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AIMS & SCOPE:

The Green Life Medical College Journal is an english language scientific papers dealing with clinical medicine, basic sciences, epidemiology, diagnostic, therapeutics, public helath and healthcare in relation to concerned specialities. It is an official journal of Green Life Medical College and is published bi-annually.

This Joural is recognized by Bangladesh Medical & Dental Council (BM&DC).

The Green Life Medical College Journal of Bangladesh intends to publish the highest quality material on all aspects of medical science. It includes articles related to original research findings, technical evaluations and reviews. In addition, it provides readers opinion regarding the articles published in the journal.

INSTRUCTION TO AUTHORS:

Papers:

The Green Life Medical College Journal (published bi-annually) accepts contributions from all branches of medical science which include original articles, review articles, case reports, and letter to the Editor.

The articles submitted are accepted on the condition that they must not have been published in whole or in part in any other journal and are subject to editorial revision. The editor preserves the right to make literary or other alterations which do not affect the substance of the contribution. It is a condition of acceptance that the copyright becomes vested in the journal and permission to republish must be obtained from the publisher. Authors must conform to the uniform requirements for manuscripts submitted to biomedical journals (JAMA 1997; 277: 927-34).

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In preparing the manuscript, use double spacing throughout, including title, abstract, text, acknowledgement, references, table and legends for illustrations and font type and size 'Times New Roman 12'. Begin each of the following sections on a separate paper. Number pages consecutively.

The standard layout of a manuscript:

- Title page
- Abstract, including Keywords
- Introduction
- Methods
- Results
- Discussion
- Acknowledgements
- Funding
- List of references
- Tables & Figures
- Illustrations

The pages should be numbered in the bottom right-hand corner and the title page being page one, etc. Start each section on a separate page.

Title page:

A separate page which includes the title of the paper. Titles should be as short and concise as possible (containing not more than 50 characters). Titles should provide a

reasonable indication of the contents of the paper. This is important as some search engines use the title for searches. Titles in the form of a question, such as 'Is drinking frequent coffee a cause of pancreatic carcinoma?" may be acceptable.

The title page should include the name(s) and address(es) of all author(s). Details of the authors' qualifications and post (e.g., professor, consultant) are also required. An author's present address, if it differs from that at which the work was carried out, or special instructions concerning the address for correspondence, should be given as a footnote on the title page and referenced at the appropriate place in the author list by superscript numbers ([1, 2, 3] etc.) If the address to which proofs should be sent is not that of the first author, clear instructions should be given in a covering note, not on the title page.

Abstract:

The 'Abstract' will be printed at the beginning of the paper. It should be on a separate sheet, in structured format (Introduction/Background; Methods; Results; and Conclusions) for all Clinical Investigations and Laboratory Investigations. For Reviews and Case Reports, the abstract should not be structured. The Abstract should give a succinct account of the study or contents within 350 words. The results section should contain data. It is important that the results and conclusion given in the 'Abstract' are the same as in the whole article. References are not included in this section.

Keywords:

Three to six keywords should be included on the summary page under the heading Keywords. They should appear in alphabetical order and must be written in United Kingdom English spelling.

Introduction:

The recommended structures for this section are:

- Background to the study/Introduction
- What is known/unknown about it
- What research question / hypothesis you are interested in
- What objective(s) you are going to address

The introduction to a paper should not require more than about 300 words and have a maximum of 1.5 pages double-spaced. The introduction should give a concise account of the background of the problem and the object of the investigation. It should state what is known of the problem to be studied at the time the study was started. Previous work should be quoted here but only if it has direct bearing on the present problem. The final paragraph should clearly state the primary and, if applicable, secondary aims of the study.

Methods:

The title of this section should be 'Methods' - neither 'Materials and methods' nor Patients and methods'. The Methods section should give a clear but concise description of the process of the study. Subjects covered in this section should include:

- Ethics approval/license
- Patient/population
- Inclusion/exclusion criteria
- Conduct of the study
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Ethical clearance:

Regardless of the country of origin, all clinical investigators describing human research must abide by the Ethical Principles for Medical Research Involving Human Subjects outlined in the Declaration of Helsinki, and adopted in October 2000 by the World Medical Association. This document can be found at: http://ohsr.od.nih.gov/guidelines/helsinki.html. Investigators are encouraged to read and follow the Declaration of Helsinki. Clinical studies that do not meet the Declaration of Helsinki criteria will be denied peer review. If any published research is subsequently found to be non-compliant to Declaration of Helsinki, it will be withdrawn or retracted. On the basis of the Declaration of Helsinki, the Green Life Medical Journal requires that all manuscripts reporting clinical research state in the first paragraph of the 'Methods' section that:

- The study was approved by the appropriate Ethical Authority or Committee.
- Written informed consent was obtained from all subjects, a legal surrogate, or the parents or legal guardians for minor subjects.

Human subjects should not be identifiable. Do not disclose patients' names, initials, hospital numbers, dates of birth or other protected healthcare information. If photographs of persons are to be used, either take permission from the person concerned or make the picture unidentifiable. Each figure should have a label pasted on its back indicating name of the author at the top of the figure. Keep copies of ethics approval and written informed consents. In unusual

circumstances the editors may request blinded copies of these documents to address questions about ethics approval and study conduct.

The methods must be described in sufficient detail to allow the investigation to be interpreted, and repeated if necessary, by the reader. Previously documented standard methods need not be stated in detail, but appropriate reference to the original should be cited. However, any modification of previously published methods should be described and reference given. Where the programme of research is complex such as might occur in a neurological study in animals, it may be preferable to provide a table or figure to illustrate the plan of the experiment, thus avoiding a lengthy explanation. In longitudinal studies (case-control and cohort) exposure and outcome should be defined in measurable terms. Any variables, used in the study, which do not have universal definition should be operationalised (described in such terms so that it lends itself to uniform measurement). Where measurements are made, an indication of the error of the method in the hands of the author should be given. The name of the manufacturer of instruments used for measurement should be given with an appropriate catalogue number or instrument identification (e.g. Keyence VHX-6000 digital microscope). The manufacturer's town and country must be provided, in the case of solutions for laboratory use, the methods of preparation and precise concentration should be stated.

Single case reports:
Single case reports of outstanding interest or clinical relevance, short technical notes and brief investigative studies are welcomed. However, length must not exceed 1500 words including an unstructured abstract of less than 200 words. The number of figures/tables must not be more than 4 and references more than 25.

Animal studies:
In the case of animal studies, it is the responsibility of the author to satisfy the board that no unnecessary suffering has been inflicted on the animal concerned. Therefore, studies that involve the use of animals must clearly indicate that ethical approval was obtained and state the Home Office License number or local equivalent.

Drugs:
When a drug is first mentioned, it should be given by the international non-proprietary name, followed by the chemical formula in parentheses if the structure is not-well known, and, if relevant, by the proprietary name with an initial capital letter. Dose and duration of the drug should be mentioned in sufficient details. If the drug is already in use (licensed by appropriate licensing authority), generic name of the drugs should preferably be used followed by proprietary name in brackets.

Present the result in sequence in the text, table and figures. Do not repeat all the data in the tables and/or figures in the text. Summarize the salient points. Mention the statistics used for statistical analysis as footnote under the tables or figures. Figures should be professionally drawn. Illustration can be photographed (Black and White glossy prints) and numbered.

Discussion and Conclusion:
Comments on the observation of the study and the conclusion derived from it. Do not repeat the data in detail, already given in the results. Give implications of the findings, their strengths and limitations in comparison to other relevant studies. Avoid un-qualified statements and conclusions which are not supported by the data. Avoid claiming priority. New hypothesis or implications of the study may be labeled as recommendations.

Letters are welcome. They should be typed double-spaced on side of the paper in duplicate.

References:
References should be written in Vancouver style, numbered with arabic numerals in the order they appear in the text. The reference list should include all information, except for references with more than six authors, in which case give the first six names followed by et al.

Examples of correct forms of references:
Dorababu M, Prabha T, Priyambada S, Agrawal VK, Aryaa NC, Goel RK. Effect of Azadirachta indica on gastric ulceration and healing of bacopa monnierang in experimental NIDDM rats. *Indian J Exp. Biol 2004; 42: 389-397.*

Chapter in a book:
Hull CJ. Opioid infusions for the management of postoperative pain. In: Smith G, Covino BG, eds. Acute Pain. London: Butterworths. 1985,1 55-79.

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Any reader can provide feedback regarding published articles by writing letter to editor. The reader can also share any opinion in relation to medical science.

Professor M.A. Azhar
Editor-in-chief
Green Life Medical College Journal and
Principal
Green Life Medical College

ABOUT THE COLLEGE

INTRODUCTION

In 2005, about fifty distinguished physicians of the country started a hospital to give specialized care in the private sector. They named it Green Life Hospital and it turned out to be a great success. So in 2009, they decided to establish a medical college which will be a non-government, non-profit, self-financing project and will serve the humanity.

This College came into existence in 2009. The college commences its activities with the enrollment of 51 students in the 1st batch in 2010. Since inception, the college has undergone tremendous development and became a splendid centre for learning and development. At present we are enrolling 110 students each year. Among them, numbers of seats are reserved for overseas students.

We continue to evaluate and improve our programme to ensure the best medical education for the students. Our educational strategy is to create a conducive learning environment and to steer our students to acquire adequate knowledge, skills and temperament to practice medicine and be a competent health care professional group.

Green Life Medical College (GMC) is approved by the Ministry of Health and Family Welfare (MOHFW), Government of Bangladesh and Bangladesh Medical and Dental Council (BMDC) and affiliated to the University of Dhaka.

AIMS AND OBJECTIVES OF THE COLLEGE

Aims:

To create a diverse and vibrant graduate scholars in medical discipline and to create highly competent and committed physicians for the country.

Objectives:

- To provide an appropriate learning environment where medical students can acquire a sound theoretical knowledge and practical skills with empathetic attitude to the people.
- To carry out research in medical sciences to scale up the standard of medical education in the country.

LOCATION

The campus is located at 31 and 32, Bir Uttom K. M. Shafiullah Sarak (Green Road), Dhanmondi, Dhaka. The location is at the heart of the mega city Dhaka and is facilitated with very good communication networks.

The Medical College and the Hospital complexes have been raised in a multistoried fully air-conditioned building with an arrangement of approximately 500 patients. The building is equipped with state-of-the-art infrastructure, excellent with an out-patient department and adequate in-patient facilities.

Clinical Audit for Standardized Patients' Management and Their Compliances

At the moment people are much concern about the quality of care provided to the patients and the standard of the care giver. The society has become more vigilant and critical about the standard of patients outcome. As a care giver we should attempt all the process to give best quality care to our patients and clinical audit is the process that supports continuous quality improvement programs.

Clinical audit is a quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and the implementation of change. Aspects of the structure, process and outcome of care are selected and systematically evaluated against explicit criteria. Where indicated changes are implemented at an individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery. [1]

Clinical audit aims to improve the quality of patient care by examining current practice and modifying it where necessary. This is done by assessing how patients are managed in comparison to local or national standards. A good audit will identify any problem in patient care and lead to effective changes that result in sustained quality improvement.[2]

In 2016 National Health Service (NHS) in England published a new definition for clinical audit as "Clinical audit is a way to find out if healthcare is being provided in line with standards and lets care providers and patients know where their service is doing well and where there could be improvements. The aim is to allow quality improvement to take place where it is most helpful and will improve outcomes for patients. Clinical audits can look at care nationwide (national clinical audits) and local clinical audits can also be performed locally in trusts, hospitals or GP practices anywhere healthcare is provided".[3.]

Clinical audit supports clinicians to make sure their patients get the best care possible. It can provide evidence of the need for organizational change, government policy change, and or extra funding requirements to support health practices.

Multidisciplinary audits marked the change from "medical" to "clinical" audits. The later incorporation of quality assurance tools (standard setting, data collection, recording and reporting performance, and making improvements) advanced the clinical audit to its present status as a quality improvement tool.[4]

Aim of the audit is to highlight the discrepancies between actual practice and standard in order to identify the changes needed to improve the quality of care.

Clinical audit evaluate the current clinical practice in terms of process or outcome, and suggestions for improvement and applied, and then the cycle can begin again.[5]

In the United Kingdom, doctors in the first two years after graduation are asked to perform an audit. Audit measures practice against standards.[6]

In clinical audit, the topic or problem to be selected to audit should be in high volumes of work; high costs in terms of health and/or economic, high risk, high variability, high complexity and high innovation.

Therefore, if we could introduce the clinical audit in our health institutes and organizations, we could analyze and compare performance indicators and outcomes and highlight the potential problems areas within an organization.

Prof. Dr. Ashraf Uddin Ahmed
Department of Community Medicine
Green Life Medical College, Dhaka

Journal of Green Life Med. Col. 2019; 4(2): 66

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ORIGINAL ARTICLE

Knowledge Regarding Health Effects of Exposure to Secondhand Smoke from Cigarettes: A Cross-sectional study of Bangladeshi Young Adults

SULTANA R[1], IMTIAZ KS[2], CHOUDHURY S[3]

Abstract

Introduction: *Secondhand smoke (SHS) is now firmly established as a significant cause of morbidity and mortality. Assessment of young adults' knowledge of the health effects of SHS may promote educational endeavors to increase awareness of the SHS-linked health effects and to facilitate interventions. The study, therefore, assessed the level of knowledge regarding health effects of exposure to secondhand smoke from cigarettes and its associated factors.*

Methods: *This cross-sectional descriptive study was conducted among 656 young adults in two districts under Dhaka division of Bangladesh. The study used a multistage cluster random sampling approach. Knowledge was assessed by a semi-structured, interviewer-administered questionnaire and categorized using predefined scores of poor (<mean - 1 SD), average (mean ± 1 SD) and good (>mean + 1 SD). Univariate and bivariate statistical analysis were done as appropriate. Multivariate linear regression was done to examine the association between SHS related knowledge and other covariates.*

Results: *The majority (74.7%)of the respondents had average knowledge regarding health effects of exposure to secondhand smoke from cigarettes while 14% had poor knowledge, and 11.3% had good knowledge.Overall knowledge was found to be significantly higher ($p < 0.001$) among 15–19 years respondents. Respondents from higher educational background (9 or more years education), males and students demonstrated significantly greater score in terms of knowledge ($p < 0.001$). On linear regression analysis, knowledge scores correlated strongly with education, age, marital status and sex.*

Conclusion: *The overall level of knowledge regarding health effects of exposure to SHS from cigarettes among Bangladeshi young adults is average. To prevent adverse health effects among children and adults there is an urgent need for coordinated educational campaigns with a prioritized focus on less educated groups.*

Key words: *Secondhand smoke, Knowledge, Health effects, Young adults.*

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Introduction:

Secondhand smoke (SHS), the smoke generated by active smokers, remains a widespread health hazard worldwide.[1] According to the World Health Organization (WHO), more than 600,000 people die of secondhand smoke (SHS) each year.[2] Exposure to SHS has been shown to be associated with many adverse health effects among children and adults. It is now fact that SHS causes lung and nasal sinus cancer, acute stroke, and ischemic heart disease in adults, and lower respiratory infections (croup, bronchitis, bronchiolitis, pneumonia), onset of asthma and worsening of asthma, reduced lung function, middle ear disease, eye and nasal irritation, reduced birth weight and Sudden Infant Death Syndrome (SIDS) in children.[3,4]

According to the WHO Framework Convention on Tobacco Control (FCTC), many countries are making efforts to protect their citizens from the damage caused by exposure to secondhand smoke.[5] In order to prevent the harmful effects of SHS, since 2005, non-smoking areas in

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public places, such as public facilities, resting places, and restaurants, have continued to expand in Bangladesh.[6] It is also important to inform both smokers and non-smokers about the risks of SHS. Studies have shown that smokers are more likely to quit smoking as their knowledge of SHS increases;[7] furthermore they avoid exposing people around them to smoke when they are aware of it risks.[8]

In Bangladesh, SHS is recognized as a principal source of indoor air pollution and a major public health problem. The GATS-Bangladesh report shows that 43% and 39% of adults are exposed to secondhand smoke at their workplaces and in their homes, respectively.[9] However, we know little about the extent to which young adults are aware of the risks of SHS and in our country and there is limited research on level of knowledge regarding health effects of SHS among them. Although many efforts have been made under the Information, Education, and Communication (IEC) programs in Bangladesh, there is still a need for additional research to understand the knowledge of secondhand smoking-health effects. The purpose of this study was to determine the level of knowledge regarding secondhand smoke related health effects and its associated factors to inform IEC programs on reducing exposure to secondhand smoke.

Methods:

Study area and population

This community-based cross-sectional study was done in four areas of Dhaka division, such as Bhuapurupazila of Tangail district and Tangail Sadar, Belaboupazila of Narsingdi district and Narsingdi Sadar. Both the districts are part of Dhaka division. Respondents were recruited for the study from the four study areas, specifically aiming at young adults aged 15-24 years who met the eligibility criteria of the study.

Procedures

A multistage cluster random sampling approach was adopted. Tangail and Narsingdi districts were selected from 17 districts of Dhaka division by random-sampling method. Bhuapur and Belaboupazilas were chosen randomly from each of the two districts. One village was selected randomly from each upazila to represent the rural community and the Sadar upazila (district headquarters) of that district was taken to stand for the urban context. A systematic sampling method was used for selecting both urban and rural households.

At 95% confidence level with 5% relative precision, the estimated sample-size was 656 young adults. The sample size was divided according to the proportionate distribution of population in each district. So, the sample size included 406 respondents from Tangail district and 250 from Narsingdi district. Only households having at least one young adult male or a female respondent aged 15-24 years were considered provided the respondents agreed to participate in the study. Respondents who were extremely ill, mentally handicapped, or unwilling to participate were excluded from the study.

The questionnaire was developed in English. It was first translated in Bangla (National language of Bangladesh) and then retranslated in English. Bangla version of the questionnaire was used for data collection. Questionnaire was pretested in a community with similar demographic characteristics to the four study communities. The trained data-collectors collected data through face-to-face interviews with the study subjects. Written informed consent was obtained from participants who were aged over 18 years and from parents or legal guardians for those who were aged less than 18 years. The study was approved by the Bangladesh Medical Research Council (BMRC).

Measures

Knowledge about health effects of secondhand smoke exposure: A total of 16 items were included in the knowledge section which included eight questions about SHS-related health effects among adults and eight questions about SHS-related health effects among children. The respondents were asked to indicate on a five-point Likert scale to what degree they agreed with each statement: strongly agree, agree, neutral, disagree, and strongly disagree. Each positive response (strongly agree and agree) was assigned a score of '1', and each negative response as a score of '0'. For the sixteen knowledge related questions the maximum attainable score was '16' and the minimum score was '0'. Scores of correct answers were added and their mean ± SD were calculated. The level of knowledge was classified according to each respondent's score. Poor knowledge corresponded to a score of (<Mean – 1 SD); average knowledge corresponded to a score between (Mean ± 1 SD); good knowledge corresponded to a score of (>Mean + 1 SD).

Data editing and statistical analysis

Data were analyzed performed using SPSS software (version 20, SPSS Inc., Chicago, IL, USA).

Descriptive statistics in terms of mean, standard deviation and frequencies were used. Furthermore, independent t test was used to compare the means of two groups and one way analysis of variance (ANOVA) was used to

compare the means of more than two groups. Multivariable linear regression modelling was applied to determine the variable associated with health effects regarding SHS related knowledge. All associations were considered significant at the alpha level of 0.05.

Results

For the total 656 respondents, the mean (±SD) age was 18.56 ± 3.03 years. Among them, a male (n = 508, 77.4%) preponderance was observed. A higher proportion of the subject (60.1%) lived in rural area. Most of them (75.6%) had 9 years or more education while 22.3% of them had 1 year to 8 years education. Professionally, majority (68.1%) of them was students. More than half (56.7%) of family had monthly income >10000 taka followed by 40.2% in the range of 5000 to 10000 taka.(Table 1)

Table 1

Characteristics of the respondents (N = 656)

Variables	Number	Percentage
Age of the respondents (years)	Mean ± SD(18.56 ± 3.025)	
15 - 19	424	64.6
20 - 24	232	35.4
Area		
Rural	394	60.1
Urban	262	39.9
Gender		
Male	508	77.4
Female	148	22.6
Marital status		
Never married	537	81.9
Married/divorced	119	18.1
Educational Status		
No education	14	2.1
1 year to 8 years education	146	22.3
9 years or more education	496	75.6
Occupation		
Unemployed and housewife	68	10.4
Student	447	68.1
Other occupation (Business, service, day labour, farmer)	141	21.5
Monthly household income		
<5000 taka	20	3.0
5000 to 10000 taka	264	40.2
>10000 taka	372	56.7

Results are expressed as number (%) and mean ± SD

Overall, respondents were strongly agreed or agreed that exposure to SHS causes breathlessness (91.9%), coughing (93.6%), asthma (70%), chest infections or bronchitis (38.3%) in adults. Respondents also agreed that SHS makes adult more likely to suffer from cancer (85.1%), raises the risk of heart attack (61.3 %) and stroke (28.4%) and makes adults less fit than they used to be (64.8%). Regarding the health effect of SHS on children a vast majority of the respondents strongly agreed or agreed that SHS causes breathlessness (91.6%) and coughing (92.1%) in children. In case of cancer, asthma, and bronchiolitis the response was 82.6%, 62.8% and 37.3 % respectively. Only 6.1 % agreed that SHS causes low birth weight baby. But none of the respondents agreed that it can lead to ear infection in children.

The knowledge distribution of the respondents regarding health effects SHS is shown in Figure1. The mean (±SD) knowledge score of the respondents was 9.64 ± 3.37. Among the respondents the levels of knowledge were poor in 14%, average in 74.7% and good in 11.3% of the respondents.

The one way analysis of variance (ANOVA) showed significant differences between the mean scores for knowledge in the various categories for the covariates, namely education and occupation. The level of education positively correlated with knowledge scores ($p < 0.05$). Independent t-test revealed that age and sex does have an effect on knowledge scores.

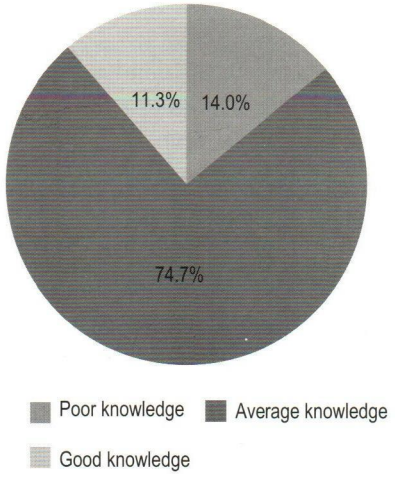

Fig.-1: *Level of knowledge regarding health effects of SHS among respondents*

Table-II

Comparison between mean knowledge scores of the respondents according to different variables (n= 656)

Variables		Knowledge Score
Age (years)	15 - 19	9.67 ± 3.08
	20 - 24	9.60 ±3.84
	t/p value[a]	0.287/0.001
Sex	Male	9.88 ±3.11
	Female	8.85 ± 4.05
	t/p value[a]	2.846/0.001
Area	Rural	9.73 ± 3.29
	Urban	9.52 ± 3.48
	t/p value[a]	0.756/0.502
Marital status	Unmarried	10.01 ± 2.10
	Married/divorced	8.02 ± 4.34
	t/p value[a]	4.751/0.001
Education	No education	3.57 ± 4.43
	1 year to 8 years education	8.17 ±4.11
	9 years or more education	10.25 ±2.73
	F/p value[a]	51.712/0.001
Monthly family income	<5000 taka	9.45 ± 3.10
	5000 to 10000 taka	9.32 ± 3.37
	>10000 taka	9.88 ± 3.36
	F/p value[a]	2.248/0.106
Occupation	Unemployed and housewife	8.26 ± 4.57
	Student	10.17 ± 2.70
	Other occupation (Business, service, day labour, farmer)	8.63 ± 4.13
	F/p value[a]	18.583/0.001

[a]For categorical variables p-values were obtained by doing independent samples t-test and ANOVA where appropriate.

Multiple linear regressions for the total knowledge scores on covariates identified in the bi-variates analysis showed several significant (adjusted) associations. Table 3 shows the results for the knowledge score. Regression analysis showed that the knowledge score is associated with education, age, marital status, and sex when knowledge was put as a dependent variable and the covariates of age, sex, level of education, marital status as independent variables. (Table-III).

Table-III

Association of socio-demographic characteristics with Knowledge

Dependent variable: Knowledge**				
	b [1*]	Standard error	Beta [2*]	*P*
(Constant)	4.369	1.058		.000
Age	.804	.283	.114	.005
Sex	-.646	.301	-.080	.032
Marital status	-1.073	.387	-.123	.006
Education in years	2.274	.273	.330	.000

* [1=Unstandardized sample regression co- efficient; 2 = Standardized sample regression co- efficient]

** Adjusted Ra^2 for Knowledge - 15.5%,

Discussion:

The findings of the study presented impressive results regarding health effects of exposure to secondhand smoke with 74.7% and 11.3% of respondents having average and good knowledge respectively. While general knowledge regarding health effects of exposure to secondhand smoke was high, specific knowledge of associated health risks was minimal. Still there are some loops to be filled like more than 90% of the respondents were unaware of the association of secondhand smoking with low birth weight baby[10] and none of the respondents were aware of the association of secondhand smoking with otitis media. This is an important finding as both low birth weight baby (prevalence in Bangladesh is 26.2%, OECD Health Data 2012; UNICEF Child info, World Bank, World Development Index) and otitis media are important health problems prevalent in this part of the world and exposure to SHS is well known preventable cause for these conditions

The commonality in the most correctly agreed statements among both the adult and children sections is that they pertain to medical conditions involving the respiratory system, such as lung cancer, asthma, bronchitis, croup, and pneumonia. There are several possible reasons that most respondents associated SHS exposure with respiratory problems. One possibility is that these are the most well-documented, and therefore well publicized, effects of SHS. When the effects of SHS first were being studied, research was focused on lung cancer and other respiratory problems. As the results became known, they became a focus of public attention. Another reason many of the respondents knew SHS caused respiratory problems is because many people have experienced them from being exposed to SHS. Many non-smokers and even smokers have walked into a smoke-filled room or been next to a

person that was smoking and have had to cough or have had trouble breathing. It is these reactions that cause people to associate cigarette smoke with respiratory conditions.

Eighty-five percent of respondents knew cancer were associated with SHS. This result is very similar to the previous study conducted in Great Britain in 2002, where 86% of the respondents answered correctly that SHS was associated with lung cancer[11]and finding of the study by Abdullah et al.[12] Perhaps the association between SHS and lung cancer is well known because many people affiliate lung cancer with smoking cigarettes and they realize that the same smoke that causes a smoker to develop lung cancer can be breathed in by a non-smoker. Also, recent television advertisements warning people of the effects of SHS have focused on lung cancer as the primary detrimental effect of SHS.

It is evident that the difference in the knowledge levels among all respondents is directly related to the level of literacy. According to a previous study, knowledge of the dangers of SHS exposure for women and children was high among employed Jordanian women with higher education[13], which is consistent with our findings. It should be noted that we also observed a gender gap in knowledge, males showed significantly higher levels of knowledge. The findings consistent with a study done by Lee et al,[14]where a wide gender gap was evident in knowledge, regarding SHS.

Conclusion:

The overall level of knowledge regarding health effects of exposure to SHS from Cigarettes among Bangladeshi young adults is average. To prevent adverse health effects of SHS among children and adults there is an urgent need for coordinated educational campaigns with a prioritized focus on less educated groups.

Funding

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ORIGINAL ARTICLE

Craniofacial Anthropometric Profile of Bangladeshi Manipuri Adult Females

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Abstract

Introduction: *Craniofacial indices are very useful anthropometric tool to find out racial and sexual differences. It gives a hint to genetic transmission of inherited characteristics from parents to their progeny. The aim of this study was to assess the craniofacial indices of Manipuri adult females. To calculate the selected indices from the head, face, nose, ear and their morphometric types on the basis of respective craniofacial indices was determined.*

Methods: *The present study was observational, cross-sectional with descriptive and some analytical components and carried out in the Department of Anatomy, Bangabandhu Sheikh Mujib University (BSMMU), Dhaka. A sample population was total 130 adult Bangladeshi Manipuri females drawn from the Madhavpur village of the Kamalganj Police Station in Maulavibazar district of Sylhet, Bangladesh. Total eight craniofacial measurements such as maximum cranial length, maximum cranial breadth, morphological face height, maximum facial breadth, nasal length, nasal breadth, left ear length and left ear width were measured directly from the subjects by using a spreading caliper and slide caliper. Cranial, facial, nasal and auricular indices were then calculated.*

Results: *The Manipuri females have mostly brachycephalic head, hyperleptoprosop face, mesorrhine nose and medium ear.*

Conclusions: *The present study can provide the essential framework for the selected craniofacial measurements in Bangladeshi Manipuri adult female population. These could be useful in forensic examination as well as in plastic and reconstructive surgery of the head and face.*

Keywords: *Anthropometry, cephalic, facial, nasal and auricular indices.*

Journal of Green Life Med. Col. 2019; 4(2): 73-76

Introduction:

A physical variation between the people of different ethnic groups is usually markedly remarkable. In case of ethnic diversity, there is a remarkable coexistence among the people. Craniofacial anthropometry is a technique used in physical anthropometry comprising of precise and systematic measurement of the human body and skeleton. Anthropological study not only assists in understanding the frequency distribution of human morphologies but also in providing the basis for a comparison among different races.[1] It can also be used to identify the gender of individuals. For determining the dimensions of the head and face that are used for studying the development of the brain, paranasal sinuses, teeth and face, craniofacial anthropometry is very much important.[2] Sex, shape and form of individuals are closely related with each other and manifestation of the internal structure and tissue components are influenced by environmental and genetic factors.[3] Cephalometry is useful in identification of individuals, head and face reconstructive surgery, plastic surgery, oral and maxillofacial surgery, orthodontics and clinical diagnosis and treatment planning. The determination of facial parameters plays an important role in the evaluation of facial trauma, congenital and traumatic deformities and easier identification of certain congenital malformations.[4]

Methods:

The present study was carried out among 130 Bangladeshi Manipuri adult females, 25 to 45 years of age in Madhavpur village of the Kamalganj Police Station in Maulavibazar district of Sylhet, Bangladesh. Ethical clearance was taken from the Institutional Review Board (IRB) of BSMMU and written informed consent was taken from all participants.

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The maximum cranial length, maximum cranial breadth, morphological face height, maximum facial breadth, nasal length, nasal breadth, left ear length and left ear width were measured by using spreading caliper and sliding caliper. At first the participants was asked to sit on a chair in a relaxed mood with head in anatomical position.[5] All the measurements were taken thrice to ensure accuracy and the mean of the three readings was taken as the final reading.[6] The physical measurements were taken at a fixed time between 9 am. to 5 pm. to eliminate the discrepancies due to diurnal variations. All the subjects measured were healthy and free from apparent symptomatic craniofacial deformity and there was no evidence of any treatment or surgery of disorders. Each measurement were recorded, tabulated and statistically analysed.

Cephalic, facial, nasal and auricular indices were then calculated and the data collected were recorded and subjected to statistical analysis.

Method of calculation of indices:

The formula is:[7]

$$\text{Cephalic index} = \frac{\text{Maximum cranial breadth (eu – eu)}}{\text{Maximum cranial length (g – op)}} \times 100$$

$$\text{Facial index} = \frac{\text{Morphological face height (n – gn)}}{\text{Maximum facial breadth (zy – zy)}} \times 100$$

$$\text{Nasal index} = \frac{\text{Nasal width (al – al)}}{\text{Nasal height (n – sn)}} \times 100$$

$$\text{Auricular index} = \frac{\text{Ear width (pra – pa)}}{\text{Ear length (sa – sba)}} \times 100$$

Results:

The ranges, mean values, standard deviations and indices of the selected craniofacial measurements are listed in Table 1 and 2. The frequencies of different morphometric types of the head, face, nose and ear of the study population are shown in Figures 1, 2, 3 & 4 based on the relevant indices.

The mean (±SD) of the maximum cranial length, maximum cranial breadth, morphological face height, maximum facial breadth, nose height, nose width, left ear length and left ear width were 17.65 (±0.74), 14.31 (±0.99), 10.72 (±0.45), 12.13 (±0.83), 4.79 (±0.37), 3.45 (±0.24), 5.84 (±0.36) and 2.89 (±0.27) respectively (Table 1). The mean values (±SD) of the cranial, facial, nasal and auricular indices were 81.21 (±6.56), 88.67 (±6.11), 72.69 (±9.49) and 49.54 (±4.82) respectively (Table 2).

Table - I

Selected linear craniofacial measurements (N=130)

Measurement	Value (cm)	
	Range	Mean (±SD)
Maximum cranial length	16.00 – 19.00	17.65 (±0.74)
Maximum cranial breadth	11.00 – 16.00	14.31 (±0.99)
Morphological face height	9.58 – 11.82	10.72 (±0.45)
Maximum facial breadth	11.00 – 15.00	12.13 (±0.83)
Nose height	2.33 – 5.42	4.79 (±0.37)
Nose width	2.64 – 4.00	3.45 (±0.24)
Left ear length	5.02 – 6.77	5.84 (±0.36)
Left ear width	2.24 – 3.93	2.89 (±0.27)

Table-II

Craniofacial indices of the Manipuri females (N=130)

Index	Value (cm)	
	Range	Mean (±SD)
Cephalic index	64.71 – 96.88	81.21 (±6.56)
Facial index	70.00 – 97.84	88.67 (±6.11)
Nasal index	57.80 – 150.70	72.69 (±9.49)
Auricular index	38.79 – 68.38	49.54 (±4.82)

In case of cephalic index, the most common type was 'brachycephalic' (35%) shown in Figure 1 and the next common type was 'mesocephalic' (22%). Nearly half of these Manipuri females had the 'hyperleptoprosop' face type (49%) and the second most common type was 'leptoprosop' (26%) shown in Figure 2. Most of the Manipuri females of the present study have the most common type of nose was 'mesorrhine' (61%) and the second most common was 'leptorrhin' (36%). 'Hyperchamaerrhin' (0%) type of nose was absent in these Manipuri females (Figure 3). The majority of the auricular index of Manipuri females was 'medium ear' (72%) followed by 'long ear' (15%) shown in Figure 4.

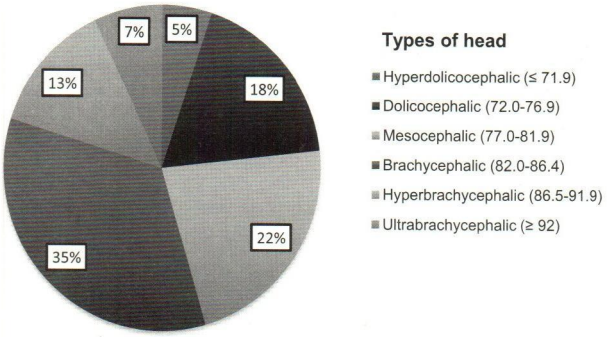

Fig.-1 *Relative percentage frequencies of types of head based on the cephalic index in the Manipuri females (N=130).*

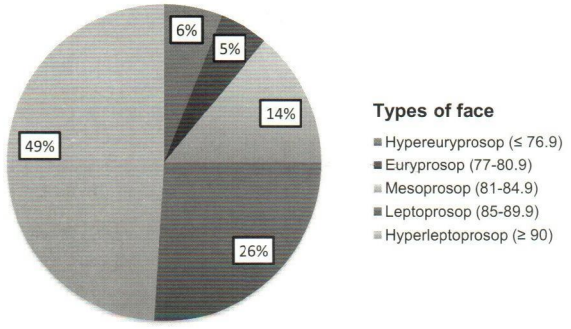

Fig.-2: *Relative percentage frequencies of types of face based on the facial index in the Manipuri females (N=130).*

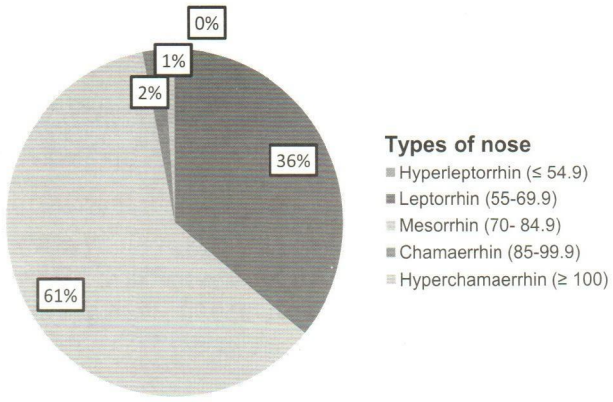

Fig.-3: *Relative percentage frequencies of types of nose based on the nasal index in the Manipuri females (N=130).*

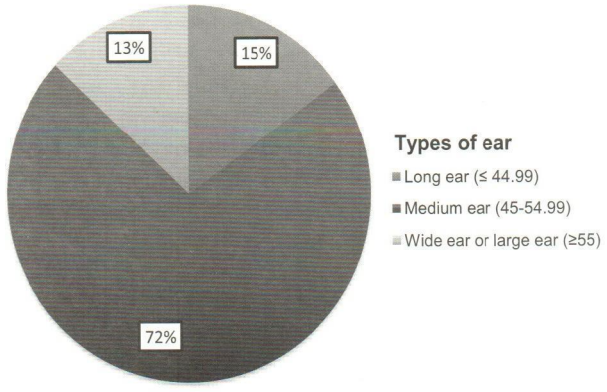

Fig.-4: *Relative percentage frequencies of types of ear based on the ear index in the Manipuri females (N=130).*

Discussion:

In this study, the cephalic index showed that most common type of head of the Manipuri females were brachycephalic (short head). Similar brachycephalic head was found in Mongoloid adult Christian Garo females, Dhaka, Bangladesh.[2] Althouth onge females[8] and Ndi Igbo of Abia state indigenes[1] are Negroid race, they also belong to brachycephalic head. Ngeow and Aljunid [6] reported that Indian females have brachycephalic head. Therefore, Bhasin M.K. 2007 (cited in Mostafa et al. 2013, pp. 3) [9] reported that Mongoloids are brachycephalic to hyperbracycephalic. On the other hand, several authors have suggested that asian people other than Mongoloids are also hyperbrachycephalic to brachycephalic. It may be environmental influences.

In the present study, the facial index showed that nearly half of these Manipuri females had the hyperleptoprosop face (very long face) followed by leptoprosop face (long face). Shah, Koirala & Khanal reported that the undergraduate Medical students of Nepalese origin, Nepal have similar face.[10] However, although Evenks, Mongol and Manchu tribes belong to Mongoloid race, they also showed hyperleptoprosop face to leptoprosop face.[9]

The nasal index of the present study showed that the most common type of nose was mesorrhine (medium nose). In case of Bangladeshi adult chakma females showed majority have mesorrhine nose.[9] According to anthropological studies the shape of the nose can be influenced by environmental climatic condition. Large nasal index indicates broad nose which is related with hot and moist climate and small nasal index indicates narrow nose which is related with cool and dry conditions.[11]

The auricular index of the majority of the Manipuri females of the present study was medium ear. All indices are crucial for the planning and prognosis of orthodontic treatments, as well as anthropometric study, forensic medicine and also genetics.

Conclusion:

The present study showed that the Bangladeshi Manipuri adult females are mostly brachycephalic head, hyperleptoprosop face, mesorrhine nose and medium ear. Lastly, it may be concluded that racial factor, ethnical factor as well as geographical factor can affect the facial form. That's why the people of different racial groups show some similarities; conversely people of similar racial groups show some dissimilarity in the form of facial.

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ORIGINAL ARTICLE

Morbidity Pattern of People Aged above 50 Years in Rural Area of Dhamrai Upazilla

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Abstract

Introduction: *The older population is increasing worldwide and, in many countries, older people will outnumber younger people in the near future. By 2020, Bangladesh is projected to be 1 in 10 countries having largest elderly population. With this demographic change, there has been a rise in incidence of non-communicable diseases and the need for health facilities to be altered accordingly. Current survey was aimed at determining the nutritional status and morbidity pattern of elderly population including their nutritional status of Dhaka district, with emphasis on symptoms of menopause.*

Methods: *A descriptive cross-sectional study was conducted among 527 people aged 50 years and above, residing in Dhamrai Upazilla of Dhaka district from 1st January 2018 to 31st March 2018. Data were collected through face-to-face interview by using a semi structured questionnaire. The collected data were analyzed using computer aided statistical software SPSS (Statistical Package for Social Sciences) Version 22. Descriptive statistics were used in data analysis.*

Results: *Among the respondents, 53.70% were male and 46.30% were female and majority were in 50-54 age group but 5.50% were more than or equal to 80 years of age. Males were engaged mostly in agricultural work (22.58%), while females were housewives (42.88%). Nutritional status was assessed by calculating BMI, which revealed that more than half (61.66%) were within normal range, 9% were underweight, 23% were overweight and 6% were suffering from obesity. The common morbidities reported were arthritis (39.85%), hypertension (33.21%), senile cataract (28.27%) and gastro intestinal disorders (26%). Among the 244 female respondents, only 12% were still menstruating and 88.11% were not menstruating. Among 215 menopausal respondents, 73% experienced symptoms of menopause, while 27% did not. Complaints of the classical symptoms of post menopause were irritated behaviour (30), hot flash (51) and night sweating (33%). Among 157 female respondents who experienced vaginal symptoms after menopause, 23% experienced burning sensation in vagina, 24 experienced dryness in vagina, 13% suffered dyspareunia and 5% had itching in vagina.*

Conclusion: *The most prevalent diseases among the respondents are arthritis, hypertension, senile cataract, gastrointestinal disorder, insomnia and diabetes mellitus. More national health surveys should be conducted regarding non-communicable diseases, to draw importance on non-communicable diseases and their associated risk factors, and make comparisons with national and international databases. Finally, community clinic should be a platform for preliminary detection and treatment for common non-communicable diseases, especially among the elderly people. Based on these findings, it is essential that primary health care system should be reoriented towards early detection and treatment of these common morbidities. Mass awareness through campaigning is necessary for prevention of non-communicable diseases. There should be separate out-patient department for geriatric patient in all the level of health care delivery system in Bangladesh.*

Key words: *Elderly people, morbidity, nutritional status, menopause, menopausal symptoms.*

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Introduction:

The older population is increasing worldwide and in many countries, older people will outnumber younger people in the near future. This projected growth in the older population has the potential to place significant burdens on healthcare and support services. Ageing is an ongoing physiological process. As mortality is declining due to improvements in public health interventions, population ageing has become a worldwide phenomenon. Within 2000-

2030, the population of persons aged 60 years and above worldwide has been projected to increase by about 550 million to 930 million, increasing from 6.9% to 12% worldwide and 6 to 12% in Asia.[1] It is commonly believed that the majority of the elderly population resides in developed countries. About 60% of the 580 million older people in the world live in developing countries, and by 2020, this value will increase to 70%. Bangladesh is projected to be 1 of the 10 countries having largest elderly population. So we can easily assume that if the problems of the elderly are not addressed, it will be a great problem.[2]

The older persons, in Bangladesh, are passing their days amidst the tender care and support mostly provided by their extended families without any remarkable backing from the national level. Geriatric problems are ignored in medical education and profession to some extend. There is a lack of information and research on elderly in health sector. Due to lack of premedical check-up, health education, health care rural elderly people are more prone to suffer in eye, dental and gastro-intestinal diseases. Due to sedentary life style which are led in urban areas non-communicable disease are spreading like epidemics. Like Diabetes mellitus and Hypertension are seen in lots of elderly people. Nutritional status changes due to ageing process as well as these diseases.[3]

Menopause is a natural part of a woman's life. It is a phase when she no longer experiences menstruation, her body begins to produce less progesterone and estrogen, and eventually her periods cease.[4] Menopausal transition are changes in periods, hot flushes and night sweats, problems with vagina and the urinary bladder, changes in sexual desire, sleep problems, mood changes/swings, changes in the body, etc. There are also some serious medical concerns related to menopause, such as the loss of bone tissue that causes osteoporosis, and growing risk of heart disease due to age related increases in weight, blood pressure, and cholesterol levels. Some women have severe symptoms that profoundly affect their personal and social functioning, and quality of life.[5]

The objective of the study was to assess the nutritional status & morbidity pattern of people aged above 50 years and to figure out the proportion and symptoms of menopausal women in rural area of Dhamrai Upazilla of Dhaka District.

Methods:

It was a cross sectional descriptive study which was conducted in the villages of Shutipara, Kelia, Depashai and Shreerampore which were situated in the Upazilla of Dhamrai, Dhaka district. The study was conducted among 527 persons who aged 50 years and above. Non probability purposive sampling was done to select the respondents. The total period of the study was three months: from January to March 2018.

Semi-structured questionnaire was used to collect necessary data. Data were collected by face to face interview by interviewers. After collection, each questionnaire was sorted for its consistency and comprehensiveness. Then the cleaned data were analyzed by using computer aided statistical software SPSS (Statistical Package for Social Sciences) Version 22.

The study purpose was to inform the respondents of Dhamrai Upazilla in such a manner that they were assured of voluntary participation. Written consent was sought from each of the respondents of the study after reading to them the reason of the study. Confidentiality was maintained throughout by ensuring that no name or number would be used that can identify the respondents.

Results:

Figure 1 shows that among 527 respondents,148(28.1%) were in 50-54 age group, 120(22.8%) were in55-59 age group, 91(17.3%) were in 60-64, 66(12.5%) were in 65-69 age group, 46(8.7%) were in 70-74 age group, 27(5.1%) were in 75-75 age group and 29(5.5%) were more than and equal to 80 years of age.

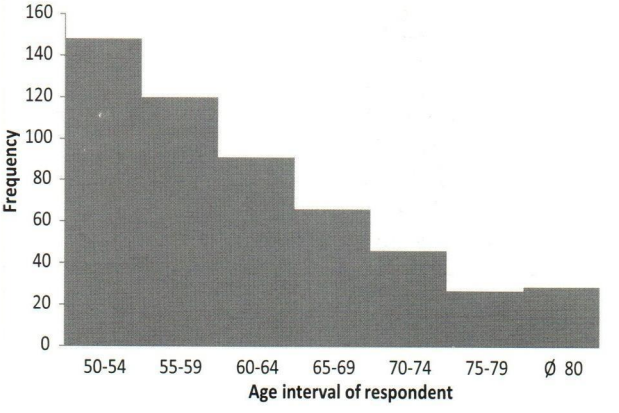

Fig.-1: *Histogram showing the age of the respondents (in completed years)*

Table 1

Socioeconomic status of the respondents (n=527)

Socioeconomic Status		Total	%
Gender	Male	283	53.7%
	Female	244	46.3%
Married		447	84.8
Widow		80	15.2
Educated		322	61.1
Non educated		205	38.9
Working		301	57.12
Housewife		226	42.88

Table 1 shows that out of 527 elderly people 283 (53.7%) were male and 244 (46.3%) were female, 447 (84.8%) were married, 205 (38.9%) were non educated and 301 (57.125%) were still working.

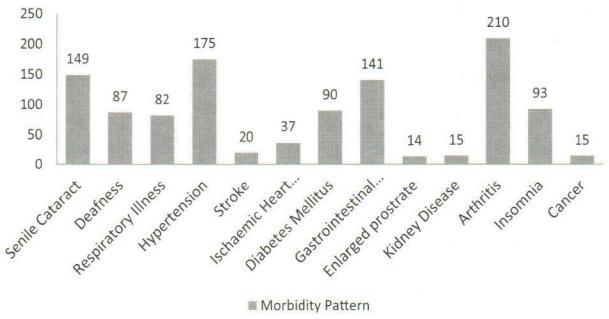

Fig.-2: *Different morbidities among the respondents*

Among 527 respondents, 210(39.85%) of the people were suffering from arthritis, 175(33.2%) people were suffering from hypertension, 149(28.2%) had senile cataract and 141(26.8) suffered from gastro intestinal disorders.

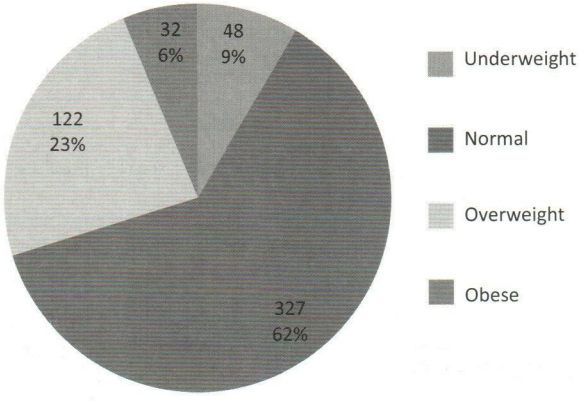

Fig.-3: *Distribution of respondents according to Body Mass Index (n=527)*

Among the total respondents (527), more than half people's (62%) BMI was within the normal range, 9% people were underweight, 23% people overweight and 6% were obese.

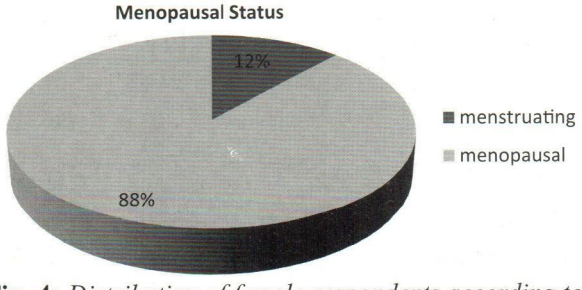

Fig.-4: *Distribution of female respondents according to menopausal status (n=244)*

Figure 4 shows out of 244 female respondents, only 29 (12%) were still menstruating and 215 (88.11%) were not menstruating.

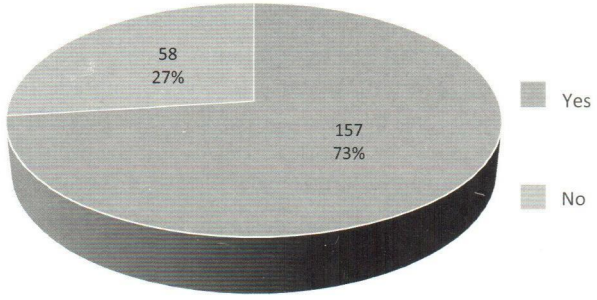

Fig.-5: *Distribution of respondents according to presence or absence of symptoms of menopause (n=215)*

Among 215 menopausal respondents, 73% experienced symptoms of menopause, while 27% did not.

Table II

Distribution of respondents according to presence of various vaginal symptoms (n=157)

Vaginal symptoms	Frequency	Percentage
Burning vagina	36	23
Dry vagina	38	24
Dysperunia	20	13
Itching	8	5
Others	55	35
Total	157	100

Table II shows that among 157 female respondents who experienced symptoms after menopause, 23%experienced burning sensation in vagina, 24% experienced dryness in vagina, 13% dyspareunia,5% itching in vagina and about 35% experienced some other symptoms.

Table-III

Distribution of respondents according to presence of other menopausal symptoms (n=215)

Manopausal symptoms	Yes	%	No	%
Hot flush	110	51	105	49
Irritated behavior	65	30	150	70
Night sweating	71	33	144	67
Urinary problem	116	54	99	46

Table 3 shows that among 215 female respondents who experienced symptoms after menopause, almost half of them experienced hot flush and urinary problem.

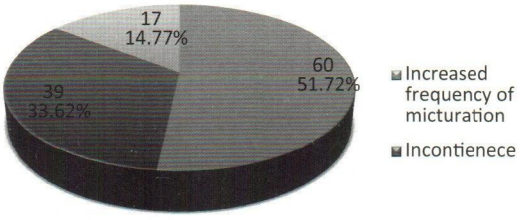

Fig.-6: *Distribution of respondents according to urinary complaints*

Out of 116 respondents who experienced urinary symptoms, almost half (51.72%) experienced increased frequency, 33.62% had incontinence and 14.66% suffered from recurrent UTI.

Discussion:

The objective of this survey was to determine the nutritional status and morbidity of people aged above 50 years. This study also included menopausal women.

Most of the respondents, 148(28.1%) were in 50-54 age group, and least number of people 27(5.12%) were in 75-79 age group, and all the respondents were at or above 50 years of age.

Among 527 respondents, more than half were male 283(53.7%), and 244 (46.30%) were female. In this study 38.89% were not educated or were illiterate. However, in a study conducted by Md. Rakibul Islam in a rural area of Bangladesh, 61% elderly were illiterate.[6] This was much higher than the study finding.

In this study, it was revealed that 61.66% of the respondents were within the normal range of BMI. In a study conducted in rural community of Bangladesh, in 2010, it was seen that 32% had normal BMI[6]. This is much lower than this study. Present study revealed that 8.53% were underweight, compared to the 24% who were underweight in the study conducted in 2010 whereas for overweight, it was 23.19% in this study but in 2010, it was found 44%.[7] Thus, distribution of underweight and overweight were significantly higher than the present study. A similar comparison can be drawn with another study done among the elderly residents of old age home in Jodhpur, Rajasthan, where 33.9% were normal, 21.4% were underweight and 44.7% were overweight[8] so distribution of underweight and overweight were also significantly higher than present study.

Among the respondents, prevalence of arthritis was 39.85%, whereas in another study in Bangladesh, in 2011, prevalence of arthritis was 57.5%[9] which was much higher. Comparing with a study from Wardha district, 15.6% respondents had arthritis[10] which was much lower than the present study. In case of hypertension, present study revealed that 33.21% respondents had hypertension. Very close findings were observed in a study conducted in South Korea (37.5%)[11] and in a study in rural Bangladesh in 2011 (38.7%)[9]. However, in Wardha district, the study showed significantly lower results (5.2%)[10]. In this study, 28.27% respondents had senile cataract, which was very similar to the 30% found in the study conducted in Wardha district[10].

In this study out of 244 female respondents, 88.11% had reached menopause and 11.89% were still menstruating. Among 215 menopausal female respondents, 51.16% complained of hot flushes. Comparing with other studies, hot flushes were found in Hyderabad (66.3%)[12], in rural West Bengal (60%)[13], which are higher than the findings of the present study, whereas in rural Amritsar (35.8%)[14] and in Egypt (29%)[15], it is found to be lower than this study findings.

In this study, 32.56% suffered from night sweats, which is similar to the 35.80% in rural Amritsar[14] whereas in rural West Bengal findings were 47%[13] which is higher than the present study.

Another classical symptom of menopause is irritated behaviour, which was found among 30.23% of the respondents. In rural Amritsar, 36% complained of feeling irritability[14] which is quite similar while in Jamnagar, 56% complained of feeling irritability[16] which is much greater than findings of the present study.

In this study, 24% experienced dryness in the vagina while in rural Amritsar (36%)[14], rural West Bengal (26%)[13], and in Jamnagar (23%)[16] reported such complaints which are more than this study.

Poomala and Arounassalame in Puducherry found that 10.8% of the women experienced feeling of dryness during intimate encounters.[17]this is similar to our findings of dyspareunia among 13% respondents.

Conclusion:

Almost half of the respondents are within the age group 50-58 years. Few of them are uneducated. Majority of the male are engaged in agricultural work and female are engaged in household work. More than half of the people have the BMI within normal range and they are non-smokers. The diseases that are most prevalent among the

respondents are in the following order: arthritis, hypertension, senile cataract, gastrointestinal disorder, insomnia and diabetes mellitus. Majority of the female respondents are in menopausal stage. Approximately half of them were suffering from hot flush and night sweating and very few of them had the history of hysterectomy.

Recommendation:

A large portion of people do not measure blood pressure or blood glucose levels and hence a large portion of population with hypertension and diabetes remain undetected. So, primary health care system should be reoriented towards early detection and treatment of these common problems. Mass awareness through campaigning is necessary for prevention of non-communicable diseases. More national health surveys should be conducted regarding non-communicable diseases, to draw emphasis on non-communicable diseases and their associated risk factors, and make comparisons with national and international databases. Utilize community clinic as a platform for early detection and treatment for common non-communicable diseases, especially among the elderly.

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ORIGINAL ARTICLE

Knowledge, Attitude and Practice of Prevention of Chikungunya among the Resident of Dhaka City

CHOWDHURY N.S[1], CHOWDHURY N.N[2]

Abstract

Introduction: *Chikungunya is a known vector borne disease. Mosquito Aedes are responsible for causing it. It is noted early in many countries. The objective of this study is to find out the knowledge about Chikungunya fever which is an infection cause joints pain last for weeks, months or sometimes even years; attitudes towards illness and practices of mosquito net along with the socio-demographic variables of the resident in a selected area of Dhaka city.*

Methods: *This was a cross-sectional descriptive type study have done with a sample size of 395 respondents at Uttara area within a period of 4 months (November 2017 to February 2018) in Dhaka city.*

Results: *The study result shows, respondents were mostly adults (26.1%) of 20-30 years age group, females more (57.5%), mostly housewives (36.2%), married (68.6%), majorities educational level are SSC (23%), income (31.1%) are within 20000-30000 taka and Muslims 94.2%. Only 21.8% are suffered from Chikungunya. Regarding knowledge of Chikungunya, respondents had agreed (90.9%) caused by mosquito bites. Bite by Aedes mosquitoes (49.1%), others (50.9%). Daytime bite (54.4%) and (45.6%) at night. Stagnant water (51.39%) was the breeding places, usually in rainy season (54.2%). Common symptoms were fever (86.6%) and joint pain (10.6%). Regarding attitudes, respondents have awareness about government program (74.7%), got information (64.8%) from television, (12.7%) from newspaper and social media. Majority had agreed it is a serious disease (74.9%) and can be preventable (74.93%), management (44.8%) can be done both by government and people together. Regarding practices, majority (89.1%) do regular check in mosquito breeding sites in and around their houses. They did not preserve (90.9%) water to collect in tiers or broken utensils. They had used bed nets (75.7%) for personal protection. Mostly had bed nets (95.9%) but only (19.5%) do sleep under it at daytime, whereas (80.5%) do not use it at day time.*

Conclusion: *From the findings, conclusion seems respondents have lots of awareness about Chikungunya. It is totally a preventable and curable disease. We just need to practice using mosquito nets and cleaning our surroundings, homes and environment.*

Key Words: *Chikungunya fever, Mosquito, Mosquito net, Knowledge, attitude and practice.*

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Introduction:

Chikungunya virus or the CHIK virus in short, is an RNA virus that belongs to the Alphavirus genus of the Togaviridae family. The letter comprising a number of viruses that are mostly transmitted by arthropods. Infection with CHIK virus results in Chikungunya fever. The name Chikungunya derives from Kimakonde language meaning "that which bends up", that is to become contoured. The name reflects the stooped appearance of sufferers with arthralgia. The is about knowledge of Chikungunya. Epidemics of fever, rashes and arthritis resembling Chikungunya as fever which recorded as early as in 1824 in India and else where.[1] However, the virus was first isolated in 1952-1953 in Tanzania from both men and mosquitoes during an epidemic of fever that was considered clinically indistinguished from dengue.[2] More outbreaks have subsequently occurred in both Africa and

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Asia. In Asia, CHIK virus strains were isolated in Bangkok in the 1960s [3]; from various parts of India including Vellore, Calcutta and the states of Maharashtra in 1964; Sri Lanka in 1969; Vietnam in 1975; Myanmar in 1975 and Indonesia in 1982.[4] Now time for people to bring positive attitudes and proper practices for prevention of Chikungunya. Clinically it occurs in all ages and both sexes. Following a bite by an infected mosquito, the disease manifests itself after an average incubation period of 2 to 4 days. The disease has an abrupt onset with high fever, myalgia and intense pain in one or more joints. In a study of 876 patients admitted to a hospital in South India during January to September 2006 abrupt onset of fever of short duration(100% of cases),severe and crippling arthritis involving the knees, ankles, wrists, hands and feet (98%) were the most significant clinical manifestations. Bleeding (3%), fulminant hepatitis (2%) and meningo-encephalitis(1%) were the rare manifestations of the disease.[5] In most study, fever and joint pain are almost universal at the onset. Fever was of sudden onset and of high grade (more than 40°C or 104°F) accompanied with chill and rigor. Fever was biphasic or saddle-beck, subsided in two to three days and then comes back after one day; the second phase of fever may associated with relative bradycardia.[6] Fever, in general, tends to last for only three to four days. Ankle, knee wrist were the usual joints that are affected but the involvements and of the small joints of hands and feet were also not uncommon. The joint involvements had two phase: initial severe eruptive arthritis followed later by disabling, protracted peripheral rheumatism that can last for several months.[7,8] In general, the acute phase was severe and incapacitating in all cases with severe pain, tenderness, swelling and stiffness of joints. Skin rashes had been reported in about 40% to 50% of cases, usually appearing between the second and fifth day of onset of fever. Rashes were mostly of the pruriginous maculopapular type on the chest but bullous or other forms can also be seen. Bullous rash with sloughing was more common in children. Maculopapular rash can sometimes be accompanied by petechiae.[9] The acute phase of the Chikungunya fever lasts for 3 to 10 days but the convalescent phase can usually last from weeks to months with accompanying joint pain, swelling and tenderness. Sometimes it can last for even a year or more.[10] The incubation period of the Chikungunya virus ranges from one to twelve days, and was mostly typically three to seven days.[11] The disease may be asymptomatic, but generally was not, as 72% to 97% of those infected will develop symptoms.[11] Characteristic symptoms include sudden onset with high fever,joint pain and rash. Other symptoms may occur, including headache, fatigue, digestive complaints and conjunctivitis.[12] Information gained during recent epidemics suggests that Chikungunya fever may result in a chronic phase as well as the phase of acute illness.[13] Within the acute phase, two stages have been identified: a viral stage during the first five to seven days, during which viremia occurs,[14] followed by a convalescent stage lasting approximately ten days, during which symptoms improve and the virus can not be detected in the blood.[11] Typically, the disease begins with a sudden high fever that lasts from a few days to a week, and sometimes up to ten days. The fever is usually above 39°c or 102°F and sometimes reaching 40°C or 104°F and may be biphasic, lasting several days, breaking and then returning. Fever occurs with the onset of viremia and the level of virus in the blood correlates with the intensity of symptoms in the acute phase.[14] When IgM, an antibody that is a response to the initial exposure to an antigen, appears in the blood, viremia begins to diminish. However, headache, insomnia and an extreme degree of exhaustion remain, usually about five to seven days.[15] Following the fever, strong joint pain or stiffness occurs; it usually lasts weeks or months, but may last for years. The joint pain can be debilitating, often resulting in near immobility of the affected joints.[16] Joint pain is reported in 87-98% of cases and nearly always occurs in more than one joint, though joint swelling is uncommon.[11] Typically the affected joints are located in both arms and legs, and are affected symmetrically. Joints are more likely to be affected if they have previously been damaged by disorders such as arthiritis.[13] Pain most commonly occurs in peripheral joints, such as the wrists, ankles, and joints of the hands and feet as well as some of the larger joints, typically the shoulders, elbows and knees.[11,13] Pain may also occur in the muscles or ligaments. Rash occur in 40% to 50% of cases, generally as a maculopapular rash occurring two to five days after onset of symptoms.[11] Digestive symptoms, including abdominal pain, nausea, vomiting or diarrhoea may also occur.[11,12,17] In more than half of cases, normal activity is limited by significant fatigue and pain.[11] Infrequently, inflammation of the eyes may occur in the form of iridocyclitis, or uveitis, and retinal lesions may occur.[18] Temporary damage to the liver may occur.[19] Rarely, neurological disorders have been reported in association with Chikungunya virus, including Guillain-Barre syndrome, palsies, meningo-encephalitis, flaccid paralysis and neuropathy.[12] In contrast to dengue fever, Chikungunya fever very rarely causes hemorrhagic complications. Symptoms of bleeding should lead to consideration of alternative diagnoses or co-infection with dengue fever or co-existing congestive hepatopathy.[14]

Methods:

This was a descriptive type of cross-sectional study. The study was carried out among the respondent of Uttara in Dhaka city from November 2017 to February 2018. A total 395 respondents were selected. Purposive sampling was done.

Results:

Table-I

Age distribution of the respondent.

Ages	Frequency(n)	Percent(%)
Less than 10 years	09	2.3
10 to 20 years	82	20.8
20 to 30 years	103	26.0
30 to 40 years	101	25.6
40 to 50 years	60	15.2
Above 50 years	40	10.1
Total	395	100

Table I - shows that among the total 395 respondents majority 103(26.1%) were in the age group within 20-30 years. Very few (2.3%) were less than 10 years age group.

Table-II

Sex distribution of the respondent.

Sex	Frequency(n)	Percent(%)
Male	168	42.5
Female	227	57.5
Total	395	100

Table II - shows that among the total 395 of the respondents female were 57.5% and male were 42.5%.

Table-III

Distribution of religion of the respondents.

Religion	Frequency(n)	Percent(%)
Hindu	20	5.1
Muslim	372	94.2
Buddhist	02	0.5
Christian	01	0.3
Total	395	100

Table III - shows that among the total 395 respondents majority were Muslims (94.2%) and very few were Christian (0.3%) and Buddhist (0.5%).

Table-IV

Educational status of the respondents.

Education	Frequency(n)	Percent(%)
Illiterate	30	7.6
Primary	68	17.2
S.S.C	91	23.0
H. S.C	86	21.8
Honors	84	21.3
Masters	36	9.1
Total	395	100

Table IV - shows that among 395 respondents majorities educational level were S.S.C (23%). Higher secondary level of education 21.8% and Honors level 21.3%.Few were Illiterate(7.6%) and Masters level(9.1%).

Table-V

Distribution of occupation of the respondent.

Occupation	Frequency(n)	Percent(%)
Un-employed	66	16.7
Employed	186	47.1
House- wife	143	36.2
Total	395	100

Table V - shows that among the 395 respondents majority (47.1%) were employed. Besides, 36.2 % were housewives and rest (16.7%) were unemployed.

Table-VI

Level of Income of the respondents.

Income(Taka/TK)	Frequency(n)	Percent (%)
TK less than 20000	65	16.5
TK 20000 to 30000	123	31.1
TK 30000 to 40000	103	26.1
TK 40000 to 50000	56	14.2
TK More than 50000	48	12.2
Total	395	100

Table VI - shows that majority were 31.1% TK 20000-30000 income group followed by 26.1% were TK 30000-40000 income group and 16.5% were less than TK 20000 income group. Few (12.2%) were in more than TK 50000 income group.

Table-VII

Marital status of the respondents.

Marital status	Frequency(n)	Percent(%)
Single	119	30.1
Married	271	68.6
Divorce	2	0.5
Widow	3	0.8
Total	395	100

Table VII - shows that 68.6% were married and unmarried 30.1%.

Table-VIII

Chikungunya sufferer.

Suffered	Frequency(n)	Percent(%)
Yes	86	21.77
No	309	78.22
Total	395	100

Table-VIII shows that among 395 respondents majority 78.2% were not suffered from Chikungunya. Only 21.8% had.

Table-IX

Sufferer of family or friend with Chikungunya.

Sufferer	Frequency(n)	Percent(%)
Yes	86	21.8
No	309	78.2
Total	395	100

Table -IX shows that among 395 of the respondents majority had no history of sufferings among friends or families (78.2%) only 21.8% had family or friends with Chikungunya.

Table-X

Chikungunya was caused by mosquito bite.

Bite	Frequency(n)	Percent(%)
Yes	359	90.9
No	36	9.1
Total	395	100

Table X - shows that 90.9% agreed that Chikungunya was caused by mosquito bite. Only 9.1 % were disagreed.

Table-XI

Identification of mosquitoes that transmit Chikungunya.

Mosquitoes	Frequency(n)	Percent(%)
Aedes	194	49.1
Others	201	50.9
Total	395	100

Table XI - shows that among the 395 respondents 50.9% thought were others and rest 49.1% were Aedes mosquitoes.

Table-XII

Chikungunya mosquito biting periods.

Time	Frequency(n)	Percent(%)
Day time	215	54.4
Night time	180	45.6
Total	395	100

Table XII - shows that among 395 of the respondents 54.4 % agreed about day time and 45.6% were night time biting period.

Table-XIII

Breeding place of Chikungunya mosquitoes.

Places	Frequency(n)	Percent(%)
Clean water	75	19.0
Stagnant water	203	51.4
Mud	03	0.8
Garbage	83	21.0
Don't know	31	7.8
Total	395	100

Table XIII - shows that 51.4% agreed with stagnant water, 21.0% garbage, 19% clean water, 0.8% mud and did not know7.8%.

Table-XIV

Seasons of Chikungunya.

Season	Frequency (n)	Percent (%)
Summer	145	36.7
Rainy	214	54.2
Winter	31	7.8
Spring	05	1.3
Total	395	100

Table-XIV shows that among 395 respondents said 54.2% rainy season, 36.7% summer, 7.8% winter, 1.3% spring for Chikungunya.

Table-XV

Knowledge of symptoms of Chikungunya.

Symptoms	Frequency (n)	Percent (%)
Fever	342	86.6
Rashes	7	1.8
Headache	4	1.0
Joint pain	42	10.6
Joint pain >1month	0	0
Total	395	100

Table-XV shows that 86.6 % were agreed fever, 10.6 % were joint pain, 1.8% were rashes and 1% were headache.

Table-XVI

Knowledge about government's awareness program of Chikungunya.

Knowledge	Frequency (n)	Percent(%)
Yes	295	74.7
No	100	25.3
Total	395	100

Table XVI shows that among 395 of the respondents 74.7% were known about program and rest 25.3% had no knowledge about government's program.

Table-XVII

Chikungunya was serious disease.

Awareness	Frequency (n)	Percent (%)
Yes	296	74.9
No	99	25.1
Total	395	100

Table XVII shows that among 395 of the respondents majority (74.9%) agreed about it as serious disease and rest 25.1% were not aware.

Table-XVIII

Chikungunya is preventable.

Prevention	Frequency (n)	Percent (%)
Yes	296	74.93%
No	99	25.06%
Total	395	100

Table XVIII shows that among the 395 respondent 74.93% knew that it could be preventable and rest 25.06% do not knew.

Table-XIX

Source of information of Chikungunya.

Source	Frequency (n)	Percent (%)
Television(TV)	256	64.8
Radio	0	0
Newspaper	50	12.7
Family members	39	9.9
Social media	50	12.7
Total	395	100

Table XIX shows that majority got information from television (64.8%),newspaper and social media were 12.7% and very few from family members (9.9%).

Table-XX

Responsible for management of Chikungunya.

Responsibility	Frequency (n)	Percent (%)
No body	13	3.3
Themselves	48	12.2
Government	117	29.6
Both government and people	177	44.8
Don't know	40	10.1
Total	395	100

Table XX shows that 44.8% agreed both government and people were responsible, 29.6% government only, themselves 12.2%, don't know 10.1% and rest 3.3% were nobody.

Table-XXI

Check mosquito breeding site in and around house.

Checking sites	Frequency (n)	Percent (%)
Yes	352	89.1
No	43	10.9
Total	395	100

Table XXI shows that majority (89.1%) checked and rest (10.9%) did not checked the breeding sites.

Table XXII

Use of personal protective measures against mosquitoes

Protection	Frequency (n)	Percent(%)
Wear full sleeves shirt	14	3.54
Mosquito repellant cream	5	1.26
Bed nets or curtain	299	75.69
Insecticide spray/coil	77	19.49
Nothing	0	0
Total	395	100

Table XXII shows that majority had bed nets (75.7%), 19.5% used coil, 3.5% used full sleeves shirt and 1.3% used repellant cream.

Table-XXIII

Respondents had mosquito nets.

Nets	Frequency(n)	Percent (%)
Yes	379	95.9
No	16	4.1
Total	395	100

Table XXIII Shows that majority (95.9%) had nets and 4.1% had not.

Table-XXIV

Sleep under net during day time.

Sleep	Frequency (n)	Percent (%)
Yes	77	19.5
No	318	80.5
Total	395	100

Table XXIV shows that majority (80.5%) didn't sleep under net during day time and 19.5% were slept under net at day.

Table-XXV

Action taken against mosquito breeding.

Action	Frequency(n)	Percent (%)
Empty and dry air-conditioner when not in use	3	0.8
Don't allow water to collect in tiers, broken pots	359	90.9
Covering of water tank	33	8.4
Total	395	100

Table XXV shows that 90.9% were don't allow water to collect in tiers, broken pots and 8.4% had cover over the water tank.

Discussion:

This is a descriptive type of cross-sectional study in a residential area in Dhaka city with a sample of three hundred ninety five respondents(395)during the period of November 2017 to Februray, 2018 with a view to assess the knowledge, attitudes and practices of resident in Dhaka city regarding control of mosquito vectors and protection from mosquito bites. The objective of the study is to find out the knowledge, attitudes and practice of preventive measures of Chikungunya along with socio- demographic variables of the respondents.

The age of the respondent's included in this study ranges between less than 10 years to above 50 years. Majority of respondents are within 20 to 30 years of age (26.1%) and 30-40 years age group (25.6%). Other study shows 72.1% are between 11-50 years of age.[20] This is similar with my study. This may be fact that young adults are mostly sufferer as they usually neglect to use mosquito nets at day time especially.

Among the 395 respondents majority are females (57.5%) whereas male are (42.5%).Other study shows 54.5% males and 45.5% females.[20]Another study shows 76.5% are women.[21] Females are more as they occupy at home most of the time. Places of mosquito are also near home due to presence of unused containers.

Regarding religion, Islam found more (94.2%) and rest are other religions. This is consistent with our national context. Regarding educational status of the respondents majority have SSC (23%), HSC (21.8%), Honors (21.3%) level. Few are illiterate (7.6%) and (9.1%) masters level of education. As most of them are students. Other study shows 65.3% have education at secondary level, 28.8% have graduation and 24.7% are illiterate.[20]

Regarding occupation of the respondents majority (47.1%) are employed. Only 16.7% are unemployed that mostly of them are students. Rest are housewives (36.2%).

Regarding level of income among the respondents more found (31.1%) at income group (20000- 30000tk/ month).Few has less than 20000tk/month (16.5%) and more than 50000tk/month (12.2%).This is due to their service hold condition. Other study shows 64.3% are socio-economically in class III level, 30.5% are socio-economical in class V level.[21] This difference may be due to the geographical distribution, educational level and social instability of countries.

Regarding marital status of the respondents majority are married 68.6%, divorced (0.5%), widow (0.8%) and single are (30.1%) because most of them are students and unmarried.

Regarding knowledge of the respondents 21.8% suffered and 78.2% not suffered from Chikungunya. Regarding, sufferer of family and friend with Chikungunya majority had not (78.2%), few suffered (21.8%). Majority of respondent (90.9%) know that Chikungunya is caused by mosquito bite only, but disagreed (9.1%). Regarding identification of mosquitoes, 50.9% didn't know the name of mosquito, only (49.1%) knew about Aedes. Only 54.4% respondent knew that this mosquito mostly bite at day time, rest (45.6%) at night .Most (51.4%) respondents knew that these mosquito breed in stagnant water and usually occur in rainy season (54.2%). Knowledge about symptoms, 86.6% complained about fever. Only 74.7% respondent knew about government program on vector borne .All these questions for knowledge were in some but not complete knowledge of Chikungunya. Other study shows that 83.1% aware about Chikungunya, 90.2% know caused by mosquito bite, 1.1%know about vectors.[20]

Regarding attitude towards Chikungunya 74.9% believes that Chikungunya is a serious disease. Almost (74.93%) respondents believe that Chikungunya can be prevented.Most (64.8%) respondents believe that information about this diseases can get from Television. Regarding responsible for management 44.8% agreed both government and people should take part. Other study shows that 40.3% preferred government health fascilitities.[20] All these measures create awareness about their prevention.

Regarding practice 89.1% respondents acknowledge that they or their family members check regularly at breeding sites of mosquitoes in and around their houses. Regarding use of personal protective measures against mosquito nets 75.7% have. Regarding sleep under net during day time 80.5% does not sleep. Other study shows 41% of the respondent use net during day time.[21] This is due to negligence of the respondent to use bed net. When asked about action taken against mosquito breeding 90.9% don't allow water to collect in tiers or broken pots. Other study shows that 57% of participants emptied their drinking containers.[21] Regarding these practices are good and satisfactory in our respondents.

Conclusion:

Chickungunya is self limiting fever.The morbidity can be very high in major outbreaks may result in a heavy social and economical loss.The prevention of disease requires a planned approach. From the above results and discussion awareness of respondent is an important factors for preventing Chikungunya in the community. Further more, this study describes the existing knowledge regarding Chikungunya among the respondent of Dhaka city.So, practice for preventive measures should be taken into media like newspaper, television, radio, workshop, facebook. Thus, every corner of Bangladeshi could prevent and treat Chikungunya and live a healthy life.

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ORIGINAL ARTICLE

Role of Serum Procalcitonin and C-Reactive Protein in The Diagnosis of Urinary Tract Infection

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Abstract

Introduction: *UTI is one of the commonest clinical conditions for which specimens are sent to the laboratory for culture. Microscopic examination of urine is the most common laboratory procedure used for detection of renal or urinary tract disease. The objective of this study was to diagnose UTI by isolation of organism and to differ upper UTI and lower UTI by procalcitonin and C-reactive protein.*

Methods: *This cross sectional study was carried out in the department of Microbiology, Dhaka Medical College from July 2009 to June 2010. The urine samples were collected from 110 patients having clinical features of urinary tract infection. Urine samples were collected for microscopic examination and culture and sensitivity. Blood samples were collected for determining CRP. PCT was detected in 50 serum samples.*

Results: *Maximum number of patients was between 21-30yrs of age group (n-32, 29.09%). Females were more than males and male female ratio was 1:3. Of the 110 urine samples, 33 (30%) yielded growth of organisms and 77 (70%) sample showed no growth. All the samples yielded single organism and no mixed growth was found. Among the study population Escherichia coli were found to be the predominant organism (n-17, 51.52%). On microscopic examination WBC casts were found only in 10 (9.09%) samples, five of them were culture positive. Serum CRP level above positive cut off value were found in 23 cases, out of which, 6 (26.09%) were urine culture positive. Serum PCT was done in 50 cases, and 5 of them were positive. Out of these 5 PCT positive cases, 4 were also urine culture positive.*

Conclusion: *CRP and PCT may be additional markers for diagnosis of upper UTI and also to assess the sequelae of renal lesion.*

Key words: *Urinary Tract Infection,* **E. Coli,** *Procalcitonin, C-Reactive Protein.*

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Introduction:

Infections of the urinary tract are the second most common type of infection in the body. Each year urinary tract infections accounts for about 9.6 million doctors visits.[1] The majority of the cases seen in the doctors chamber are women (Female:male ratio=30:1) and 40% of all women have at least one episode of a UTI at sometime in their lives.[2] Upto 20% of young women with acute cystitis develop recurrent UTIs. More than 90% of UTI in patients with normal anatomic structure and function are caused by certain strains of *E. Coli*.[3]

Pyelonephritis must be distinguished from lower UTI as it could lead to chronic renal damage and in case of extensive renal scarring, hypertenion and renal insufficiency.[4] Upper UTI causes elevation of inflammatory parameters such as

C-reactive protein or leucocytosis and fever. N-acetyl beta glucosaminidase (NAG) lysozomal enzyme exeretion is significantly higher in patients with upper UTI.[5] The diagnosis of UTI involves the presence of fever and C-reactive protein (CRP).[6]C-reactive protein is a protein found in the blood, the level of which rises in response to inflammation occurring in the body. This increment is due to a rise in the plasma concentration of interleukin-6 (IL-6) which is produced predominantly by macrophage.[7] Serum C-reactive protein remains a good marker of the severity of UTI in children despite false negative results.[8] In one recent study by Pecile (2004) a sensitivity of 94.4% and specificity of 31.9% for CRP were reported.[9]

Procalcitonin (PCT) is another biomarker of acute infection .[10] In comparison to other commonly used markers such as C-reactive protein, PCT has a superior diagnostic accuracy in distinguishing bacterial infection from non infective causes of inflammation and from viral infections.[11] Procalcitonin is the key precursor of calcitonin and specific marker of bacterial infections.[12] PCT is released into the blood 3-6 hours after endotoxin injection in rabbits or humans.[13] PCT may guide treatment decisions and reduce antibiotic administration. A serum procalcitonin concentration of 0.05ng/ml or lower indicates the absence of bacterial infection and the use of antibiotics is strongly discouraged. Procalcitonin levels of 2ng/ml are highly indicative of a bacterial infection and antibiotics are strongly recommended.[14]

It is important to differentiate between lower UTI and acute pyelonephritis through the use of inflammatory markers eg. procalcitonin and CRP. Procalcitonin may be a determinant for diagnosis as well as to see the prognosis of urinary tract infection.

Methods:

This cross sectional study was carried out in the department of Microbiology, Dhaka Medical College from July 2009 to June 2010. The urine samples were collected from 110 patients having clinical features of urinary tract infection. Urine samples were collected for microscopic examination and culture and sensitivity. Blood samples were collected from 110 patients for culture and estimating C-reactive protein. For procalcitonin estimation 1ml blood was collected from selective 50 patients. At first urine samples were inoculated in Blood and MacConkey agar media. Urine cultures were done by standard loop method. The inoculated culture plates were aerobically incubated at 37°C for 24 hours. The culture plates were observed for the presence of any bacterial growth next morning. If growth occured colony count was done to calculate the number of colony forming unit per ml of urine.Blood cultures were done by standard procedure in Trypticase soya broth and subsequent subculture done in Blood agar and MacConkeys agar media. Then bacteria were identified by their colony morphology, Gram staining, motility test,and biochemical test. The estimation of CRP was done by latex agglutination and procalcitonin estimation was done by immunochromatographic test.

Results:

A total of 110 clinically diagnosed patients with UTI were selected for the study.

Table I shows the age distribution of clinically diagnosed 110 cases of UTI. Highest number of patients were 32 (29.09%) in the age group of 21-30 years.

Table-I

Age distribution of study population

Age group in years	Number	Percentage
4-10	8	7.27
11-20	24	21.82
21-30	32	29.09
31-40	23	20.91
41-50	10	9.09
51-60	6	5.45
>60	7	6.36
Total	110	100

Table-II shows the sex distribution of the patients according to the culture results. Out of 36 male patients 7 (19.44%) were culture positive. Out of 74 urine samples collected from females, 26 (35.14%) yielded growth of organisms.

Table-II

Sex distribution according to culture result

	Urine Culture		Total
Sex	Positive	Negative	
Male	7 (19.44)	29 (80.56)	36 (100)
Female	26 (35.14)	48 (64.86)	74 (100)
Total	33 (30.00)	77 (70.00)	110 (100)

Figures within parentheses indicate percentage

Table-III shows microscopical findings in urine in relation with urine culture. Pus cell, RBC, WBC cast, epithelial cell and crystals were found. It was found that out of 54 cases with pus cell count 5-9/HPF, only 9 (16.67%) cases were culture positive. Similarly out of 32 cases with pus cell count 10-20/HPF, only 10 (31.25%) were culture positive. Out of 24 cases with pus cell count >20/HPF, only 14 (58.33%) cases were culture positive. WBC cast was found in 10 cases and out of them only 5 (50%) were culture positive.

Table-III

Comparison of urine culture with urine R/M/E in study population

Urine Culture	Puscell			Crystal	RBC	WBC Cast
	Few	Moderate	Plenty			
Positive	9(16.67)	10(31.2)	14(58.33)	4(33.33)	8(32)	5(50)
Negative	45(83.33	22(68.75)	10(41.67)	8(66.67)	17(68)	5(50)
	54(100)	32(100)	24(100)	12(100)	25(100)	10(100)

Figures within parentheses indicate percentage

Table-IV shows that 33 (30%) samples had growth of single organism and 77 (70%) samples yielded no growth. There was no mixed growth. *Escherichia coli* were found to be the predominent organism which was 17(51.52%).

Table-IV

Types of organism isolated from urine culture

Organism	Total
Escherichia coli	17 (51.52)
Klebsiella spp.	6 (18.18)
Staph. aureus	5 (15.15)
Proteus spp.	3 (9.09)
Pseudomonas spp.	1 (3.03)
Staph. saprophyticus	1 (3.03)
Total	33 (100.00)

Figures within parentheses indicate percentage

Table-V shows that 87 patients had serum CRP level below cut off value. Among these 87 cases 27 (31.03%) were culture positive. 23 patients had CRP level above the positive cut off value, among these 23 patients only 06 (26.09%) were also culture positive.

Table-V

Comparison of serum CRP level with urine culture results

Serum CRP	Urine culture		Total
	Positive	Negative	
Positive	06 (26.09)	17 (73.91)	23 (100)
Negative	27 (31.03)	60 (68.97)	87 (100)
Total	33 (30.00)	77 (70.00)	110 (100)

Figures within parentheses indicate percentage

Note: CRP for C-reactive protein.

< 0.8mg/dl indicate negative and > 0.8mg/dl indicate positive

Table-VI serum PCT was done on 50 cases. The 50 cases were as follows: 33 urine culture positive, 7 with plenty pus cell but urine culture negative, 6 Serum CRP positive with loin pain with urine culture negative case. In total, 5 cases were Serum PCT positive. Out of 33 urine culture positive cases, only 4 (12.12%) were Serum PCT positive; in the remaining 29 (87.88%) urine culture positive cases, it was negative. One case was Serum PCT positive but urine culture negative.

Table-VI

Comparison of serum PCT level with urine culture results

Serum PCT	Urine culture		Total
	Positive	Negative	
Positive	04 (12.12)	1 (5.88)	5 (10.00)
Negative	29 (87.88)	16 (94.12)	45 (90.00)
Total	33 (100.00)	17 (100.00)	50 (100.00)

Figures within parentheses indicate percentage

Note: PCT for procalcitonin.

< 0.5ng/dl indicate negative and >0.5ng/dl indicate positive

Table-VII shows that serum PCT was done on 50 patients, 12 were serum CRP positive. Out of 12, 4 (80%) were serum PCT positive.

Table-VII

Comparison of results of serum PCT with results of serum CRP in study population (n-50)

Serum PCT	Serum CRP		Total
	Positive	Negative	
Positive	4 (80.00)	1 (20.00)	5 (100)
Negative	8 (17.78)	37 (82.22)	45 (100)
Total	12	38	50 (100)

Figures within parentheses indicate percentage

Note: CRP for C-reactive protein and PCT for procalcitonin

Table-VIII the sensitivity and specificity for serum CRP were 18.18% and 77.92% respectively. Similarly the sensitivity was 12.12% and specificity was 94.12% for serum PCT.

Table-VIII

Sensitivity and specificity of serum CRP and serum PCT considering positive culture as gold standard.

Tests	Sensitivity	Specificity
Serum CRP	18.18%	77.92%
Serum PCT	12.12%	94.12%

Note: CRP for C-reactive protein and PCT for procalcitonin

Discussion:

Urine samples are the commonest specimens sent for microbiology studies, to diagnose and manage cases of urinary tract infection and to reduce morbidity and mortality through accurate and timely diagnosis with appropriate antimicrobial sensitivity testing.[15]

Clinically diagnosed 110 cases of UTI were studied in the present study. Most of them (29.09%) were in the age group of 21-30 years. This finding was consistent with the findings from Nepal who found common age group for females were 21-30 years.[16]

In the present study, a total of 110 samples of urine from clinically diagnosed UTI cases were cultured. Of them, 33 (30%) samples showed growth of organisms and 77 (70%) samples yielded no growth. These findings were consistent with the findings of Sharmin (2009) from BSMMU, Dhaka who reported 38.5% growth and 57.5% yielded no growth.[17] In contrast to the findings of the present study a higher growth rate of 54.2% was reported by Perry *et al* (2003) from the UK.[18] This might be due to the fact that urine samples having pus cell >200/HPF were included in their study. A lower bacterial isolation rate were reported by Lakshmi *et al* (2004) from India (20%),[19] D'Souza *et al* (2004) from California (24.5%)[20] and Samra *et al* (1998) from Israel (19.55%)[21]. Such lower isolation rates in their study were probably due to the fact that all urine samples were cultured irrespective of pus cell count.

In this study, majority (70%) of symptomatic patients had no growth in urine which might be due to prior use of antibiotic in inadequate doses or infections by other organism like *Chlamydiatrachomatis, Neisseria gonorrhoeae* and Herpes simplex virus or infected by drug resistant organisms.

In the present study, among 36 urine samples collected from males, 7 (21.21%) showed growth of organisms and among 74 urine samples collected from females, 26 (78.79%) yielded growth of organisms. The difference was, however, not statistically significant ($p>0.05$). Jha (2005) showed that 80% of the urine samples collected from females and 20% of the urine sample collected from males yielded growth.[16] Bapat (2005) showed that 70.5% of the urine samples collected from females and 29.5% of the urine samples from males yielded growth. These findings are similar to the findings of the present study.[22]

From this study, it is evident that as the number of pus cells/HPF of centrifuged urine increases, the rate of culture positivity also increases. Among the 110 study cases, 54 urine samples had pus cell count 5-9/HPF, of them only 9 (16.67%) were culture positive. Similarly, out of 32 urine samples having pus cell count 10-20/HPF, 10 (31.25%) were culture positive. On the other hand, 24 urine samples had pus cell count >20/HPF, 14 (58.33%) of them were culture positive. Razzaque and Rahman (1982) studied 55 cases of symptomatic UTI and found all (100%) of them to be having significant bacteriuria following culture and all these cases had pus cell count>5/HPF.[23]

In the present study, a total of 33 strains were isolated of which 17 (51.52%) were *E. coli,* 6 (18.18%) were *Klebsiella spp.,* 5 (15.15%) were *S. aureus*, 1 (3.03%) was *Proteus spp.,* 1 (3.03%) was *Pseudomonas spp.* and 1 (3.03%) was *S. saprophyticus*. Sharmin (2005) from Bangladesh reported *E. coli* as the predominant (53.6%) organism.[17] Chowdhury *et al.* (1994) reported 64% *E. coli* from urine.[24] These findings are comparable with the findings of the present study but differs from study done by Bhuiyan and Abdullah (1994), who found 92% *E. coli.*[25] Islam *et al* (2002) from Bangladesh and Hames and Rice (2007) from University of Oklahoma reported 92% and 90% *E. coli* from urine respectively.[26] In the present study, the 2nd most common organism was *Klebsiella spp.* (18.18%) which was similar to the findings of Sharmin and Hassin in Bangladesh showing *Klebsiella spp.* of 17.9% and 17.7% respectively.[17,27] Another study done in BSMMU, Dhaka by Ahmed (1998) showed *E. coli* (92%) as the commonest organism responsible for UTI followed by *Pseudomonus, Enterococci, Klebsiella and Proteus.*[28]

In the present study, CRP levels of >0.8mg/dl was considered as positive. Of the 23 CRP positive cases, 6 (26.09%) were urine culture positive and 17 (23.91%) were urine culture negative. In contrast to the findings of the present study Ayazi *et al.* (2009) reported that 94% of the urine culture positive cases had positive CRP but most of

the patients in their study had renal cortical lesion.[12] Among the children suffering from UTI, 30.60% had positive CRP level who did not have renal cortical lesion. The lower positivity of CRP among UTI patients in the present study might be due to the fact that most of the patients included in the present study were suffering from lower UTI which was diagnosed by presence of significant number of pus cell in urine and absence of any cast.

PCT is a propeptide of calcitonin with 116 amino acids and devoid of hormonal activities, was initially described to have the potential of being a marker of bacterial infection.[29,30] Serum concentrations of PCT is increased in UTI having renal cortical damage (upper UTI).[9,12,31] PCT increases in blood 6 hours after a stimulus, reaches a plateau between 12-48 hours and then decreases if the stimulus stops. In the present study, out of 33 urine culture positive cases, 4 (12.12%) were positive by PCT and 1 (87.88%) was negative by PCT. Similar results were reported by different authors.[4,9,12] Ayazi *et al,* (2009) found 70.6% positive PCT in culture positive cases.[12] Benadar *et al,* (1998) and Pecile *et al, (*2004) found 83.3% and 94.4% positive PCT respectively whose urine were culture positive.[4.12]Different published data indicate that a highly significant correlation is present between elevated PCT level and severity of renal involvement and subsequent sequelae.

Of the 12 CRP positive cases, 4 (33.33%) were PCT positive. On the other hand, out of 5 PCT positive samples, 4 (80%) were CRP positive. In the present study the sensitivity and specificity of CRP were 18.18% and 77.92% respectively and that of PCT were 12.12% and 94.12% respectively.

For diagnosis of UTI the specificity of PCT was found higher than CRP in the present study. Sensitivity and specificity of PCT in diagnosis of pyelonephritis were 70.3% and 99.1% respectively.[4,27,31,32] The sensitivity of PCT in the diagnosis of UTI is lower in the present study. This lower sensitivity in the present study might be due to the fact that most of the patients included in the present study had only lower UTI.

The specificity of CRP in the diagnosis of UTI is lower than PCT as mentioned by defferent authors. Benador *et al,* (1998) and Paolo Pecile *et al.,* (2004) found specificity of CRP 26.1% and 31.9% respectively.[4,9] From these discussions it may be concluded that if a patient comes with history of UTI, if his/her urine culture yields growth of organisms and blood is positive for PCT and CRP, there are strong possibilities for the patient to be suffering from pyelonephritis.

Conclusion:

In most developing countries, sophisticated laboratory test-based screening of upper UTI is often costly and impractical. On the other hand, syndrome-based management alone would miss a majority of asymptomatic infections. In these circumstances, serum CRP level e"128 mg/L along with positive PCT may be considered as promising biomarkers of upper UTI and thus may prove as cost effective and time saving diagnostic tools in management of this serious infection.

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ORIGINAL ARTICLE

Assessing Materal Care of Mothers having Children Less Than Two Years of Age in the Rural Area of Dhamrai Upazilla, Dhaka

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Abstract

Introduction: *Proper maternal care is responsible for reduction in mortality and morbidity of mothers in the developing countries of the world. The aim of the study was to assess the provision of maternal care among mothers having children less than 2 years of age in Dhamrai Upazilla, Bangladesh.*

Methods: *A descriptive cross sectional study was conducted among 454 mothers having children less than 2 years of age from 1st January, 2018 to 31st March, 2018. Data was collected through face to face interviewing of mothers having children less than 2 years of age using a semi-structured pretested questionnaire. The collected data were analyzed manually.*

Results: *More than half (55%) of the respondent were in between 15-25 years of age. Most (99.3%) of the respondents were currently married, 0.4% of them were divorced, and 0.2% of them were widowed. About 38.5%, 39%, 10.8% of the respondents had up to primary level, secondary level and intermediate level education respectively and 11.7% had no formal education. Majority (93.6%) of them were homemakers and 3.1%, 1.1% of them were service holder and businesswoman respectively. About 14.3% of the mothers did not go for antenatal visit. In this study, among prenatal advices, highest proportion (75.8%) of the mothers received advice on diet and lowest proportion (45.8%) of the mothers received advice on warning signs. Besides these 75.3% of the mothers received prenatal advice on personal cleanliness, 70.5% on rest and sleep, 63.7% on drug intake, 54.6% on exercise, 50.4% regarding bowel habits and 56.4% regarding childcare. About 76% of the mothers received protection from tetanus and 58.6% of the mothers received protection from anemia during pregnancy. Most (72%) of the mothers did not receive mother craft classes during pregnancy. More than half(57.7%) of the mothers did not receive family planning advice during pregnancy. Among mothers 32% had under-five children during pregnancy and only 15% of them received care for their under-five children. About one third (32.2%) of the respondents had delivered their babies at home. Near one fourth (22%) of the respondents had faced complications during delivery and among them 21% received care for that complication. The study reveals that 11.9% of the respondents experienced some sorts of complications within 42 days after delivery and among them 9% mothers received care of those complications. About one fourth (27.8%) of the mothers did not have post natal checkups. Highest proportion (72.2%) of the mothers received postnatal advice on breast feeding and lowest proportion (26.7%) of the mothers received postnatal advice on checkup of hemoglobin level. About 61% of the mothers received advice regarding low cost nutritious food and 56.3% of the mothers received family planning advice after delivery. About half of the respondents (52.4%) were instructed for birth registration for the child.*

Conclusion: *To improve maternal care WHO recommended at least four antenatal visit (ANC) visit should be met. Emphasis should be given on warning sign of pregnancy; hospital delivery should be more encouraged and post natal checkup should be ensured.*

Key words: *Maternal care, Antenatal care, Intra-natal care, Post-natal care.*

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Introduction:

Motherhood is the most important position a woman can have in her life but can be a life threatening event as well. During pregnancy any woman can develop serious, life threatening complications that require medical care. Maternal death means death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.[1]

Maternal health is the health of women during pregnancy, childbirth and the postpartum period and maternal health

care services are antenatal care (ANC), intranatal care (INC) and postnatal care services.[2]

Maternal care is a comprehensive program for health care professionals, covering all the common and important problems that occur during pregnancy, labour, delivery and the puerperium. While "the mother" usually means the woman who has carried the child to term and looks after it after birth, in the present context it may also denote any person who fulfills the maternal role in a continuous fashion from birth on.

The United Nations Population Fund (UNFPA) estimated that 289,000 women died of pregnancy or child birth related causes in 2013. The causes range from severe bleeding to obstructed labor, all of which have highly effective interventions. As women have gained access to family planning and skilled birth attendance with backup emergency obstetrics care, the global maternal mortality ratio has fallen from 380 maternal deaths per 100,000 live births in 1990 to 210 maternal deaths per 100,000 live births in 2013. This has resulted in many countries having the maternal death rates decline.[3]

Bangladesh has achieved important health gains over the last decade. The maternal mortality ratio (MMR) as an indicator of maternal health in Bangladesh remain unexpectedly high, 176 death/100,000 live birth.[4] In many ways the existence of high MMR represents the failure of health system to effectively respond to the needs of women in the country. One of the way to reduce MMR is to ensure proper maternal care. The objective of this study was to assess the provision of maternal care among mothers having children less than 2 years of age in Dhamrai Upazilla, Bangladesh. It may help to improve the maternal care services of Bangladesh by implementing evidence-based continuum of care.

Methods:

It was a cross sectional type of descriptive study conducted from 1st January 2018 to 31st March 2018 among the mothers having children less than 2 years of age in the villages of Dhamrai Upazilla, Dhaka. Four hundred and fifty four mothers were selected for data collection by non-probability convenient sampling technique. Data were collected by face to face interviewing of mothers having children less than 2 years of age using semi-structured questionnaire which was developed, pretested and finalized before data collection. Data were collected on socio-demographic details of the mothers having children less than 2 years and ante-natal care, intra-natal care and post-natal care of the mothers. After collection of data each questionnaire was checked for inconsistency. Then the data were analyzed manually and using computer based programme M S excel.

Results:

This cross sectional study was conducted to assess the provision of maternal care of mothers having children less than 2 years of age in Dhamrarai Upazilla. Data were analized and has been presented through tables and chart or graph.

Socio-demographic characteristics

More than half (55%) of the mothers' age was between 15 to 25 years. Highest proportion (39%) of the mothers had secondary level education and majority (93.6%) of the mothers were homemakers. One third (33.7%) of the mothers' monthly family income was between 10,000-15,000 taka (Table - I).

Table - I

Distribution of the respondents by socio-demographic characteristics

Socio-demographic characteristics	Frequency (n)	Percentage (%)
A. Age of respondents in year		
15-25	250	55
26-35	191	42
36-45	9	2
46-49	4	1
B. Educational status		
No formal education	53	11.7
Primary level	175	38.5
Secondary level	177	39
Intermediate level	49	10.8
C. Employment status		
Homemakers	425	93.6
Service holder	14	3.1
Business women	5	1.1
D. Monthly household income in taka		
10000- 15000	153	33.7
>15000	139	30.6

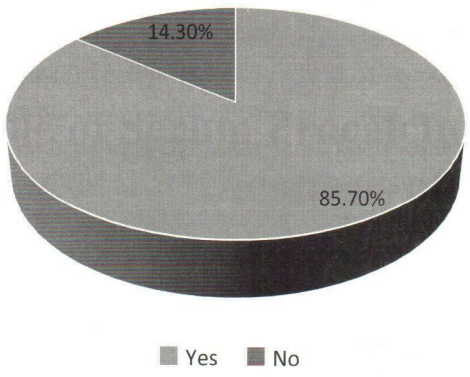

Fig.-1. *Distribution of the respondent by receiving antenatal care*

Antenatal care

About 14.3% of the mothers did not go for antenatal visit (Fig - 1). More than half (55.3%) respondents had 1 to 4 antenatal visits and only 17.8% mother had 11-13 antenatal visits. Highest proportion (75.6%) of the mothers received advice on diet and lowest proportion (45.8%) of the mothers received advice on warning signs. Besides these 75.3% of the mothers received prenatal advice on personal cleanliness, 70.4% on rest and sleep, 63.4% on drug intake, 54.4% on exercise, 50.4% regarding bowel habits and 56.2% regarding childcare. About 76.1% of the mothers received protection from tetanus and 58.7% of the mothers received protection from anemia during pregnancy. Most (71.9%) of the mothers did not receive mother craft classes during pregnancy. More than half (57.7%) of the mothers did not receive family planning advice during pregnancy (Table - II).

Intra-natal care

About 67.8% respondents delivered baby at hospital. 67.8% delivered baby by doctors, 25% by trained birth attendants, 56.6% underwent caesarean section among them 43.4% underwent normal delivery. Only 22.1% faced complication during delivery among them 21% received care for complications whereas only 1% did not receive care for complication.

Highest proportion of the respondent (72.2%) received advice on breast feeding and lowest proportion of the respondents (26.7%) received advice on checkup of haemoglobin level in post natal care (Table - IV).

Table-II

Distribution of respondents according to antenatal care

Variables	Frequency (n)	Percentage (%)
A. Number of antenatal visits		
1-4 visits	215	55.3
5- 10 visits	105	26.9
11-13 visits	69	17.8
B. Advices received on antenatal visits		
a. Advice on diet		
Yes	294	75.6
No	95	24.4
b. Advice on personal cleanliness		
Yes	292	75.1
No	97	24.9
c. Advice on rest & sleep		
Yes	274	70.4
No	115	29.6
d. Advice on bowel habits		
Yes	196	50.4
No	193	49.6
e. Advice on exercise		
Yes	212	54.4
No	177	45.6
f. Advice on drug intake		
Yes	247	63.4
No	142	36.6
g. Advice on warning signs		
Yes	178	45.8
No	211	54.2
h. Advice on childcare		
Yes	219	56.2
No	170	43.8
C. Protection from anemia		
Yes	228	58.7
No	161	41.3
D. Protection from tetanus		
Yes	296	76.1
No	93	23.9
E. Received mother craft classes		
Yes	109	28.1
No	280	71.9
F. Received family planning advice		
Yes	165	42.3
No	224	57.7

Table-III

Distribution of respondents according to intra-natal care

Variables	Frequency (n)	Percentages (%)
A. Site of delivery		
At home	146	32.2
At hospital	308	67.8
B. Persons conducting the delivery		
Doctor	308	67.8
Trained birth attendant	114	25.1
Family member/ Neighbor	32	7.1
C. Mode of delivery		
Caesarean section	257	56.6
Normal delivery	197	43.4
D. Complications during delivery		
Yes	100	22.1
No	354	77.9

Table-IV

Distribution of respondents according to post-natal care

Variables	Frequency (n)	Percentage (%)
A. Post-natal advices received		
a. Advice on check-up of heamoglobin level		
Yes	121	26.7
No	333	73.3
b. Advice on low cost nutritious foods		
Yes	277	61.1
No	177	38.9
c. Advice on breast feeding		
Yes	328	72.2
No	126	27.8
d. Advice on family planning		
Yes	256	56.4
No	198	43.6
e. Advice on birth registration of new born baby		
Yes	238	52.4
No	216	47.6
B. Post-natal complication		
Yes	54	11.9
No	400	88.1

About 72.2% of the respondent received postnatal checkup (Fig - 2).

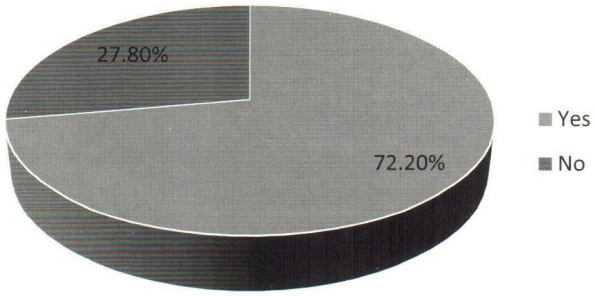

Fig.- 2. *Distribution of the respondents by receiving post-natal checkup*

Discussion:

The study aimed to assess the maternal care of mothers having children less than 2 years of age of Dhamrai upazilla, Bangladesh. To obtain the baseline information about maternal care this cross sectional study was carried out.

More than half (55.3%) of woman received 1-4 antenatal visits, 26.9% received 5-10 antenatal visits, and 17.8% of mothers had 11-13 antenatal visits. Whereas, 14.5% of the pregnant mothers did not have any antenatal visits. A study conducted in eastern Ethiopia in 2014, shows that 14.9% mothers received no antenatal visit.[5] The data from both studies were found to be similar. About 75.6% of the respondents received advice on diet during pregnancy and rest (24.4%) of them did not. About 75.1% of respondents were given advice on personal cleanliness and 70.4% received advice on proper rest and sleep. About half (50.4%) of the respondants received prenatal advice regarding bowel habits and 54.4% received advice prenatal advice on exercise. Advice on drug intake was given to 63.4% of the respondents. However, 54.2% were not told about the warning signs. About 56.2% of the respondents were told about child care. About 58.7% of the mothers were protected from anemia via iron tablets and most of them (76.1%) were protected against tetanus. About 71.9% of them did not have any mother craft classes. Out of all the respondents 57.7% of them were not given family planning advice. During pregnancy 32% had one or more under 5 children and among them 15% said that their under 5 children received some kind of care. In a study done in four developing countries (Argentina, Cuba, Thailand, and Saudi Arabia), it was found that women want more information on the psychosocial aspects of pregnancy.[6] The information received from providers is an important

issue for Saudi women. Another study among the same countries revealed that women were satisfied with the information received about normal labor, breastfeeding, family planning, danger signs, and on how to recognize problems and what to do to manage them.[7]Since majority of the respondents in this study also received some prenatal advice, it can be said that mothers were obtained with the information they were provided during prenatal visits. However the finding that only a small percentage of women received advice on warning signs and mother craft classes was alarming.

About 67.8% of the respondents delivered their babies in hospital and 32.2% at home. About 67.8% of the deliveries were done by a doctor and 25.1% by a trained birth attendant or dai. Majority of the deliveries were caesarean section (56.6%) and 43.4% were normal deliveries. A study was conducted at Birbhum district of West Bengal showed that 37.8% deliveries were conducted at home. About 25% deliveries were conducted by untrained birth attendants, unqualified practitioners or relatives and friends. About 68.6% home deliveries were conducted on the floor without any clean covering sheet. In contrast, this study findings suggest that intra natal care is better and more improved compared to districts in neighboring countries as a large proportion of deliveries were conducted at hospitals by a professional where proper aseptic precautions could be taken.[8]

Most of the respondents (88.1%) did not face any complication during the puerperal period. Of the 11.9%, who have had complications, about 9% received some kind of care. About 72.2% of the respondents received postnatal advice on breast feeding and 61.1% received postnatal advice on low cost nutritious food. About 54.4% received family planning advice and 60.5% are using some kind of contraceptive method. About 52.4% were instructed for birth registration of the child. In a study conducted in Missouri, New York State it was seen that the prevalence of postpartum contraceptive use, including the use of more effective methods, was highest when contraceptive counseling was provided during both prenatal and postpartum time periods. The majority of women (86%) received postpartum contraceptive counseling. Compared with those who received no counseling, those counseled during one time period had significantly increased odds of postpartum use of a more effective contraceptive method (49%).[9] In comparison, this study shows that even though the percentage who received family planning advice in post natal period (56.4%) is lower, the percentage of respondents using contraceptive method was much higher (60.5%). This shows that mothers now have increased awareness about family planning and its importance.

Conclusion:

To assess the provision of maternal care this cross sectional study was carried out. The study found that majority of women were aged between 15-25 years. Most of them did not received WHO recommended antenatal visits. Highest proportion of the mothers received advice on diet and lowest proportion of the mothers received advice on warning signs. Very few mother received mother craft classes. About one third of the respondents had delivered their babies at home. Near one fourth of the respondents had faced complication during delivery and few of them received care for that complication. About one fourth of the mothers did not have post natal checkups. Highest proportion of the mothers received postnatal advice on breastfeeding and lowest proportion of the mothers received postnatal advice on checkup of hemoglobin level.

To improve maternal care WHO recommended at least 4 antenatal visits should be met. Emphasis should be given on warning signs of pregnancy and mother craft classes. Hospital delivery should be more encouraged and post natal checkup should be ensured.

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REVIEW ARTICLE

An Update of in vitro Antimicrobial Synergy Testing Methods: Technique with Interpretation

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Abstract

Evaluation for antimicrobial drugs interactions has gained attention of the researchers in the last decade due to the increasing prevalence of drug-resistant bacteria which limit the options for the treatment of these infections with appropriate drugs. It is worth noting that in vitro combination testing provides information, on which two or more antimicrobials can be combined for an effective clinical outcome. Amongst the different methods in vitro of drug interactions, time-kill assay (TKA), checkerboard (CB) assay and E-test-based methods are widely used in this regards. Comparative efficacy in performance of these methods reveals the TKA as the most acceptable method to detect synergistic combinations followed by CB assay and E-test. Various combinations of antimicrobial drugs have been tested to demonstrate synergistic activity. Promising results were obtained for the combinations. However, antagonism was detected in only few instances. The presence of synergy or antagonism with a combination seems to correlate with minimum inhibitory concentration of the drug and mechanism involved in the resistance.

Keywords: Drug-resistant bacteria, drug interactions, TKA, CB assay, E-test, synergistic activity, combination testing.

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Introduction:

Recently, the indication for synergy testing has been driven by the following reasons: necessity to extend the antimicrobial spectrum, possibility of reducing the dosage and toxicity and possibility of reducing the development of resistance.[1] Moreover, the emergence of multidrug resistance (MDR), extensive drug resistance (XDR) and pan-drug resistance (PDR) strains, combined with the continued development of newer antimicrobial agents, has contributed to the necessity for the synergy testing between various combinations of antimicrobial drugs.

The emergence of drug-resistant bacteria is the predominant cause for the increase in healthcare-associated infections, especially ventilator-associated pneumonia and bacteraemia. Among the hospital-acquired infections (HAI) due to Gram-negative bacteria, MDR-Gram negative bacilli (GNB) infections accounted for 36.8% in a tertiary care centre in Taiwan during a 7-year period (2002–2009).[2] Similar trend was seen in South America, where a tertiary care centre in Brazil recorded 3.7-fold increase in the infection rates due to MDR-GNB during 1999–2008.[3] The emergence of MDR and carbapenem resistance was increasingly seen, especially for *A. baumannii*.[4] However, good infection control practices were able to decrease the overall HAI rates, and the trend remains unchanged for GNB-HAI contributed by carbapenem resistance (CR) bacteria.[2]

Alternative treatment strategies for such XDR and carbapenem-resistant (CR) GNBs are limited. Nevertheless, old drugs such as colistin, fosfomycin and tigecycline can be used in combination with other frugs. In the past decades, the use of colistin has been restricted by the concerns of toxicity and problems in optimization of dosage. Tigecycline use was found adverse by its large distribution volume, leading to sub-inhibitory levels and selection of resistant strains with increase in the geometric mean of minimum inhibitory concentration (MIC).[5] Further, the Food and Drug Administration approved the use of tigecycline only for complicated skin and soft tissue

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infections, intra-abdominal infections and community-acquired pneumonia. However, it was not approved for the use in VAP because of higher mortality rate. Fosfomycin was reported to have superior in vitro activity against CR-enteric bacilli isolates but was reserved for the treatment of urinary tract infection (UTI). Moreover, fosfomycin must be used in combination with other antimicrobial agents because of high rate of resistance mutation[6].

Considering the facts and figures mentioned above, it is imperative to test different antimicrobial combinations including the agent to which the organism has developed resistance. The justification behind the choice of combination therapy is that the antimicrobials will have a synergistic effect when given together.

Preview of Synergic Test

The spread of carbapenem-resistant Enterobacteriaceae (CRE) and other MDR pathogens constitutes a worldwide public health crisis.[7] Antimicrobial synergy may offer the ability to treat pathogens otherwise resistant to all available or acceptable therapies. Antimicrobial synergy is a phenomenon in which two agents exert greater than additive activity when used together. Specifically, the MICs of two agents that are in the resistant range individually may be moved into the susceptible range when used in combination, thereby providing additional treatment options. Furthermore, synergistic combinations may provide therapeutic benefit even if susceptibility to both agents alone already exists by establishing more favourable drug exposure–MIC relationships. However, the synergy field has been limited by the laborious technical requirements for standard synergy testing, whether performed using chequerboard or time–kill methods, as a consequence of which such testing has generally only been applied retrospectively to limited numbers of drug combinations and bacterial isolates.[8]

For CRE, clinical data supporting the use of antibiotic combinations exist primarily in the form of small, retrospective studies that do not incorporate *in vitro* synergy data.[9] Furthermore, *in vitro* investigations of synergistic activity against CRE have employed variable antimicrobials and methods, and the findings amongst studies have at times been contradictory,[10,11] perhaps because results for individual strains are not generalizable to other CRE. As a result of these limitations, evidence-based guidelines for use of combination therapy for CRE have proven impossible to formulate.

Technical Performance of Drug Interactions Methods

Although many test methods are available to determine the interaction between antimicrobial agents, they were not well standardized. Interpretation criteria followed for test results are not defined and remain uncertain. The various in vitro testing methods for determining the synergistic activity of antimicrobial drugs are discussed below.

Time-kill assay

The time-kill assay (TKA) is considered as the standard reference method for the determination of synergy between antimicrobial agents. TKA determines the actual reduction in the viable count of the bacteria after exposure to the drug combination compared to the most active single agent at different time intervals. This is done by adding standard inoculums in broths containing the individual antimicrobial agents and its combination.[12] Sub-cultures are made from the broth containing antimicrobials at different time intervals and the bacterial count is performed. Colony count is done at shorter time intervals e.g., every 2 h over a 24-h period for drugs having concentration-dependent activity. For drugs having time-dependent killing activity, colony count is done every 3–4 h till 24–48 h.[13] The determination of the synergistic action by TKA is defined as ≥2 $\log_{10}$ CFU/ml reduction in the bacterial growth in the combination when compared to the most active single drug. However, antagonism is defined by an increase of ≥2 $\log_{10}$ CFU/ml in the combination compared to the most active single agent. Less than 2 $\log_{10}$ CFU/ml difference is interpreted as indifference. Bactericidal effects of the combinations are determined by a decrease of ≥3 $\log_{10}$ CFU/ml from the initial inoculums.

This method of interpretation was found to be robust with high precision and less intra-experimental variation but not widely used.[14]

This method allows the testing of one concentration and one ratio of the antimicrobials at one time. The test has to be repeated to observe interactions at other concentrations and ratios. There is also a lack of consensus as to a standard inoculum of the organism to be used though the inoculum size varied from 1 to 5 × 10^5. The reported concentration of antimicrobials tested in other studies varies from 0.125 × MIC to 4 × MIC.[15] When drug combinations are tested at the MIC or more than MIC concentrations, the test may be hard to interpret because inhibition of the organism by the single agent may preclude demonstration of synergy.

Some authors prefer testing of drug concentrations that are achievable in human serum when standard dosing regimens are administered.[16] Though this strategy incorporates the pharmacokinetic (PK) property of the tested drugs, it does not implicate the concentration of

drug at tissues or other sites of infection. Thus, results may not be extrapolated to particular organ system infection such as VAP where the serum concentration of the drug may not reflect the tissue concentration. The drug concentration in the *in vitro* test does not vary, while *in vivo*, there is a variation in the concentration and ratio of the drugs used. This depends on the PK and pharmacodynamic (PD) property of the drugs, dosing interval, strength and route of administration.[17] The drawbacks of TKA include testing of limited antimicrobial concentrations, non-standardised inoculum size and antimicrobial concentration, static concentration of the drug, labour intensive and time-consuming.

Checkerboard assay

The checkerboard (CB) assay utilizes a panel of antimicrobial combinations at different concentrations either in the macrobroth (2 ml volume) or microbroth (100 ìl volume) method. The range of tested concentrations varies from four to eight times the MIC to at least 1/8–1/16 of the MIC.[18] It is important to include broad range of concentrations because MIC can vary depending on the method used and also within the method (a variation of one/two-fold dilution is allowed within a test system). For the interpretation of result, the fractional inhibitory concentration (FIC) is calculated for each antibiotic at a given concentration combination by the following formula:

FIC of agent A = MIC of agent A in combination/MIC of agent A alone.

The cumulative FIC is then calculated by summing up the FIC of both the agents. 'Synergy' is interpreted when the FIC index is ≤0.5, 'indifference' or 'no interaction' corresponds to the FIC index >0.5–4.0 and 'antagonism' when the FIC index is >4.0.[19]

However, in some studies, authors have defined 'partial synergy' for FIC index between >0.5 and <1 and an 'additive interaction' for FIC index of 1. Reporting of such results has to carefully consider because of the acceptance of inherent one tube dilution variation with this method and possibility of reproducibility error.[20] This was addressed by Rand *et al.*, who reported 25% discordance with the CB method and suggested testing in at least five replicates and considering the reading only with ≥80% agreement between the replicates.[21] Another contentious issue with CB assays is the use of different criteria to interpret the test.

E-test

E-test strips containing gradient of antimicrobial agents have been used to determine the synergistic combinations. The different methods are (i) *E*-test cross method, (ii) *E*-test fixed ratio method, (iii) *E*-test agar method and (iv) *E*-test MIC: MIC method.

E-test cross method

Mueller-Hinton agar (MHA) plate is inoculated with 0.5 McFarland matched inoculum, to which *E*-test strips are placed one over the other at 90° angle crossing at the MICs of the individual agent of the organism determined earlier. After incubation for 18 hour, the zone of inhibition is read and the FIC index is calculated and interpreted as described for CB assay.[22]

E-test fixed ratio method

In this method, MHA plates are inoculated with 0.5 McFarland matched inoculum. E-test strip of the first agent is placed and incubated at room temperature for 1 hour to allow the antimicrobial to diffuse into the medium. After 1 hour, it is removed and saved as MIC template. The *E*-test strip for the second agent is then placed directly over the imprint of the first strip. The FIC index is again calculated and interpreted as described for CB assay.[23,24]

E-test agar method

In this method, MHA plates are incorporated with 0.5 × or 0.125 × MIC of one agent and the *E*-test strip of the second agent is placed over the inoculated surface. The MIC obtained is compared with the MIC in drug-free medium. The synergy is interpreted when there is more than three-fold reduction in MIC on the drug-incorporated medium.[25]

E-test minimum inhibitory concentration: minimum inhibitory concentration method.

In this method, one test strip is placed on the inoculated MHA plate and incubated at room temperature for 1 h to allow diffusion of the agent. After 1 hour, the agar is marked adjacent to the previously determined MIC of the agent and removed. The second E-test strip is then placed over the imprint of the previous strip such that the mark on the agar corresponds to the MIC of the second agent.[26] The resulting ellipse of inhibition is read after 20 hour of incubation at 37°C. The FIC index is calculated and interpreted as like that of CB assay.

Compared to the other commonly used methods such as TKA and CB assay, E-test methods are technically simpler to perform and reproducible. The limitations of E-test methods are the inability to determine interaction of more than two antimicrobial combinations and the limited gradient of antimicrobial on the paper strip. For organisms where the MIC is more than the highest concentration on the strip, difficulties may be encountered with calculation of the FIC index and may result in the false interpretations.

In addition, detection of antagonistic combinations will be limited for such isolates.[27] With the E-test cross method, mild degree of antagonism may not be detected because of overlapping of strips.

Conclusion

Combination therapy has gained attention due to increased efficacy and scope for decreasing the toxicity and development of resistance especially against drug-resistant strains. Therefore, it is imperative to investigate the antimicrobials that have to be used in combination for the clinical utility. At present, very few agents are available for treating infections due to PDR pathogens, and combination therapy is found to be the effective strategy to tackle this. Several methods exist for the assessment of synergistic activity of two or more antimicrobial agents. However, wide variation was observed in terms of their technical issues, complexity and interpretation of test results. This signifies the need for global-level standardization of the various methods for the determination of synergy of antimicrobial combinations. At present, TKA is the reference method which yields considerable level of concordance rate among the various studies.

It can be inferred that the majority of the in vitro test methods could not predict the clinical success rates. Therefore, prospective clinical trials with in vitro synergy testing data are needed to improve the clinical outcome.

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Insulinoma Induced Hypoglycemia Mimicking Seizure Disorder: A Less Common Encounter

MAJUMDER SN[1], SHEIKH AK[2]

Abstract

Insulinoma is a rare neuroendocrine tumor, mostly benign. Non-specific clinical features contribute to its diagnostic delay cut. A 26-year-old gentleman presented to Emergency Room (ER) with generalized tonic clonic seizure followed by post confusion state. He had multiple attacks of repetitive symptoms of diaphoresis, tremulousness, palpitation followed by abnormal behavior and unresponsiveness lasted for few minutes and relieved with eating something. Most of the episodes occur after prolonged fasting and physical exertion with worsening of symptoms during month of Ramadan. Subsequently biochemical and morphological workup detected localized pancreatic insulinoma. He was referred to pancreatic surgeon for surgical intervention. Paste though insulinoma is a manageable condition, it may cause potentially life threatening hypoglycemic symptoms if left untreated.

Key words: Insulinoma, Tonic clonic seizure.

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Introduction:

Neuroendocrine tumors which are thought to derive from neuroendocrine cells in the endocrine and central nervous systems are rare neoplasm, commonly occurred in the intestine, less commonly found in the pancreas, lung and rest of the body.

Among all neuroendocrine pancreatic tumors, insulinoma is considered to be the commonest which arise from beta cells that secret endogenous insulin ectopically resulting in hypoglycemia.[1]

Myriad clinical manifestations ranging from subtle, vague complaints to catastrophic events are largely due to neuroglycopenia and increased catecholamine secretion in response to it.[2] Neuroglycopenic symptomatology often masquerades not only psychiatric disorders but also primary epilepsy which leads to a misdiagnosis of insulinoma.[1,2]

The patient described in this case report presented with sweating followed by abnormal behavior which were more marked during prolonged fasting specially in the month of ramadan alleviated by taking food. His low blood sugar was first documented as a part of routine test after presenting with generalized tonic clinic seizure. He was admitted to the neurology unit in presumption it as a case of primary epilepsy. Aftermath, in a view to investigate the causes of hypoglycemia, the confirmed diagnosis of insulinoma came up.

Insulinoma should be taken into consideration in a patient with unexplained hypoglycemia specially when there is a suggestive history that attacks are provoked by fasting.[1]

Case Presentation:

A 26-year-old gentleman with unremarkable family history presented with generalized tonic clonic seizure followed by post seizure confusion state in an emergency room of a Specialized Hospital. His capillary blood glucose was found to be low (2.7mmol/l). On query, his attendant gave history of recurrent attacks of characteristic spells for the last six months. During each attack, he experienced tremor of the hands, excessive sweating, palpitation, blurring of vision followed by altered behavior, confusion and unresponsiveness. This episode shortened with meal. None of his attack was associated with convulsion or involuntary micturition. After recovery, he was unable to recollect short term memories. He experienced near about 8-10 episodes lasting for about few minutes, noticeably after prolonged fast and physical exertion. He gained 10

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kg weight in last 6 months. Initially he visited a registered doctor and diagnosed as a case of psychiatric disorder and hypothyroidism on the basis of lab tests and was given replacement therapy with a hope to reduce the symptoms.

Later on, he had frequent attacks during month of Ramadan, mostly before breaking the fast. Multiple consultations were made without significant improvement.

There was no suggestive history of drug, alcohol or prescription medication overuse.

On firsthand, he was suspected as a case of seizure disorder and managed with antiepileptic drugs in the emergency room.

On examination, his BMI was 26.98 kg/m2. Acanthosis nigricans was observed over the neck and axilla. Other systemic examinations including neurological examination findings were unremarkable.Laboratory reports included CBC- Hb-14.2 g/dl, WBC-10,800/cumm, PLT-3,42000/cumms; serum electrolytes showed sodium-143 mmol/l, potassium- 4 mmo;/l; serum creatinine was 1 mg/dl; liver function test was normal; serum calcium was 9.8 mg/dl; CPK was high which was 288 U/l (ref: 55.0-170); prolactin was also high-129 ng/ml (ref: 3.46-19.4); morning cortisol was 21.5 microgram/dl; RBS was found to be low that was 2.7 mmol/l alongside low fasting glucose which was 2.1 mmol/l; 2 h after 75 gm glucose; HbA1C was found 4.8%, fasting insulin was significantly high with a value of 84.4 microIU/ml (ref- 3.0-17.0) along with high level of C-peptide that was 13.8 ng/ml (ref-0.78-5.19).Imaging studies were also carried out. CXR P/A view was normal. MRI of brain was insignificant. However EEG of brain came up as abnormal because of left fronto-temporal interictal epileptiform discharges. This would signify some underlying fronto-temporal dysfunction of a nonspecific etiology. Clinical correlation was suggested.

USG of abdomen revealed hepatomegaly with mild fatty infiltration, dilated portal vein alnd left sided renomegaly. Endoscopic ultrasound showed pancreatic SOL? insulinoma. To delineate the lesion accurately, CT scan of whole abdomen with contrast was ordered where a well defined, lobulated soft tissue density lesion which was isodense to pancreas in non contrast image (Fig 1) was depicted.The lesion measured about (18.9*18.9*15.6)mm. pancreas was normal in size.

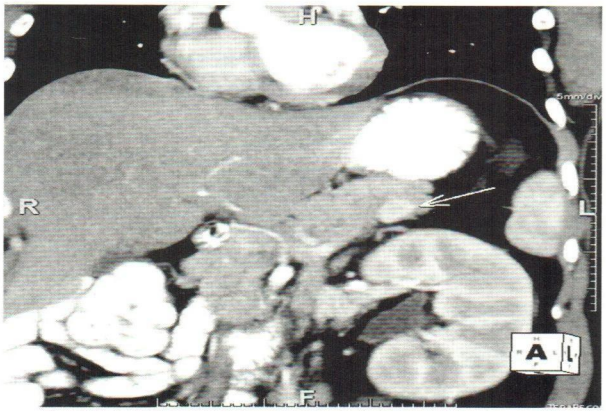

Fig.-1: *Lobulated Isodense lesion to pancreas*

It showed strong enhancement in arterial phase with rapid wash out seen at posterior aspect of pancreas near the tail, abutting the splenic vein however no definite intravascular extension was noted (Fig: 2)

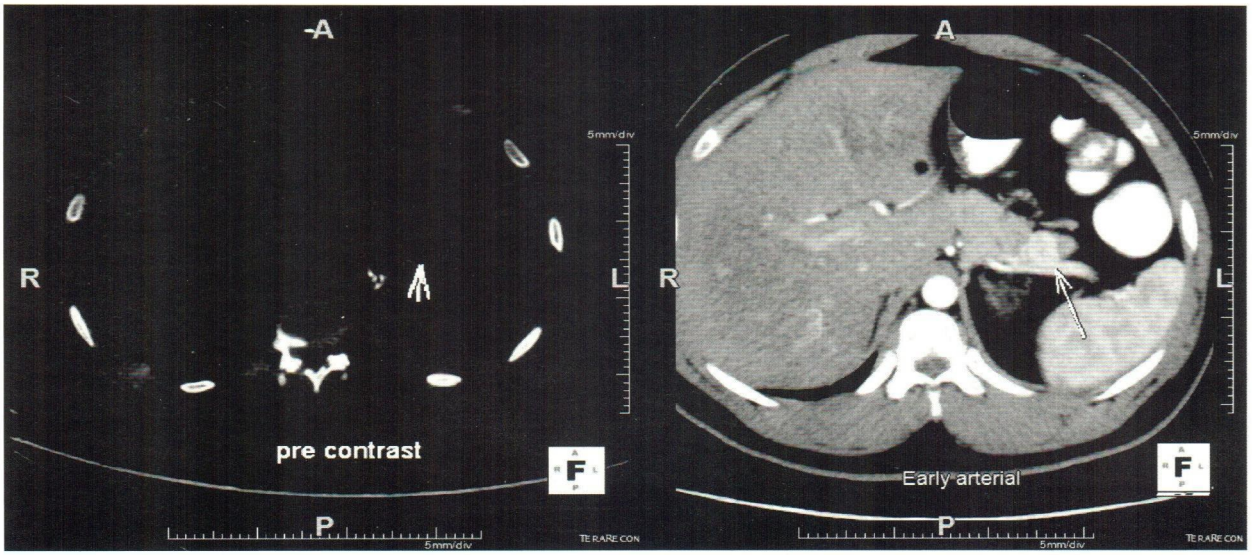

Fig.-2: *In pre contrast phase, no enhancement was seen; early arterial phase showed early enhancement with rapid washout in porto-venous phase.*

Calcification was seen in both adrenal glands, more on left side.

Final impression suggested islets of cell pancreatic neoplasm (insulinoma) at posterior aspect of pancreas, near the tail, abutting the splenic vein. Calcification of both adrenal glands suggesting previous infection/ hematoma, enlarged portal vein with dilated inferior mesenteric vein and it's tributaries, hypoplastic suprarenal segment of IVC, mildly diffuse change in liver.

CT chest findings were within normal limit

Based on clinical symptomatology and supportive blood tests alongside imaging findings, finally it was concluded as a case of neuroendocrine tumor probably insulinoma in the tail of pancreas.

He was sent to surgeon for further management needed to alleviate his symptoms. Finally he underwent spleen preserving distal pancreatectomy. Subsequently, the histopathology of specimen depicted findings consistent with insulinoma of benign nature.

Now he is under regular follow up without any hypoglycemic symptoms or documented hypoglycemia and complications.

Discussion:

Insulinoma, mostly benign (90-95%) pancreatic islet cell tumor are generally small (>90% <2 cm) equally distributed in the pancreatic head, body and tail.[1,3] It may be associated with other endocrine glands tumors in the multiple endocrine neoplasia type I (MEN I) (parathyroid, pituitary, endocrine pancreas).[1]

The incidence is 3-10 cases per million people per year in United State[4] however exact data for international incidence of insulinomas is not known. Slight female predisposition is seen with male-to-female ratio 2:3.[2] Common presentation is in between 30 and 60 years of age(median age at diagnosis is about 47 years) except insulinoma associated with MEN 1, where the median age is the mid-20's.[5,6]

It is considered as one of the important causes of hypoglycemia (glucose <55 mg/dL)in patient without diabetes.[7,8]

It presents as fasting hypoglycemia, with Whipple's triad which is described as 1. Symptoms associated with fasting or exercise.[2] Recorded hypoglycemia with symptoms and 3. Symptoms relieved with glucose.[8] It has the tendency to produce clinical features from neuroglycopenia comprising initial symptoms of nervousness, hunger, flushed facies, headache when blood glucose level goes down to 55 mg/dL (3.0 mmol/L) in otherwise healthy individuals along with palpitation, trembling and anxiety mostly due to adrenal and sympathetic over activity. Subsequently disorientation, visual difficulties, irrational behavior occur. If plasma glucose continues to fall other symptoms like grasping, forced sucking, motor restlessness, muscular spasm even myoclonic twitching and convulsion appear in some cases. Lastly, deep coma, pupillary dilatation, pale skin, shallow respiration, slow pulse, hypotonia has been observed.[1,6,8]

Symptoms may be present from one week to as long as several decades prior to the diagnosis (1 month to 30 years, median 24 months).[7]

Detailed overview of history revealed clinical features like palpitation, sweating owing to excess catecholamine release followed by visual difficulties, confusion and bizarre or combative behavior in our reported case. Based on these clinical features, he was labelled to have psychiatric abnormality. However, more terrifying presentation with generalized tonic clonic seizure waned the previous diagnosis. Although he was put on antiepileptic drug to control his seizure and hypoglycemia measured by capillary glucose level was thought to be due to poor intake of food for prolonged time prior to admission, but documented hypoglycemia on multiple occasion in hospital setting warranted further meticulous evaluation.

Hypoglycemia, the most common endocrine emergency, in an apparently healthy non-diabetic young adult need thorough investigation. Prompt diagnosis and treatment is essential to prevent brain damage.

Several causes other than insulinoma behind fasting hypoglycemia like inadvertent use of insulin or oral hypoglycemic drugs, alcoholism, critical illness, hormone deficiencies, severe liver disease, poor nutrition and extrapancreatic tumors secreting IGF-II should be ruled out.[1,8]

The most reliable investigation to diagnose insulinoma is a 72-hour-fast with serum glucose , C-peptide, proinsulin and insulin measurement every 4-8 hours 1. Endogenous hyperinsulinism is supported by insulin ≥3 uU/mL, c-peptide ≥0.2 nmol/L, proinsulin ≥5 pmol/L.[8] Undetectable sulfonylurea/meglitinide in the setting of hypoglycemia needs to be present.[8] Alternatively, testing can be done at the time development of spontaneous hypoglycemia.[8]

Imaging studies are mainly employed to localize the tumor after clinical and biochemical diagnosis is established.[1]

Low fasting glucose with high fasting plasma insulin level and C-peptide gave the clue to suspect insulinoma in our patient.

Surgery is the curative treatment. Long-term survival of patients with insulinoma is generally excellent with recurrence rate of only 5.4% in benign case.[4]

Conclusion:

Early picking up of hypoglycemic symptoms, blood sampling for sugar level at emergency room is of paramount importance. Moreover, hypoglycemia in case of non-diabetic patients should be evaluated. Although insulinoma is a rare entity in our context, but delayed diagnosis can lead to potentially life threatening consequences.

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COLLEGE NEWS

Journal of Green Life Med. Col. 2019; 4(2): 110

Presentation held during CME/CPD sessions organized by Medical Education Unit (MEU) of Green Life Medical College from January to July, 2019:

Date	Topics	Department
06.01.19	Designing questionnaire –a research instrument	Research Cell
16.01.19	Oral antidiabetic drugs	Department of Pharmacology
20.01.19	Medical ethics	Department of Forensic Medicine
30.01.19	Evaluation of breast lump	Department of Pathology
03.02.19	World cancer day	Department of Medicine
06.02.19	Preanaesthetic evaluation	Department of Anaesthelogy
17.02.19	Students approaches to learning and preference of using social media	Department of Community Medicine
20.02.19	How to diagnose paediatric fracture	Department of Orthopaedics
27.02.19	Childhood obesity	Department of Paediatrics
03.03.19	World TB day observation	Department of Medicine
06.03.19	How to prepare ideal OSPE	Department of Anatomy
13.03.19	World glaucoma day observation	Department of Ophthalmology
20.03.19	Dental caries and prevention	Department of Conservative Dentistry
24.03.19	World Down Syndrome day observation	Department of Paediatrics
27.03.19	Swelling in disguise	Department of Surgery
02.04.19	Vertigo	Department of ENT
07.04.19	Health for all: everyone, everywhere: World Health Day theme	Department of Community Medicine
10.04.19	Anxiety disorder	Department of Psychiatry
17.04.19	Overview on Pre-diabetics	Department of Biochemistry
21.04.19	World malaria day	Department of Medicine and Microbiology
24.04.19	PCOS: An update	Department of Endocrinology
05.05.19	World Lupus day observation	Department of Medicine
22.05.19	Yaba addiction	Department of Pharmacology
02.06.19	Celebration of world blood donor day	Department of Surgery

Corrigendum

The name of a co-author was misspelled in the in the Original article titled "Role of FNAC in the Management of Breast Lump and its Correlation with Histopathology" which was published in the Volume 04 Issue Number 01 (January 2019) of Green Life Medical College Journal. The correct name with designation is mentioned below:

Dr. Mohammad Haroon Or-Rashid
Resident Surgeon, 250 Bed District Hospital, Feni

The Editorial Committee expresses their regret for this unintended mistake and the inconvenience caused.

Executive Editor, GMCJ

GREEN LIFE MEDICAL COLLEGE JOURNAL

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