16</sup> The various pathways involved in this apoptotic process include viral cytopathy, hypoxic mitochondrial dysfunction and the immune response.<sup>17</sup>

Dengue infection also induces a cytokine storm. Concentrations of cytokines like interleukin IL-2, IL-6, tumor necrosis factor (TNF)- $\alpha$ , and interferon (IFN)- $\alpha$  reach peak levels in the initial 3 days. IL-4, IL-5 and IL-10 contribute to later in the course of disease.<sup>18</sup> Currently, the exact mechanism by which the host immunity damages hepatocytes is unknown, a role of T cells entering the liver causing cytopathology cannot be ruled out.

Wide spectrums of hepatic histological changes have been noted in Dengue. This comprises fatty change (micro vesicular), hepatocyte necrosis, hyperplasia and destruction of Kupffer cells, Councilman Bodies and mononuclear cell infiltrates at the portal tract.<sup>19,20</sup> Hepatocyte injury including necrotic changes commonly involves the mid zonal area followed by the centrilobular area. Probable explanation for such a finding could be that the liver cells in this area are more sensitive to the effects of anoxia or immune response or may be a preferential target zone of the Dengue Virus.

Clinical features suggesting dengue related hepatic involvement are the presence of liver enlargement and elevated transaminases. The commonest abnormality detected has been raised SGPT levels.

In the present study, 74.5% were male and 25.0% were female where showing male predominance. The male: female ratio was 3:1. Studies in Singapore, India and Bangladesh showed similar male predominance in occurrences of infection which is also compatible with the present study.<sup>21,22</sup> However, this gender difference may not indicate more susceptibility of male to dengue infection, because females in these areas get less priority and may not obtain equal chance to have proper treatment for fever.

Majority of the cases in this study were (67.3%) in age below 30 years followed by (21.8%) patients aged 31-40 years. A similar study noted that most of the patients (53%) were between the ages of 13-30 years.<sup>23</sup> This finding is also similar to a study which showed 49% cases within 16-30 years of age.<sup>24</sup>

In the present study, 40.9% dengue patients had normal SGPT values, 59.1% had raised SGPT. In a similar kind of study reported raised SGPT levels in

45%- 96% of patients.<sup>1</sup> Few study shows less (24%) dengue patients to have increased SGPT values as it is the marker for liver tissue damage due to fever.<sup>25</sup> A study at Khulna medical college showed SGPT increased in 54 (54.08%) cases.<sup>3</sup> This value is very close to our study. Another study in Ahmedabad showed 68 % elevated SGPT levels.<sup>5</sup> Similar type of study conducted at a tertiary care hospital in Kolkata showed 67.86% raised SGPT in dengue patient.<sup>26</sup>

A study in India showed mean value of SGPT 53-390 IU/L and S.D value was  $\pm$  86.67.<sup>25</sup> But our study showed similar value of mean (111.1 IU/L) and higher SD  $\pm$  150.9.

There was a good correlation between Serum Aminotransferase levels and occurrence of hepatic dysfunction and spontaneous bleeding and can be used to predict the same.<sup>25</sup> In a study, hepatic dysfunction was found in both the non-shock group (4.2%) and the shock group (17.9%) as defined by those who had SGPT more than 5 times upper normal values (SGPT > 200 U/L).<sup>23</sup>

This hints at a possible association between increased transaminase levels with increasing disease severity.

#### Conclusion:

The spectrum of hepatic involvement in Dengue fever can vary from asymptomatic biochemical involvement to severe acute liver cell injury. In most cases hepatic involvement prolongs the clinical course of this self-limiting viral infection and constitutes a sign of worst prognosis. Such liver involvement can be a major contributing factor in morbidity and mortality of such patients with Dengue fever. So SGPT can be a useful early marker to assess the severity of the disease which can thereby lead to early recognition of high risk cases and for treatment plan.

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#### Conflict of Interest: None

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# Infant Feeding Practices in a Selected Rural Area of Bangladesh

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## Abstract

**Introduction:** Appropriate feeding methods are critical for newborn and young children's nutrition, growth, development and survival. Breast milk should be fed exclusively during the first six months of life, after which it should be supplemented with other types of nutrition until the child is at least two years old. This study was aimed to assess the feeding practice of infant group among the rural people.

**Materials & Methods:** It was a descriptive type of cross sectional study done at Ashuganj, Brahmanbaria from January, 2021 to December, 2021. Total 94 respondents were asked about their knowledge regarding exclusive breast feeding (EBF), practice of breast feeding and their practice of weaning and types of complementary feeding.

**Results:** Regarding the knowledge about EBF and weaning 68.1% knew about importance of EBF and 66% knew about the weaning period and complementary feeding. A good number of the respondents (77.7%) said that they fed colostrums within one hour of child birth, only 33% gave prelacteal feeding and 94.7% answered that they started complementary feeding after the end of 6 months. This study found that there, is positive relation of level of education ( $p<0.0005$ ) and housing status ( $p<0.000$ ) with the respondents knowledge and feeding practice.

**Conclusion:** Level of education of the parents have positive impact on correct feeding practice of their child. So a comprehensive awareness program to increase general knowledge on infant feeding including exclusive breastfeeding (EBF) and health education among rural people especially with low socio economic status will be a great attempt to improve the situation.

**Key words:** Exclusive Breastfeeding, Complementary Feeding, Infant Feeding Practice, Infant Formula

(*MH Samorita Med Coll J 2022; 5(2): 60-65*)

## Introduction:

Bangladesh is ranked seventh in child mortality in the world, alongside India, Nigeria, China, Pakistan, the Democratic Republic of Congo, Ethiopia, Afghanistan, Tanzania, and Indonesia, with over 340,000 children dying each year<sup>1</sup>. Infant mortality in Bangladesh is decreasing, but still high when compared to developed countries. In comparison to infants who are exclusively breastfed, non-breastfed newborns had a 7-fold and 5-fold greater risk of death from diarrhoea and pneumonia respectively<sup>2</sup>. Nonexclusive rather than exclusive breastfeeding causes a more than 2-fold increase in the risk of dying from diarrhea or pneumonia at the same age.

Malnutrition is responsible for 67% of all fatalities among children under the age of five in India, either directly or indirectly<sup>3</sup>. Malnutrition caused by inadequate eating practices in infancy and early

childhood contributes to poorer cognitive and social development, poor school performance and lower productivity later in life<sup>4</sup>.

Exclusive breast feeding and complementary feeding are the most important factor in a child's growth and when impaired results in malnutrition. Complementary foods and techniques are vital part of a child's health and development. Breastfeeding in Bangladesh is frequently protracted, lasting between 24 and 30 months<sup>5</sup>. In rural area of Bangladesh, early supplementing is also said to be widespread<sup>6</sup>. Infants are at danger of protein energy malnutrition as a result of early supplementation and limited breast feeding. Breastfeeding for a long time protects the baby from malnutrition and several diseases<sup>7</sup>.

The first milk, also known as colostrum, is the best sustenance for the newborn throughout the early stages of life. It should be given within the first hour of the

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baby’s delivery. Anti-infective components in it help to protect the body from respiratory infections and diarrheal disorders thus supplementary feeds aren’t required at this time. Solid foods should be given when breast milk or infant formula no longer provides an adequate supply of energy and nutrients for proper growth and development. Complementary feeding is the term for this practice. Piwoz et al. argued in 2003 that supplemental nutrition for infants and young children had received insufficient attention globally<sup>8</sup>.

Inappropriate feeding practices and the implications of these behaviors are important roadblocks to long-term socioeconomic growth and poverty reduction. Governments will be unable to significantly accelerate economic development in the long run unless optimal child growth and development, particularly through appropriate eating habits, is ensured<sup>9</sup>. Complementary feeding is delayed for 33% of infants 6–9 months of age, indicating that suboptimal feeding patterns continue as the child grows older<sup>10</sup>. Various socio-demographic groupings have a variety of incorrect practices and perceptions. In Bangladesh, pre-lacteal/heating meal feeds preceded the start of breastfeeding soon after birth<sup>4</sup>. Approximately 98 percent of newborns are traditionally fed “heating foods” such as honey, sweetened water, or mustard oil, with the belief that these foods provide strength and prevent colds in the first few days of life, and that pre-lacteal feed sweetens the baby’s voice<sup>11</sup>. This cross-sectional study was conducted to provide information about the prevalence of infant feeding practices, the knowledge gap regarding the initiation and composition of complementary feeding practices.

**Materials and methods:**

It was a cross sectional descriptive type of study done from January, 2021 to December, 2021. Total sample size was 94 who were selected through purposive sampling technique. Study place was Ashugonj, Brahmanbaria. After taking informed consent from the participant, data were collected by pretested semi-structured questionnaire from Ashugonj Upazilla Health Complex and three unions of that upazilla which were randomly selected by lottery technique.

**Inclusion criteria:**

- 1. Mothers of the infant aged 6-12 months from defined geographical area

**Exclusion criteria:**

- 1. Not willing to participate in the study
- 2. Unable to participate due to severe illness or any other reason

Respondents were asked about their socio demographic characteristics, their knowledge about

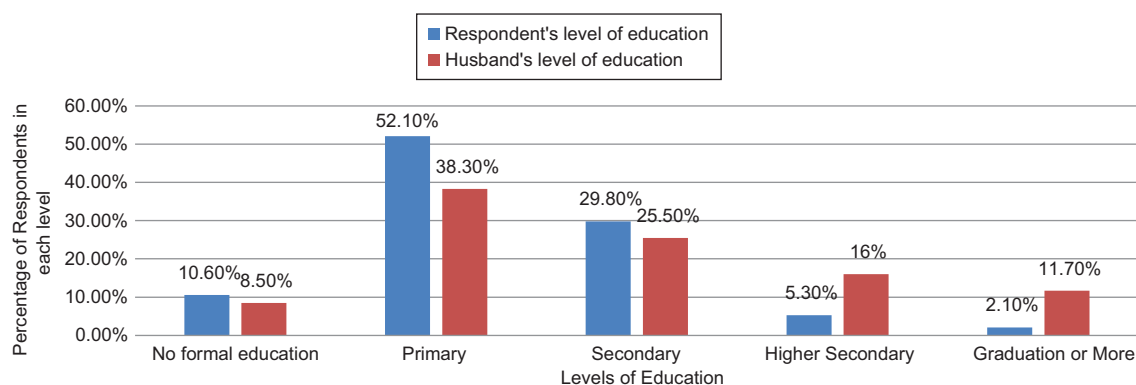
EBF and their practice of breast feeding and complementary feeding. All the collected data were checked, compiled and statistically assessed to search any association between their socio demographic characteristics and their knowledge and practice of breast feeding and complementary feeding. Statistical analysis was done by SPSS (version 22) and statistical significance was set at P<0.05.

**Results:**

Table 1 shows the Socio demographic characteristics of the respondents. Here most of the respondents 33 (35.10%) were between 26 to 30 years. Highest percentage 53 (56.4%) of infant’s age were in less than 6 to 8 months age group. About 89(95%) of the respondents were belonged to Islam and 46 (48%) of the respondents had joint family, most of the respondent’s 37 (39.40%) family income were between 10000 taka to 19999 taka. Most 82 (87.2%) of the decision makers of respondent’s family was husband. Most of the respondents 50 (53.20%), were living in kacha house.

**Table 1 Socio demographic characteristics of the respondents (n=94)**

Variables	Frequency	Percentage
<b>Age of mother</b>		
<21 years	26	27.70
21-25 years	13	13.80
26-30 years	33	35.10
>30 years	22	23.40
<b>Age of child</b>		
6-8 months	53	56.40
9-10 months	28	29.80
11-12 months	13	13.80
<b>Religion</b>		
Islam	89	94.7
Sonaton	5	5.3
<b>Family type</b>		
Nuclear	38	41
Joint	46	48
Extended	10	11
<b>Monthly Income</b>		
<10,000 BDT	11	11.7
10,000-19,999 BDT	37	39.40
20,000-29,999 BDT	30	31.90
30,000-39,999 BDT	10	10.6
>40,000 BDT	6	6.40
<b>Family leader</b>		
Husband	82	87
Self	2	2.1
Parents/ In-laws	10	11
<b>Housing condition</b>		
Kacha	50	53.20
Semi Pucca	24	25.50
Pucca (concrete roof)	20	21.30



**Fig-1:** Distribution of the participant and her husband's level of education

**Table 2:** Distribution of the respondent by knowledge on breastfeeding (n=94)

Variables	Frequency (n=94)	Percentage (%)
<b>Know about Colostrum</b>		
Yes	79	84.0
No	15	16.0
<b>Know about Exclusive Breastfeeding (EBF)</b>		
Yes	61	64.9
No	33	35.1
<b>Know about importance of EBF</b>		
Yes	64	68.1
No	30	31.9
<b>Knowledge about complementary feeding</b>		
Yes	62	66.0
No	32	34.0

**Table 3:** Distribution of infant feeding practices among respondents (n=94)

Variables	Frequency (n=94)	Percentage (%)
<b>Feed colostrums within 1 hour after birth</b>		
Yes	73	77.7
No	21	22.3
<b>Any pre lacteal feeding</b>		
Yes	31	33
No	63	67
<b>Frequency of Breastfeeding per day</b>		
Less than 6 times	19	20.2
7 to 8 times	34	36.2
9 to 10 times	31	33.0
More than 10 times	10	10.6
<b>Did you practice EBF</b>		
Yes	50	53.2
No	44	46.8
<b>Started Complementary feeding</b>		
Yes	86	91.5
No	8	8.5
<b>Starting age of Complementary Feeding</b>		
Before 6 month	89	94.7
After 6 month	5	5.3

Table 2 shows that most 79 (84.0%) of the respondents had knowledge about colostrum, whereas 61 (64.9%) of the respondents knew about exclusive breastfeeding, majority 64 (68.1%) of the respondents knew about importance of EBF and 62 (66%) of the respondents knew about weaning.

Table 3 shows 73 (77.7%) of respondents were fed colostrum within 1 hour of birth, among the respondents 63 (67%) did not give any pre lacteal feeding, and 34 (36.2%) of respondent's frequency of BF was 7 to 8 times a day, and 50 (53.2%) of respondents performed EBF, most 86 (91.5%) of

**Table 4 Association of practicing EBF with socio-demographic variables.**

Variables	Practised EBF		(n=94)	Percent(%)	(P-Value)
	Yes	No			
<b>Age of Respondents</b>					<b>0.639</b>
Less than 21 years	15	11	26	27.7	
21 to 25 years	5	8	13	13.8	
26 to 30 years	19	14	33	35.1	
More than 30 years	11	11	22	23.4	
<b>Age of Infant</b>					<b>0.932</b>
Less than 7 months	19	17	36	38.3	
7 to 8 months	8	9	17	18.1	
9 to 10 months	16	12	28	29.8	
11 to 12 months	7	6	13	13.8	
<b>Family Income per month</b>					<b>0.012</b>
Less than 10000 BDT	3	8	11	11.7	
10000 to 19999 BDT	14	23	37	39.4	
20000 to 29999 BDT	22	8	30	31.9	
30000 to 39999 BDT	7	3	10	10.6	
More than 39999 BDT	4	2	6	6.4	
<b>Type of the Family</b>					<b>0.885</b>
Nuclear Family	20	19	39	41.5	
Joint Family	24	21	45	47.9	
Extended Family	6	4	10	10.6	
<b>Who lead the Family</b>					<b>0.899</b>
Husband	43	39	82	87.2	
Self	1	1	2	2.1	
Relatives	6	4	10	10.6	
<b>Religion of the Respondents</b>					<b>0.126</b>
Islam	49	40	89	94.7	
Hinduism	1	4	5	5.3	
<b>Education of the Respondent</b>					<b>0.005</b>
Illiterate	3	7	10	10.6	
Primary	20	29	49	52.1	
Secondary	21	7	28	29.8	
Higher secondary	5	0	5	5.3	
Graduation or above	1	1	2	2.1	
<b>Education of the Respondent's Husband</b>					<b>0.004</b>
Illiterate	5	3	8	8.5	
Primary	11	25	36	38.3	
Secondary	14	10	24	25.5	
Graduation or above	10	1	11	11.7	
<b>Type of House</b>					<b>0.000</b>
Kacha (Muddy Floor)	15	35	50	53.2	
Semi-Pucca (Brick and Tin Shed)	17	7	24	25.5	
Pucca (Concrete Roof)	18	2	20	21.3	

respondents started complementary feeding, 89 (94.7%) of respondents started complementary feeding before 6 months of age.

### Discussion:

In this study the participant mothers were in different age groups with mean age  $26.2 \pm 5.5$  years. Mean age of the participant's baby was  $8.33 \pm 1.7$  months. The study found that 10.6% of the infant's mothers were illiterate whereas 8.5% of the husbands were illiterate and majority of the participant and their husband had secondary level of educational qualification. Most of the respondents were belonged to either nuclear or joint family. Study depicts that with an average income of  $19861 \pm 10219$  BDT, 11.7% of the participant's had family income less than 10000 taka. It is found that majority (87.2%) of the participant's family was led by respondent's husband. Among all the respondents more than half (53.2%) of them were living in kacha house with muddy floor. According to Giashuddin et al, the majority of the respondents had a secondary education (30.90%), a primary education (34.50%), and the majority of the mothers (95.5%) were housewives<sup>12</sup>. Faruque et al. conducted a similar study in Bangladesh and found that the majority of the respondents were from the lower economic class<sup>13</sup>.

Total 84% participants knew about colostrums, which is similar with other studies. In a study showed that mothers who gave birth in baby-friendly hospital units were more likely to be familiar with EBF than mothers who did not give birth in these settings<sup>14</sup>. In an Indian study, 295 (91%) women fed colostrum and 185 (57%) moms started breastfeeding their babies within one hour of birth<sup>13</sup>. Whereas 77.7% of the participants in this study fed colostrum within one hour of birth of new born. Breastfeeding exclusively for the first six months of life is recommended by the WHO. Despite the fact that the benefits of exclusive breastfeeding are widely documented, only 39% of infants below six months are exclusively breastfed globally<sup>15</sup>. Although, in terms of knowledge about exclusive breastfeeding, 64.9% of the participants in this study knew about EBF.

This study found that 53.2% of the participants performed exclusive breast feeding. In terms of describing the reason for not practising exclusive breast feeding was illness of mother, children being unable to suck the breast, being influenced by a neighbor who does not exclusively breastfeed her

child, a lack of nutritious food for the mother resulting in inadequate breast milk secretion. Approximately 98% of newborns are traditionally fed "heating foods" such as honey, sweetened water, or mustard oil in the first few days of life<sup>11</sup>. In this study it was found that 67% of the participants didn't feed any type of pre-lacteal feeding to the baby. In this study most of the mothers fed their babies more than 6 times a day while only 20% mothers fed their babies less than 6 times per day, which collide with another study whereas 30 percent of respondents breastfed their infant 7 times or more, 26.9% fed 4-6 times, only 9.6% fed 3 times or less, and 33.6 percent of respondents' breast feeding times were unknown<sup>4</sup>.

The study found strongly significant relationship between performing exclusive breastfeeding with source of family income ( $p < 0.000$ ) & type of house ( $p < 0.000$ ). A significant relationship between performing exclusive breastfeeding with education of the respondent ( $p = 0.005$ ) & education of the respondent's husband ( $p = 0.004$ ) has been also explored in the study. All of these findings are matching with recent similar studies. In a study women who completed high school were 70% more likely to breastfeed than those who did not and women who completed college were four times more likely to breastfeed than those who did not<sup>16</sup>. Education, economic conditions were the factors determining EBF in a countrywide research in rural Ghana<sup>17</sup>. In addition to educational attainment, maternal age has been found as one of the most powerful determinants of newborn feeding initiation, duration, and intensity<sup>18</sup>.

According to the bivariate testing results, some socio-demographic parameters, such as education, husband's age, economic status, had a relationship with breastfeeding self-efficacy<sup>19</sup>. It was shown that the length of exclusive breastfeeding varies based on the mother's educational level<sup>20</sup>. In a study on exclusive breast feeding habits conducted by community-based peer counselors in Dhaka, Bangladesh, it was discovered that 46 percent of the women in the study were younger (20-26 years) than the other age groups<sup>2</sup>. It can be said that present study outcomes are proving correctness of previous research findings. In the study there's been strongly significant relationship between performing exclusive breastfeeding with family income per month ( $p < 0.000$ ), education of the respondent ( $p < 0.000$ ) and type of house ( $p < 0.000$ ).

**Conclusion:** In this study, socio-demographic factors were key influencers on infant feeding practices including exclusive breast feeding. According to study findings, there's been strongly significant relationship between performing exclusive breastfeeding with family income per month, education and type of house. The study findings also explored that the complementary feeding is strongly associated with education and type of house of the respondents. The study found strongly significant relationship between type of delivery with almost all the knowledge and practice variables regarding breast feeding and complementary feeding. Further studies should be conducted in this regard to explore more unknown information.

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# A Study of Death due to Suicidal Hanging: A Retrospective Study of the Socioeconomic and Demographic Profiles of Hanging Victims

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## Abstract:

**Introduction:** Hanging is a common method of suicide in which a person applies a ligature to the neck and brings about unconsciousness and then death by suspension or partial suspension. Hanging is the leading method of suicide globally. The epidemiological risk factors for suicidal hanging can contribute to construct a socioeconomic and demographic profile of hanging victims. There has been an alarming rise of suicide by hanging in Bangladesh over the past few years. These profiles can then be used to identify individuals at the highest risk for committing suicide by hanging to formulate a preventive strategy to reduce the incidence of suicide by hanging is often considered a low-cost but effective intervention for developing countries like us.

**Objective:** The main objective of this study was to assess the socioeconomic and demographic profiles of hanging victims in Tangail, Bangladesh.

**Materials & Methods:** A retrospective study was performed using data collected from 250 bedded Tangail general hospital morgue from January, 2020 to December, 2020 during the period of autopsies of the dead bodies who came with death due to hanging.

**Results:** A total of 189 cases of deaths due to hanging were included in this study. Among 189 victims, 76 (40.2%) were male and 113 (59.7%) female. The commonest age group involved in suicidal hanging deaths was 21-30 years (34.3%). Single victims were higher 102 (53.9%) than married. Regarding the employment status of victims, unemployed were the highest in number 79 (41.7%). The most common location where the hanging occurred was at home. Among the cases, 189 (100%) victims had cyanotic visceral congestion and parchmentization, petechiae were present in 164 (86.7%) victims.

**Conclusion:** Hanging was observed as a frequently used method of suicide in Bangladesh. The different parameters of suicidal hanging are necessary to understand the suicidal nature of hanging.

**Keywords:** Hanging, Suicide, Autopsy, Postmortem, Asphyxia.

(MH Samorita Med Coll J 2022; 5(2): 66-70)

## Introduction:

Hanging is that form of asphyxia which is caused by suspension of the body by a ligature which encircles the neck, the constricting force being the weight of the body<sup>1</sup>. Hanging is always suicidal unless otherwise proved. It is a form of violent asphyxial death. It produces painless death for the victims so it is a

widely practiced method of suicide. The exact mechanism of death by hanging is not completely understood. Causes of death due to hanging include asphyxia &/or venous congestion, cerebral ischemia, shock, fracture, or dislocation of the cervical vertebrae<sup>2</sup>. The mechanism of death is an interplay between compression of the jugular veins, carotid

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arteries, respiratory tract, and carotid bodies. These four mechanisms, independently or synergistically, cause cerebral ischemia and death<sup>3</sup>.

In hanging, a fatal outcome is secondary to compression of the neck structures by a constricting ligature tightened by the weight of the body. Body position in hanging is one of the numerous factors that determine the strength of the neck compression by the ligature and thus should be considered in the evaluation of the dying process and pathomorphological feature of hanging<sup>4</sup>.

Various studies show that less-educated and unemployed people are more likely to hang themselves<sup>5-7</sup>. Some studies have shown a connection between hanging and marriage, relationship and financial problems<sup>8,9</sup>. However, the literature shows conflicting results relating to civil status. The World Health Organization (WHO) estimates that of the more than 700,000 people who die from suicide globally every year<sup>10</sup>.

A global increase in suicides due to hanging has been observed. A study in Turkey reported a two-fold increase in hanging deaths among females, and a five- to six-fold increase among men over a period of 33 years<sup>11</sup>. Sometimes hanging is chosen as a final method of self-destruction after poisoning, cutthroat wound, fall from height, etc. fail to produce the desired effect. International statistical classification of diseases and related health problems, classified suicidal deaths by hanging are under the code X70: "Intentional self-harm by hanging, strangulation, and suffocation"<sup>12</sup>.

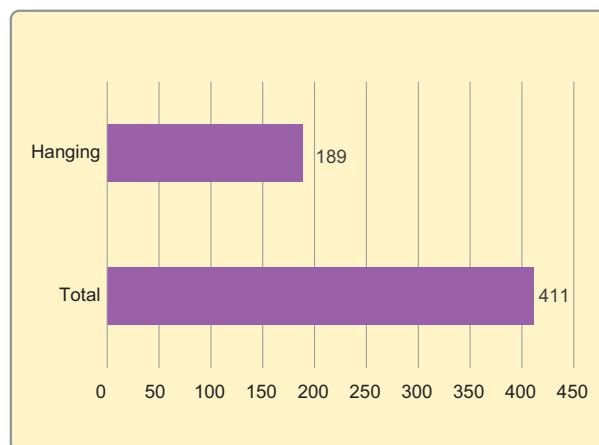
**Materials & Methods:**

This was a retrospective study including (all-inclusive) 189 autopsies carried out at 250 bedded Tangail general hospital morgue from January, 2020 to December, 2020 during autopsy. Various data were collected. In this study incidence of hanging deaths, its relationship with sex and age of the deceased, relationship status, employment status, place of occurrence, and various other postmortem findings were studied on autopsy.

**Results:**

A total of 411 autopsies were conducted from January, 2020 to December, 2020 in the mortuary of 250 bedded

Tangail general hospital, out of which 189 (48.3%) cases were of hanging deaths (Fig:1).



**Fig-1:** Proportion of hanging in relation to total autopsies

Among 189 studied cases, 76 (40.2%) were male and 113 (59.8%) were female (Table:1).

**Table-1: Sex distribution of hanging victims**

Sex	Number	Percentage
Male	76	40.2
Female	113	59.8
Total	189	100

The commonest age group involved in suicidal hanging deaths was 21-30 years (34.3%). From 11 to 30 years, females performed more suicidal hanging than males but from 31 to 80 years, death rates by hanging were higher in males (Table:2)

**Table-2: Age distribution of hanging victims with sex**

Age group years	Male	Female	Total	Percentage
11-20	12	44	56	29.6
21-30	18	47	65	34.3
31-40	21	13	34	17.9
41-50	10	4	14	7.4
51-60	7	4	11	5.8
61-70	5	1	6	3.1
71-80	3	0	3	1.5

Single individuals accounted for the majority 102 (54%) of cases, followed by those who were Married 87 (46%) (Fig:2).

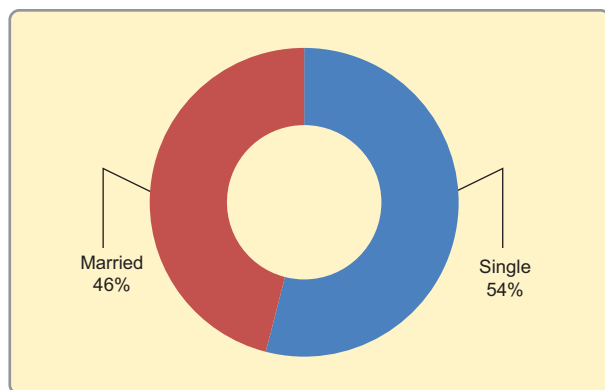


Fig-2: Distribution of total cases by marital status

More of our study population were unemployed 79 (41.8%), with less being employed 69 (36.6%). In 41 (21.6.7%) cases, the victims were students (Fig:3).

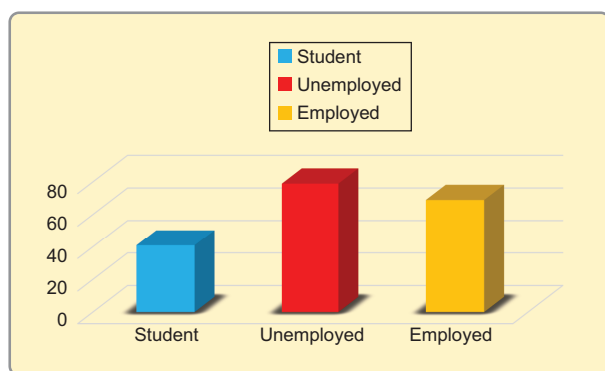


Fig-3: Employment status

As shown in figure 4, the most common location where people were found hanging was at home 139 (73.5%), followed by outdoor areas 46 (24.3%). The outdoor locations included trees in open fields or on farms.

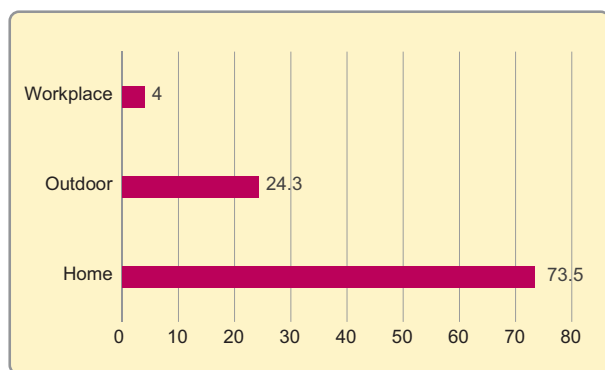


Fig-4: Location of hanging victims

Table 3 shows cyanosis, visceral congestion, and subcutaneous tissues underneath the ligature mark was found pale, white, hard, glistening (Parchmentization) was found in all 189 (100%) cases, petechial hemorrhages in 164 (86.8%) cases, and dribbling marks of saliva were seen in 139 (73.5%) cases. Neck muscle injuries were noticed in 31 (16.4%) cases while hyoid bone fracture was in 8 (4.2%) cases.

Table-3: Distribution according to postmortem findings

Post mortem findings	Frequency	Percentage
Cyanosis	189	100
Visceral congestion	189	100
Parchmentization	189	100
Petechial hemorrhage	164	86.8
Dribbling of saliva	139	73.5
Injury to the neck muscle	31	16.4
Hyoid bone fracture	8	4.2

**Discussion:**

A total of 391 cases were brought for postmortem examination at the mortuary of 250 bedded Tangail general hospital morgue from January, 2020 to December, 2020. After post mortem examination and correlation with the history received from the police, it was confirmed that among them 189 died of suicidal hanging. The rate of suicide is sharply increasing in Bangladesh according to data from Police headquarters. In the Year 2017, 11,095 people committed suicide in Bangladesh which means on average 30 people kill themselves every day, 569 of them hanged themselves, 3467 took poison and 59 people set themselves on fire<sup>13</sup>.

Several international studies have identified diverse risk factors, which through a complex interplay, may predispose an individual to a higher risk for committing suicide by hanging<sup>14-17</sup>. Therefore, we aimed to describe the socioeconomic and demographic profiles of hanging victims in our region to compile a profile for the future identification of individuals who are at the highest risk of committing suicide by hanging.

Our study reports that, out of the 189 cases of hanging, 40.2% of cases were male and 59.8% of cases were female, indicating that a large majority of the victims are females. Most of the suicidal hanging cases 34.3% were found in the age group of 21-30 years, followed

by 11-20 years age group (29.6%) and 31-40 years age group (17.9%). These are the most active years and an individual has to face various sorts of the struggle of life with emotional, financial, familial, or other crises.

The findings of our study are comparable with many studies done in Bangladesh and abroad and the reason might be due to our society being a male-dominated society, there is the active participation of the male population in various social and day-to-day activities<sup>18-21</sup>.

Contrary to the findings reported by Rao, our research showed a predominance of single persons<sup>17</sup>. Naidoo and Schlebusch also reported that the highest number of suicide victims in their study were single, although the focus was on suicides in general, and not hanging per se<sup>22</sup>. The reason for this finding or the contribution of marital status to the victim's motivation to commit suicide is uncertain.

The maximum number of our study population was unemployed (41.8%), which was similar to the findings by Stark et al.<sup>23</sup>. Other national and international studies reported that between 59.1% and 38.5% of their study populations were unemployed<sup>17, 22</sup>. It is, therefore, possible that financial pressure contributed as a risk factor in our study population.

The most common location where hanging victims were found was at home, followed by outdoor locations. Other locations included local prisons and SAPS holding cells. Our findings are supported by international research<sup>11, 16, 17, 24-27</sup>. The reasons for choosing the home as the most common location to commit suicide by hanging included familiarity with a beam from which to suspend oneself, concealment, and the lower risk of interference by another person during the act of committing suicide by hanging<sup>17, 27</sup>.

In the present study cyanosis of fingertips and nail beds of both hands was the commonest finding followed by pale, white, hard, and glistening subcutaneous tissue underneath the ligature mark and dribbling marks of saliva. These findings are the most important signs of asphyxia and are mentioned in every literature available<sup>28</sup>.

The socioeconomic and demographic profile constructed from our data to identify individuals at high risk of committing suicide by hanging included

males between the ages of 21 to 30, who are single and unemployed. The population at the lowest risk for committing suicide by hanging appears to be individuals older than 70 years of age, who are married and employed. The most common location that individuals will choose to hang themselves will either be at home or in an isolated open space. This profile can be used to identify individuals having the highest need for suicide prevention programs.

#### Conclusion:

Our observation and result conclude that most of the victims who died due to hanging were female, age group mostly ranging from 21-30 years. Several females had significant marital conflict due to many reasons which was alarming and awareness needed from the level of family and community to combat this. According to relationship and occupational status most commonly involved victims were single (54%) and unemployed (41.8%). Much of our current knowledge regarding the socioeconomic & demographics of high-risk populations is obtained through the retrospective investigations of mortuary records. Increasing public awareness about suicidal hanging, intensified supervision, counseling, and identification, and early psychiatric consultation of the high-risk population are possible useful measures for the prevention of deaths due to hanging in this age group.

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# Climate Change: Prospects and Challenges in Bangladesh

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### Abstract:

*Over the last two decades, the Global Climate Risk Index rates Bangladesh as the seventh most affected country in the world from extreme weather events. Depending on the extent of sea level rise in the coming decades, an estimated 15 to 30 million Bangladeshis could be displaced from coastal areas, if not more. A 2018 U.S. government report noted that 90 million Bangladeshis (56 percent of the population) live in "high climate exposure areas," with 53 million subject to "very high" exposure. The United Nations Children's Fund's 2021 Children's Climate Risk Index rates the climate risk facing children in Bangladesh "extremely high" – the index's most severe rating. The current article amid actual climate issues in Bangladesh. The health system needs strategic interventions to cope with climate-sensitive health problems. Community-based adaptation strategy for health could be beneficial for sectoral approach in ensuring sustainable development. It has been warranted to confirm shifting of vector-borne diseases such as malaria from endemic to non-endemic zones. Child-centred and school-based intervention studies could be explored to reduce seasonal childhood diarrhoea, pneumonia, and malnutrition.*

**Key word:** Climate change, rising temperature, Global warming.

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### Introduction:

Bangladesh is a subtropical country which is located between 88° to 92° east and 20° to 26° north, positioned with the Bay of Bengal at south, Myanmar at south-east and India at east, west and north. Geographically, it is mostly covered by low-lying land delta (i.e., river) by the Brahmaputra and Ganges.<sup>1</sup> The floodplains are covered by 80% of the country's inland areas where mean elevations range from 0.8 metre in the coastal zones, 1 to 3 metres on the main river basin zones and up to 6 metres in the north-east basin zones. However, the elevations are greater than 30 metres in the extreme north-west zones. Nevertheless, some south-east and north-east zones are sometime over 1,000 metres from the sea level.

While with the use of the development indicators, Bangladesh has been identified as a developing country, World Bank ranked it as LDC (least developed country) because of its low level of economic development measures.

In regards to the impacts of global warming and climate change issues, Bangladesh is also identified as one of the most vulnerable countries where risk is higher compared to other counterparts. Earlier works indicate that the country has experienced a series of extreme climatic events that claims millions of lives in the last two to three decades. The basic grounds are considered for the geographic location, high population density (i.e., 1,221 persons per km), poverty issues, limited capacity to cope with climate

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issues, over dependence on natural resource and finally, low elevation from the sea level. The country also lacks immensely on how to adapt with the issues of climate change and the limited capabilities that destroy relatively past development gains.<sup>2</sup> As the migration within the country is limited; therefore, it causes higher increases of vulnerability and exposed to higher risk to climate change and global warming. As one-fourth of the national GDP comes from agriculture and related sectors which are generally vulnerable to climate change impacts; therefore, recent climate sensitivity exposed to higher susceptibility.<sup>3</sup> There are some uncertainties toward the estimation and measurement to the impact of climate change and global warming in Bangladesh; several key figures such as inadequate rainfalls, increases in temperature, unpredictable and extreme weather (e.g., storms, surges, etc.), high humidity, and seasonal variations monsoon provides some insights of impacts for the long-run visions. The frequency of big floods which has caused inundating more than 60-70% of the country over the last twenty five years and has increased from approximately 1 in every 20 years to 1 in every 5/10 years in recent times.<sup>4</sup> As a sub-tropical country, Bangladesh is supposed to have a monsoon season for more than three months, but recent statistics and phenomenon indicate that the same amount of monsoon season has spread no longer than a month that causes the increasing possibilities of severe flash floods. In addition to, the variability of seasonal monsoon sometime causes high averaged temperature and sometime causing drought particularly in the northern part in Bangladesh These are the direct and indirect results of climate change and global warming. The Fourth Assessment Report of IPCC states the increasing temperature in the monsoon season and decreasing temperature of average winter as observed the impacts due to the climate change and global warming, and that is resulting in increasing problem of unexpected flooding and drought.<sup>5</sup> Therefore, time for Bangladesh to realize the importance of climate change issues and consequently, national and international forum, policymakers and environmentalists are working and looking for the long-run mechanisms to resolve the issue and operational tools in dealing with the global warming and climate change impacts<sup>6</sup>. However, the detailed analyses of long-term climate change mitigation or adaptation system, scientific foundation and

operational barriers are still a vital issue on integrating climate change concerns in the case of Bangladesh. Appropriate long-term climate change modelling and frameworks aiming to resolving climate change disputes are fundamentally lacking, particularly in the developing country like in Bangladesh whilst the impact of climate change is increasing and fast approaching that is real<sup>7</sup>. We have identified three areas to deal with climate change visualization by a climate change issues climate change impacts and mitigation related operational strategies. In addition, we have evaluated critically the ongoing initiatives and preparations on the global warming and climate change issues to clarify the existing lacking.<sup>8</sup>

**Climate change issues in Bangladesh:** A number of studies have recently been commenced to stimulate climate change and global warming vulnerabilities in Bangladesh. Particularly, Mizanur et al. (2012) recently studied the stimulation of climate change and global warming related vulnerabilities in Bangladesh by the regional climate model of version 3. They have taken the rainfall and temperature fluctuations by the ECHAM4 techniques toward the resolution at  $0.54^\circ \times 0.54^\circ$  horizontal grid in two parameterisations: Fritch-Chappell (GFC) and Grell Scheme (GS) that widely known as Arakawa-Schubert (GAS) assumptions.<sup>8</sup> This recently released exclusive study indicates the evidence of climate change and global warming vulnerabilities until the year of 2060<sup>9</sup>. Their findings for the year 2050 indicate that the rainfall projection is about +35% for monsoon season (JJAS), however, about -67% for pre-monsoon (MAM), and about -12% for post-monsoon (ON). On the other hand, rainfall uncertainty is about 107% for winter season (DJF) for the projection year 2050. In addition, their simulations indicate that the mean surface air temperature may differ from +0.9°C to -3.5°C for the different months for the year 2060<sup>10</sup>. International organisations such as IPCC (2007) and Clime Asia (2009) have identified Bangladesh as the sixth most vulnerable country to floods and the most vulnerable countries to tropical cyclones compared to other developing countries. The extended frequencies of the tropical cyclones or extreme weather pattern are zilch but due to the effects of climate change and global warming which is well evident recently by the reliable publications such as by Lobell et al.. These studies indicate the climate change vulnerability and impacts of the short and long run vision. As we are aware that the developing

countries will be greatly affected by the direct and indirect global warming and climate change effects but particularly, Bangladesh would be one of the most vulnerable countries to the impacts for its high poverty, extreme population density, limited capability and capacity. Whatever we consider climate change and global warming issue, Bangladesh is equally vulnerable to climate induced hazards and the vulnerability is primarily contextual. The overall cyclone corridor, flood-plain and low coastal topography contributes to climate induced hazards. The unexpected sudden high temperature sometime lies harder active cyclone corridor transects deadly hazards. Bangladesh has experienced six severe floods in the last 25 years (Table 1). There are recent evident that the severe tropical cyclone, tsunami, tidal flooding and flash flooding during stress monsoon and storms seasons is linked to global warming. Recently, the severe tropical cyclone on average in Bangladesh hits every 3 years. It is estimated that the severe tropical cyclones in 1991 have killed 140,000 people. The impact and hazards in Bangladesh is higher than neighbouring countries as because, Bangladesh in the entrance of the Bay of Bengal where it narrows toward cyclone tracks. Therefore, we need to find a way forward to mitigate the impact and hazards.<sup>11</sup>

Despite producing only 0.56% of the global emissions changing our climate, Bangladesh ranks

seventh on the list of countries most vulnerable to climate devastation, according to Germanwatch's 2021 Global Climate Risk Index (CRI). This threat is not an abstract one. The data shows that from 2000 to 2019, Bangladesh suffered economic losses worth \$3.72 billion and witnessed 185 extreme weather events due to climate change. Located east of India on the Bay of Bengal, the country is known for its many waterways, including the world-famous Ganges river. These are waterways that produce rich agricultural soil, allow extensive travel by boat, and provide access to the rest of South Asia and the world. What's more, Bangladesh is home to the Sundarbans: the world's largest contiguous mangrove forest. This UNESCO World Heritage site both provides a livelihood for local people and makes world-renowned biodiversity possible. This same geography also makes Bangladesh one of the most vulnerable countries in the world to sea-level rise, increasingly powerful cyclones, floods, and more. What's more, a 2018 U.S. government report found that whopping 90 million Bangladeshis (56 percent of the population) live in "high climate exposure areas," with 53 million subject to "very high" exposure. The threat could hardly be clearer.<sup>12</sup>

#### Sea-level rise

Rising seas are a growing threat to people all around Bangladesh. That's because a staggering two-thirds

**Table 1: Series of floods in Bangladesh from 1980–2007**

Disaster period	Disaster events
1984	The inundated area was over 50,000 sq. km and the estimated damage was US \$378 million
1987	The inundated area was over 50,000 sq. km, the estimated damage was US \$1 billion, and the loss of lives were 2,055
1988	The inundated area was 61% of the country's total areas, the estimated damage was US \$1.2 billion, the homeless numbers were more than 45 million and the loss of lives were about 6,500
1998	The inundated area was about 100,000 sq. km, the homeless numbers were about 30 million, the damage was US \$2.8 billion, and the loss of lives were about 1,100
2004	The inundated area was 38% of the country's total areas, the damage was about US \$6.6 billion, about 3.8 million were affected. The estimated damage was about \$2 billion, and the loss of lives were about 700
2007	The inundated area was about 32,000 sq. km, the damage was over \$1 billion, and the loss of lives were 649

of the country is less than 15 feet above sea level. The threat becomes even clearer knowing that about a third of the population of Bangladesh lives by the coast. It has been estimated that by 2050, one in every seven people in Bangladesh will be displaced by climate change. Specifically, with a projected 19.6 inch (50 cm) rise in sea level, Bangladesh may lose approximately 11% of its land by then, and up to 18 million people may have to migrate because of sea-level rise alone. Looking even further down the road, Scientific American describes how “climate change in Bangladesh has started what may become the largest mass migration in human history. Some scientists project a five-to-six foot [sea-level] rise by 2100, which would displace perhaps 50 million people. What’s more, these rising seas now threaten to inundate the Sundarbans – the mangrove forest in southern Bangladesh. This is a doubly dangerous effect, given that this coastal forest doesn’t just sustain biodiversity and livelihoods, but also shields Bangladesh from the worst of the region’s many cyclones. But sea-level rise isn’t just a problem because of outright land loss. It’s also a problem because of salinization: the process by which salt infiltrates agricultural land, hindering crop growth by limiting their ability to take up water. On top of increasingly ruining crops, salinization threatens the drinking water supplies of tens of millions of people in coastal communities. Consuming this salty, contaminated water can expose populations to health problems like cardiovascular diseases.. For context, in 1973, 8.3 million hectares (321,623 square miles) of land were affected by encroaching seawater. By 2009, the number grew to over 105.6 million hectares (407,723square miles), according to Bangladesh’s Soil Resources Development Institute. Overall, salinity in the country’s soil has increased by about 26% over the past 35 years.<sup>13</sup>

### **Flooding and unmanageable urbanization**

It’s a well-known fact that, all around the world, climate change is making rainfall more erratic and often far more intense. In Bangladesh, this reality rings especially true. This phenomenon of stronger downpours – combined with rising temperatures melting the Himalayan glaciers that feed rivers around Bangladesh – is leaving massive swaths of the country far more prone to devastating floods. Increasingly, supercharged water levels in the Ganges-Meghna-Brahmaputra River Basin are

destroying entire villages and hundreds of thousands of livelihoods. Devastation that contributes to over 10 million Bangladeshis already being climate refugees. The most recent major flooding of the Brahmaputra River in 2017 inundated at least 480 community health clinics and damaged some 50,000 tube wells, essential for meeting communities’ safe water needs. Millions of Bangladeshis are having to uproot their lives and migrate because of overflowing rivers. By one estimate, up to 50% of those now living in Bangladesh’s urban slums may be there because they were forced to flee their rural homes as a result of riverbank flooding. Similarly, a study completed in 2012 of 1,500 Bangladeshi families migrating to cities, mainly Dhaka, showed that almost all of them cited the changing environment as the biggest reason for their decision. Overwhelmingly, when these migrants move into big cities, they don’t find refuge from rural climate challenges, but rather, more and at times worse problems. They were forced to settle into densely populated urban slums with rudimentary housing conditions, poor sanitation, and limited economic opportunities. For context, take Dhaka: Bangladesh’s capital and biggest city. Dhaka holds 47,500 people per square kilometer, nearly twice the population density of Manhattan. Yet, nowadays up to 400,000 more low-income migrants arrive in Dhaka every year. The riverine flooding and other climate impacts contributing to this unmanageable urbanization has no end in sight especially without serious climate action.<sup>13</sup>

### **Cyclones**

The Bay of Bengal narrows towards its northern shore where it meets the south coast of Bangladesh. This “funneling” can both direct cyclones towards Bangladesh’s coast and make them more intense. These effects – combined with the fact that most of Bangladesh’s territory is low, flat terrain – can make storm surges absolutely devastating. Over the last decade, on average, nearly 700,000 Bangladeshis were displaced each year by natural disasters, according to the Internal Displacement Monitoring Centre. The annual number spikes during years with powerful cyclones, such as the following: Back in 2007, Cyclone Sidr struck the country’s coast with wind speeds of up to 149 miles (240 km) per hour, claiming 3,406 lives. Just two years later, in 2009, Cyclone Aila affected millions of people, claimed the lives of about 190, and left about 200,000 homeless .In 2016, Cyclone



Roanu caused disastrous landslides and submerged villages, leaving thousands homeless, forcing half a million people to evacuate, and causing 26 fatalities. Three years later, in 2019, Cyclone Bulbul swept through the country, forcing over 2 million people into cyclone shelters. Bulbul spent about 36 hours over Bangladesh, making it one of the longest-lasting cyclones the country has faced in recorded history. In 2020, Cyclone Amphan took the lives of 10 people in Bangladesh (and 70 others in India), left thousands homeless, and destroyed at least 176,007 hectares of agricultural land in 17 coastal districts. It was the strongest cyclone ever recorded in the country's history. 2021 Cyclone Yaas made landfall with a wind speed of 93 miles (about 150 kilometers) per hour, like its predecessors, bringing momentous devastation, and claiming unnecessary lives. Now it is clear that stronger cyclones are becoming more common because of our changing climate. As a result, Bangladesh is bearing more and more of the same tragic aftermath.<sup>13</sup>

### **Climate injustice**

Talking about climate impacts in Bangladesh would hardly be complete without mention of the staggering injustice Bangladesh faces. Because overwhelmingly, climate impacts are being imposed on Bangladesh by high-emitting, wealthy countries – not by the people of Bangladesh themselves. As a country, Bangladesh emits only a tiny fraction of the greenhouse gas emissions causing climate change. Perhaps more telling, the average person in Bangladesh emits 0.5 metric tons of CO<sub>2</sub> per year. In the US, for comparison, that number is 15.2 metric tons per person – about 30 times as much.<sup>13</sup>

### **Climate change is affecting health and mental wellbeing**

The Climate Afflictions Report finds a link between the shifting climatic conditions and the increase in respiratory, waterborne, and mosquito-borne diseases as well as mental health issues. With further climate change predicted, more physical and mental health issues are likely to emerge. The most vulnerable are children and the elderly, and those living in large cities like Dhaka and Chattogram. Bangladesh has remarkably tackled climate change challenges, despite being among the most vulnerable countries. It has built resilience against natural disasters and introduced homegrown solutions to improve

agricultural productivity. With more evidence showing a pronounced impact of climate change on physical and mental health, Bangladesh needs to build on its success in adaptations to ensure a stronger health system that averts outbreaks of emerging climate-sensitive diseases. Over the past 44 years, Bangladesh experienced a 0.5°C temperature increase. The summers are getting hotter and longer, winters are warmer, and the monsoon seasons are being extended from February to October. With these patterns, the country's distinct seasonal variations are becoming blurred. By 2050, the temperatures are predicted to rise by 1.4°C in Bangladesh. Erratic weather conditions played a key role in the 2019 dengue outbreak in Dhaka city, where 77 percent of the country's total dengue-related deaths occurred. That year, Dhaka recorded more than three times the average February rainfall followed by high temperature and humidity between March and July. Compared to monsoon, the likelihood of contracting an infectious disease is about 20 percentage points lower in the dry season. Respiratory illness rises with the increase in temperature and humidity. For a 1°C rise in temperature, people are more likely to suffer from respiratory illnesses by 5.7 percentage points; for a 1 percent increase in humidity, the chances of catching a respiratory infection rise by 1.5 percentage points. The weather pattern also affects mental health. More people suffer from depression during winter while the level of anxiety disorders increases with temperature and humidity. Further, women are at higher risk than men for depression, while men are more susceptible to anxiety. Bangladesh has experienced an average rise in temperature of 0.5°C between 1976 and 2019. The increase in maximum temperatures during this period has been shown to be consistent on a month-to-month basis, with the months from February to November getting warmer. The rise in maximum temperature across the country has not been uniform. For instance, between 1976 and 2019, compared to a 0.5°C rise in central parts covering Dhaka and neighboring districts, maximum temperatures rose by 0.9°C in the eastern parts (Chattogram and Sylhet divisions).

### **Impact on Physical Health**

A survey of 15,000 people in 3600 households has shed more light on the influence of climate variability on physical and mental health. Respiratory illnesses are likely to increase with rising temperature and



humidity. A 1°C increase in temperature rises the likelihood of contracting a respiratory infection by 5.7 percentage points, whereas a 1 percent increase in humidity rises the chances of catching a respiratory infection by 1.5 percentage points. Waterborne diseases like cholera are likely to decrease with rising humidity and temperature. A 1 percent increase in relative humidity reduces the probability on contracting waterborne illnesses by 1.6 percentage points, whereas a 1°C increase in mean temperature reduces the likelihood of respiratory infections by 4.2 percentage points. Dengue is likely to increase in Dhaka as the climatic conditions become more suitable. Humidity in the range of 60 to 80 percent, maximum temperature between 25°C and 35°C, and rainfall between 200-800 mm create ideal conditions for mosquitoes. Weather data between 1976 and 2019 indicate Dhaka is experiencing falling humidity levels, rising temperatures, and heavier summer rainfall. These together with factors like urbanization are increasing the risk of the spread of dengue in Dhaka city.<sup>14</sup>

### Impact on Mental Health

Changes in weather can cause mood swings. But, seasonality have a slightly different impact on anxiety than depression. The level of anxiety disorders increases with temperature and humidity. Increase in mean humidity and mean temperature increases the probability of having anxiety by 0.3 percent and 0.8 percent, respectively. More people suffer from depression during winter. Increase in temperature lowers the probability of depression by 1.6 percent. Further, women are at higher risk than men for depression, while men are more susceptible to anxiety.<sup>15</sup>

### What can Bangladesh do to tackle these Challenges?

By 2050, Bangladesh is expected to experience an increase in temperature of about 1.5°C. And between 2040 and 2059, annual rainfall is also expected to increase by 74 millimeters. These projected changes will escalate spread of infectious diseases and mental health issues. By taking urgent actions, Bangladesh can remain better prepared to mitigate the impacts of climate change on health.

### Three ways for better adaptation:

1. Improved data collection systems will help the country better track the evolution of climate-

sensitive diseases and predict potential disease outbreaks.

2. Strengthen health systems to preempt and mitigate outbreaks of infectious and other emerging or reemerging climate-sensitive diseases.
3. Strengthen response to mental health issues through awareness building, improving assessment mechanisms and facilitating means to address shortcomings such as self-help groups.

### Conclusion:

There is a potential risk of climate change on human health. The magnitude of malaria, dengue, childhood diarrhoea, and pneumonia is high among the vulnerable communities. Prevention and control of climate-sensitive diseases have to be addressed with area-specific interventions guided by local-level planning of the low-income vulnerable communities. Government initiatives, public-private strong advocacies, and international collaborations are needed to reduce OOP payments through alternative health care financing for climate victims. Climate change ultimately has an impact on health; therefore, public health care facilities at the community level should be prepared to be utilised to their full potential. The health system needs strategic interventions to cope with climate-sensitive health problems. Community-based adaptation strategy for health could be beneficial for sectoral approach in ensuring sustainable development. It has been warranted to confirm shifting of vector-borne diseases such as malaria from endemic to non-endemic zones. Child-centred and school-based intervention studies could be explored to reduce seasonal childhood diarrhoea, pneumonia, and malnutrition.

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# Blood Transfusion Safety: A Brief Review

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## Abstract:

Access to adequate safe and effective blood transfusion service is a fundamental part of modern health services. Transfusion of blood and blood products save millions of life every year. Surgery, any emergency, accidental trauma, disaster, chronic medical illness like blood and bone marrow disorder, severe anemia and complications of pregnancy are some of the clinical conditions that urge to blood transfusion. In aid of these conditions also management of bleeding, accidents, cancer, hemophilia, excessive burn and other hematological disorders demand safe blood. Safe blood saves life but unsafe blood can cause severe debilitating illness even death to a patient if the blood is not screened for transfusion transmitted infections (TTIs) and if the blood is issued for transfusion without major and minor cross matching for blood and blood components. A reliable supply of blood begins with voluntary blood donors. Screening and cross matching of donated blood further reduces the risk of TTIs and hemolytic transfusion reaction. World Health Organization (WHO) recommends universal screening for HIV, Hepatitis B&C Virus, Syphilis and regional screening for specific infections such as Malaria. "Safe Blood Transfusion program" is going on from 1999 by government of Bangladesh along with to reach the goal "Approval of Safe Blood Transfusion Law-2002 and Safe Blood Transfusion by Laws-2008" are the justified steps towards blood safety, also a designed network to establish that is National Blood Transfusion Services (NBTS) which will coordinate voluntary blood collection all over the country, safe blood transfusion, blood safety related all issues by giving the facilities, logistics, quality control and assurance, hemovigilance, HLA typing, forensic immunology, molecular biology, rare blood group identification, apheresis, stem cell collection and also preservation of cord blood.

*Key words:* Safe blood, Rational use of blood, Transfusion Transmitted Infections (TTIs), Professional Blood Donors (PBDs), Voluntary blood donors (VBDs), Family Replacement Blood Donors (FRBDs).

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## Introduction:

Blood Transfusion is an indispensable component of health care system. It contributes in saving millions of lives each year in both routine and emergency situations and improves the life expectancy and quality of life of patients with a variety of acute and chronic conditions.<sup>1</sup> Treating accidental patients, surgery, caesarean section procedure of pregnant women & thalassemia patients require regular blood transfusion and they demand safe blood. A number of serious infectious diseases that transmitted through blood are named as transfusion transmitted infections (TTIs). TTIs encompass HIV, Hepatitis B&C virus, Syphilis and Malaria. Safe blood saves life but unsafe

blood can cause transmission of TTIs to its recipient or severe hemolytic transfusion reaction even death if major and minor cross matching is not properly done.<sup>2</sup>

## What is safe blood:

The blood or blood components that does not contain any viruses, bacteria, parasites, chemical substances or other factors that might cause harm, danger or disease to its recipient is known as safe blood. Donor should be in good health and should not suffer from any serious illness. The abstraction is that, recipient should not be harmed by receiving blood and the donor will not face any risk by donating blood.<sup>3</sup>

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The safety of blood is ensured by collection of blood from low risk voluntary non-remunerated donors, relevant screening, testing and processing of blood, appropriate storage, transportation and proper clinical use of blood. Low risk donors comprise healthy, well educated disease free people like teachers, service-holders, students, social workers and who assume socio-religious norms for usual life style. Paid or professional blood donors (PBDs), parenteral or intravenous drug abusers (IVDU), commercial sex workers (CSWs) and their clients, truck and bus drivers, frequent travelers, sailors, emigrated workers and homosexuals comprise of high risk blood donor group. We should be very careful during collection of blood from them for blood safety.

#### **Rational use of blood:**

Blood safety also includes rational use of blood that is right blood product to right patient at right time with right amount. As there is a shortfall in blood availability, careful attention should be given to inappropriate blood use and concomitant wastage as unnecessary transfusion increases the transfusion related hazards and risk of transmission of TTIs.<sup>4</sup>

#### **Hemovigilance and quality assurance:**

Hemovigilance encompasses surveillance of all activities from donor recruitment upto post transfusion surveillance. Director General of Health Services had established a national hemovigilance in our country in which surveillance in sentinel events, including transfusion reactions and TTIs are investigated.<sup>4</sup>

#### **Blood safety before 2000AD:**

No blood has been screened for TTIs before 2000AD. At that time PBDs were providing 70% of the total blood collected for transfusion in Bangladesh. In rest 30%, voluntary blood donors were 20% and only 10% were replacement donors. Risk of transmission of TTIs was high, about 29% of professional blood donors (PBDs) were carrying Hepatitis B virus, 6.2% Hepatitis C virus and 21% Syphilis.<sup>5</sup> In another study it has been showed that PBDs comprises 70% of total blood donor, voluntary blood donors (VBDs) noted 20% and family replacement blood donors (FRBDs) found only 10%.<sup>6</sup> In multiple studies it has been showed that PBDs were found 19-29% positive for HBV, 2.4-6.2% positive for HCV and 16-22% found positive for Syphilis.<sup>7-9</sup> So

for greater extent of our present and future generation blood transfusion should be safe for all the recipients.

#### **Safe blood transfusion after 2000AD:**

A project of "Safe Blood Transfusion Program (SBTP)"<sup>10</sup> has been launched in 1999 supported by UNDP&WHO to provide safe blood and blood product from higher center up to district level aimed for increasing the building capacity of the local hospitals also training of the service providers and thereby strengthening the efforts for prevention of HIV, hepatitis B and other TTIs.

For blood safety and screening purpose necessary kits and other equipments were supplied to 98 blood transfusion centers up to district level. As a consequence, prevalence of TTIs had started to decline. In the year 2004-2005, a total number of 142562 units of blood were screened, where PBDs found 19%, VBDs found 31% and FRBDs were 50% after screening of these blood sample. HIV reactivity were 5(0.002%), HCV positivity 179(0.10%), HBV positivity 2,244(1.3%) RPR reactivity found 622(0.3%), Malarial parasite found in 39(0.022%).<sup>11</sup> After banning of PBDs in 2012 the screening picture was different. In 2012 total blood collecting was 541682 units where VBDs were 31% and FRDs were 69% and screening status was: HIV reactivity 0.010%, HBV positivity 0.932%, HCV positivity 0.124%, RPR reactivity 0.073%, Malarial parasite found 0.0.102%.<sup>12</sup> Thus there was an increasing trend in voluntary and replacement/relative blood donors and declining the reactivity rate of TTIs.

At present kits are available all over the country and the trained personnel are available and refreshment training is going on by DGHS and Ministry of Health and Family Welfare.

In Bangladesh, medical demand for blood is 9.5 lakhs bag annually and voluntary donors help meet 32% of the demand and remaining 6% come from family relative and friends of blood recipients. 7.5 lakh bag collected in last year where 70% donor was male and 30% was female. Blood donors are the main bricks (pillars) of blood transfusion services. For a country to meet up the annual demand of blood unit, voluntary blood donor should be 2% of total population. Unfortunately in our country it is only 0.4%.<sup>5</sup> From Bangabandhu Sheikh Mujib Medical University (BSMMU) Data record of transfusion medicine department, from July 2015 to June 2023 a



total number of 191189 units of blood were screened where VBDs found 48% and FRBDs found 52% and after screening of those blood sample: HIV reactivity were 84(0.04%). HbsAg positivity 1869(0.97%),HCV positivity 84(0.04%),VDRL or Syphilis reactivity 198(0.0103%) and malarial parasite found 02(0.00104%). Process of safe blood transfusion practices starts from donor selection. Sometimes blood donors are advised to avoid blood donation if they considered themselves as high risk donor (self-deferral). We have to convert our FRBDs to VBDs thus we can achieve the goal of WHO that is 100% voluntary blood donation.

Every year 14<sup>th</sup> June is celebrated as world blood donor day and seminars are arranged all over the country,awards,crests,certificate sand refreshments are given to donor for encouraging their life saving initiative and raising awareness through mass people. To improve the blood safety further a network has been designed with a plan to establish National Blood Transfusion Services (NBTS) which will coordinate voluntary blood collection, all blood safety related issues by giving the facilities,logistics,quality control and assurance, hemovigilance, HLA typing,forensic immunobgy,molecular biology, rare blood group identification,apheresis,plasma exchange,stem cell collection and also preservation of cord blood.

#### **Background of safe blood transfusion services:**

- 1<sup>st</sup> blood transfusion services started in 1950 at Dhaka medical college hospital(DMCH),1950.
- Blood transfusion committee was formed in the year 1952.
- By the year 1968 three more blood transfusion centers were opened at Mitford hospital,Dhaka,Chittagong medical college hospital &Rajshahi medical college hospital.
- From 1972, Diploma course in transfusion medicines started at IPGM&R, Dhaka.
- Bangladesh government formed National Council of Blood Transfusion in 1976.
- Blood Transfusion Society of Bangladesh(BTSB) was formed in 1986.
- Sandhani, a student based voluntary blood donation organization started their professional movement from November 02,1997. Later on they also established associate organization called "Sandhani Donor Club" all over the country.

- Bangladesh Red Crescent society established it's blood centre around 1981 at Dhaka.
- Safe Blood Transfusion Programme launched by government of Bangladesh with UNDP & WHO in 1999.
- Production of CPD single blood bag in Bangladesh since 1999.

#### **Present status of safe blood transfusion services in Bangladesh:**

- To meet the national demand MD and master course in transfusion medicine have started in 1997. MCPS, FCPS started from 2007 and also PhD is running at BSMMU, Dhaka.
- More than 120 post graduate doctors are working at different blood transfusion centers and laboratories.
- Our honourable Prime Minister of Bangladesh, Sheikh Hasina inaugurated the National Blood Transfusion Centre (5<sup>th</sup> January, 2001).
- CPDA1 single, double, tripple and quadruple & pediatric blood bags are now preparing in Bangladesh.
- Regional training is ongoing in different medical college hospital by DGHS.
- Legislation on "Safe blood transfusion law-2002" was approved by the parliament.<sup>13</sup>
  - To control unsafe and unscreened blood supply,bad ordering blood transfusion, maintenance of cold chain during blood collection, transport and supply, licensing authority, service fees etc.
  - Punishment of illegal persons involving unscreened blood supply and legal persons involving unsafe blood transfusion by which patient suffers from TTIs etc.
- Government approved "Safe Blood Transfusion by Laws -2008" on the basis of above laws.<sup>14</sup>
  - Explanation about establishment of govt. and non-govt. blood transfusion centres, clarification about needed personnel,space, service fees etc.
- Ban of professional blood donors (ch-2,Section 9(2-c).Properly collection, tasting, storage, component preparation
- Workshop conducted for the development of policy on the improvement of voluntary blood donation in the country stakeholders participation

- Quality control and hemovigilance programme is running by DGHS.
- Procured more than 100 units of Laboratory waste disposal furnace.
- Both govt. and private centres are trying to be equipped with Refrigerated centrifuge and apheresis machine.
- Expanded Safe Blood Transfusion activities in Upazilla/Thana level hospitals.
- Developing National regulatory licensing authority with development of skilled manpower.
- Community participation in local areas for building awareness for blood donation.
- The Lion International (Bangladesh), Rotary International (Bangladesh), Badhon, Quantum Blood centre etc are working as voluntary blood donor organization.
- Plasma fractionation plant established at Bangabandhu Hi-tech city in Gazipur.
- A MOU is signed to produce Hepatitis B virus vaccine from HBV positive blood bags.

#### **Future program of blood transfusion service in Bangladesh:**

- Establishment of National Blood Transfusion Services (NBTS).
- Achievement of 100% voluntary blood donor as per goal of WHO.
- Expansion of safe blood transfusion services up to upazilla/thana level hospital.
- A central fractionation plant has to be established.
- NAT should cover all the higher centres also in Medical College Hospitals.
- Development of centrally coordinated activation and network services among the govt. and private organizations.
- Voluntary counselling of all TTIs should be confirmed in all blood transfusion center.

#### **Conclusion:**

Every transfusion has a risk of transfusion reaction. So rational and appropriate use of blood will minimise the chance of reaction which will improve safe blood transfusion in Bangladesh. Government of Bangladesh is very much conscious about safe blood transfusion. Project of safe blood transfusion program, approval of "Safe Blood Transfusion Law - 2002" and "Safe Blood Transfusion by Laws -2008"

are the justified steps towards blood safety. Further study is needed with maximum coverage of blood centres of Bangladesh including govt. and private organizations. To ensure blood transfusion safety, a rational use of blood, hemovigilance, quality assurance and accreditation will have to come in action. Continuation of current activities, implementation of future upcoming plans, at the same time involvement of all physicians, medical personnel, government and voluntary organizations and the conscious people will definitely improve our blood safety further.

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# A Case of Acute on Chronic Heart Failure Rescued with CRT-D Implantation

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### Abstract

A 45-year-old gentleman was admitted to MH Samorita Medical College & Hospital with acute on chronic decompensated heart failure with reduced left ventricular ejection fraction (LVEF) and cardiogenic shock. Electrocardiography (ECG) revealed a typical left bundle branch block (LBBB). His haemodynamics could only be stabilized with inotropes and vasopressors. Thus, we decided to perform cardiac resynchronization with defibrillator (CRT-D) implantation as a "rescue" therapy. Three days post-implantation, the inotropes and vasopressors could be stopped.

**Key Words:** Cardiac resynchronization therapy; Heart Failure.

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### Introduction:

Heart failure (HF) is the fastest growing cardiovascular diagnosis in the world, and it has a poor prognosis. Electrical conduction disturbances are common in heart failure and are associated with elevated mortality. Atrial synchronized biventricular pacing (Cardiac Resynchronization Therapy [CRT]) addresses many of the pathophysiological changes seen in patients with wide QRS complexes in whom delayed activation of the left free wall results in mechanical dyssynchrony.<sup>1</sup>

CRT is recommended for symptomatic patients with HF in Sinus Rhythm with LVEF <\_35%, QRS duration >\_150 ms, and LBBB QRS morphology despite optimal medical treatment (OMT), in order to improve symptoms and reduce morbidity and mortality.<sup>2,3</sup> However, uncertainty remains whether it is beneficial to implant CRT devices in patients with severe HF, especially those in cardiogenic shock or end-stage HF, since such patients have been excluded from most CRT trials. Few cases have been reported about CRT implantation in patients with acute decompensated HF being treated with vasopressors/inotropes.<sup>4-7</sup> In

this report, we present a case of end stage heart failure with cardiogenic shock in whom inotrope could be weaned after a CRT device with implantable cardioverter defibrillator (CRT-D) implantation.

### Case Report

A 45-year-old male came with complaints of worsening shortness of breath on minimal exertion with orthopnoea (NYHAClass III-IV) for the past 1 month. He has been suffering from these symptoms for the last 20 years and had history of few syncopal attacks in between. He is non-diabetic and normotensive. In 2015 he had pulmonary tuberculosis and completed an anti-TB drug regimen according to protocol. Since 2020 he has been on optimum medical treatment for heart failure. On examination, the patient was dyspnoeic, sitting upright, and unable to lie flat. His Heart rate – 86 bpm, Blood Pressure - 80/60 mmHg, Respiratory Rate – 28 breaths/min, oxygen saturation – 93% with 3 litres/min oxygen, Jugular Venous pulse (JVP) – raised. Systemic examination revealed normal heart sounds, no added sounds and diffuse bilateral inspiratory crepitation.

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Laboratory findings include: Hb- 14.2 gm/dl, TC- 10,840/cumm, DC- 81% neutrophils, 10% lymphocytes, platelet count - 2,78,000/cumm. S. Creatinine - 0.9 mg/dl, NT-ProBNP - 2066pg/ml, Troponin I- 1<sup>st</sup> sample: 0.5 ng/l and 2<sup>nd</sup> sample: 0.25 ng/l, Sodium -135.2 mmol/l, Potassium -4.08 mmol/l, SGPT -40 U/L, CRP -3.8, D-dimer - 0.79. On admission, ECG revealed complete LBBB (QRS duration: 190ms) (Figure-1).

Inotrope (Nor Adrenaline) was started to stabilize blood pressure. He was started on Frusemide 10 mg/hr intravenously through a pump. Oxygen support at 3L/min was given through a nasal cannula. Echocardiogram showed severe global hypokinesia of all LV segments with severe LV dysfunction (EF: 29%) and LVIDd-67mm (Figure-2a & 2b).

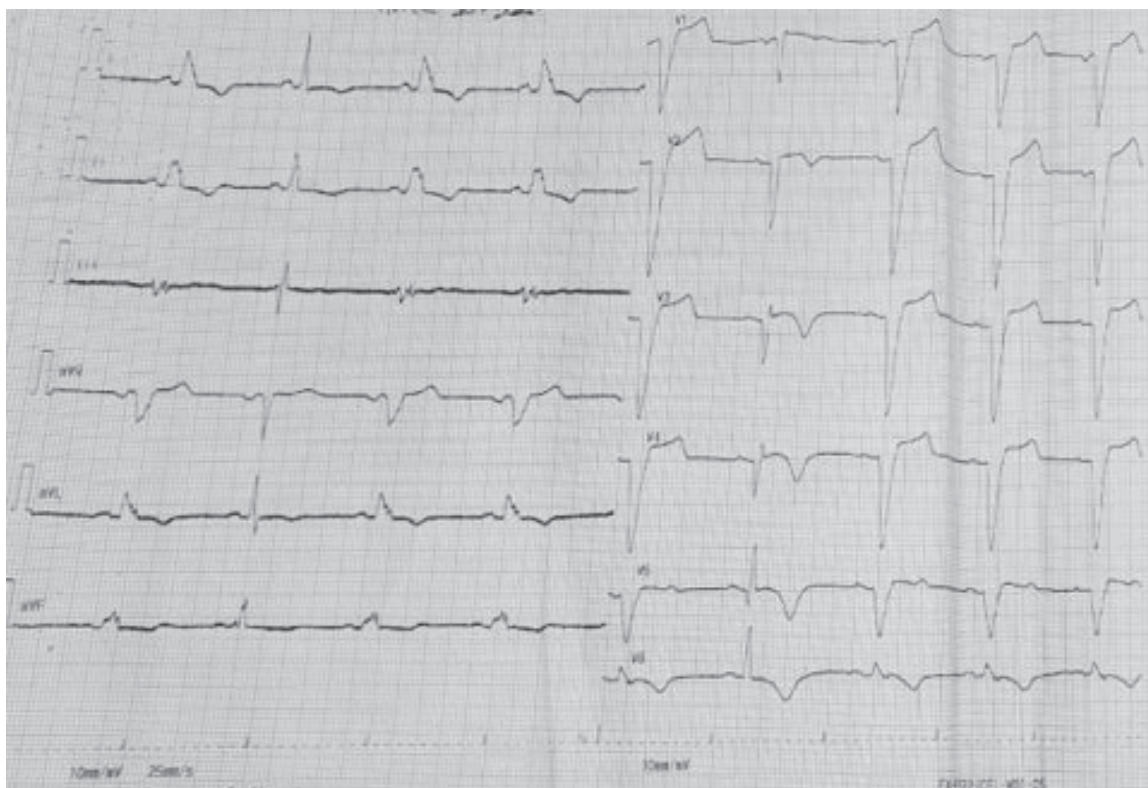


Fig.-1: ECG (On admission): Complete LBBB

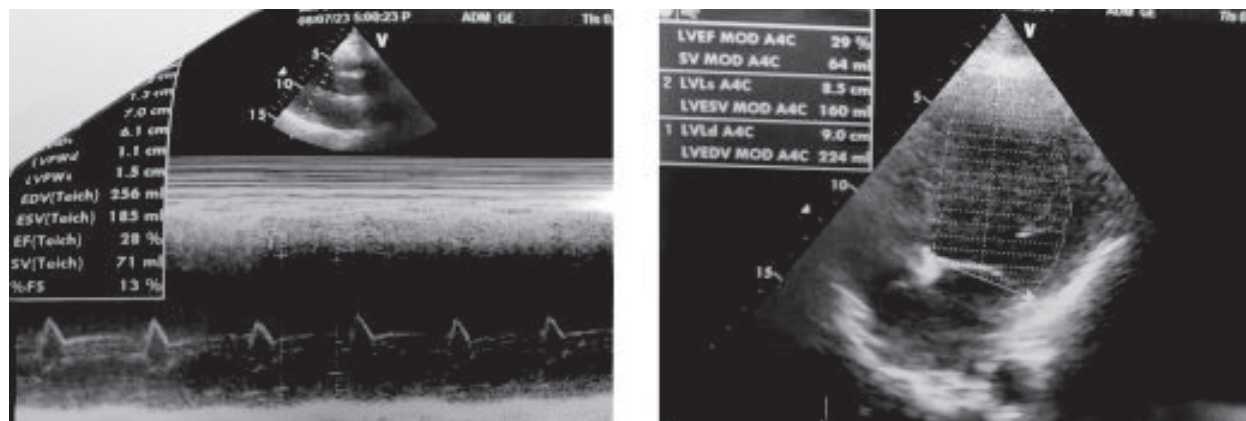


Fig.-2 : (a) ECHO 2D: LVIDd is 67 mm, (b) ECHO 2D: Simpson's Method



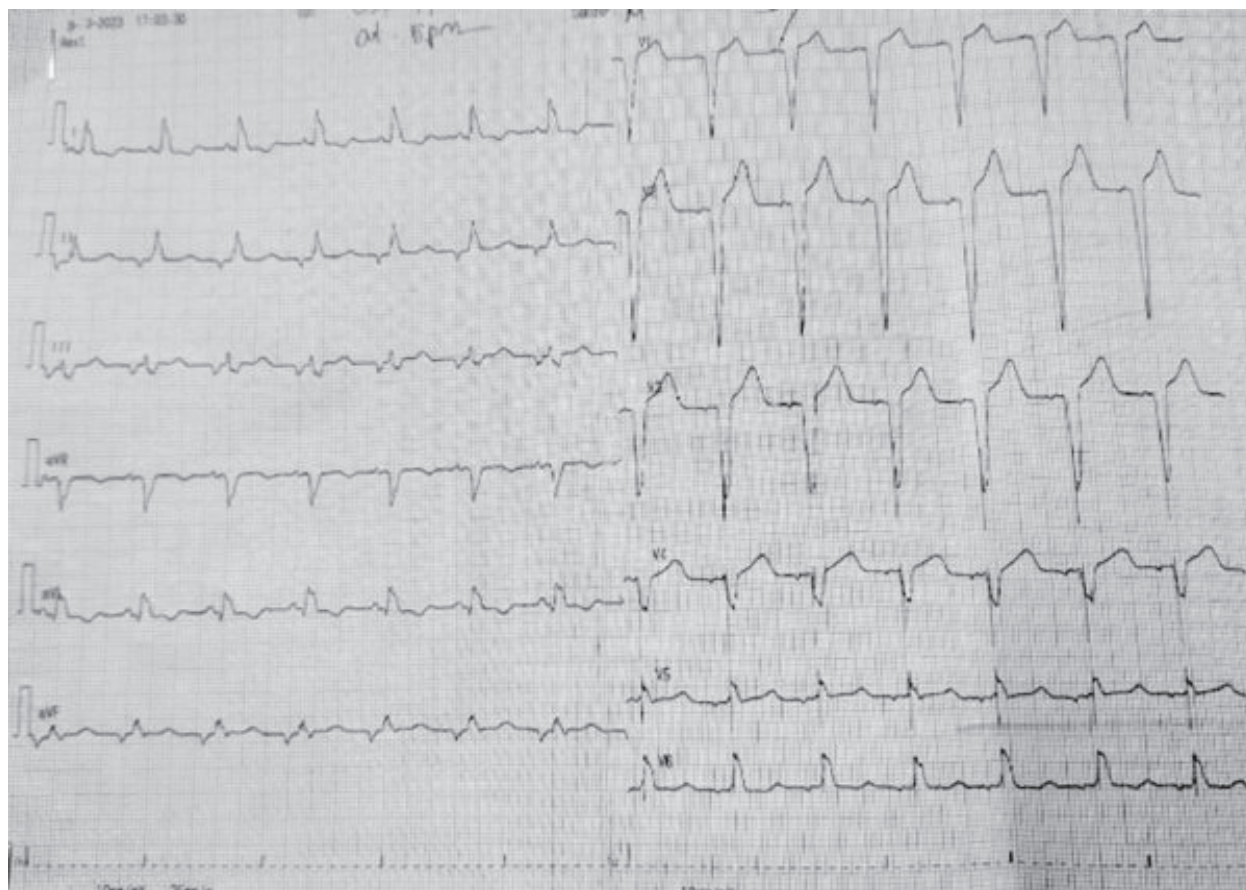
24-hour Holter Monitoring shows- Non sustained Ventricular Tachycardia (VT). A coronary angiogram was done that revealed non-critical coronary artery disease with slow flow in LAD and LCX.

Our final diagnosis was – Dilated Cardiomyopathy with acute on chronic heart failure, cardiogenic shock and non-sustained VT. As the patient fulfilled most of the criteria, a CRT-D was implanted.

*Procedure:* With all aseptic precautions under local anaesthesia, three punctures were done to the left axillary vein and three guide wires were introduced and kept in the IVC. Then two-and-a-half-inch incision was made in the upper part of the left pectoral region one inch below the clavicle. A subcutaneous pocket was completed. A 9F 50 cm splitable sheath was introduced over the wires and cannulated the CS with the help of a 0.035" guide wire. A quadripolar LV lead was placed in the distal end of the middle cardiac vein with the help of a whisper MS wire. Two

sheaths (7Fr) were introduced over the wires and through them. The ventricular (active fixation) and atrial (Passive) leads were positioned. All the parameters were checked. Then all sheaths were split out. All leads were connected to the CRT-D generator and the generator was placed. Three leads were connected to the CRT-D generator and the generator was placed in the subcutaneous pocket. The wound was closed in layers with absorbable sutures and the skin was closed by intradermal sutures. The whole procedure was uneventful.

Subsequent ECG following the implant showed a shortening of QRS to 145 ms (as shown in Figure 3). The patient was monitored in Coronary care unit. The inotrope was subsequently tapered and stopped. He did not develop any surgical complications and was discharged on Day 10 of admission. Echocardiogram after 1 month reveals improvement in EF( 42%) and reduction of LVIDd (59mm) (Figure-4).



**Fig.-3:** ECG after CRT-D implantation: Shortened QRS complex

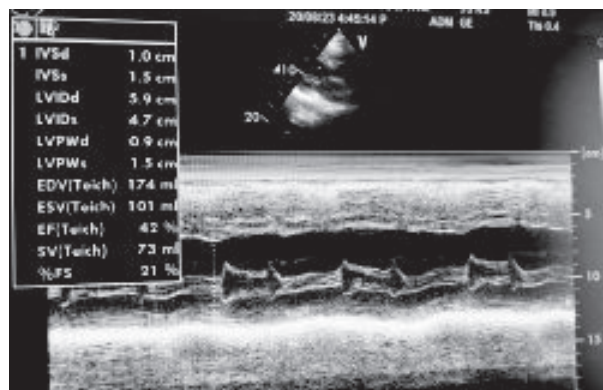


Fig.-4: ECHO (2D) 1 month after implantation

### Discussion:

Multiple randomized clinical trials (RCTs) have shown CRT to be an effective treatment for HF patients with reduced EF and increased QRS duration. However, patients with advanced HF being managed with inotropic support were rarely included in these RCTs.<sup>2</sup> The reasons for exclusion were a high risk of complications and short life expectancy. Therefore, the clinical usefulness of CRT in these patients is not clear. There have been few selective studies and case reports investigating the usefulness of “rescue” CRT in patients with New York Heart Association (NYHA) functional class IV HF or cardiogenic shock.<sup>4-8</sup>

Since our case was categorized as a non-ambulatory NYHA functional class IV, it was unclear whether CRT would be helpful. Broad QRS duration, left bundle branch block,<sup>9</sup> a nonischemic cause of HF, were favorable factors in this case. Thus, we implanted a CRT-D.

In general, CRT is useful for restoring cardiac synchrony and LV function, and for inducing LV reverse remodeling. The device also helps to reduce LV end-diastolic and end-systolic volume.<sup>10</sup> The effects of CRT gradually appear over several months in most cases. A desirable, early hemodynamic effect of CRT immediately after the procedure<sup>11</sup> can facilitate weaning from pharmacological support in end-stage HF.<sup>6</sup> As expected, echocardiography revealed rapidly improving LV synchrony and contractility after implantation of CRT, with stabilization of the blood pressure and HR.

Controversy remains regarding which patients are the best candidates for ‘rescue CRT’. The response of patients undergoing biventricular pacing depends

on several factors, including age, gender, underlying heart disease (cause and severity), comorbid illness, type of branch block, QRS duration, degree of dyssynchrony and the presence or absence of atrial fibrillation. Consequently, careful decisions regarding whether CRT would be beneficial in all critically ill patients, are still at the discretion of the clinician. Further studies will be needed to establish better clinical decisions in such cases.

### Conclusion:

Heart failure (HF) is syndrome that has a deleterious effect on the quality of life and having the risk of significant mortality and morbidity secondary to pump failure or ventricular arrhythmias. Currently, more than 64 million people suffer from this condition worldwide. To combat this problem, Cardiac Resynchronization Therapy (CRT) seems to be one method that has proven to show improved quality of life and decrease re-hospitalization and death.

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# Abstract From Current Literatures

(MH Samorita Med Coll J 2022; 5(2): 87-90)

## CHD IS ASSOCIATED WITH HIGHER GRADES OF NAFLD PREDICTED BY LIVER STIFFNESS

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**Background and aim:** Accumulating clinical and epidemiologic evidence indicates that nonalcoholic fatty liver disease (NAFLD) is not only associated with liver-related morbidity and mortality, but also with a greater risk of coronary heart disease (CHD). However, there is currently no diagnostic parameter for NAFLD that has been determined to reliably indicate the presence of CHD as a co-morbidity. We evaluated the liver stiffness and visceral fat thickness of NAFLD patients ultrasonographically to explore the relationship between liver stiffness, visceral fat thickness, and CHD, aiming to find explore the relationship between the liver stiffness and CHD.

**Methods:** We enrolled 120 consecutive patients who had been initially diagnosed with CHD on the basis of their symptoms. All patients underwent coronary angiography or computed tomography angiography, and were classified into a CHD group and a non-CHD group on the basis of the results. All patients underwent liver ultrasonography, shear-wave elastography, and visceral fat thickness measurement.

**Results:** NAFLD and visceral fat thickness were significantly positively correlated with CHD and Gensini score ( $P < 0.001$ ). Multivariate regression showed that age, male, cholesterol, liver stiffness, and visceral fat thickness were determinants of CHD. Age, cholesterol, liver stiffness, and visceral fat thickness cut-off points for the prediction of CHD were above 50 years old [area under the curve (AUC): 0.678; sensitivity, 87%; specificity, 42.6%],  $>3.76$  mmol/L (AUC: 0.687; sensitivity, 68.4%; specificity, 64.8%),  $>6.1$  kPa (AUC: 0.798; sensitivity, 50%; specificity, 92.6%), and  $>7.41$  cm (AUC: 0.694; sensitivity, 52.6%; specificity, 87%), respectively. Compared with the use of age, gender, and cholesterol (model 1), the addition

of the liver stiffness cut-off to model 1 resulted in a stronger predictive value ( $P = 0.005$ ).

**Conclusions:** High-grade NAFLD is more present in symptomatic CHD. The higher degree of liver stiffness in patients with NAFLD, the higher risk of CHD in these NAFLD patients.

## COVID-19 VACCINE EFFECTIVENESS AGAINST THE OMICRON (B.1.1.529) VARIANT

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**Background:** A rapid increase in coronavirus disease 2019 (Covid-19) cases due to the omicron (B.1.1.529) variant of severe acute respiratory syndrome coronavirus 2 in highly vaccinated populations has aroused concerns about the effectiveness of current vaccines.

**Methods:** We used a test-negative case-control design to estimate vaccine effectiveness against symptomatic disease caused by the omicron and delta (B.1.617.2) variants in England. Vaccine effectiveness was calculated after primary immunization with two doses of BNT162b2 (Pfizer-BioNTech), ChAdOx1 nCoV-19 (AstraZeneca), or mRNA-1273 (Moderna) vaccine and after a booster dose of BNT162b2, ChAdOx1 nCoV-19, or mRNA-1273.

**Results:** Between November 27, 2021, and January 12, 2022, a total of 886,774 eligible persons infected with the omicron variant, 204,154 eligible persons infected with the delta variant, and 1,572,621 eligible test-

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negative controls were identified. At all time points investigated and for all combinations of primary course and booster vaccines, vaccine effectiveness against symptomatic disease was higher for the delta variant than for the omicron variant. No effect against the omicron variant was noted from 20 weeks after two ChAdOx1 nCoV-19 doses, whereas vaccine effectiveness after two BNT162b2 doses was 65.5% (95% confidence interval [CI], 63.9 to 67.0) at 2 to 4 weeks, dropping to 8.8% (95% CI, 7.0 to 10.5) at 25 or more weeks. Among ChAdOx1 nCoV-19 primary course recipients, vaccine effectiveness increased to 62.4% (95% CI, 61.8 to 63.0) at 2 to 4 weeks after a BNT162b2 booster before decreasing to 39.6% (95% CI, 38.0 to 41.1) at 10 or more weeks. Among BNT162b2 primary course recipients, vaccine effectiveness increased to 67.2% (95% CI, 66.5 to 67.8) at 2 to 4 weeks after a BNT162b2 booster before declining to 45.7% (95% CI, 44.7 to 46.7) at 10 or more weeks. Vaccine effectiveness after a ChAdOx1 nCoV-19 primary course increased to 70.1% (95% CI, 69.5 to 70.7) at 2 to 4 weeks after an mRNA-1273 booster and decreased to 60.9% (95% CI, 59.7 to 62.1) at 5 to 9 weeks. After a BNT162b2 primary course, the mRNA-1273 booster increased vaccine effectiveness to 73.9% (95% CI, 73.1 to 74.6) at 2 to 4 weeks; vaccine effectiveness fell to 64.4% (95% CI, 62.6 to 66.1) at 5 to 9 weeks.

**Conclusions:** Primary immunization with two doses of ChAdOx1 nCoV-19 or BNT162b2 vaccine provided limited protection against symptomatic disease caused by the omicron variant. A BNT162b2 or mRNA-1273 booster after either the ChAdOx1 nCoV-19 or BNT162b2 primary course substantially increased protection, but that protection waned over time. (Funded by the U.K. Health Security Agency).

#### A REGIONAL SUITABLE CONDITIONS INDEX TO FORECAST THE IMPACT OF CLIMATE CHANGE ON DENGUE VECTORIAL CAPACITY

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**Background:** The mosquitoes *Aedes aegypti* and *Ae. albopictus* are the primary vectors of dengue virus,

and their geographic distributions are predicted to expand further with economic development, and in response to climate change. We aimed to estimate the impact of future climate change on dengue transmission through the development of a Suitable Conditions Index (SCI), based on climatic variables known to support vectorial capacity. We calculated the SCI based on various climate change scenarios for six countries in the Asia-Pacific region (Australia, China, Indonesia, The Philippines, Thailand and Vietnam).

**Methods:** Monthly raster climate data (temperature and precipitation) were collected for the period January 2005 to December 2018 along with projected climate estimates for the years 2030, 2050 and 2070 using Representative Concentration Pathway (RCP) 4.5, 6.0 and 8.5 emissions scenarios. We defined suitable temperature ranges for dengue transmission of between 17.05-34.61 °C for *Ae. aegypti* and 15.84-31.51 °C for *Ae. albopictus* and then developed a historical and predicted SCI based on weather variability to measure the expected geographic limits of dengue vectorial capacity. Historical and projected SCI values were compared through difference maps for the six countries.

**Findings:** Comparing different emission scenarios across all countries, we found that most South East Asian countries showed either a stable pattern of high suitability, or a potential decline in suitability for both vectors from 2030 to 2070, with a declining pattern particularly evident for *Ae. albopictus*. Temperate areas of both China and Australia showed a less stable pattern, with both moderate increases and decreases in suitability for each vector in different regions between 2030 and 2070.

**Interpretation:** The SCI will be a useful index for forecasting potential dengue risk distributions in response to climate change, and independently of the effects of human activity. When considered alongside additional correlates of infection such as human population density and socioeconomic development indicators, the SCI could be used to develop an early warning system for dengue transmission.

**Keywords:** *Aedes*; Climate change; Dengue; Prediction; SCI; Vectors.

## EVALUATION OF PUBLIC HEALTH INTERVENTIONS FROM A COMPLEX SYSTEMS PERSPECTIVE: A RESEARCH METHODS REVIEW

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**Introduction:** Applying a complex systems perspective to public health evaluation may increase the relevance and strength of evidence to improve health and reduce health inequalities. In this review of methods, we aimed to: (i) classify and describe different complex systems methods in evaluation applied to public health; and (ii) examine the kinds of evaluative evidence generated by these different methods.

**Methods:** We adapted critical review methods to identify evaluations of public health interventions that used systems methods. We conducted expert consultation, searched electronic databases (Scopus, MEDLINE, Web of Science), and followed citations of relevant systematic reviews. Evaluations were included if they self-identified as using systems- or complexity-informed methods and if they evaluated existing or hypothetical public health interventions. Case studies were selected to illustrate different types of complex systems evaluation.

**Findings:** Seventy-four unique studies met our inclusion criteria. A framework was developed to map the included studies onto different stages of the evaluation process, which parallels the planning, delivery, assessment, and further delivery phases of the interventions they seek to inform; these stages include: 1) theorising; 2) prediction (simulation); 3) process evaluation; 4) impact evaluation; and 5) further prediction (simulation). Within this framework, we broadly categorised methodological approaches as mapping, modelling, network analysis and 'system framing' (the application of a complex systems perspective to a range of study designs). Studies frequently applied more than one type of

systems method.

**Conclusions:** A range of complex systems methods can be utilized, adapted, or combined to produce different types of evaluative evidence. Further methodological innovation in systems evaluation may generate stronger evidence to improve health and reduce health inequalities in our complex world.

**Keywords:** Complexity science; Evaluation methodologies; Practice; Public health; Systems thinking.

## HANGING PROTOCOL OPTIMIZATION OF LUMBAR SPINE RADIOGRAPHS WITH MACHINE LEARNING

Gene Kitamura<sup>1</sup>

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**Objectives:** The purpose of this study was to determine whether machine learning algorithms can be utilized to optimize the hanging protocol of lumbar spine radiographs. Specifically, we explored whether machine learning models can accurately label lumbar spine views/positions, detect hardware, and rotate the lateral views to straighten the image.

**Methods:** We identified 1727 patients with 6988 lumbar spine radiographs. The view (anterior-posterior, right oblique, left oblique, left lateral, right lateral, left lumbosacral or right lumbosacral), hardware (present or not present), dynamic position (neutral, flexion, or extension), and correctional rotation of each radiograph were manually documented by a board-certified radiologist. Various output metrics were calculated, including area under the curve (AUC) for the categorical output models (view, hardware, and dynamic position). For non-binary categories, an all-versus-other technique was utilized designating one category as true and all others as false, allowing for a binary evaluation (e.g., AP vs. non-AP or extension vs. non-extension). For correctional rotation, the degree of rotation required to straighten the lateral spine radiograph was documented. The mean absolute difference was calculated between the ground truth and model-predicted value reported in degrees of rotation. Ensembles of the rotation models were created. We

evaluated the rotation models on 3 test dataset splits: only 0 rotation, only non-0 rotation, and all cases.

**Results:** The AUC values for the categorical models ranged from 0.985 to 1.000. For the only 0 rotation data, the ensemble combining the absolute minimum value between the 20- and 60-degree models performed best (mean absolute difference of 0.610). For the non-0 rotation data, the ensemble merging the absolute maximum value between the 40- and 160-degree models performed best (mean absolute

difference of 4.801). For the all cases split, the ensemble combining the minimum value of the 20- and 40-degree models performed best (mean absolute difference of 3.083).

**Conclusion:** Machine learning techniques can be successfully implemented to optimize lumbar spine x-ray hanging protocols by accounting for views, hardware, dynamic position, and rotation correction.

**Keywords:** Hanging protocol; Lumbar spine; Machine learning; Radiographs; Workflow.

## CME Presentations (January- June 2022)

No.	Date	Department	Presenter	Topic
1.	16.01.2022	Psychiatry	Prof. Dr. Enayet Karim	Epilepsy - Update
2.	30.01.2022	Anaesthesiology	Dr. Kazi Muhammad Mahmudul Hasan Assistant Professor Dr. Dipankar Shaha Assistant Professor	Basic Life Support
3.	17.02.2022	Medicine	Prof. Dr. Md. Abdul Jalil Ansari Principal Prof. Dr. SM Mamun Iqbal Professor & Head of Cardiology	Cardiovascular emergencies faced by Physicians
4.	27.02.2022	Community Medicine	Dr. Taslima Akter Associate Professor	Mental Health Problems - The Unmet Need of Society
5.	13.03.2022	Pathology	Dr. Mahtab Uddin Ahmed Associate Professor & Head	Rosettes and pseudorosettes with their significance
6.	24.04.2022	Anatomy	Students of First Year MBBS	Anatomical Basis- Joints of Lower Limb
7.	08.05.2022	Surgery	Dr. Riddita Mustica Registrar Dr. Md. Sourav Hossain Assistant Registrar	Diagnostic dilemma of Appendicitis
8.	22.05.2022	Forensic Medicine	Students of Third Year MBBS	Creating Hope Against Suicide

Following students obtained honours in respective subject against his/her name:

Name	Course	Type of Exam	Year of Exam	Exam. Roll No.	Subject
Farzana Tasnim	MBBS	2 <sup>nd</sup> professional	May, 2022	9196	Community Medicine
Sumaiya Jahan Meem	MBBS	2 <sup>nd</sup> professional	May, 2022	9199	Community Medicine
Hriday Saha	MBBS	3 <sup>rd</sup> professional	May, 2022	5602	Pharmacology
Sadia Afrin	MBBS	3 <sup>rd</sup> professional	May, 2022	5625	Pharmacology
D.M Al-Amin	MBBS	3 <sup>rd</sup> professional	May, 2022	5656	Pharmacology