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Medical  
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3. Manuscript should be submitted in Microsoft Word file using font size 12 Calibri (Body) characters, double-spaced except for abstract and author's information where single space is required and with 1.5 cm margins on top and left and 1 cm on right and bottom.
4. All authors' names, posts, affiliation at the time they did their work and their highest academic degree(s), cell phone numbers and e-mail addresses should be included.
5. A cover letter must be signed by the corresponding author and co-author(s). The letter must include the following statement: **"This manuscript is my/our own work, it is not under consideration by another journal, and this material has not been previously published."**

6. Abstract and key words in the first page followed by the text, prepared in the format of IMRAD (Introduction, Methods, Results and Discussion).

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- c) Introduction
- d) Methods
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- Disclosure of conflict of interest if any
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- Preferably within 250 words
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- Statement of the problem with a short discussion of its importance and significance
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#### **Methods**

- Research type, place and time
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- Present results in a logical sequence in text, table and illustration with most important finding first

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2. Dr.---
3. Dr.---



## Editorial

# Medical Biotechnology: Problems & Prospects in Bangladesh

Mizan S<sup>1</sup>, Samad MA<sup>2</sup>, Momen A<sup>3</sup>

## Introduction

Medical Biotechnology (MBT) refers to methods and procedures for manipulating and studying genes & their application in medical science. In the 1970s, Scientists discovered and used their power of natural "scissors" proteins called restriction enzymes to specifically remove a gene from one kind of organism and put it into related or unrelated organism. Thus, recombinant DNA technology, the most experts label as modern biotechnology, was born.

## Applications of MBT

### 1. Production of recombinant protein

**(a) Therapeutic protein-** The first "Bioengineered" drug a recombinant form of human insulin, was approved by the U.S Food and Drug Administration (FDA) in 1982.

Other recombinant DNA products includes interferon's, growth hormone, erythropoietin etc. Human protein produce by this method have severe advantages. They are indistinguishable from their authentic human counter parts but safer as they are less likely to be contaminated by infectious agent, and they can be produced in large quantities.

**(b) Biotech Vaccine-** Biotechnology also plays an important role in preventing disease. Vaccines produced by the recombinant DNA methods are generally safer than traditional vaccines because they contain isolated viral or bacterial protein as opposes to killed or weakened disease causing agents.

### 2. Transgenic Animals

By the early 1980s scientists were able to insert DNA from humans into mice and other animals.

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"Transgenic" animals can be as models for the development for diabetics, atherosclerosis and Alzheimer disease.

### 3. Sequencing of Human Genome

The sequencing of human genome, completed in the year 2004, has given the scientist an incredibly rich "parts list" with which to better understanding why and how disease happen.

## Challenges for Bangladesh

Medical biotechnology is definitely a very prospective area of development for developing countries like Bangladesh. In Bangladesh although some initiatives have been taken in this field, the field of modern biotechnology is still untouched. A summary analysis of the situation in Bangladesh is:-

### Strength

- Rich biodiversities
- Low cost of labor in research, development and manufacturing
- Fairly trained human recourses

### Weakness

- Lack of commitment in the part of government
- Weak connection to the knowledge and information network
- Immigration of the experts to rich countries
- Unawareness of the part of entrepreneur community
- Almost total absence of co-ordination between research and industry

### Opportunities

- Fairly large local markets
- Big export potentials
- Scopes for contact research

### Threats

- Heavy investment by neighboring countries like India and China
- Anti-biotech propaganda, fueled by traditional and western funding
- Unfavorable IPR and trade politics imposed by the rich and technologically advanced

countries or their representative agencies like World Bank and IMF

### **Conclusion**

Biotechnology has the potential to provide more and healthier food, reduce dependence on fossil fuels, offer more effective cures, diagnosis and prevention of disease. It could be a shining path for industrial and economic development through the generation of products and services both for domestic consumption and export. The weakness on

part of Bangladesh as noted above are addressable. However, government must be the initiator and major investor in this efforts, as the initial diffused return, which the private sector is incapable to undertake.

### **Reference**

1. Mizan, S. Guide book for participants, workshop on Medical Biotechnology for medical teachers and scientists, June 26-27, 2007.

## Original Article

## Knowledge and Practice of Personal Hygiene among Rural Adults in a Selected Area of Bangladesh

Rahman MA<sup>1</sup>, Zinia SN<sup>2</sup>

### Abstract

This was a descriptive cross-sectional study which was conducted to assess the level of knowledge and practice regarding personal hygiene among rural adults of Bangladesh. The study was conducted at the selected villages in Brahmanbaria in 2017. A total of 300 rural adults of both sexes were selected purposively and interviewed with the help of interview schedules. The findings of the study reflected that among all the respondents, female (53.67%) were more than male (46.33%). Among them, 17.67% respondents were quite illiterate. Occupation of the respondents was mainly agriculture (15.33%) and housewife (48.67%). Among the respondents, 14.33% used kancha latrines and 5.00% of them still used open field for defecation. Maximum respondents (93.33%) drunk tube-well water. Majority (86.44%) of the respondents took their bath with soap and water daily. Most (98.33%) of the respondents had their teeth brushed once daily but only 4.07% of them did so three times daily. Among the respondents, 31.00% did not use tooth-paste and 20.33% of them did not cut their nails weekly. Only 5.33% respondents washed their hair with soap-shampoo-water. Most of them (66%) washed their hands with only water before meal & 11.67% did so with only water after defecation. More than one-third (34.33%) of the respondents did not have any knowledge about the transmission of diseases through dirty nails and even after defecation (33.67%) if not hands washed properly. A considerable number of respondents (62.33%) did not have knowledge about transmission of diseases from using latrine barefooted. The habit of tobacco smoking, betel leaf & nut and alcohol & ganja were 18.00%, 14.67% and 0.66% respectively. There was lack of awareness in maintaining many important particular aspects of personal hygiene among rural adults.

**Keywords:** Personal hygiene, Rural adults, Awareness.

### Introduction

Personal hygiene is that which deals with measures, which are the personal responsibilities of the individual for the promotion of good health. It implies the observance of healthy practices by an individual in his daily life.<sup>1</sup> To achieve health or to maintain it may not be easy in this world when lives have become too artificial and the environment around us is so very polluted and hazardous. For overall healthful condition community is responsible.

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In fact responsibility for health is quite divided. State has taken up big share of it; some has been taken over by international agencies, but still many things are left to the individual and this part is known as personal hygiene. With all the desires and sincere attempts there may be failures, there are two blocks on our way which we cannot remove. These are the heredity and the constitution which may have a link with the first one. With these two exceptions many things about health depends upon individual's desire and endeavour, because environment or the existing health service is the common factor for all in a community. There are many personal factors conducive to good health and there are many good quotables e.g. "early to bed and early to rise makes a man healthy, wealthy and wise". There are many things to do and similarly there are many things 'not to do' or one should avoid these things. When one does a thing over a long time that becomes a part of his life - a habit. Habits may be good or conducive to health or they may be definitely injurious. It is

obvious that one can look after his own health when he has grown some sense of responsibility, but personal hygiene is possibly more important for an infant and young child, but at this stage its mother and others of the family are responsible and this time is more important for habit formation and easy learning.<sup>2</sup> A recent trend in health care is self care. It is defined as "those health-generating activities that are undertaken by the persons themselves". It refers to those activities individuals undertake in promoting their own health, preventing their own disease, limiting their own illness, and restoring their own health. These activities are undertaken without professional assistance, although individuals are informed by technical knowledge and skills. The generic attribute of self care is its non-professional, non-bureaucratic, non-industrial character; its natural place in social life.<sup>3</sup> Personal hygiene involves those practices performed by an individual to care for one's bodily health and well being, through cleanliness. Motivations for personal hygiene practice include reduction of personal illness, healing from personal illness, optimal health and sense of well being, social acceptance and prevention of spread of illness to others. What is considered proper personal hygiene can be cultural-specific and may change over time. Other practices that are generally considered proper hygiene include bathing regularly, washing hands regularly and especially before handling food, washing scalp hair, keeping hair short or removing hair, wearing clean clothing, brushing teeth, cutting finger nails, besides other practices. Some practices are gender-specific, such as by a woman during her menstrual cycle. Good personal hygiene now forms part of primary health prevention strategy, this has been found to be effective by reducing morbidity and mortality. Personal hygiene, which is also referred to as personal care, includes the following: bathing, hair, nail, foot, genital and dental cares, and washing of clothing among others.<sup>4</sup> A large number of diseases occur due to lack of personal hygiene and most of these diseases are communicable. Poor hygiene practices and inadequate sanitary conditions play major roles in the increased burden of communicable diseases within developing countries. A large fraction of the world's illness and death is attributable to communicable diseases. Sixty-two percent and 31% of all deaths in Africa and Southeast Asia, respectively, are caused by infectious disease.<sup>5</sup> It is true that the rural people are very much vulnerable

to communicable diseases. Diseased people are liabilities to the community. Treatment of these diseases is expensive and always not within the reach of them. But prevention of these diseases is possible if their life style and hygienic practices can be maintained to an expected level. Various practices like maintaining personal cleanliness- washing hand prior to eating and after using toilet, keeping nails cut, brushing teeth in time, drinking safe water, using hand flush water seal type of latrine etc. are contingent to control many of these diseases. Hand washing with soap alone averts 0.5 - 1.4 million deaths per year.<sup>6</sup> Diarrhoeal diseases, skin diseases, worm infestations and dental diseases are most commonly associated with poor personal hygiene. The primary causes of infections are contaminated water and poor sanitation, as well as poor hygienic practices. Lack of personal hygiene coupled with poor sanitation favor person-to-person transmission of infection.<sup>7</sup> This study on personal hygiene among rural population will help making relevant policies to reduce the problems for the improvement of health of the rural people and this is the justification of this study.

### **Methods**

This was a descriptive cross-sectional study. This study was carried out to assess the level of knowledge and practice of personal hygiene among rural adults of Bangladesh. This study was conducted at the selected villages in Brahmanbaria in 2017. A total of 300 rural adults of both sexes of a selected area were selected purposively for the study. First of all consent was taken from the respondents before information collection and they were clearly informed of the objectives of the study. They were also assured that data would be kept confidential and used only for academic and medical purposes. Then face to face interview was conducted by asking questions with the help of Interview schedules. After compilation, the obtained data were checked, verified, edited and a table was prepared. The data were then analyzed from the table for having results.

### **Results**

A total of 300 rural adults of both sexes were selected purposively for the study to assess the level of knowledge and practice of personal hygiene. The findings of the study from data analysis are documented below:

Table I Socio-demographic information (n= 300)

Variable	n (%)	Variable	n (%)
<b>Age group in year</b>		<b>Education</b>	
18 - 38	190 (63.33)	Illiterate	53 (17.67)
38 - 58	82 (27.34)	Below graduation	232 (77.33)
58 - 78	25 (08.33)	Graduation & above	15 (05.00)
78 - 88	03 (01.00)	<b>Monthly family income (Taka)</b>	
Mean ± SD	40.83 ± 9.09	<5000	24 (08.00)
<b>Sex</b>		5000-10,000	63 (21.00)
Male	139 (46.33)	10000-15000	92 (30.67)
Female	161 (53.67)	15000-20000	49 (16.33)
<b>Marital status</b>		20000 & above	72 (24.00)
Married	258 (86.00)	Mean ± SD	15500 ± 7047
Unmarried	42 (14.00)	<b>Family member</b>	
<b>Occupation</b>		2 – 5	107 (35.67)
House wife	146 (48.67)	5 - 8	149 (49.67)
Service	16 (05.33)	8 - 11	37 (12.33)
Day labourer	23 (07.67)	11-14	07 (02.33)
Maid servant	04 (01.33)	Mean ± SD	5.94 ± 2.21
Business	26 (08.67)	<b>Source of water</b>	
Agriculture	46 (15.33)	Tube-well	280 (93.33)
Rickshaw-puller	02 (00.67)	Tap-water	20 (06.67)
Student	24 (08.00)	<b>Type of latrine</b>	
Driver	07 (02.33)	Kancha latrine	43 (14.33)
Carpenter	04 (01.33)	Open field defecation	15 (05.00)
Masonry	02 (00.67)	Sanitary latrine	242 (80.67)

Out of 300 respondents, the highest and lowest age was 88 and 18 years respectively. The mean age of the respondents was (40.83 ± 9.09) years. Female 161 (53.67%) were more than male 139 (46.33%) and of them 258 (86.00%) married and 42 (14.00%) unmarried. Occupation of 46 (15.33%) respondents was agriculture and 146 (48.67%) respondents was housewife mainly. As to educational status, the 53 (17.67%) respondents were quite illiterate and the majority 232 (67.33%) of them were below graduation. Monthly family income of 204 (68.00%)

respondents was within the range of 5000-20000 taka but the income of 24 (08.00%) of them was <5000 taka. The mean monthly family income was (15500 ± 7047). The majority 149 (49.67%) of the respondents had 5-8 family members. The mean family member was (5.94 ± 2.21). Most 280 (93.33%) of the respondents used tube-wells as their source of drinking water. The majority 242 (80.67%) of the respondents used sanitary latrine, 43 (14.33%) used kancha latrine and 15 (05.00%) of them still used open field for defecation (Table I).

Table II Practice of personal hygiene (n= 300)

Variable	n (%)	Variable	n (%)
<b>Habit of taking bath</b>		<b>Habit of washing hands</b>	
Daily	295 (98.33)	Before & after taking meal,	295 (98.33)
At interval	05 (01.67)	After defecation	
<b>Material used for taking bath</b>		Before preparing & cooking food,	05 (01.67)
With only water daily	18 (06.00)	Before distributing food, After	
With soap & water daily	255 (85.00)	taking meal & after defecation	
With soap & water irregularly	24 (08.00)	<b>Material used for washing</b>	
With soap & water on the occasion	03 (01.00)	<b>hands before meal</b>	
<b>Habit of brushing teeth</b>		Only water	198 (66.00)
Daily	295 (98.33)	Soap & water	102 (34.00)
At interval	05 (01.67)	<b>Material used for washing</b>	
<b>Frequency of brushing teeth daily</b>		<b>hands after defecation</b>	
One time	153 (51.00)	Only water	35 (11.67)
Two times	130 (43.33)	Soap & water	250 (83.33)
Three times	17 (05.67)	Mud & water	09 (03.00)
<b>Method of cleaning teeth</b>		Ash & water	06 (02.00)
Brush/Finger/Meswak-Tooth paste	207 (69.00)	<b>Defecation done barefooted</b>	
Brush/Finger/Meswak-Majan/Charcoal	86 (28.67)	Yes	46 (15.33)
With only Meswak	07 (02.33)	No	254 (84.67)
<b>Frequency of cutting nails</b>		<b>Habit of sleep</b>	
Weekly	239 (79.67)	9/10/11 PM – 4/5/6/7 AM	277 (92.33)
Fortnightly	24 (08.00)	No specific time and duration	23 (07.67)
At leisure time	37 (12.33)	<b>Physical exercise performed</b>	
<b>Method of washing hair</b>		Jogging	13 (04.33)
With soap & water	128 (42.67)	Playing	07 (02.33)
With shampoo & water	149 (49.67)	Physical labour	101 (33.67)
With mud & water	07 (02.33)	Simple waking	179 (59.67)
With soap-shampoo-water	16 (05.33)	<b>Habit of addiction</b>	
<b>Frequency of washing hair</b>		Tobacco smoking	54 (18.00)
One time daily	64 (21.33)	Betel leaf & nut	44 (14.67)
Washing irregularly	231 (77.00)	Alcohol & Ganja	02 (00.66)
On the occasion	05 (01.67)	Nothing	200 (66.67)

Out of 300 respondents, 295 (98.33%) took bath daily of which majority 255 (86.44%) of them took bath 'with soap & water daily', 03 (01.00%) 'with soap & water on the occasion', 18 (06.10%) did so only with water daily and the rest 24 (08.00%) did so 'with soap & water' irregularly. Majority 295 (98.33%) had their teeth brushed daily but majority 153 (51.86%) of

them had their teeth brushed one time daily. Maximum 207 (69.00%) cleaned their teeth with 'Tooth paste' and 86 (28.67%) used 'Majan/Charcoal'. Majority 239 (79.67%) cut their nails weekly and the rest 61 (20.33%) fortnightly or at any leisure time. Among the respondents, 128 (42.67%) washed their hair with 'soap & water', 149 (49.67) did so with

shampoo & water' and only 16 (05.33%) washed their hair with 'soap-shampoo-water'. Majority 231 (77.00%) washed their hair irregularly and 05 (01.67%) on the occasion and only 64 (21.33%) washed their hair one time daily. Regarding washing hands, 295 (98.33%) of the respondents washed their hands 'before & after taking meal & after defecation'. Before taking meal, majority 198 (66.00%) washed their hands with 'only water'. After defecation, 35 (11.67%) respondents still washed their hands with

'only water'; 46 (15.33%) went for defecation barefooted. Among the respondents, 23 (07.67) did not maintain regularity for sleeping; 121 (40.33%) performed their physical exercise mainly by physical labour, jogging and playing but most 179 (59.67%) of them did so by only simple walking. About 54 (18.00%), 44 (14.67%) and 02 (00.66%) of the respondents had the habit of 'tobacco smoking', 'betel leaf & nut' and 'alcohol & ganja' respectively (Table II).

**Table III Knowledge about health problems from lack of personal hygiene (n= 300)**

Variable	n (%)	Variable	n (%)
<b>Effect of using majan/charcoal</b>		<b>Problems if not taking care of hair</b>	
Problem in teeth	198 (66.00)	Dandruffs	115 (38.33)
Don't know	102 (34.00)	Dandruffs, Lice	99 (33.00)
<b>Transmission of diseases through dirty nails</b>		Don't know	86 (28.67)
Diarrhoea, Dysentery	159 (53.00)	<b>Diseases from using latrine barefooted</b>	
Worm infestation	30 (10.00)	Worm infestation	113 (37.67)
Typhoid	03 (01.00)	Don't know	187 (62.33)
All of above	05 (01.67)	<b>Avoidance for the prevention of obesity</b>	
Don't know	103 (34.33)	Eating excessive rice	35 (11.67)
<b>Diseases transmitted if not washing hands after defecation</b>		Eating vegetables	15 (05.00)
Diarrhoea, Dysentery	150 (50.00)	Physical work and exercise	45 (15.00)
Worm infestation	37 (12.33)	Eating excessive rice, meat, fast food and taking fat or oil	138 (46.00)
Typhoid	02 (00.67)	Don't know	67 (22.33)
All of above	10 (03.33)		
Don't know	101 (33.67)		

Out of 300 respondents, 198 (66.00%) answered 'Problem in teeth' from using majan/charcoal. More than fifty percent 159 (53.00%) and 30 (10.00%) answered 'Diarrhoea, Dysentery' and 'Worm infestation' transmitted through dirty nails respectively. About fifty percent 150 (50.00%) respondent and 37 (12.33%) answered 'Diarrhoea, Dysentery' and 'Worm infestation' transmitted if not washing hands after defecation respectively and the 115 (38.33%) and 99 (33.00%) answered 'Dandruffs' and 'Dandruffs, Lice' transmitted if not taking care of hair respectively. Regarding disease transmission, 113 (37.67%) answered 'Worm infestation' transmitted from using latrine barefooted. The majority 138

(46.00%) of the respondents answered that 'Eating excessive rice, meat, fast food and taking fat or oil' were avoidable for the prevention of obesity. Regarding the use of charcol 102 (34.00%) did not know its harmful effects. About 103 (34.33%), 101 (33.67%), 187 (62.33%) and 86 (28.67%) of the respondents did not have any knowledge of disease transmission through dirty nails, through hands if not washed after defecation, from using latrine barefooted and about problem if not taking care of hair respectively. Regarding avoidance for the prevention of obesity 67 (22.33%) had no knowledge (Table III).

## **Discussion**

Findings of the study reflected that mean age was  $40.83 \pm 9.09$  years. Majority of the respondents were female (53.67%) than male (46.33%). Among them, 17.67% respondents were quite illiterate. About 62.33% respondents did not have knowledge about transmission of diseases from using latrine barefooted. The habit of 'tobacco smoking', 'betel leaf & nut' and 'alcohol & ganja' were 18.00%, 14.67% and 0.66% respectively. In contrast and compare with other studies, the observation from the study conducted by Imtiaz et al. revealed that the mean age of the respondents was 33 years but in our study, the mean age of the respondents was  $40.83 \pm 9.09$  years. Regarding educational qualification, 87.33% were educated in different levels and 12.67% were illiterate whereas in this current study 17.67% of the respondents were quite illiterate. Imtiaz et al. in their study revealed majority (74.67%) of them were housewives that are similar to our study.<sup>8</sup> The study observation conducted by Ghose et al. revealed that the practice regarding tooth paste use (80.6%) was higher in urban area and charcoal use (10.0%) was still found in rural areas.<sup>9</sup> Similarly in our study, majon/charcoal use (28.67%) was still found for cleaning teeth among the rural people. Farah et al. revealed that about 50% respondents brushed their teeth regularly with toothpaste but in our study it's more about (69.00%) of them brushed their teeth regularly with toothpaste. The study observation conducted by Farah et al. revealed that out of 475 respondents, more than fifty percent slum dwellers resided in tin shaded room while 21.7% in 'kancha' houses. The 66% percent of the respondents used to drink water from tube-well and 24% used supplied water provided by the city corporation. But in our study majority 93.33% drunk tube-well water. Farah et al. also revealed that near 59% of the respondents used sanitary latrine. About 67% slum dwellers regularly practiced hand washing before taking meal and 59.2% respondents used soap after defecation whereas in our study 14.33% used kancha latrines and 5.00% of them still used open field for defecation. Regarding personal cleanliness, they showed that 81% subjects took bath regularly while 78% washed clothes irregularly.<sup>10</sup> But in our present study, more respondents (98.33%) took bath daily. Also in our study majority (86.44%) of the respondents took their bath with 'soap and water' daily. Regarding

knowledge, it was poor in our study that more than one-third (34.33%) respondents did not have any knowledge about the transmission of diseases through dirty nails and even after defecation (33.67%) if not hands washed properly. Thus this study evaluated the knowledge, attitudes and practices of hygiene among rural people of Bangladesh and assessed the extent to which proper knowledge on hygiene was associated with personal hygiene characteristics.

## **Conclusion**

Study findings revealed lacking in maintaining personal hygiene among rural adults. There is need for continuous community hygiene education along with adequate access to safe water supply and sanitation in rural communities of Bangladesh. Community-based hygiene education is vital in order to decrease communicable diseases burden. The current study emphasized the importance of motivating the villagers of Bangladesh regarding this aspect by regular health education programs. Rural study emphasized the importance of motivating the villagers of Bangladesh regarding this aspect by regular health education programs. Rural people can be receptive to learning and they can also be agents of change by spreading what they have learned in hygiene education to their families and community members. Thus the study recommended that people should be made conscious for practicing personal hygiene through 'Behavior Change Communication (BCC)'. Successful low-cost but highly effective programs should be implemented that will considerably attenuate the communicable diseases burden among the people in rural settings.

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## Original Article

# Clinical Features and Operative Findings in Chronic Suppurative Otitis Media with Cholesteatoma

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### Abstract

The present research was conducted to observe the outcome of chronic suppurative otitis media on the basis of surgical findings. This prospective observational research was carried out in tertiary care hospital in Dhaka city and peripheral hospital outdoor patients who underwent chronic suppurative otitis media with cholesteatoma. Patients undergoing modified radical mastoidectomy. Twenty two (73.3%) cases belonged to age 16-30 years. The mean age was found 23.0±9.1 years with range from 10 to 52 years. Male female ratio was 1.5:1. Commonest presenting complaint was otorrhoea (100%) followed by hearing loss (93.3%). Chronic otitis media with cholesteatoma often describe scanty but persistent, and foul smelling otorrhoea. Half of the patients (50%) had conductive loss with 21 - 30 dB air-bone gap. Only 3(10%) patient had severe conductive loss > 41 dB AB gap. The preoperative and surgical findings can predict the patients' conductive hearing loss in chronic otitis media.

**Keywords:** *Chronic suppurative otitis media (CSOM), Radical mastoidectomy.*

### Introduction

Chronic suppurative otitis media (CSOM) is a common disease of younger ages which may lead to fatal and other dreadful complications. Meningitis is the commonest intracranial complication of chronic suppurative otitis media followed by brain abscess. Early surgical intervention in combination with broad spectrum antibiotics provides a good outcome.<sup>1</sup> It is defined as chronic inflammation of the

mucoperiosteal lining of the middle ear cleft lasting longer than twelve weeks.<sup>2</sup> Despite advances in public health and medical care CSOM is still prevalent around the world, and common in developing countries and certain high risk population in developed nations.<sup>3,4</sup> Chronic suppurative otitis media is defined as chronic otorrhoea (> 12 weeks) through a perforated tympanic membrane. The cycle of infection, inflammation, granulation tissues, polyp and cholesteatoma formation continues, destroying surrounding bony margins and ultimately leading to the various complications of CSOM.<sup>5</sup> Differentiation of cholesteatoma from non-cholesteatoma otitis media on clinical basis is difficult. A careful clinical, radiological and ear examination under microscope helps in detection of cholesteatoma in most of the cases expressed as presence of keratin debris along with pars flaccida and attic defect.<sup>6</sup> The middle ear cholesteatoma is a very common disease in Bangladesh and also other developing countries where conditions like poverty, overcrowding, illiteracy and poor hygiene are very common. With the availability of antibiotics, operative microscope and the microsurgical operating instruments it has become easier to successfully treat middle ear infection and cholesteatoma. The present research was aimed to observe the outcome of chronic suppurative otitis media on the basis of surgical findings.

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## Methods

The research group includes 30 patients who underwent surgical exploration of middle ear and or mastoid, for the removal of cholesteatoma. All patients had preoperative evaluation by otoscopy or EUM (examination under microscopy) and by plain X ray mastoid/CT scanning. These cases included only those suspected of chronic suppurative otitis media with cholesteatoma; and those cases who have no findings suggestive of cholesteatoma in the middle ear on examination and those diagnosed with congenital cholesteatoma were excluded from the research. This prospective observational cross sectional research was carried out in the Department of Otolaryngology and Head-Neck surgery in different private medical hospital in Dhaka city and peripheral hospital in 2018. A detailed clinical history, with otoscopic examination was performed for all these cases. Some of the cases required EUM, to know the extent of the cholesteatoma or the bony erosion. Radiological investigation consisted of both conventional plain radiography and computerized tomography. Conventional plain radiography was in the form of a lateral oblique view (Law's) of both ears. In computerized tomography, high resolution serial 3 mm thick sections were obtained in both axial and coronal planes. Taking into consideration the cost of both the radiological methods of evaluation, X-ray was more affordable and convenient for the patients. Most of these 30 patients came from a low socioeconomic status. Out of 30 cases 14 cases were done by CAT, 16 cases were done modified radical mastoidectomy. A questionnaire and a consent form were prepared, sample was selected on the basis of inclusion and exclusion criteria, questionnaire was filled with informed written consent, relevant investigations was done. After collection of data, data were edited by meticulous checking and rechecking. SPSS (statistical Package for Social Science) version 23.0 package program was used for analysis of these data.

## Results

This research was based on 30 patients who underwent mastoid exploration for cholesteatomatous ear disease during a period of three years between March 2014 to March 2016. Twenty two (73.3%) cases belonged to age 16-30 years. The mean age was

found  $23.0 \pm 9.1$  years with range from 10 to 52 years. Eighteen (60%) patients were male and 12 (40%) female. Male female ratio was 1.5:1. Commonest presenting complaint was otorrhoea (100%) followed by hearing loss (93.3%). Chronic otitis media with cholesteatoma often describe scanty but persistent, and foul smelling otorrhoea. In this research, 5 (16.7%) of the cases were misleading and had the characteristic feature of a tubotympanic variety rather than an atticotympanic type. About 8 (26.7%) patients presented with blood tinged discharge which was further supported by the otoscopic finding of granulation tissue in the middle ear. Most of the patients showed hearing impairment, while in some patients there was no severe hearing loss, which did not correlate with the surgical findings in these cases showing extensive bony erosions, but rather had increased hearing impairment following surgery. This preservation of hearing is supposedly due the cholesteatoma that bridges the gap between the functioning part of the ossicular chain and the inner ear. Three (10.0%) patients presented with earache, 2 (6.7%) patient presented with post-aural abscess and 2 (6.7%) patients with facial weakness (Table I). On microscopic examination of the diseased ear, presence of posterosuperior perforation was the commonest finding. About 9 (30%) patients showed posterosuperior perforation and 6 (20%) showed subtotal perforation, while only 4 (13.33%) patients had total perforation (Table II). In this research, in 14 patients ossicular involvement of the disease could be visualized, mostly through microscopic examination, out of which 10 patients showed absence of incus and 9 cases showed malleus erosion. However, stapes involvement could not be assessed (Table III). Bone erosion could be visualized in 12 cases of which 9 showed attic erosion and 3 showed posterior canal wall erosion (Table IV). All patients had pure conductive hearing loss, except two patients who had a mixed hearing loss. No patients showed sensorineural hearing loss or minimal conductive hearing loss. Half of the patients (50%) had conductive loss with 21 - 30 dB air-bone gap. Only 3 (10%) patient had severe conductive loss > 41 dB AB gap (Table V).

**Table I Symptom distribution (n= 30)**

Symptom	No. of patient	Percentage
Otorrhoea		
Profuse	08	26.7
Scanty	22	73.3
Foul smelling	25	83.3
Blood tinged	08	26.7
Earache	03	10.0
Hearing loss	28	93.3
Temporal headache	02	6.7
Facial weakness	02	6.7
Post-aural abscess	02	6.7
Vertigo	01	3.3
Tinnitus	01	3.3

**Table II Distribution by ear findings (n= 30)**

Perforation	No. of patient	Percentage
Total	04	13.33
Subtotal	06	20.00
Central	03	10.00
Posterosuperior	09	30.00
Anterosuperior	05	16.67
Attic	03	10.00

**Table III Ossicular involvement (n= 30)**

Ossicle	No. of patient	Percentage
Malleus	9	30.0
Incus	10	33.3
Stapes	0	0.0

**Table IV Bone erosion (n= 30)**

Bone erosion	No. of patient	Percentage
Attic	9	30.0
Posterosuperior canal wall	3	10.0

**Table V Preoperative hearing loss (n= 30)**

Finding	No. of patient	Percentage
Type of hearing loss		
Conductive	28	93.3
Mixed	02	6.7
A-B gap (dB)		
1-10	00	0.0
11-20	05	16.7
21-30	15	50.0
31-40	07	23.3
> 40	03	10.0

### Discussion

The current research showed that 22 (73.3%) cases belonged to age 16-30 years. The mean age was found 23.0±9.1 years with range from 10 to 52 years. Eighteen (60%) patients were male and 12 (40%) were female. Male female ratio was 1.5:1. Tak and Khilnani research observed similar findings, they showed majority of the patients (70%) were in the age group of 11 to 30 years and 26 (52%) were males.<sup>7</sup> Khan et al. showed the mean age was 25.43±9.67 years, range 10-50 years and male to female ratio was 2:1.<sup>1</sup> Karimi-Yazdi et al. observed that the mean age of cases was 33.5±14 years and 54 (67.5%) of them were females.<sup>8</sup> In this research, the presenting clinical complaints were nonspecific. More than half 22 (73.3%) patients presented with complaints of scanty discharge. Pain is unusual with COM and indicates either a reactive external otitis or the possibility of a developing intra-temporal or intracranial complication. Only 3(10%) patients in the present research presented with complaints of pain among which 1 patient was diagnosed as brain abscess and other two as postauricular abscess, by surgical exploration and CT scan. Commonest complaints were otorrhoea (100%) followed by hearing loss 28 (93.3%), 1 (3.3%) patient who presented with vertigo and 1 (3.3%) patient who presented with tinnitus. These results are comparable to the studies done by Glasscock et al<sup>9</sup> and Mac Millan<sup>10</sup>, but was not agreeable with the studies performed by Brunner et al.<sup>11</sup>, which showed 80% of cases with hearing impairment and 70% cases with otorrhoea. In this research though, diagnosis of cholesteatoma was made in 28 (93.3%)

patients on surgical exploration with 2 false negative cases. In addition, 3 (10%) patients presented with post-aural abscess and pain. The nature of the otorrhoea is helpful in describing the specific type of COM. Profuse, intermittent, mucoid drainage is commonly noted in chronic suppurative otitis media without cholesteatoma. Malodorous otorrhea is rare in this setting. Conversely, patients with COM associated with cholesteatoma often describe scanty but persistent, purulent, and foul-smelling otorrhoea.<sup>12</sup> In this research, 25 (83.3%) patients presented with the characteristic foul smelling discharge, but 5 (16.7%) cases did not correlate with the surgical findings in the diagnosis of cholesteatoma. When an infected cholesteatoma is present or there is bone destruction, the purulent discharge tends to be thick, scanty and fetid.<sup>13</sup> This did not correlate with the findings of the studies done by Phelps and Wright<sup>14</sup>, which suggests that there is no apparent difference in the smell associated with cholesteatoma compared with the active mucosal disease.

An occasional patient will ignore the disease until impending complications develop heralded by the onset of pain, bloody otorrhoea, vertigo, headache, facial paresis, or the appearance of a polyp at the meatus. Blood-stained discharge is often noted with granulation tissue or polyps and was presented by 8 (26.7%) patients, which were supported by the presence of granulation tissue with or without cholesteatoma on otoscopic examination and all these cases correlates well with surgical findings. 93.3% of the patients had complaints of hearing impairment in which majority, 15 patients, showed air bone gap between 21-30 dB. Twenty eight patients had conductive hearing loss and 2 had mixed hearing loss. 23.3% of hearing loss was of mild degree with 31-40 dB A-B gap, Glasscock et al had similar results in their series of 41 children.<sup>9</sup>

## Conclusion

The preoperative and surgical findings can predict the patient's conductive hearing loss in CSOM. In present research, half of the patients had conductive loss with 21-30 dB AB gap and 10% patients had severe conductive loss more than 41 dB AB gap.

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## Original Article

**Antibiotic Sensitivity Pattern of Bacteria Associated with Urinary Tract Infection in a Medical College Hospital of Dhaka**Rahman MA<sup>1</sup>, Rahman MZ<sup>2</sup>, Das KP<sup>3</sup>, Rahman MM<sup>4</sup>, Sinha SP<sup>5</sup>, Hossain ME<sup>6</sup>**Abstract**

Urinary tract infection (UTI) is one of the most common infections both in the world and in our country as well. *Escherichia coli* are one of the most frequently isolated bacteria in complicated or uncomplicated, nosocomial or community acquired urinary tract infections. Antibiotic resistance among urinary pathogens to commonly prescribed drugs is increased day by day. The aim of the present research was to determine the prevalence and to find out the causative agents of UTI and their antibiotic sensitivity pattern among suspected UTI patients. A retrospective research was conducted at Ashiyan Medical College Hospital, Dhaka, Bangladesh by analyzing the records of urine samples. Urine samples (n=520) were collected from patients with signs and symptoms of urinary tract infections. Bacteria were isolated and identified by conventional biochemical profile. Antibiotic sensitivity pattern against different antibiotic was determined by Kirby-Baur method. In this research, 78 (15%) out of 520 urine samples were positive for pathogenic organisms. Of the various pathogenic organisms isolated, *Escherichia coli* constituted for 52.56% followed by *Pseudomonas aeruginosa*, *Staphylococcus* species, *Klebsiella pneumoniae* and *Proteus* species. *Escherichia coli* was found to be most sensitive to amikacin, meropenem, imipenem and nitrofurantoin. Mainly Gram negative bacilli are responsible for UTI and most frequent isolated bacteria was *Escherichia coli*. The most effective antibiotics were amikacin, meropenem, imipenem, nitrofurantoin. The choice of antibiotic therapy in UTI should depends on the local sensitivity pattern of the infecting organisms.

**Keywords:** *Urinary tract Infection, Isolated bacteria, Antibiotic sensitivity.*

**Introduction**

Urinary tract infection (UTI) is the most common bacterial infection of all. It is one of the most important causes of morbidity. It occurs in both male

and female, but is more common in females than in males due to anatomical difference, hormonal effects and behavioral pattern. The major pathogens causing UTI are *Escherichia coli*, *Klebsiella pneumoniae*, *Proteus* species, *Pseudomonas aeruginosa*, *Staphylococcus* species.<sup>1</sup> Most frequently *Escherichia coli* are located in complicated or uncomplicated or community acquired urinary tract infections.<sup>2</sup> Indiscriminate and extensive use of antimicrobial agents is a common practice in third world countries like Bangladesh which leads to emergence of resistant microorganism. As a common practice in our country, antimicrobial treatment is started before the laboratory report of urine culture are available which may spread the antimicrobial resistant strains.<sup>3</sup> Besides this, antimicrobial susceptibility data of UTI causing microorganisms changes over periods and places. Therefore, the purpose of our investigation was to determine the recent status of prevalence of bacterial pathogens and their antimicrobial sensitivity in UTI patients in a medical college of Dhaka, Bangladesh. It would help and guide the physicians by providing information about choice of proper antibiotic for suspected UTI treatment.

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### Methods

This research was carried out in the Microbiology Department of Ashiyan Medical College Hospital from 01 January 2018 to 31 December 2018. A total of 520 urine samples were collected from patients who suspected to have urinary tract infection. Then urine was inoculated on MacConkey's and Blood agar media using calibrated platinum loop. After that culture plates were incubated at 37° C for 24-48 hours. Pure bacterial colony of > 10<sup>5</sup> CFU/ml of a single species was considered positive for UTI. Antimicrobial susceptibilities of isolated organisms were determined using disc diffusion method. For confirmation of specific bacterial species, standard biochemical tests (Motility indole urea agar media, Triple sugar agar media, citrate, catalase, coagulase, bile soluble test) were performed.

### Results

A total of 520 clinical urine samples were collected. Out of the collected 520 urine samples, 78 (15%) samples were found positive. Out of 520 cases males were 166 (31.92%) and females were 354 (68.08%). (Figure 1)

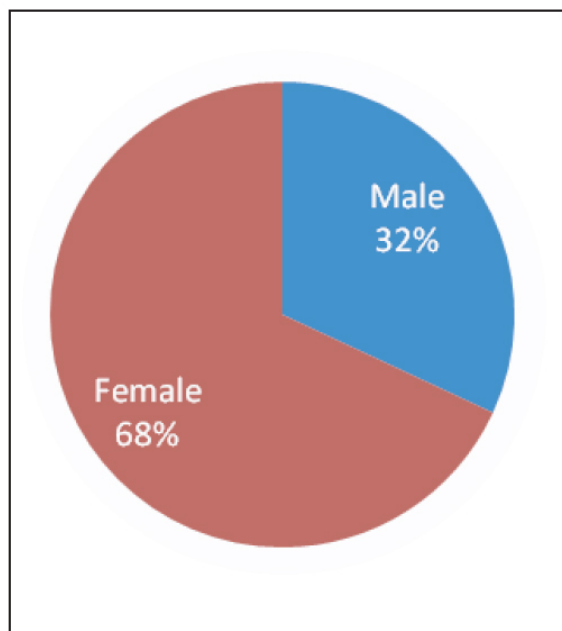


Figure 1 Sex distribution of suspected UTI patients (n= 520)

Most common age group affected was 21-30 years with 185 (35.57%) cases followed by > 50 years with 99 (19.03%) cases. (Figure 2)

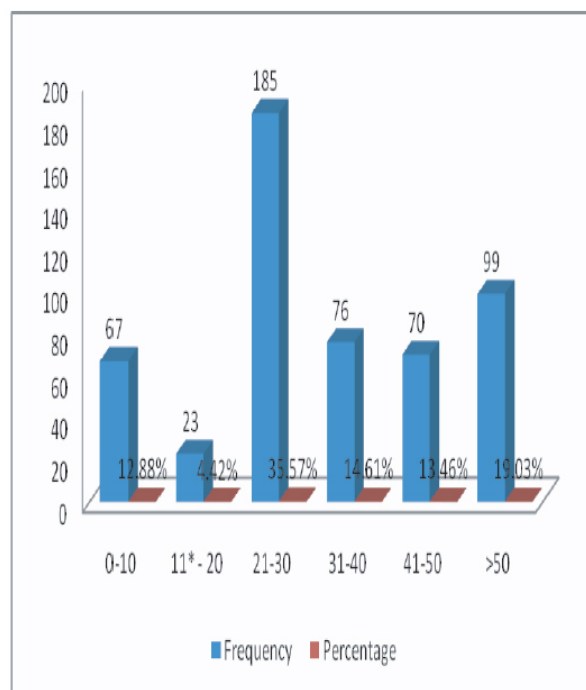


Figure 2 Age distribution of suspected UTI patients (n= 520)

A total of 78 (15%) bacterial growths were isolated from 520 urine samples. Escherichia coli was the predominant isolates 41 (52.56%) followed by Pseudomonas aeruginosa 19 (24.36%), Staphylococcus species 11 (14.1%), Klebsiella pneumoniae 04 (5.13%) and Proteus species 03 (3.85%). (Table I)

Table I Distribution of isolated uropathogens (n= 78)

Bacterial pathogens	Frequency (%)
Escherichia coli	41 (52.6%)
Pseudomonas aeruginosa	19 (24.4%)
Staphylococcus species	11 (14.1%)
Klebsiella pneumoniae	04 (5.1%)
Proteus species	03 (3.8%)

Amikacin, meropenem, imipenem and nitrofurantoin showed the highest sensitivity against 99%, 98%, 98% and 92% *Escherichia coli*. Meropenem, amikacin, imipenem and ciprofloxacin were found to be the most susceptible drug for *Pseudomonas aeruginosa* with the rate of 91%, 88%, 85% and 82%. In case of *Staphylococcus* species, the highest susceptible

antibiotics were meropenem (100%), imipenem (100%), amikacin (100%) and nitrofurantoin (82%). Sensitivity of *Klebsiella pneumoniae* was 100% against meropenem, 94% against imipenem and 93% against amikacin. Meropenem, imipenem and amikacin were found to be 100%, 96% and 95% sensitive for *Proteus* species. (Table II)

**Table II Antibiotic sensitivity pattern of isolated organisms in UTI (n= 78)**

Antibiotics	<i>Escherichia coli</i> (41)	<i>Pseudomonas aeruginosa</i> (19)	<i>Staphylococcus</i> species (11)	<i>Klebsiella pneumoniae</i> (04)	<i>Proteus</i> species (03)
Amoxicillin	04%	16%	40%	20%	22%
Meropenem	98%	91%	100%	100%	100%
Imipenem	98%	85%	100%	94%	96%
Amikacin	99%	88%	100%	93%	95%
Gentamicin	40%	65%	65%	48%	60%
Ciprofloxacin	60%	82%	88%	64%	84%
Ceftriaxone	78%	78%	75%	41%	26%
Cefuroxime	41%	36%	25%	41%	26%
Cotrimoxazole	25%	50%	65%	52%	68%
Nitrofurantoin	92%	13%	82%	62%	43%
Nalidixic acid	20%	30%	30%	40%	32%

## Discussion

Urinary tract infection is an emerging issue as a common clinical problem in both the community and health care associated settings. Moreover, antimicrobial resistance to uropathogens creates major health problem in different parts of the world.<sup>4,5</sup>

The prevalence rate of UTI accounted for 38.6%, 35.5%, 34.5%, and 36.68% in India.<sup>6,7,8,9</sup> In our research, out of the collected 520 urine samples, 78 samples (15%) were found positive which is similar to the research of Siddiqua et al.<sup>10</sup> The prevalence of UTI varies according to sex and age.<sup>11</sup> The present research showed a high prevalence of UTI in females (68.08%) than in males (31.92%) which correlates with the findings of others.<sup>12,13</sup> The probable reason behind this high prevalence of UTI in females is due to close proximity of the urethral meatus to the anus and shorter length of urethra.<sup>14,15</sup> The occurrence of UTI was highest in the age group of 21-30 years. Our result agrees with the research of Yasmeen et al.<sup>16</sup> Most of the researches reveal the involvement of Gram negative enteric organisms which are

commonly responsible for UTI such as *Escherichia coli*, *Klebsiella pneumoniae* and *Proteus* species.<sup>17</sup> In our research *Escherichia coli* was the largest group with a prevalence of (52.6%). This finding is similar to other researches done in other countries such as India, Ethiopia, Saudi Arabia, Cameroon.<sup>18,19,20,21,22</sup>

The sensitivity rate of carbopenems (meropenem and imipenem) among uropathogens was as follows- *Escherichia coli* (98% and 98%), *Pseudomonas aeruginosa* (91% and 85%), *Staphylococcus* (100% and 100%), *Klebsiella pneumoniae* (100% and 94%) and *Proteus* (100% and 96%). A research conducted in India showed that meropenem was highly sensitive against Gram negative bacilli.<sup>23</sup> Another research done in Spain also showed the reduced susceptibility of *Escherichia coli* isolates from patients with UTI to fluoroquinolones. This reduced susceptibility might be due to using antibiotics without restriction. In several researches it has been shown that the high prescribing habits of the physicians are the driving factor for the antibiotic resistance for this group of antibiotics.<sup>24</sup>



## **Conclusion**

The antibiotic resistance of uropathogens has now become a public health concern in Bangladesh. This is due to abusing antibiotic and practicing incomplete antibiotic regimen. So it should be closely monitored both at the regional and national levels. So continuous monitoring should be done to evaluate the trend of resistance of antimicrobials for sustained optimization of empirical therapy.

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## Original Article

## Study of Waist Hip Ratio (WHR) among Undergraduate Medical Students of Bangladesh

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### Abstract

The present research was conducted to evaluate the WHR (Waist-Hip ratio) among the students of Mainamoti Medical College, Comilla. A total of 110 young adults were included in the research and their waist-hip circumferences were measured using a measuring tape. All data were recorded in a structured questionnaire. The mean WHR in men was 0.92 and in women 0.86. Most of the students have an appropriate WHR. The research will help the doctors in earlier identification of various systemic complications such as obesity, cardiovascular diseases by assessing the WHR.

**Keywords:** *Waist-Hip Ratio, Obesity, Waist Circumference, Hip Circumference.*

### Introduction

Obesity is a complex multi factorial chronic disease that has become a worldwide epidemic. Over weight and obesity among the young people give rise of other non-communicable diseases such as diabetes, hypertension, stroke, and myocardial infarction.<sup>1</sup> Body mass index (BMI) is a valuable tool to assess the nutritional status of an individual. It can be conveniently used to identify those who are underweight, overweight or obese.<sup>2</sup> BMI gives no idea about the distribution of body fat. In adolescents, as in adults, central or abdominal fat increases the risk for metabolic (dyslipidemia and insulin resistance) and cardiovascular complications.<sup>3</sup>

Accurate measurements of total and regional body fat are essential to determine the cardio-metabolic risk in earlier age. Waist circumference (WC) and Waist-Hip ratio (WHR) are the measurements most commonly used to estimate abdominal fat because they have a positive, significant correlation to the amount of intra-abdominal fat as assessed by imaging studies both in adults and children as they are able to identify people at cardio-metabolic risk better than body mass index (BMI) alone.<sup>4</sup> Waist circumference is a parameter which provides an estimate of body girth at the level of the abdomen, a point between the lowest rib and iliac crest. It is a simple and valuable anthropometric measure of total and intra-abdominal fat. Hip circumference is measured over the hip exactly over the gluteal muscle. When hip circumference measurement is combined with the measurement of waist circumference, can be used to indicate coronary heart disease.<sup>5</sup> According to the guideline, the Waist-Hip measurement in men is <0.95 and in woman <0.80.<sup>6</sup> The objectives of the present research were to assess the obesity by Waist-Hip ratio.

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### Methods

This was a cross-sectional observational research conducted in Mainamoti Medical College, Comilla in 2018. A total of 110 young adults from age group of 21 to 23 years were chosen for the research. Students suffering from any systemic disorders were excluded from the research. A structured questionnaire was used to collect and record the information. The objective of the research was explained and written

consent was taken from each student. The measurements were taken under supervision using a measuring tape. The waist circumference was measured using a measuring tape at the midpoint between the lower margin of the last palpable rib and top of the iliac crest. The hip circumference was measured at the widest gluteal region with tape parallel to the floor (Figure 1). The WHR was calculated by dividing the waist circumference by hip circumference. The measurements were recorded and tabulated.

## Results

A total of 110 medical students participated in the research with the age ranged from 22 to 24 years. Among them 68 (62%) were males and 42 (38%) were females (Figure 2). The mean hip circumference in men was 105 cm where in women it was 102 cm. The mean waist circumference in men was 101 cm where in women it was 88 cm. The mean WHR in men was 0.92 and in women 0.86. The WHR seems approximately normal in majority of students. The percentage of students having normal WHR is 81% in males and 80% in females. (Table I).

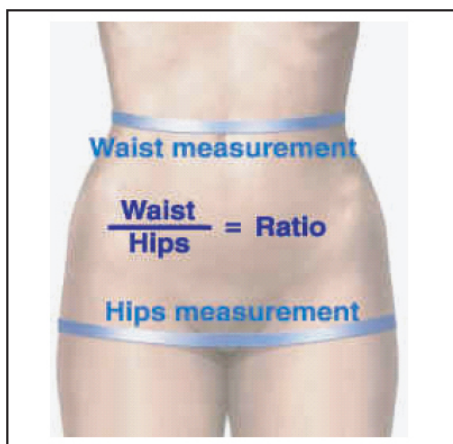


Figure 1 Waist-Hip measurement

Table I Mean Waist-Hip Ratio

Trait	Men	Women
Mean percentage of waist circumference in cm	101	88
Mean percentage of hip circumference in cm	105	102
Mean WHR	0.92	0.80
Percentage of student with normal WHR	81%	80%

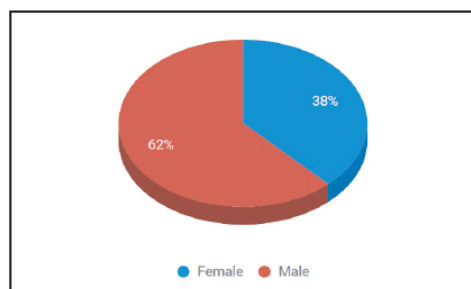


Figure 2 Sex distribution of the students

## Discussion

In this research, most of the students have normal WHR and male students have more WHR than females which is similar to the study conducted by Ravishankar et al.<sup>5</sup> WHR is a more accurate measure of distribution of body fat (abdominal fat) although it is less commonly used.<sup>6,7</sup> It can be used to classify body types into two main categories: apple and pear. Apple shaped body type is more common among men and is caused by abdominal obesity. In women fat is usually accumulated around the hip and the thigh to develop a pear shaped body type.<sup>8</sup> Apple shaped fat distribution is considered more dangerous than pear shaped fat distribution because of the accumulation of fat in the deep abdominal area around the visceral organs. This hidden fat can lead to development of metabolic disorder, diabetes type II and increases cardiovascular risk. If the waist circumference in women is >80 cm and in man is >94 cm, it may lead to development of insulin resistance and arterial hypertension. Increased hip circumference is associated with increased hip subcutaneous fat, gluteal muscle and total leg muscle.<sup>9,10</sup> Waist to hip ratio (WHR), a measure of central obesity and visceral fat, may be a better indicator of obesity than other anthropometric measures, including BMI, as high WHR can reflect both an increase in visceral fat as well as a relative lack of gluteal muscle, both of which have been found to be independently associated with cardiovascular disease risk. Since WHR is a more sensitive marker for central obesity and potentially less influenced by muscle mass, WHR may better indicate risk associated with obesity in a population.<sup>11</sup>

## Conclusion

In this research most of the students have normal WHR. Males had higher WC, WHR values than females. This probably reflects gender-specific influences on waist circumference and can be

explained by the fact that in males central fat distribution is more predominant than in females. WHR above normal predict the increasing risk of various non communicable diseases.

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## Case Report

### Herpes Zoster: A Case Report

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#### Abstract

Herpes zoster (HZ) is a sporadic disease which results due to reactivation of the latent Varicella-zoster virus that is present because of a previous exposure to varicella infection (chicken pox). The C3, T5, L1, L2, and 1st division of the trigeminal nerve are the most commonly affected; the involvement of 2nd and 3rd division of trigeminal nerve is a rarity. The condition is marked by the manifestation of multiple, painful, unilateral vesicles, and ulcerations which show a typical single dermatome involvement. The elderly and those with an immunocompromised status such as HIV/AIDS stand at a greater risk to develop HZ. The case report, presents a 24 years old female patient with HZ involving the L3 dermatome of left knee and L5 dermatome of top and bottom of left foot. The involvement of two dermatomes in young immunocompetent patients relatively uncommon and accounts for only few percentages of the total cases of HZ. The purpose of this article is to review a case along with the discussion.

**Keywords:** *Herpes zoster, Immunocompromised, Chicken pox.*

#### Introduction

Herpes zoster (HZ) is a well-known viral disease that usually presents as a painful unilateral vesicular rash restricted to the distribution of a sensory nerve. HZ which is also known as shingles, is an acute infection of viral origin resulting from the reactivation of the DNA virus varicella zoster, which causes chickenpox.<sup>1</sup> It commonly manifests as vesicular rash, which are painful and runs its progression in a matter of 4-5 weeks. The pain may persist for months or even years after healing of the skin lesions. This phenomenon is called as post herpetic neuralgia (PHN).<sup>2</sup> The risk of PHN in patients with zoster is approximately 10-18%. Nearly, 3% of patients with zoster are hospitalized. Herpes zoster (HZ) typically erupts within one or two

adjacent dermatomes, with thoracic (50- 60%), cervical (10-20%) and trigeminal (10-20%) being more commonly involved, while lumbar (5-10%) and sacral (5%) are other less commonly involved dermatomes. In immunocompetent patients, involvement of non-contiguous dermatomes is never seen, although overlapping of adjacent dermatomes can be seen in 20% of cases.<sup>3</sup> Morbidity due to zoster is common among immunocompromised patients.<sup>4</sup> This case is being reported to highlight the rarity of involvement of more than one dermatome in young immunocompetent individuals.

#### Case Report

A female patient of 24 years reported to our department (Department of Dermatology, Brahmanbaria Medical College and Hospital in August 2018) complaining of painful skin rash in the left knee and bottom of the left foot for 3 days. The patient presented with the history of pain which was severe, developed fluid-filled blisters, distributed over the left half of the knee and lower part of the leg. The patient gave a history of chickenpox infection in childhood. No relevant drug, and family history was recorded. On general physical examination, the patient was of normally built and no abnormality was detected in the nails, gait, upper, and lower limbs. Clinical signs of icterus, pallor, clubbing, edema, cyanosis, and lymphadenopathy were absent. On evaluation of vital signs, temperature was noted to be 100°F and blood pressure 130/70 mm of Hg. On examination of left leg, no abnormality was detected in the knee joint.

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Clusters of vesicles and pustules (Figure 1) were present on the left half of knee involving lower part of the foot (Figure 2). Routine hematological tests were done for the patient. Complete blood count was found to be within normal limits except erythrocyte sedimentation rate and red blood cell which were slightly raised. Correlating the case history and clinical finding, a final diagnosis of HZ was established. Aceclofenac 100 mg two times daily was prescribed for symptomatic relief of pain. Antiviral drug therapy was started with valacyclovir 1 gm 2 times per day for 10 days.



Figure 1 Vesicles involving the left side of the knee



Figure 2 Vesicles in the bottom of left lower leg

On examination of the patient after 2 weeks, regression of a number of lesions were noted with the formation of scar tissue and hypopigmented areas. No fresh vesicles were reported. The patient was then reviewed after 1 week and tremendous improvement was noticed regarding the HZ lesions. After 1 month follow-up, the patient was totally devoid of symptoms. The lesions healed with scarring, but post therapeutic complications were not reported.

## Discussion

HZ is also known as shingles, which is derived from the Latin *cingulum*, meaning 'girdle'. This is because a common presentation of HZ involves a unilateral rash

that can wrap around the waist or torso like a girdle. The name *zoster* is derived from classical Greek, referring to a belt-like binding (known as a *zoster*) used by warriors to secure armour.<sup>5</sup> Von Bokayin, in 1988, hypothesized for the first time that chicken pox and HZ were caused by the same infectious agent.<sup>6</sup> Varicella-zoster virus (VZV) is one of the eight known herpes viruses that infect humans. Its structure is characterized by an icosahedral nucleocapsid surrounded by a lipid envelope. Double-stranded DNA is located at its center. The virus is approximately 150-200 nm in diameter and has a molecular weight of approximately 80 million.<sup>7</sup> VZV like other herpes viruses causes both primary and recurrent infections and remains latent neurons present in the sensory ganglia. VZV is associated with two major clinical infections of humans: Chickenpox (varicella) and shingles (HZ).<sup>8</sup> Chicken pox is a primary infection that occurs the first time in an individual is affected by the virus with generalized manifestations. After the primary disease heals, VZV remains latent in the dorsal root ganglia of spinal nerves or extramedullary ganglia of cranial nerves. A person without any prior contact with VZV can develop chickenpox after coming in contact with an individual with HZ.<sup>9</sup> The patient complained of severe pain. Hence, HZ disease patients can have mild to severe pain during active stage of the disease. HZ follows a prodromal, active and chronic stage.<sup>10</sup>

Classically it presents with a prodrome of mild-to-moderate burning or tingling (or in some cases numbness) in the skin of a given dermatome. often associated with fever, headache, general malaise and stomach upset.<sup>11</sup> Similar findings were reported in our case, however, stomach upset was not reported. In a duration of about 48-72 hours from the prodrome, there is development of a unilateral erythematous, maculopapular rash along the dermatome, which eventually develops into a vesicular lesion, this represents the active stage.<sup>12</sup> The active stage is described by the appearance of the rash with along with the systemic upset. The skin rash is very characteristic and progresses from erythematous papules, edema to vesicles, and finally to pustules within 1-7 days. Later, these pustules dry, crust, and are exfoliated over the next 2-3 weeks leaving erythematous macular lesions that may scar.<sup>13</sup> In this case, an apparently immunocompetent patient with HZ who responded dramatically to treatment with oral valacyclovir, 1 gm two times daily for 7 days, is

reported. Treatment should be initiated within 48 hours of the onset of the rash. The decision to treat the patient with a valacyclovir was not influenced by her age but the presence of severe pain, multi dermatomal involvement. Herpes zoster, in the immunocompetent patient is not a listed indication for treatment with systemic valacyclovir. However, successful treatment of this infection has been reported previously and was borne out by the present case.

### Conclusion

In conclusion, a case of HZ affecting multi dermatome in young age is reported. This case signifies the importance of a thorough medical history and examination of the patients with sporadic diseases such as HZ. Early diagnosis and prompt treatment by antiviral drugs in the prodromal stage of the HZ may aid in reducing the duration and the severity of pain of HZ infection and also prevent the complications.

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