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Editorial Board

Hurdles of Health Care Delivery System of Bangladesh

Mohammad Jalal Uddin[1]*

Health care delivery system of Bangladesh is extended to the doorstep of common people. It is the good side of the system and we feel proud of it. Main objectives of the system is to ensure optimum health for all people of the country irrespective of party, politics and religion. To achieve that targets Bangladesh government has adopted national health policy which includes 15 goals and objectives, 10 principles and 32 strategies where all aspects are well described[1]. An ideal health service should fulfill following criteria[2]:

- Appropriate: Health service should be relevant to the priority need of the people.
- Available: It should cover 100% of population.
- Adequate: It should be sufficient to satisfy the needs of the people.
- Accessible: It should be within easy physical distance.
- Affordable: It should be purchasable by the people.
- Comprehensive: Right mix of promotive, preventive, curative and rehabilitative services.

But due to some avoidable and correctable issues the good system fails to provide satisfactory services to the people. A Focus Group Discussion (FGD) consists of 10 veterans on the subject unanimously opined about the hurdles. Health policy of the Government of Bangladesh was also discussed and contrasted vis a vis. There were several opinions. But unanimous and filtered opinions are as follows[3]:

i) Lack of strong political commitment to improve existing situation.

ii) Inappropriate planning, bureaucracy, corruption, nepotism, and political affiliation.

iii) Disproportionate demand and supply.

iv) Lack of collaboration, comprehensiveness & poor management at all level.

v) Disproportionate manpower and environment is not doctor friendly.

vi) Ineffective referral system.

vii) Underutilization of resources.

viii) Bad communication and infrastructure of health facilities.

ix) Illiteracy, ignorance and poor affordability of the patient. Moreover, environment is not patient friendly.

x) Poor accountability, performance evaluation, reward and punishment.

Every conscious citizen and government machinery know about above mentioned hurdles of health services. Increasing national health budget >5%, improving managerial and technical capacity and ensuring zero tolerance against all sorts of corruption all hurdles are removable. So, under short term and long term plan all hurdles should be removed as soon as possible for the betterment of the commoner of the country.

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1. Professor of Community Medicine and Public Health Chattogram Maa-O-Shishu Hospital Medical College Chattogram.

*Correspondence: **Dr. Mohammad Jalal Uddin**
Cell : +88 01819 90 94 64
Email : drjalal65@gmail.com

Personal Hygiene Practice Associated Skin Diseases among the Patients Attending at A Military Hospital

Syed Hasan Mahmud Hussain[1]   Imru-Al-Quais Chowdhury[2]   Md Arifuzzaman[3]*

ABSTRACT

Background: Skin diseases still remain as a major public health problem worldwide. This study was aimed to assess the hygiene practices and to find out the skin diseases associated with it among individual attending at Adhoc Combined Military Hospital, Ramu, Cox's Bazar.

Materials and methods: This cross-sectional, questionnaire survey was conducted in the Outpatient Department of Combined Military Hospital, Ramu, Cox's Bazar from July 2019 to December 2019 among 170 patients conveniently and randomly selected. The study includes newly diagnosed cases only.

Results: Out of 170 respondent, 122 (71.76%) had the habit of washing hands with soap and water before eating and after using toilet. 130 (76.47%) respondent cleaned their uniform/clothing daily. 98 (57.47%) of the respondents had practice of clean and trim nails regularly. 100% patients had sanitary types of latrine. There was significant association between skin diseases and some of the personal hygiene practices such as hand washing, daily bathing, wearing clean uniform/ clothes, trimmed and clean nails and sharing of bed.

Conclusion: The hygiene practices among respondents were associated with skin diseases. Therefore, regular health education on hygiene practices has to be imparted for all in order to prevent the skin diseases.

Key words: Personal hygiene; Skin diseases; Military Hospital.

Introduction

Skin disease related health burden is more in developing countries, affecting millions of people, as a result of improper hygienic conditions and practices[1]. This leads to needless suffering from infectious diseases, despite being preventable. There is an increasing evidence to show that good hygiene practice in the home and working places has an important role in preventing the spread of these infections. According to World Health Organization (WHO) the Safe Water, Sanitation and Hygiene (WASH) has the potential to prevent at least 9.1% of the global disease burden and 6.3% of all deaths[2]. WASH is critical in the prevention and care of all the 17 Neglected Tropical Diseases (NTDs) scheduled for intensified control or elimination by 2030[3].

A healthy skin is a source of pleasure, not only to its owner but also the one who looks at it. To possess a nice skin is to have great social and economic advantage. Besides, the positive health of the skin is an insurance against disease. Skin disease is seldom fatal. Successful management of skin diseases requires accurate diagnosis and prompt treatment.

Hygiene refers to conditions and practices that help to maintain health and prevent the spread of diseases. Likewise, personal hygiene refers to the comprehensive cleaning and caring of the body which includes bathing, washing hands, brushing teeth and wearing clean clothes. These good hygiene practices can reduce the incidence of diseases such as diarrhea-related diseases, pneumonia, scabies, skin diseases, eye infections, etc. Therefore, maintaining good personal hygiene is necessary for physical, mental and social well-being[4].

In developing countries, improper personal hygiene practices and unhygienic living conditions favor person-to-person transmission of infection and is an important factor for higher incidence of these diseases. Likewise, infection and malnutrition form a vicious cycle. Therefore, the high burden of communicable diseases due to poor personal hygiene practices still remains a threat to the public health in developing countries[5].

Water, sanitation and hygiene play an important role in sustainable development and have broad public health benefits. Hygiene is the first step towards ensuring a healthy physical life. Education and communication are important components of promoting hygiene and key to promote behavioral change within communities by motivating, informing and educating about good hygiene practices.

1. Commanding Officer
    55 Field Ambulance
    Ramu Cantonment, Cox's Bazar.

2. MPH Student Officer
    Course Member, MPhil
    Armed Forces Medical Institute (AFMI)
    Dhaka Cantonment, Dhaka.

3. Graded Specialist in Medicine
    Adhoc Combined Military Hospital
    Ramu, Cox's Bazar.

*Correspondence: **Lt Col (Dr) Syed Hasan Mahmud Hussain**
                Cell: +88 01769 10 21 92
                Email: syedhasan988@gmail.com

The present study was conducted among patients attending the OPD of CMH Ramu, to know their hygiene practices and to find out the skin diseases associated with it.

Materials and methods
A cross sectional study was carried out among 170 respondents by purposive sampling to assess the hygiene practices and to find out the skin diseases associated with it among the patients attending at skin OPD of military hospital, Ramu, Bangladesh from July 2019 to December 2019. All the skin disease cases of different age irrespective of sex attending at Dermatology Department for seeking treatment were considered. Armed forces personnel and their families, retired service personnel and their families, civilian paid from defense estimates and their families attend this hospital for treatment. Respondents were selected as non-probability type of purposive sampling technique. Data collection was carried out through a questionnaire and face to face interview by asking question in Bangla. The data was analyzed by using software SPSS and presented in tables.

Results
Out of 170 respondents, 35.9% were in the 21-30 years age group and the 27.6% were in the 31-40 years group (Table-I). The mean age was 27.14 years with standard deviation ±12.70 years. Male and female respondents were distributed as, 100 male (58.8%) and 70 female (41.2%) (Table-I). Majority (96.5%) received formal education followed by illiterate (0.6%) and pre-school (2.9%) group.

Majority of the respondent lived in family accommodation 128 (75.3%) and the rest 42 (24.7%) lived in barracks. Maximum respondents 106 (62.4%) shared bed with others and rest (37.65%) not. As many as 142(83.53%) had habit of daily bathing. 122 (71.76%) had the habit of wash hands with soap and water before eating and after using toilet. Among 170 respondents 130(76.47%) cleaned their uniform/clothing daily. Out of 170 total respondents, 98(57.47%) of the respondents had practice of clean and trimmed nails regularly. 100% patients had sanitary types of latrine (Table-II).

Table-III shows that, there was significant association between skin diseases and some of the personal hygiene practices (p<0.01) such as hand washing, daily bathing, wearing clean uniform/ clothes, trimmed & clean nails and sharing of bed.

Table I : Distribution of respondents (n= 170).

Characteristics	Frequency	Percentage (%)
Age group (Years)		
Up to 10 years	20	11.8
11-20 years	24	14.1
21-30 years	61	35.9
31-40 years	47	27.6
Above 40 years	18	10.6
Sex		
Male	100	58.8
Female	70	41.2

Table II : Distribution of respondents by personal hygienic practices (n= 170).

Characteristics	Frequency	Percentage (%)
Daily bathing habit		
Yes	142	83.53
No	28	16.47
Sharing of bed		
Yes	106	62.4
No	64	37.6
Habit of daily uniform/cloth washing		
Yes	40	23.53
No	130	76.47
Type of latrine used		
Sanitary	170	100.0
No sanitary	00	00.00
Brush teeth twice daily		
Yes	95	55.88
No	75	44.12
Yes	98	57.47
No	72	42.53
Walk without footwear		
Yes	50	29.41
No	120	70.59
Wash hands before eating and after toilet		
Yes	122	71.76
No	48	28.24

Table III : Association between personal hygiene practices and skin diseases (n=170).

Personal hygiene practices		Skin disease		Test statistics
		Present	Absent	(With df=1)
Take bath daily	Yes	42	100	χ^2 =14.89
	No	19	09	p= .0001
Washed uniform/clothes daily	Yes	12	28	χ^2 =18.76
	No	89	41	p= .0003
Brush teeth twice daily	Yes	55	40	χ^2 =0.097
	No	49	26	p= 0.323
Sharing of bed	Yes	73	33	χ^2 =20.986
	No	21	43	p= .0001
Clean and trim nails regularly	Yes	26	72	χ^2 =20.029
	No	49	23	p= .0001
Walk without footwear	Yes	21	29	χ^2 =3.0121
	No	34	86	p= .0826
Wash hands before eating and after using toilet	Yes	32	90	χ^2 =15.546
	No	28	20	p= .0008

Discussion

Hygiene is aimed at nurturing good practices by providing clean water, sanitary toilets and educating good hygiene practices, which are essential for the survival and development of children. Access to safe water and sanitation facilities will necessarily lead to improved health, when it is utilized properly along with personal hygienic behavior. Hygiene also enables to become agents of change for sanitation and hygiene practices in their families and communities. Providing easy access to hygiene, nutrition and health education services as a simple and cost effective tool which can be the way in the prevention and control of these diseases.

The present study showed that only 71.76 % washed their hands with soap water before eating and after using toilet. Other studies done at different places also showed the similar findings with regards to hand washing practices. A study from Assam conducted among the paramilitary forces showed that, 84.25% reported of washing their hands before eating and after using toilet with soap and water[6]. Another study on personal hygiene in a slum of Kolkata, India showed that 98 (94.23%) washed their hands after visiting toilet and 88 (84.62%) washed their hands before eating[7]. Cleaning hands before eating meals and after using bathroom/toilet is a very simple and important practice.

The present study revealed that 83.5 % of the respondent took bath daily. Similarly, a study on personal hygiene living in a slum of Kolkata, India showed that only 42.3% took bath daily[7].

This study depicted that only 98 (57.47%) respondents used to clean and trim their nails regularly. Similarly, a study on personal hygiene in a slum of Kolkata, India showed that 76.92% trimmed their nails[7].

The present study showed that, there was significant association between skin diseases and some of the personal hygiene practices (p<0.01) such as hand washing, daily bathing, wearing clean clothes, trimmed & clean nails. Similarly, a study conducted among 184 respondents also showed significant association between personal hygiene scores and morbidity profile among them[8].

The present study revealed that 142 (83.5%) of the respondents have daily bathing habit, 57.47% respondents used to clean and trim their nails regularly. Similarly, a study on personal hygiene practices and related skin diseases among habitants of urban locality of Bangalore, India9 showed that 40.7% took bath daily and 56.5% had trimmed nails and 76.7% washed hands with soap and water before eating and after using toilet[9].

In a study on prevalence of skin infections among school children in Hyderabad, Telangana state, 178 respondents showed highly significant association between personal hygiene and skin infection[10]. The present study also showed that, there was significant association between skin diseases and some of the personal hygiene practices (p<0.01). Therefore, all should be educated regarding proper hygiene practices to prevent most of the skin diseases.

Conclusion

Our study found a higher prevalence of skin diseases among the respondents with bad personal hygiene practices. Health education among the individual and their family regarding personal hygiene should be given. Regarding various morbidities among them, proper education and necessary support should be given by the authority. While maintaining health status and personal hygiene, socioeconomic factors are seen to play an essential role. The hygiene practices among military persons, their families and others were associated with many skin diseases. Therefore, regular health education on hygiene practices has to be imparted for all in order to prevent these skin diseases.

Disclosure

All the authors declared no competing interests.

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The Impact of COVID-19 Pandemic on Undergraduate Medical Students of Bangladesh

Fatema Johora[1]   Asma Akter Abbasy[2]   Fatiha Tasmin Jeenia[3]   Mithun Chandro Bhowmik[4]   Priyanka Moitra[5]   Jannatul Ferdoush[6]*

ABSTRACT

Background: The Coronavirus Disease 2019 (COVID-19) pandemic has caused unprecedented disruptions worldwide including education system. While the necessary focus has been on patient care, safety of healthcare professionals as well as economic aspect, the impacts on medical education need to be warranted. The purpose of the study to find out the impact of COVID-19 Pandamic on Medical students of Bangladesh.

Material and methods: This cross-sectional comparative was conducted to evaluate the impact of COVID-19 pandemic on paraclinical (3rd & 4th year) and clinical (Final year) students of seven medical colleges of Bangladesh in October 2020. A structured questionnaire survey linked in the google form was used as study instrument and was distributed among study population through email, messenger, whatsapp and other social media. Total 1020 students were participated in the study.

Results: In the present research, total number of paraclinical (3rd & 4th year) and clinical (Final year) students were 718 (70.4%) and 302 (29.61%) respectively. Respondents of current research strongly agreed about disruption of ongoing education and more concern was expressed by clinical students. A fear of concern about losing clinical skill and competency was expressed specially by the clinical students. Clinical students were also more worried about the influence of COVID 19 on their future career plan and the financial impact due to the prolongation of course length. Both paraclinical and clinical students disagreed about achieving positive learning from this pandemic which was marked among paraclinical students. Rather they agreed that this pandemic crisis has increased their stress and anxiety. Most of the students are feared of getting infected with coronavirus when they will return for clinical placement as most of them expressed impossibility of maintenance of social distancing in campus.

Conclusion: Undergraduate medical students of Bangladesh has expressed their concern about losing of clinical skill, imposed financial burden, increased level of anxiety and stress, changing aspect of future career plan and fear of getting infected whenever return to clinical placement and significant concern was observed among clinical students.

Key words: COVID-19 pandemic; Medical education; Bangladesh.

Introduction

For last several months, COVID-19 pademic has caused major disruption of every aspects of human life including abrupt closure of medical schools worldwide[1,2]. For the past few months, medical students have been forced to transit their intensive learning environments to an online format[3]. At present, undergraduate teaching is being conducted by various methods using various online platforms by many medical colleges without any uniformity[4,5]. However, with the beginning of online education, students and educators have faced challenges. In addition to that students are also facing challenges in communicating teachers, adjusting new online assessment methods and workloads and dealing with many online education issues like unavailability of electronic devices, no internet access, high cost of internet, etc[6,7,8]. There is a distinguished difference between medical institutions with other public institutions. Chance of getting infected with COVID is more in medical students as they are supposed to learn clinical skills through their rotatory placement in hospital[3]. On the other hand, virtual learning might be helpful for theoretical knowledge but it's effectiveness for preparing future physicians as competent clinicians is still questionable.

Considering the health issue, Government of Bangladesh has also closed all institutional activities due to COVID-19 pandemic since 18th March, 2020[9]. In Bangladesh, total 112 medical colleges (36 public medical colleges, 70 private medical colleges and 06 medical colleges run by Bangladesh Armed Forces) are assigned to provide the formal

1. Associate Professor of Pharmacology & Therapeutics
    Army Medical College Bogura, Bogura.

2. Associate Professor of Pharmacology & Therapeutics
    Brahmanbaria Medical College, Brahmanbaria.

3. Assistant Professor of Pharmacology & Therapeutics
    Chattogram International Medical College, Chattogram.

4. Lecturer of Pharmacology & Therapeutics
    Rangpur Medical College, Rangpur.

5. Lecturer of Pharmacology & Therapeutics
    Colonel Malek Medical College, Manikganj.

6. Associate Professor of Pharmacology & Therapeutics
    BGC Trust Medical College, Chattogram.

*Correspondence: **Dr. Jannatul Ferdoush**
            Cell: +88 01856 18 99 77
            Email: jannat_fkh@yahoo.com

Medical education with the aim of making graduate competent under the guidance of BMDC[10]. MBBS course comprises of five years of study followed by a mandatory one-year clinical internship[11]. In view of the prolonged closure of institutions and the uncertainty of re-opening, Bangladesh Government took decision to switch onto online education from conventional face-to-face education. However, virtual teaching being a new experience in almost all medical colleges; sudden shifting of teaching methodology has imposed challenges to both the faculty and students in adopting the new virtual class[9,12].

Hence, the present study was carried out with the attempt to find out the impact of COVID-19 pandemic on medical students of Bangladesh.

Material and methods

A cross-sectional comparative study was designed to meet the study objective. The study population comprised of paraclinical (3rd & 4th year) and clinical (Final year) students of seven medical colleges of Bangladesh including government (Colonel Malek Medical College, Manikganj and Rangpur Medical College) and Non-Government Medical Colleges (Army Medical College Bogura, Army Medical College Chattogram, BGC Trust Medical College, Brahmanbaria Medical College and Chattogram International Medical College) in October 2020.

A structured questionnaire consisted of 08 Likert scale (Five-point) questions were developed and questionnaire was validated before survey.

Permission was taken from college authorities and informed consent was taken from the participants of the Structured Questionnaire Survey. Researchers explained the nature and purpose of the survey to the students during a virtual class. This self-administered questionnaire was linked in google form and was distributed among study population through email, messenger, whatsapp and other social media who gave consent. To assure the quality, students filled and submitted the questionnaire quickly during end of class. Later, this web-based questionnaire was sent to students who were absent in the class through email. A reminder mail or message was given on 7th day and 15th day of the primary one. The response generated by the students was received through google drive, and it did not accept double response from same participant.

Data was compiled, presented and and analyzed using SPSS version 22, and was expressed as percentage and mean values. Unpaired t-test was done to determine the significance of difference between the mean values. Statistical analysis was performed at a 95% confidence interval and significance was determined at $p < 0.05$.

Results

One thousand and twenty respondents were covered during the study period, of which 330 (32.35%) were males and 690 (67.64%) were females. Total number of paraclinical (3rd & 4th year) and clinical (final year) students were 718 (70.4%) and 302 (29.61%) respectively.

Table I : Demographic Information.

Demographic Information	Particulars	Frequency	Percentages (%)
Gender	Male	330	32.35%
	Female	690	67.64%
Year of MBBS	Para clinical	718	70.4%
	Clinical	302	29.61%

Among the paraclinical students, majority (60.03%) of the students strongly agreed that their medical education has been significantly disrupted by the pandemic, majority (52.51%) agreed that pandemic is going to limit their clinical skills and competency and it will influence the career plan of most (49.86%) of them. Most (62.53%) of the students strongly agreed that their academic career is going to be lengthen by this pandemic which will increases the financial burden of their family and many (34.54%) of them disagreed on the issue of finding a meaningful learning from this pandemic. Rather majority (41.36%) strongly agreed that their stress and anxiety level has been increased. Most (43.04%) of the students don't think that maintenance of social distancing in classroom, ward and hostel is possible and majority (37.47%) has agreed to accept the risk of getting infected with COVID 19 while returning to clinical ward placement.

Table II : Responses of paraclinical students to the questionnaire.

Question	Response (n=718)									
	Strongly agree		Agree		Neither agree or disagree		Disagree		Strongly disagree	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
My medical education has been significantly disrupted by the pandemic	431	60.03	253	35.24	14	1.95	19	2.65	1	0.14
The pandemic is going to limit my clinical skills and competency	283	39.42	377	52.51	39	5.43	18	2.51	1	0.14
COVID 19 will definitely influence my future career plan	244	33.98	358	49.86	65	9.053	43	5.99	8	1.11
As this pandemic is going to lengthen my academic career, it would be a financial burden for my family	449	62.53	208	28.97	36	5.01	19	2.65	6	0.84
I have been able to find meaningful learning opportunities in the pandemic	46	6.41	173	24.09	187	26.04	248	34.54	64	8.91
My stress and anxiety level has been increased in this pandemic	297	41.36	295	41.09	54	7.52	64	8.91	8	1.11
It is possible to maintain social distancing in classroom, ward and hostel.	51	7.10	86	11.98	40	5.57	309	43.04	232	32.31
I accept the risk that I may be infected with COVID 19, if I return to clinical ward placement	206	28.69	269	37.47	60	8.36	95	13.23	88	12.25

Among the clinical students, majority (64.90%) of the students strongly agreed that their medical education has been significantly disrupted by the pandemic and it also going to limit the clinical skills and competency of majority (61.59%) of them. It will also influence the career plan of most (57.28%) of them. Majority (77.81%) of the students strongly agreed that their academic career is going to be lengthen by this pandemic which will increases the financial burden of their family and many (47.35%%) of them disagreed on the issue of finding a meaningful learning from this pandemic. Rather majority (63.25%) strongly agreed that their stress and anxiety level has been increased. Most (57.62%) of the students don't think that maintenance of social distancing in classroom, ward and hostel is possible and majority (49.34%) has agreed to accept the risk of getting infected with COVID 19 while returning to clinical ward placement.

Table III : Responses of clinical students to the questionnaire.

Questions	Response (n= 302)									
			Agree		Neither agree or disagree		Disagree		Strongly disagree	
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency	%
My medical education has been significantly disrupted by the pandemic	196	64.90	104	34.44	1	0.33	1	0.33	0	0
The pandemic is going to limit my clinical skills and competency	186	61.59	113	37.42	1	0.33	2	0.66	0	0
COVID 19 will definitely influence my future career plan	173	57.28	114	37.75	8	2.65	6	1.99	1	0.33
As this pandemic is going to lengthen my academic career, it would be a financial burden for my family	235	77.81	67	22.19	0	0	0	0	0	0
I have been able to find meaningful learning opportunities in the pandemic	18	5.96	51	16.89	41	13.58	143	47.35	49	16.23
My stress and anxiety level has been increased in this pandemic	191	63.25	99	32.78	7	2.32	5	1.66	0	0
It is possible to maintain social distancing in classroom, ward and hostel.	11	3.64	19	6.29	9	2.98	174	57.62	89	29.47
I accept the risk that I may be infected with COVID 19, if I return to clinical ward placement	128	42.38	149	49.34	7	2.32	15	4.97	3	0.99

Table IV showed statistically significant difference present between paraclinical and clinical students in all questions.

Table IV : Comparison between the responses of paraclinical and clinical students.

Questions	Response		
	Paraclinical students Mean ± SD (n=718)	Clinical students Mean ± SD (n=302)	p value
My medical education has been significantly disrupted by the pandemic	4.52± 0.68	4.64± 0.51	0.006
The pandemic is going to limit my clinical skills and competency	4.29± 0.69	4.60± 0.54	< 0.0001
COVID 19 will definitely influence my future career plan	4.10 ± 0.87	4.50± 0.68	< 0.0001
As this pandemic is going to lengthen my academic career, it would be a financial burden for my family	4.50± 0.78	4.78± 0.42	< 0.0001
I have been able to find meaningful learning opportunities in the pandemic	2.85 ± 1.08	2.49± 1.13	< 0.0001
My stress and anxiety level has been increased in this pandemic	4.13 ± 0.96	4.58± 0.63	< 0.0001
It is possible to maintain social distancing in classroom, ward and hostel.	2.19 ± 1.31	1.97± 0.95	0.009
I accept the risk that I may be infected with COVID 19, if I return to clinical ward placement	3.57 ± 1.35	4.27± 0.81	< 0.0001

Unaired t-test was done, p ≤ 0.05= Statistically significant.
1= Strongly disagree, 2= Disagree, 3= Neither agree or disagree, 4= Agree, 5= Strogly agree.

Discussion

For several months, a global crisis is going on due to outbreak of Corona Virus Disease (COVID-19) and well-established systems such as healthcare and education have been facing enormous challenges worldwide. Current study was conducted in this context to assess the the impact of COVID-19 pandemic on medical students of Bangladesh.

Medical education is a dynamic process, begins at undergraduate level and continues until a physician retires from active practice. The years spent in medical school are formative for future physicians as it is expected that medical schools should equip the students with knowledge, attitude and skills required for the clinical practice throughout their life to serve the fundamental purposes of medicine[13]. In the last few months, the world has been overwhelmed by COVID 19 pandemic and it's deleteriously affecting education and healthcare system[14]. Closing of health institutions, distance learning tactics, compliance to virtual learning, loss of clinical experience and classroom learning experience, no proper examination, disruption of professional development all leads to disruption in the education of future physicians[15,16]. Respondents of current research agreed about disruption of ongoing education and more concern was expressed by clinical students although

medical schools in Bangladesh adapted virtual teaching-learning from the very beginning of the pandemic[9,17]. A particularly challenging aspect of education during the pandemic is the sustainable restriction of clinical learning experiences for medical students. The combination of reduced exposure to clinical sessions and the suspension or cancellation of attachments will have noticeable impacts on medical education, particularly on final year students, who are expected to gain certain structured competencies and skills before starting their careers[18,19]. And similar concerns were expressed by medical students of Bangladesh, especially clinical students perceived more fear about losing clinical skill and competency. Although COVID-19 pandemic has been considered as a source of disruption, it is likely that it will also be viewed as a catalyst for the transformation of medical education as the pandemic provided an opportunity for learners to realize the dynamic nature of medical knowledge and medical students not only continued to learn through alternative ways but in many circumstances, also contributing to efforts to reduce the impact of the pandemic and accelerating their attainment of the types of competencies that 21st century needs[15,20,21].

Medical education is expensive worldwide. Digital device or infrastructure required for online learning putting extra cost on medical students belonging to low socioeconomic status[15,16]. Prolongation of course length due to postponing of exams for an indefinite period can have significant financial implications and it was expressed by participants of this study. Clinical students were more concerned about financial implications of COVID-19 pandemic as delay in graduation is a serious matter of fact as paid internship affords them the financial security for the future[22,23,24]. Sudden changes in curricular delivery, struggling with virtual learning, fear of lossing clinical skill, loss of peer interaction, social isolation, uncertainity, ambiguity around future prospects and subsequent financial stress all are negatively affecting mental well being of medical students and putting anxiety and stress on medical students of Bangladesh[24,25]. COVID-19 pandemic causing uncertainty, confusion and significant concerns about future career planning of medical students of Bangladesh and similar kind of viewpoint was observed in a study conducted in US[26]. High rate of infection and mortality of physicians in Bangladesh during the pandemic might be influencing future career plan of young graduates[27]. Most of the students feared of getting infected with coronavirus when they will return for clinical placement as most of them expressed impossibility of maintenance of social distancing in campus, and similar views were expressed in a study conducted among medical students[28].

COVID-19 pandemic has imposed a myriad of diversities on medical education worldwide. Disruption of medical education, losing of clinical skill and competency, increased level of anxiety and stress, imposed financial burden, changing perspective of future career plan and fear of getting infected whenever return to clinical placement were expressed by both paraclinical and clinical students participated in this study but statistically significant concern was observed among clinical students as they were supposed to graduate if this pandemic did not exist.

Conclusion

COVID-19 pandemic has caused unprecedented disruptions in medical education worldwide. Undergraduate medical students of Bangladesh expressed their concern about losing of clinical skill, imposed financial burden, increased level of anxiety and stress, changing aspect of future career plan and fear of getting infected whenever return to clinical placement. Innovative transformations are needed to overcome the impact COVID-19 pandemic on medical education of Bangladesh.

Disclosure
All the authors declared no competing interests.

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Training Events Responsible for Injuries among Recruits in Selected Military Training Centers of Bangladesh Army

Iqbal Bahar Chowdhury[1*]   Manzurul Haque Khan[2]

ABSTRACT

Background: Bangladesh (BD) army has a continuous process of recruit training throughout the year in its different training centers. While training, recruits suffer from a lot of health problems which hinders their physical training as well as academic activities. The objective of the study is to ascertain training events responsible for injuries among recruits in selected military training centers of Bangladesh Army.

Materials and methods: This descriptive cross-sectional study was conducted in two selected training centers of BD Army for the initial 06 months of the training period from July 2018 to June 2019. The samples were selected purposively. Among 2702 study population the number of injured recruits (Respondents) were 152. A semi-structured pre-tested questionnaire and checklist were used as the research instrument.

Results: Among 152 respondentss, 130(85.5%) respondents got injury while doing normal routine training activities. Of them highest 74(56.92%) got injury during run, 32(24.62%) during PT, 16(12.31%) during drill, and rest 8(3.16%) during doing other events. Games and sports events caused 17(11.2%) cases of injury and of them 14 respondents injured during football playing.

Conclusion: The study revealed that more safety measures need to take while doing the training events specially while doing events like run, PT and games & sports, to keep the recruits more fit to complete their training efficiently.

Key word: Injury; Training events; Recruits.

Introduction

Injury is recognized as a leading health problem worldwide among both civil and military personnel. In 2002, worldwide some 161,269 people died as the result of injuries[1]. Musculoskeletal physical training-related injuries are major problem in military population. Injuries are important in terms of loss of time from work and training and decreased military readiness. The implications of injuries in terms of morbidity, attrition rates, and training costs for military personnel are staggering[2]. In an attempt to develop more effective preventative strategies, epidemiological studies have been conducted in various military settings to quantify the scale of the injury problem and to identify the risk factors associated with increased injury risk[3].

Training injuries can result in the loss of training time, causing reductions in physical fitness which may result in recruits being put back in training or, in cases of severe injury, discharged from the military. This is of high personal cost to individual recruits and financial cost to the military[4].

In USA, there were 743,547 injury-related musculoskeletal conditions in 2006 and there has been a consistently high rate of attrition due to injury in military population within the initial training period[5,6]. Physical training-related injuries have been identified as a major threat to the readiness of the USA Armed Forces and a high priority for injury prevention[7]. Prevention of injuries during Basic Combat Training (BCT) is specifically important due to the potential adverse effects of injuries on career longevity and trajectory in addition to health and force readiness[8].

In Bangladesh due to the military activities of Armed forces personnels, games was the main event that has caused 53(27.5%) case of injuries, followed by operational activities 40(20.7%) exercise 10(5.2%) Physical Training (PT) 28(14.5%) and about one third 62(32.1%) cases received injury during administrative duties. Out of 28 injuries received during PT events, PT/drill caused maximum 7(3.6%) cases followed by crossing 6 feet wall 5(2.6%) crossing horizontal rope 4(2.1%) and during assault course 3(1.6%)[9].

The only descriptive cross-sectional study so far found conducted by Mohsin M among the recruits of Bangladesh Army in 2007 to ascertain the pattern of injuries among army recruits during initial recruit training in two selected training centers[10]. Maximum number of injured respondents was caused by football game 13(11.9%). It was followed by physical field punishments 10(9.2%) 1.5 kilometer run 5(4.6%) 6 feet wall and basketball game 4(3.7%) each, 100 meter run and pre-firing drill 3(2.8%) each, horizontal rope 2(1.8%), high jump and boxing 1(0.9%) each.

1. A/Commandant
    Combined Military Hospital (CMH)
    Majhira Cantonment, Bogura.

2. Professor of Occupational & Environmental Health
    NIPSOM, Dhaka.

*Correspondence: **Colonel (Dr) Iqbal Bahar Chowdhury**
             Cell: +88 01711 47 55 14
             Email: Iqbal_chowdhury2007@yahoo.com

A number of studies related to physical stress induced injuries among recruits were being carried out in various countries of the world to observe incidence and prevalence of common types of injuries to recommend the preventive measures to reduce the occurrence. In Bangladesh AF, so far only one study was found about recruit injury which was done in 2007. Since 2012 in Bangladesh Army, a lot of changes have done in recruit training module, including significant increase of duration of training, changes in training events, changes in test procedures and so on. The physical facilities like training aids, accommodation, food etc. for the recruits are improved a lot.

This study can be another initiative for this purpose after a long period to find common injuries of recruits in the present context. If the types and reasons of injuries can be identified then appropriate measures can be taken to reduce the various injuries among recruits in future. This will reduce the drop-out of the recruits also.

Materials and methods

This descriptive cross-sectional study was conductedfrom 01 July 2018 to 30 June 2019 at Chattogram Cantonment, Chattogram where two of the largest training centers of BD Army are situated; one is East Bengal Regiment Center (EBRC) and anotheris Artillery Center & School (AS & C). Data were collected from the center's Medical Inspection Rooms (MI Room) and Combined Military Hospital (CMH) Chattogram purposively. The study populations were 1500 and 1202 in EBRC and AC & S respectively. In this study purposive type of non-probability sampling technique was used. Time frame sample size is taken. Recruits who developed any injury from January, 2019 to June, 2019 were taken as sample. A semi-structured pre-tested questionnaire and checklist were used as the research instrument. Data were checked and verified thoroughly to reduce inconsistency.

Results

 Out of 2702 recruits 152 reported sick to the dependent health care facilities for having different types of injuries. Among the total 152 respondents, 81(53.3%) were from EBRC and 71(46.7%) were from AC&S. The overall frequency of injury in two centers was 5.63%. Whereas the injury frequency in EBRC was 5.4% and in AC & S was 5.9% respectively. The mean age of the total 152 respondents was 18.66 years with SD of ± 0.88 years. The minimum BMI was 17.14 kg/m^2 and maximum 31.52 kg/m^2. Only 9(5.9%) found underweight and 6(3.9%) found overweight.

Among 152 respondents, highest 130 (85.5%) got injury while participating in normal training events. While games & sports events account for 17(11.2%) injury cases, special training events only 2(1.3%) cases and other miscellaneous events 3(2.0%) cases (Figure 1).

Among 130 respondents who got injury due to normal training events, sprain was 55(36.2%) followed by shin pain 40 (26.3%). Games & sports causes total 17 injury of which 8(5.3%) was sprain (Table I).

The 2(1.3%) cases of injury happened due to special training events where assault course and hill climbing was 1 of each (Table II).

Games and sports events caused 17(11.2%) cases of injury in the study. Of those football playing accounts for 14 injury cases, basket-ball playing 2, and volley-ball playing 1(Table II).

Among 130 respondents, highest 74(56.92%) got injury during run, 32(24.62%) during PT, 16(12.31%) during drill, 4(3.08%) during rope climbing, 2(1.54%) during walk and another 2(1.54%) during 6 feet wall crossing (Figure 2).
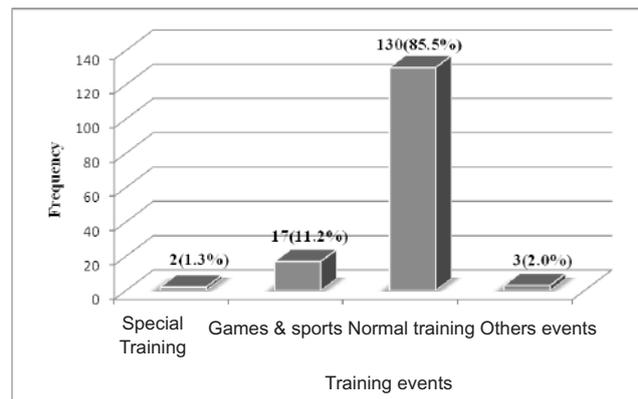
Figure 1: Distribution of the respondents by training category causing injury.

Table I : Distribution of the respondents by injury type and training events.

Injury type	Training events				Total
	Special training	Games & sports	Normal training	Other events	
Sprain	00	8(5.3%)	55(36.2%)	2(1.2%)	65(42.8%)
Dislocation	00	1(0.7%)	00	00	1(0.7%)
Fracture	00	1(0.7%)	19(12.5%)	00	20(13.2%)
Shin pain	1(0.7%)	1(0.7%)	40(26.3%)	1(0.7%)	43(28.4%)
Muscle strain	00	2(1.3%)	7(4.6%)	00	9(5.9%)
Low back pain	1(0.7%)	2(1.3%)	3(2.0%)	00	6(3.9%)
Other injuries	00	2(1.3%)	6(3.9%)	00	8(5.3%)
Total	2(1.3%)	17(11.2%)	130(85.5%)	3(2.0%)	152(100.0%)

Table II : Distribution of the respondents by games and sports events and special events.

Games & sports events n=17(11.2%)	Frequency
Football	14
Basket-ball	02
Volley-ball	01
Special training events n=2(1.3%)	
Assault course	01
Other special training	01
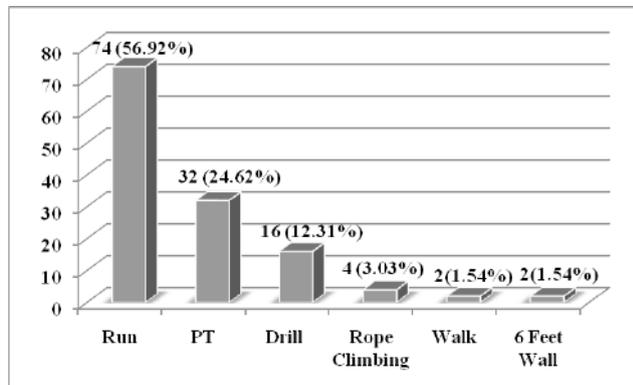
Figure 2 : Distribution of the respondents by normal training events (n=130).

Discussion

This study was carried out to ascertain the training events responsible for injuries among the recruits of Bangladesh Army. In the present study the overall frequency of injury in two training centers was 5.63%. Sulsky SI et al in their study found injury rates during military training were from 6% to 12% of recruits per month during basic training[11]. Kaufman KR et al found incidence of injuries during military training of varying duration ranges from 8% to 51%[2]. Injury rates range from 10% to 15% for recruits, and 6% to 12% per month for infantry soldiers as found in other studies[12]. Incidence among British recruit was reported to range widely from 20%, to as much as 86% in parachute regiment[13,14]. Variation in injury incidence rates among army recruits in different countries were due to difference in training practices, training populations, environmental conditions and injury prevention strategies.

In the present study among 152 respondents, highest 130(85.5%) got injury while participating in normal training events. While games & sports events account for 17(11.2%) injury cases, special training events only 2(1.3%) cases and other miscellaneous events 3(2.0%) cases which include running in line (01) and fatigue working (02) (Figure 1). In the study by Mohsin M maximum 18(16.6%) of respondents got injury due to normal training events[10]. It was followed by games 17(15.6%), physical field punishments 10(9.2%) and boxing 1(0.9%). Study by Khan NH et al statedthat games was the main event that has caused 53(27.5%) cases of injuries[9]. The study result showed much more injury cases due to normal training events which need to be evaluated in future. Injury due to games events found almost same as in the study of Mohsin M[10]. Study of Khan NH et al differed and found more injury due to games event, because of that the study was not on recruits rather on trained soldiers[9].

In the present study the 2(1.3%) cases of injury those happened due to special training events were assault course and hill climbing, 1 of each (Table II). Special training events starts usually in the third or last part of the training, as such respondents were very few for these events. In the study of Mohsin M injury due to assault course was 13(11.9%)[10]. The contribution of all other events, such as assault bayonet fighting, parallel bar, long jump, volleyball and foot ball were 8.2% of cases altogether. Study by Khan NH et al stated that out of 28 injuries received during physical training events assault course causes only 3(1.6%) of the injuries[9]. As the study period varies, so the frequency of injury due to special training events also vary in studies.

Games and sports events caused 17(11.2%) cases of injury in the study. Of those football playing alone accounts for 14 injury cases, basket-ball playing 2, and volley-ball playing 1 (Table II). Study by Khan NH et al found that maximum 24(12.4%) injuries occurred during playing football followed by volley ball 13(6.7%) and basket ball 10(5.25%)[9]. Study by Mohsin M found injury caused by football game as 13(11.9%) followed by basket ball game 4(3.7%) and boxing 1(0.9%)[10]. The later study result has similarity with the present study as the populations have similarity. Hawlader MAR also revealed that games were the main events causing injury which occurred in 53(27.5%) cases[15]. A study conducted by Rahman MM on ankle sprain at CMH, Dhaka showed that the incidence of injury related to football was 40% and basket ball and volleyball 15%-17.5%[16].

Among130 respondents, highest 74(56.92%) got injury during run, 32(24.62%) during PT, 16(12.31%) during drill, 4(3.08%) during rope climbing and 2(1.54%) during walk (Figure 2). Fifty-three percent of training injuries occurred at PT ground[17]. Rudzki SJ in a study among Australian recruits revealed higher injury rate in the run group, which was 37.6% and 46.6 % in the walk and run groups, respectively[18]. Van Mechelen in a review of running injury epidemiology, noted that the incidence of running injuries ranged from 24% to77%[19]. Zaman UIC in their study on knee injury in Bangladesh Army found that Physical Efficiency Test (PET) is a prime cause of knee injuries in military personnel (38.09%)[20].This variation in frequency of injury due to different training events are due to the difference in training centers, corps difference and variation in training modules.

Conclusion

The study revealed that majority of the injury occurs during training doing the events like run, PT and games and sports. This study will help to take necessary steps to minimize injury during training. As a result training of the recruits can be completed efficiently avoiding injury morbidity.

Disclosure

Both the authors declared no competing interests.

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Estimation of Stature from Ring Finger Length and Sexual Dimorphism in Adult Chakma Males and Females

Md. Mujibul Huq Talukdar[1*]   Md. Ashrafuzzaman[2]   Asma Mostafa[3]

ABSTRACT

Background: Estimation of stature from ring finger length in adult Chakma males and females and also to observe gender difference was the main purpose of this study.

Materials and methods: It was a cross-sectional analytical study conducted over 104 adult healthy Chakma males and females (52 males & 52 females) residents of Chattogram Hill Tracts area from July 2011 to June 2012 in the Department of Anatomy, Chittagong Medical College, Chattogram. Subjects selection was done by convenient sampling technique and stature and ring finger length were measured and data was documented in SPSS version 19.

Results: A highly significant gender difference was found in ring fingers length. Mean Multiplication Factor (M.F) to estimate stature in males was 24.0172 and 24.0350 for right and left ring finger respectively and in female was 24.1770 and 24.1696 for right and left ring finger respectively. A positive correlation was found between stature and right ring finger length 0.511 and left ring finger length 0.560 in Chakma males and stature and right ring finger length 0.574 and left ring finger length 0.601 in Chakma females respectively.

Conclusion: This study found multiplication factors for right and left ring finger length to estimate stature in a correct way and found a linear correlation between stature and ring fingers length and also there was significant gender difference present between ring fingers length in adult Chakma males and females.

Key words: Stature; Ring finger length; Co-relation coefficient; Gender difference; Chakma population.

Introduction

Anthropometry is an early tool of physical anthropology where sizes and proportions of the human body are measured and relation with stature also observed. Estimation of stature from the dimensions of different body parts is being used for many years in the field of anthropometry. Stature of an individual is necessary in medico-legal autopsies, in forensic examinations, mutilated, decomposed and amputed body fragments found due to natural disasters like earthquakes, tsunamies, cyclones, floods and manmade disasters like terror attacks, bomb blasts, mass accidents, wars, plane crashes etc[1]. There is a constant relationship between the height of the person and with body segments[2]. Morphological characteristics among the individuals are different in different ages, ethnicities, genders, religions, geographical status, nutritional factors. So, that identification process is more complicated and subjective[3]. Anthropometry helps in reconstruction of the biological profile

of the deceased such as age, sex ethnicity and stature. Among these 'big fours' of forensic anthropology, estimation of stature is considered as one of the main parameter of personnel identification in forensic examinations[4]. Relationship between the dimensions of individual body segments and the height has been of interest to artists, anthropologists and scientists for many years. The anthropologists have done many studies on different populations to identify the body segments relation with the stature. Inter-racial and inter-geographical differences present in data of correlation of stature with body appendages & length of long bones; what may be true for one race or one region may not be true for the other[5]. Height is one of the factors in description of impressiveness of an individual and it varies with race, age, sex, heredity, climate and nutritional status. Telekka (1950) expressed the opinion that each racial group needs a separate formula for estimation of stature[6]. As per physical anthropologist, long bones of the limbs are best to estimate the height of a deceased[7]. Correlation between height and upper limb segment length can be used medicolegally to determine the stature, sex, race, age. Stature estimation from finger length was attempted by some researchers which were reported by the published work of Raju GM et al, Bardale et al, Hasan KR et al, Sen J et al, Acharya J et al, Katwal B et al[8-12,3]. Jasuja and G. Singh in their published work in 2004 and they also attempted of stature estimation from hand and phalalange length[13]. Anthropometric study of finger length of both hand of Chakma population will add an additional parameter in personal identification. The Chakma also known as 'Changhma' are a community that inhabits the Chattogram

1. Associate Professor of Anatomy
   BGC Trust Medical College, Chattogram.

2. Professor of Anatomy
   Chittagong Medical College, Chattogram.

3. Professor of Anatomy
   Chattagram Maa-O-Shishu Hospital Medical College, Chattogram.

*Correspondence: **Dr. Md. Mujibul Huq Talukdar**
                Cell: +88 01905 42 46 67
                Email: mujibulhuq_talukdar@yahoo.com

Hill Tracts of Bangladesh, the north-east India and rakhine state of Myanmar. Among Chakma tribal group, anthropometric study for stature estimation from ring finger length was very rarely seen. It was seen that normally due to some degenerative changes in joints and cartilages after 50 years the stature is being reduced and growth of the child occur upto 20 to 25 years[6]. So, in between 25 to 45 years actual height of the person is remain unchanged. So, An attempt had been taken in the present study to make correlation of stature with the ring finger length and also to see the gender difference among chakma males & females in ring finger length within these age group for antropometric knowledge.

Materials and methods
Total 104 Chakma adult Buddhist in the age between 25 to 45 years were undergo direct physical measurement. Among them 52 males & 52 females. The subjects were chosen by convenient sampling technique from Rangamati & Khagrachari district of greater hill tracts area of Chattogram and analysis was done in the Department of Anatomy of Chittagong Medical College. To eliminate the discrepancies of diurnal variation the measurements and the photographs were taken in day time between 9 a.m. to 4 p.m[14].

Procedure for Measurement of Stature (Height of the Body in A Standing Position :-
The subject stood on bare-footed with feet together on a level concrete floor, with his/her upper backs, buttocks and heels touching the wall. The participant's head in the Frankfort plane. The arms were hung freely by the sides with the palm facing the thighs. After asking the subject to take a deep breath and holding it, a measuring scale was placed against the head and wall to determine maximum height on the wall and this was marked. The subject was then told to breath and to step away from the wall. The height was then measured from the floor to the mark on the wall with steel tape which represents stature in centimeters to the nearest 0.1 centimeters. The average of the two measurement was considered for the height of that person[15].

Procedure for Measuring the Length of Ring Finger :-
The subject was asked to place his / her hand on a table with the fingers together and thumb abducted and the hand and fingers as straight as possible. Measurement of length of ring finger was taken from the tip of the finger to the middle point of proximal / basal crease of the ring finger with the help of sliding caliper[16].

Measurement of Ring Finger Length Using Sliding Caliper :-
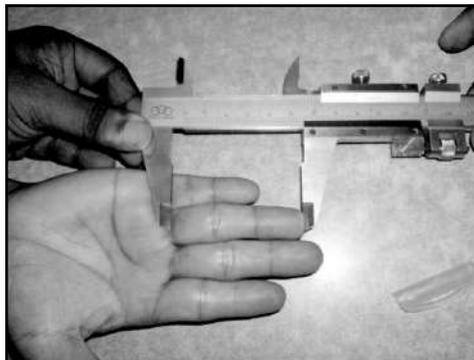
Figure 1 : Measurement of ring finger length.

Formula for Measurement of any Length by Sliding Caliper:-
Length = Reading of the main scale + Vernier coincidence × Vernier constant – (± Mechanical error)[17,18].

Procedure of Calculation of Multiplication Factor :-
Multiplication factor was obtained by dividing the stature with the respective upper limb variable (Length of ring finger). Then the mean multiplication factor was calculated.

Multiplication factor = stature ÷ upper limb variable (Length of ring finger)[15].

Software SPSS version 19 was used for analysis of data. Their mean, minimum, maximum, standard deviation, mean multiplication factor were calculated. Frequency distribution and regression analysis were done. Measured and estimated statures by using multiplication factor were tested by paired sample t-test. Gender differences in each variable were tested by using independent sample t-test. The Pearson correlation coefficient (r), probability (p) value was calculated. The significance level was set at $p < 0.05$.

Results
In the present study, descriptive statistics and Multiplication Factor (MF) to estimate stature of Chakma adult males and females was shown in Table I. A highly significant positive $(p<0.001)$ correlation between ring finger length with stature found in males and females shown in table II. In Table III showed that there was no significant difference present in measured and estimated stature in males and females respectively.

Table I : Descriptive statistics and Multiplication Factor (MF) in males (n=52) and females (n=52).

Variables		Minimum(cm)	Maximum(cm)	Mean±SD	M.F.
Stature	Male	150.85	189.05	162.5327± 6.85381	
	Female	137.90	165.95	150.7500±5.82519	
Right ring finger	Male	5.92	8.01	6.7828±0.41233	24.0127
	Female	5.18	7.31	6.2584±0.45843	24.1770
Left ring finger	Male	5.82	8.10	6.7790±0.43155	24.0350
	Female	5.30	7.39	6.2575±0.44779	24.1696

Table II : Pearson correlation coefficient (R) of variables measurements with stature and p value – males & females.

Variable		Right side			Left side		
Ring finger length		r	r²	p value	r	r²	p value
	Males	0.511	0.262	p=0.000	0.560	0.314	p=0.000
	Females	0.574	0.330	p=0.000	0.601	0.361	p=0.000

Table III : Comparison between the measured stature and the stature estimated from different physically measured variables-males & females.

	Measurement from which the stature estimated	Measured stature (cm)	Estimated stature (cm)		p value
		Mean ± SD	Range	Mean ± SD	
Male	Right ring finger length	162.53 ± 6.85	142.18 – 192.38	162.90 ± 9.90	0.760
	Left ring finger length		139.76 – 194.56	162.93 ± 10.37	0.739
Female	Right ring finger length	150.75 ± 5.82	125.24 – 176.73	151.30 ± 11.08	0.660
	Left ring finger length		128.10 – 178.49	151.24 ± 10.82	0.685
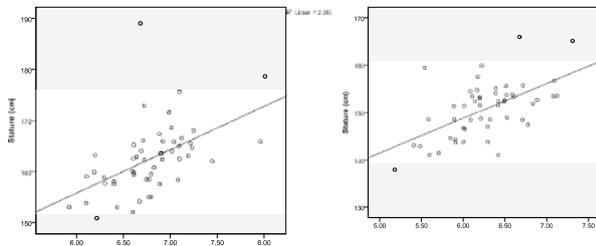
Figure 2 : Scatter diagram with regression analysis showing significant positive correlation (r=0.511, p<0.001) between the stature and length of right ring finger of the Chakma adult males (n=52) and (r=0.574, p<0.001) between the stature and length of right ring finger of the Chakma adult females (n=52).
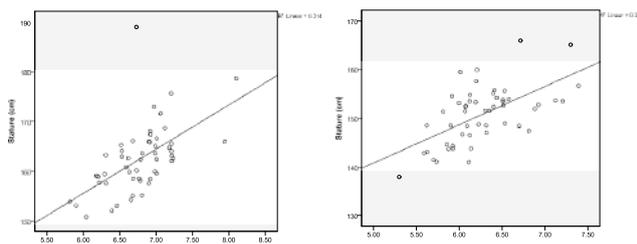
Figure 3 : Scatter diagram with regression analysis showing significant positive correlation (r=0.560, p<0.001) between the stature and length of left ring finger of the Chakma adult males (n=52) and (r=0.60, p<0.001) between the stature and length of left ring finger of the Chakma adult females (n=52).

Discussion

The mean length of right ring finger in male was 6.7828(±0.41233) cm, in female was 6.2584(±0.45843) cm, left ring finger in male was 6.7790(±0.43155) cm, in female was 6.2575(±0.44779) cm. Larger ring finger length was found in similar study done by Acharya et al. in Nepalese population (Left ring finger in male was 7.43±0.45 cm and in female was 6.97±0.38 cm)[3]. Pramod Kumar study of Mysore district population of India (right ring finger length in males 9.3720(±0.6639) cm, in females 8.7490(±0.6222) cm; left ring finger length in males 9.3250(±0.6333) cm, in females 8.6840(±0.5839) cm)[19].

Multiplication factor for estimation of stature for right and left ring finger for both male and female was different and specific for that finger and tribe and we have seen that with the multiplication factor we can determine almost accurately the stature of that person. Pearson correlation coefficient (r) in male was 0.511 for right ring finger and 0.560 for left ring finger and in female was 0.574 for right ring finger and 0.601 for left ring finger and all showed p value for correlation was <0.001. So, highest correlation with stature found in left ring finger in both male and female. Our study also showed coefficient of determination (r^2) in case of male was for right ring finger 0.262 and for left ring finger 0.314. Coefficient of determination (r^2) in case of females was for right ring finger 0.330 and for left ring finger 0.361. Other researchers also found significant (p<0.01) positive correlation between stature and ring finger length. Pearson correlation coefficient (r) in study by Pooja Ahuja et al of Gujarat population of India, in males, right ring finger 0.577 and left ring finger 0.563 and in females, right ring finger 0.566 and left ring finger 0.582[2]. Pramod Kumar study on peoples of Mysore district, India, in males, right ring finger 0.350 and left ring finger 0.315 and in females, right ring finger 0.383 and left ring finger 0.434[19], Rajesh et al study on Maharastra population, India, right ring finger 0.546 and left ring finger 0.572, in female 0.594 for both right and left ring finger[9]. Gender difference in ring finger length in our study also showed highly significant (p<0.001) and male ring finger length was longer than female ring finger length. Rajesh et al found significant difference (p<0.001) exists between male and female index and ring finger length[9]. So, from above discussion it have been seen that some study was done about correlation with stature with ring finger length and develop multiplication factor and our study also effective to identify the Chakma adult people.

Conclusion

Highly significant positive correlation was established between stature and right and left ring finger length in adult Chakma tribal population. Regression analysis was done and found very effective in stature estimation was seen in this study. The multiplication factor showed the accuracy in determining the height of the person and the highly significant gender difference was also seen in our study. So, our study will be helpful in personal identification of the Chakma population.

Acknowledgement

Disclosure

All the authors declared no competing interests.

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Socio-demographic Characteristics of Depressive Patients Attending at A Tertiary Level Hospital, Dhaka

Md. Abul Kalam Azad[1]*

ABSTRACT

Background: Mental illness is an important public health problem but mostly neglected in Bangladesh. A large number of people is suffering from different types of mental illness, especially depressive disorders. If they remain undiagnosed and untreated, they may lead to quite unproductive lives and causes a health burden. So, appropriate knowledge is required to control the prevalence and its negative impact on national budget. The purpose of this study is to find out the socio-demographic characteristics of depressive patients attending at a Tertiary level hospital, Dhaka.

Materials and methods: This descriptive type of cross sectional study was conducted among 91 depressive patients attending at Combined Military Hospital (CMH) Dhaka during the months of March to June, 2012. The respondents were interviewed through a interviewer-administered questionnaire.

Results: In this study the mean age of the respondents was 37.97 ±11.357 years, all were literate. Majority (45.1%) from 30-39 years and females (56%). Most of them (96.7%) were married and (86.80%) had 1-4 children in their families and maximum (67%) were from urban area. The study revealed that young and mid-aged females and females from urban area were significantly prone to depression than male.

Conclusion: In this study it was found that educated young and mid aged married females from urban area are the more sufferers of depressive illness. Adequate recreational facilities, improved health and welfare resources should be developed and health education and counseling may be incorporated during treatment process to improve the patient's compliance.

Key words: Socio-demographic; Depressive patient; Mental illness; Psychiatric disorder.

Introduction

Good mental health is crucial to live a long and healthy life. Good mental health can enhance one's life, while poor mental health can prevent someone from living a normal life. Health as defined by the World Health Organization is "a state of complete physical, mental and social wellbeing and not merely an absence of any disease or infirmity". A man must be mentally healthy to lead a socially and economically productive life. Ginsberg simplified the definition of mental health, "the ability to hold a job, have a family, keep out of trouble with the law, and enjoy the usual opportunities for pleasure"[1].

From several studies it was found that about 16.05% of adult populations of Bangladesh were suffered from mental health disorders and among them the prevalence of major depressive disorders is 4.61%. Knowledge and awareness among the population about mental illness are still in the very early stage in Bangladesh[2,3].

1. Director
    Commanding Officer
    Border Guard Hospital, Thakurgaon.

*Correspondence: **Lt Col (Dr) Md. Abul Kalam Azad**
          Cell: +88 01769 60 81 00
          Email: azad101025@yahoo.com

Surveys suggested that major depressive disorder has the highest lifetime prevalence (Almost 17 percent) of any psychiatric disorder[4,5]. The mean age of onset for major depressive disorder is about 40 years, with 50% of all patients having an onset between the ages of 20 and 50 but as a whole depression is more common in older persons[4,5]. An almost universal observation, independent of country or culture, is that the depressive disorder is much higher in women than in men[2,5-10]. Some studies revealed that depression is more common in rural areas, but other studies differed, even after controlling for the effect of differences of age, sex, ethnic group, education and migrant status[9, 11-13]. Young adults with preponderance in males (61%) of rural (55%) area having school level education (57.35%) and married (55.33%) were significant but female widows/divorcees were double that of male counterpart[13]. Most previous research has argued that marriage is associated with low rates of depression because it shields the individual from exposure to stress.[14]. A study was carried out in the year 2007 within the age group of 10 to 55 years, results showed that most of the patients were educated. 19% completed graduation, 56.6% completed Higher Secondary Certificate (HSC) examinations and most of the patients (70.4%) were from urban background[15]. But a retrospective study, conducted in 2010 found male preponderance, maximum (64.67%) married, (30.88%)

illiterate, followed by secondary education (27.2%) and mostly (89.94%) resided in the rural areas[16]. In a study at CMH Chittagong in 2001 found maximum number of patients (42.85%) was between the age of 31-40 years and in all age groups females (60.72%) outnumbered the males[17]. Another study conducted at CMH Dhaka in 2004 showed, 84% had age range from 20-40 years and majority were (60%) female, (86%) urban background, Having Secondary level (64%) education and were married (92%)[18].

Although considerable information on mental illness is available from developed and some developing countries, estimates are scarce for Bangladesh. Bangladesh is a poor, the most densely populated country in the world, situated where floods, storms and other natural disasters occur and cause great sufferings which are highly associated with psychiatric morbidity. In spite of these adverse conditions, must needed data are rarely available for any future planning and true intervention. Thus this study may consider just an initiative to find out the socio demographic relationship with the prevailing depressive illness to enrich the required data which may provide some guide lines in taking preventing measures in respect to the relatively neglected, often misunderstood and helpless depressive patients and also to make further specific study.

Materials and methods

The descriptive type of cross sectional study was conducted among 91 depressive patients irrespective of their age and sex attending for treatment at the Outpatient department and admitted in the Psychiatric ward of Combined Military Hospital, Dhaka Cantonment during the months of March to June, 2012. Mentally stable and co-operative patients were only interviewed after signing a written consent. Data were collected through face-to-face interview by a semi-structured interviewer-administered questionnaire, which was planned and designed according to the objectives to get information of the different variables. Ethical consideration was strictly maintained and as such the respondents were given full assurance that under no circumstances findings of the interview would be disclosed to any unauthorized person. Depressive patients were diagnosed by the psychiatrist of Combined Military Hospital Dhaka, following the diagnostic criteria of the Diagnostic and Statistical Manual (DSM-IV) of the American Psychiatric Association and International Classification of Disease (ICD-10) of the World Health Organization. In this study age, sex, educational status, marital status, position in sibs of the patients and number of children each of the patients was having and their residences were taken into consideration. However, for age 6 months and above was taken

as a full completed year and position in the sibs was determined in ascending order and residence was categorized in urban and rural only. Data were analyzed by SPSS 19 for windows. Frequency distributions and normal distributions of all continuous variables were checked. For analysis, arithmetic mean standard deviation was used. Cross tabulation was prepared. Chi-square was done to see the association where and whenever required.

Results

The maximum numbers of the respondents were within the 30-39 years (45.1%), majorities were female 56.04%, all were found educated. Most of them 96.70% were married and maximum were having 86.80% children within 1-4 group (Table-I). Among the respondents most of them 29.67% from 2nd and other position in their sibship and maximum 67.03% were residing in urban area (Table-I).

Table I : Socio-demographic characteristics of the participants (n=91).

	Characteristics	Frequency	Percentage
Age	<20	2	2.2
	20-29	16	17.60
	30-39	41	45.10
	40-49	18	19.80
	50	14	15.40
	Mean 37.97 years, SD ±11.357 years, Lowest age=19 and Highest=72.		
Sex	Male	40	44
	Female	51	56
	Female: Male = 1.275		
Educational Status	Primary	30	32.97
	SSC	39	42.86
	HSC	13	14.29
	Graduate	7	7.69
	Post Graduate	2	2.20
	None of them found illiterate		
Marital Status	Unmarried	3	3.30
	Married	88	96.70
	All females were married but only 3 males were unmarried.		
Position in Sibs	1st	17	18.68
	2nd	27	29.67
	3rd	20	21.98
	4th	27	29.67
Number of children	0	9	9.90
	1 to 4	79	86.80
	5 to 8	3	3.30
	Most of the families 29(31.9%) were having 2 children only.		
Residence	Rural	30	33
	Urban	61	67

Table II : Age of the respondent by Sex of the respondent (n=91).

Age of the respondent	Sex of the respondent		Total
	Male	Female	
<19	0	0	0
19-29	0	18	18
30-39	18	23	41
≥40	22	10	32
Total	40	51	91

Lowest age=19 (None was found below of that age) and highest age=72 years.

Among 91 respondents most of the females (18+23=41) were young and mid-aged within 19-39 years. The entire male respondents were found mid-aged and above. χ^2 test (χ^2 =12.32, df=1, p< 0.001) showed age groups 19-39 and ≥40 are highly significant, that is positive association of age pattern with sex for depression.

Table III : Sex of the respondents by area of residence (n=91).

Sex of the respondent	Area of residence		Total
	Rural	Urban	
Male	18	22	40
Female	12	39	51
Total	30	61	91

χ^2=4.676, df=1, p<0.05 (0.031).

Among the 91 respondents majority of the male (22) and female (39) were from urban area.χ^2 test showed females from urban area were significantly prone to depression than male.

Discussion
In this study the mean age of the patient was 37.97 years with Standard Deviation (SD) ±11.357 years and range was 19 years to 72 years (Table-I). This age range was very well consistent with many studies like Sadock BJ and Azim MN[5,13]. The maximum numbers of respondents were within the 30-39 years (45.1%). This result is consistent with the result of Choudhury AU and Islam MM[17,18]. 50% of patients had an onset of depression between the ages of 20-50 years. The study is also supported by Sadock BJ and Azim MN[9,13].

In this study, majority of the patients were (56.04%) female and 43.96% were male (Table-I). Female: Male ratio is 1.275. So, depression found relatively more among the female than their male counterpart. The study result is consistent with the study result of Islam MM[18]. It is also found consistent with the study conducted by Choudhury AU and some other study results also revealed the same that depression is much higher in women than in men[17,6-10]. However it is not consistent with the result of Azim MN conducted on manic depressive psychosis[13].

Table II showed young and mid-aged females 41 (19-39 yrs) are more sufferers than males, on the contrary males of ≥40 are more (22) sufferers. These age patterns with sex are highly significant (χ^2 =13.15, df=1, p< 0.001) for association with depression.
In this study 100% of respondents were literate. As the respondents were service personnel and their dependents only, the percentage of literacy was such. This result is also supported by the study conducted by Islam MM and Fahmida A et al[18,15]. Among the literate group most of the respondents were from SSC (42.9%) level, then primary (33%) which is consistent with the study conducted by Islam MM[18].
Though depression is common among persons without close personal relationship or in those who are divorced or separated but in this study the majority of the respondents (96.7%) were married and 3.3% were unmarried[5]. The high percentage of married persons was sufferer of depressive illness, this study result somehow supported by the study result of Islam MM[18].
Among the patients maximum (67.03%) were from urban area, which is consistent with the study conducted by Islam MM but not consistent with Azim MN[18,13]. In North Carolina sample of the ECA study showed that major depressive disorder was twice as common in the urban as in the rural area[11].
Table III revealed that more female (39) of urban area were significantly (χ^2=4.676, df =1, p<0.05) associated with depression than their male (22) counter-part.
In this study the maximum respondents 86.81% have children within 1-4 group, next only 3.30% have children within 5-8 group but 9.89% respondents didn't have any children at all. This study result nearly consistent with the result of Firoz AHM et al[2].
Among the respondents most of them 29.67% from 2nd and other position in their sibship, next 21.98% from 3rd but 18.68% from 1st in order (Table-I). This result does not reflect that first-born was significantly associated with being depressed but consistent with the study conducted by Grosz HJ[19-21].
This study was carried out among a small sample of depressive patients who were treated only in a hospital like Combined Military Hospital, Dhaka, so has some limitations, even though cross-sectional study design provides reliable and valid information but more studies should be carried out in other area of Bangladesh also. The findings of this study may not have the better reflection of the socio-demographic characteristics of depression as stated in the various psychiatric text books and other studies, though a very limited number of researches were carried out globally as a whole and data from national survey are really scarce and as such the study might have less comparatively discussed and might be lack of overall reflection of the country's scenario as a whole but hopefully generated some statistical information which can serve as baseline data for further in-depth study in broader perspective.

Conclusion

Depressive illness is equally important as a psychiatric as well as any other psychiatric illness. Psychiatric illness contributes the major share of non-fatal disease burden globally and so in our country too. Among them depressive illness is highly prevalent in any type of population, which has a great impact on normal functioning of day to day life. Like any other physical illness, it is also preventable and treatable. Early diagnosis, effective treatment, follow-up and rehabilitation enable the ill patient as a productive citizen of the nation. In this study we intended to understand some important socio-demographic factors but a lot many of the other factors were missing. The case depression in Bangladesh requires a mass investigation, not only of psychological but also of biological factors. All the people should be made aware that depression is a case of psychiatric illness, needs medical attention and like any other physical illness does have necessary scientific treatment.

Discloser

The author declared no competing interests..

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Serum Gamma Glutamyl Transferase (GGT) Level in Preeclampsia

Rukhsana Afroz[1] *Qazi Shamima Akhter[2] Halima Sadia[3] Sharmin Sultana[4]*

Mita Bhowmik[5] Fouzia Farid[6]

ABSTRACT

Background: Preeclampsia is a major cause of maternal and perinatal mortality and morbidity. The intracellular enzyme, Gamma Glutamyl Transferase (GGT) is widely distributed throughout the body in many tissues. As severe preeclampsia may lead to a numerous multisystem complications, estimation of serum GGT level can be used to predict the severity of preeclampsia.The aim of this study wasto assess serum GGT level in preeclamptic women and its comparison with normal pregnant women in third trimester.

Materials and methods: The cross sectional analytic study was carried out in the Department of Physiology, Dhaka Medical College (DMC) Dhaka from January 2014 to December 2014. Seventy preeclamptic women and thirty five normotensive pregnant controls were selected.Preeclamptic group was further divided into two subgroups, mild (n=35) and severe (n=35) preeclamptic women. Both the groups were in their third trimester (28-40 weeks) of pregnancy and of same age (18-35 years).

Results: The mean serum GGT levels (In mild preeclamptic = 28.4±6.7 U/L & in severe preeclamptic= 63.1±45.9 U/L) were significantly higher in mild and severe preeclamptic women than those of normal pregnant women(in normal pregnant women = 14.8±4.6 U/L).Again, this value was significantly elevated in severe preeclamptic women than mild preeclamptic women.

Conclusion: From this study, it can be concluded that serum GGT level is elevatedin patients of preeclampsia. So, measurement of serum GGT level in preeclamptic women may reflects the severity of disease and helps to provide appropriate treatment to the patient.

Key words: Preeclampsia; Blood pressure; Serum GGT.

Introduction

Preeclampsia is specific to human pregnancy and presents with hypertension, proteinuria and/or edema after 20 weeks of gestation[1]. In the absence of proteinuria, preeclampsia is suspected in pregnant women if the hypertension is associated with headache, visual disturbances, abdominal pain or rapid weight gain[2].

Preeclampsia has been classified by clinical severity in to mild and severe forms. Mild preeclampsia is defined as new onset of hypertension (Systolic blood pressure of > 140 to < 160 mmHg or a diastolic blood pressure > 90 to ≤ 110 mmHg) after 20 weeks of pregnancy with or without proteinuria (> 0.3gm to < 5gm/day). Preeclampsia is considered as severe when blood pressure is markedly elevated (≥160 mmHg/110 mmHg) and associated with significant proteinuria (> 5gm/ day or ≥ 2+ on dipstick) or evidence of other organ dysfunctions[3-4].

Preeclampsia can occur in about 2-8% of all pregnancies and can be devastating and life threatening for both mother and fetus[5]. In developing countries, the rate of maternal deaths from preeclampsia and eclampsia is as high as 15% where as 1.8% in developed countries[6]. The increased incidence of perinatal morbidity and mortality seen in preeclampsia is primarily due to the need for premature delivery and uteroplacental insufficiency[4]. Placental abruption, Intrauterine Growth Restriction (IUGR) and Intrauterine Fetal Death (IUD) are some fetal complications from preeclampsia. Some acute maternal complications of preeclampsia are eclampsia, pulmonary oedema, Disseminated Intravascular Coagulation (DIC) HELLP (Hemolysis, Elevated Liver Enzymes, Low Platelets) syndrome, acute renal failure and death. Long term effects on mother include chronic hypertension, diabetes mellitus, coronary artery disease, neurological deficit and premature death etc[6].

The exact mechanisms which lead to preeclampsia are unknown. The primary pathophysiology in preeclampsia is proposed due to placental hypoxia with consequent endothelial cell injury[7]. Endothelial cells dysfunction can contribute to inappropriate vasoconstriction, platelet aggregation,

1. Assistant Professor of Physiology
   Bikrampur Bhuiyan Medical College, Munshiganj, Dhaka.

2. Professor of Physiology
   Dhaka Medical College, Dhaka.

3. Assistant Professor of Physiology
   Army Medical College Chattogram.

4. Assistant Professor of Physiology
   Ad-din Sakina Medical College, Jessore.

5. Assistant Professor of Physiology
   Dr. Sirajul Islam Medical College, Dhaka.

6. Assistant Professor of Physiology,
   Dhaka Community Medical College, Dhaka.

*Correspondence: **Dr. Rukhsana Afroz**
                Cell: +88 01837 72 63 37
                Email: rukhsana.afrz@ gmail.com

activation of the coagulation system and ultimately decreased blood flow to organs by microthrombi formation[8-9]. Since preeclampsia is a syndrome, it virtually affects all maternal organ system including liver, kidneys, brain, clotting system and primarily the placenta. Gamma Glutamyl Transferase (GGT) is a microsomal enzyme which is widely distributed in many tissues throughout the body, particularly in liver[1,8]. It acts significantly at the cellular level both in endothelium and epithelium. So, an elevated level of serum GGT indicates both endothelial and cellular damage. A biochemical marker of endothelial damage which might predict the severity of the diseases in preeclampsia would be useful clinically to avoid adverse maternal and fetal outcome[10]. Some authors suggested that serum GGT level can be used as potential marker to predict the severity of preeclampsia[1].

In many studies, it was found that serum GGT level was significantly raised among mild and severe preeclamptic subjects as compared to normotensive controls[1,8,11-12]. On the contrary, some authors observed no significant change of serum GGT level in between preeclamptic and normal pregnant women[13].

Therefore the study was done to observe the changes of serum GGT level in preeclamptic women and to compare it with normal pregnant women in third trimester.

Materials and methods

The cross sectional analytic study was carried out in the Department of Physiology, Dhaka Medical College (DMC) Dhaka from January 2014 to December 2014. Ethical permission was taken from Ethical Review Committee of Dhaka Medical College.A total number of 70 pregnant women with preeclampsia and 35 healthy normotensive pregnant controls were selected from Department of Obstetrics & Gynecology of DMC Hospital. Preeclamptic group was further divided into two subgroups mild (n=35) and severe (n=35) preeclamptic women[3-4]. Both the groups were in their third trimester (28-40 weeks) and of same age (18-35 years). Cases with any medical history of preexisting hypertension, diabetes, renal disease, thyroid disease or liver disease were excluded from the study. Detailed clinical and anthropometric data was recordedby using a prefixed questionnaire.

The results were expressed as means ± SD and compared by applying one way ANOVA test, unpaired Student's 't' test. Procedure of estimation of serum GGT level: With all aseptic precaution, 5ml of venous blood was collectedfrom all cases from antecubital vein. The blood was allowed to clot and serum was separated for the estimation of serum GGT levelby continuous spectrophotometric method[14]

Results

There were no significant differences among the three groups in respect of age and Body Mass Index (BMI). The mean gestational weeks of severe preeclamptic women was significantly lower than mild preeclamptic (p < 0.05) and normal pregnant (p < 0.001) groups. But there was no significant difference between mild preeclamptic and normal pregnant in respect of this value (Table I).

Table I : Demographic data of the three groups (n=105).

Groups	Age (Years)	BMI (kg/m^2)	Gestational weeks
Normal pregnant (n=35)	25.08±5.39	29.13±3.29	35.6±2.80
Mild preeclamptic (n=35)	26.09±4.58	30.05±3.92	34.3±3.38
Severe preeclamptic (n=35)	25.17±5.03	30.34±2.73	32.6±3.46[***, #]

Results are expressed as Mean ± SD.

(***$p < 0.001$, when compared to normal pregnant and #$p < 0.05$, when comparison was done between mild preeclamptic and severe preeclamptic women). n = Number of subjects.

In this study, the mean systolic blood pressure and diastolic blood pressure were significantly higher (p<0.001) in mild preeclamptic and severe preeclamptic women in comparison to those of their control group. Again, these value were also significantly higher (p<0.001) in severepreeclamptic women than that of mild preeclamptic women (Figure 1).
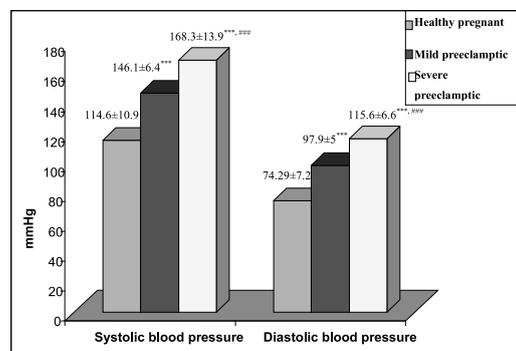
Figure 1: Mean blood pressure of the three groups (n=105).

Results are expressed as Mean ± SD. (***$p < 0.001$, when compared to normal pregnant and ###$p < 0.001$, when comparison was done between mild preeclamptic and severe preeclamptic women). n = Number of subjects.

Figure 2, showing that the mean serum GGT levelwas significantly higher (p<0.001) in mild preeclamptic and severe preeclamptic women than that of normal pregnant women. Again, the value was also significantly higher (p<0.001) in severe preeclamptic women than that of mild preeclamptic women.

Figure 2: Mean serum GGT level of the three groups (n=105).

Results are expressed as Mean ±SD. (***p < 0.001, when compared to normal pregnant and ###p < 0.001, when comparison was done between mild preeclamptic and severe preeclamptic women). n = Number of subjects.

Discussion

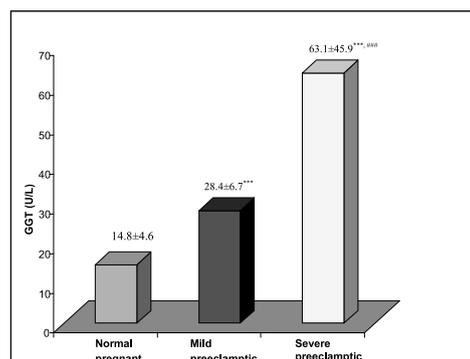In this study, the mean serum GGT level was significantly higher (p< 0.001) in preeclamptic women than that of healthy pregnant women. Serum GGT level was also significantly higher (p<0.001) in severe preeclamptic women than that of mild preeclamptic women. This finding was in agreement with the study of many researchers of different countries[1,8,10-11,14,15].

On the other hand, no significant changes of serum GGT level in between preeclamptic and normal pregnant women were found by Delic & Stefanovic[13].

In preeclampsia, there occurs abnormal trophoblastic implantation of placenta that ultimately causes reduced placentalperfusion. Decreased blood supply to the placenta results in production and release of different placental factors into the maternal circulation.These factors act on endothelial cells and leading to endothelial dysfunction[7]. This altered endothelial function results in imbalance of vasoconstrictor and dilator agents and also the endothelial-platelet dysfunction leads to alteration of haemostasis process. These ultimately results in intense maternal vasospasm, adhesion and aggregation of platelets and activation of the coagulation process. Subsequently, there is hypoxic damage to the maternal all organ system[16-17]. Some authors suggested that high serum GGT level in preeclampsia is found due to this widespread endothelial injury including within the uteroplacental circulation and hepatobiliary system[1,10,15,18].

In the present study, increased serum GGT level in preeclamptic women was found than normal pregnant women may be due to these facts.

Conclusion

From the results of this study, it can be concluded that serum GGT level is elevated in women withpreeclampsia than that of women normal pregnancy. Therefore, measurement of serum GGT level may reflect the severity of preeclampsia and helps to provide appropriate treatment to ensure a satisfactory outcomefor mother and fetus.

Disclosure

All the authors declared no competing interests.

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A Comparative Study between Total Laparoscopic Hysterectomy and Total Abdominal Hysterectomy on 50 Cases in CMH, Dhaka

Mahmuda Ashrafi Ferdousi[1] Liza Chowdhury[2]*

ABSTRACT

Background: *Since the introduction of by Reich in 1989, Laparoscopic hysterectomy is achieving great popularity nowadays worldwide. Our people are becoming increasingly interested in new advances in this field of surgery. The aim of this study was to compare the per-operative and postoperative outcomes and complications of Total Laparoscopic Hysterectomy (TLH) and Total Abdominal Hysterectomy (TAH) performed for same indications in our hospital.*

Materials and methods: *We performed surgical procedures at Department of Obstetrics and Gynaecology of Combined Military Hospital, Dhaka, between November 2013 and April 2014. Twenty five patients who underwent TLH (Group 1) and 25 patients who underwent TAH (Group 2) were included prospectively in this study. The mean age of the cases, Body Mass Index (BMI) duration of operation, the amount of blood loss, rates of complications and post-operative hospital stay were compared for two groups.*

Results: *The two groups were similar in terms of age, BMI, uterine size, parity and indications of hysterectomy. The mean operative time was significantly longer in group 1 than group 2 (90.12±9.12 vs. 55.48±10.11 minutes. The mean duration of hospital stay was significantly shorter in group 1 compared to the group 2 (3.10±1 vs. 6.30±1.00 days. Per-operative haemorrhage was within normal limit in 92% cases of TLH, but it was 80% cases TAH. 96% cases of TLH did not required post-operative blood transfusion,in comparison to 92% in TAH group. Significantly higher proportion of patients ambulate within 12 hours in group 1 compared to group 2. Injectable antibiotics were more needed in case of TAH. Overall patients' satisfaction was better in TLH group than TAH group.*

Conclusion: *TLH was safe and feasible method for properly selected patients. Its advantages were faster ambulation, less per-operative blood loss, pain and shorter hospital stays in expense of longer operating time.*

Key words: Total laparoscopic hysterectomy; Total abdominal hysterectomy; Complications.

Introduction

Hysterectomy is the most common gynecological procedure[1,2]. Common indications are abnormal uterine bleeding, fibroid uterus, post-menopausal bleeding, ovarian tumor of perimenopausal ladies[3]. There are different types of hysterectomy. The most common is abdominal hysterectomy comprising 66% of all hysterectomies followed by the vaginal hysterectomy[4]. Though there are three approaches in hysterectomy-abdominal, vaginal, laparoscopic, 70-80% of all hysterectomies are performed abdominally[5].

Gynecological surgical laparoscopy started to be used by Palmer at the end of 1950s. While surgical procedures like adhesiolysis, cyst aspiration and ovarian biopsy were performed firstly, Reich et al reported first laparoscopic assisted vaginal hysterectomy case in 1989[6]. Since then, when compared with abdominal hysterectomy, because of lower morbidity and faster healing period, laparoscopic hysterectomy started to be used progressively as an alternative of abdominal hysterectomy. But because necessity of comprehensive surgical education and equipment today still a lot of gynecologists prefer abdominal surgery[7]. However, the challenges and limitation of this procedure are still debatable, especially for a country like Bangladesh where resources are scarce. The outcome of laparoscopic hysterectomy and the technique used in performing the operation will depend on various factors, such as the indication for hysterectomy, associated comorbidity, surgeon's experience and availability of the necessary equipment[5,8].

In this context, aim of this prospective observational study was to evaluate and compare the per-operative and postoperative complications and outcome of Total Laparoscopic Hysterectomy (TLH) and Total Abdominal Hysterectomy (TAH) cases which were performed in our hospital.

Materials and methods

This prospective observational study was conducted in Gynecology and Obstetrics Department of Combined Military Hospital, Dhaka, Bangladesh. Fifty patients age 35 years and above with parity two or more, had hysterectomy operation for benign indications between November 2013 and April 2014 were included in this study. Patients with extensive pelvic adhesion, multiple fibroid in uterus with size ≥20

1. Classified Specialist in Obstetrics and Gynaecology
    Combined Military Hospital (CMH)
    Chittagong Cantonment, Chattogram

2. Advisor Specialist in Obstetrics and Gynaecology
    Combined Military Hospital (CMH)
    Dhaka Cantonment, Dhaka.

*Correspondence: **Lt Col (Dr) Mahmuda Ashrafi Ferdousi**
    Cell: +88 0171091 96 71
    Email: mahmuda101062@gmail.com

weeks, body mass index >35 kg/m^2, suspected or con- firmed malignant disease of any part of the genital tract were excluded. According to which surgical procedure per- formed, patients are chosen consecutively and divided into two groups. While group 1involved 25 patients who had TLH operation, group 2 involved 25 patients who had TAH operation. Patients were operated by same surgical team and had same pre-operative preparation. TAH was per- formed pfannenstiel incision with classical technique which was described for benign indications[9]. TLH operation, was done as described by Osman[10]. Patients were discharged when their pain score was acceptable and could be re- lieved by oral medication alone, they could tolerate soft diet and were able to urinate on their own.

Main outcome variables of interest were operating time (Time between skin incision and last skin suture in cases of TAH and between insertion of Veress needle and skin clo- sure of the trocar sites in cases of TLH) intraoperative com- plications (Excessive bleeding those required transfusion peroperatively, injury to major vessel or organ) postopera- tive pain, postoperative hemoglobin level, postoperative hospital stay (From the day of surgery to day of discharge) and postoperative complications (Febrile morbidity, wound infection, postoperative secondary haemorrhage). Postop- erative pain was assessed by using Visual Analogue Scale (VAS) of 0 to 10 four hourly on day of operation and eight hourly on 1st POD onwards. Finally, overall patients' satis- faction was measured by 3 point liker scale (Highly satis- fied, satisfied and not satisfied).

Statistical analysis was conducted with SPSS-21. Continu- ous data were expressed either as mean ± standard devia- tion or median and interquartile range and compared by Student-t tests or Mann Whitney U test respectively. Cate- gorical variables were expressed as frequency (Percent- age) and compared between groups by either Chi square tests or Fisher's exact test. p<0.05 value was regarded as statistically significant. Written informed consent was taken from each patient and the study was conducted with prior approval of the institutional ethical clearance committee.

Results

The distribution of baseline characteristics of the patients was showed in Table I. The mean age (46.36±6.94 vs. 46.64±6.36 years, p-0.817) and the mean BMI (26.84±5.71vs. 27.01±4.99kg/m^2, p-0.141) for the TLH and TAH groups respectively were comparable. We were able to do the planned surgical procedure in both modalities. There was no significant difference noted between the two groups regarding parity, uterine size or the indication of surgery.

Table I : Patients' characteristics and operation indications.

Variables	TLH (n=25)	TAH (n=25)	P value
Age, years	46.36±6.94	46.64±6.36	0.817[a]
BMI	26.84±5.71	27.01±4.99	0.141[a]
Parity	3.5 (2-4)	3.5 (2-4)	0.889 [c]
Uterine size in weeks	8.45±3.12	10.12±4.07	0.084[a]
Indications of surgery			
DUB	12 (48)	11 (44)	0.841[b]
Fibroid	7 (28)	6 (24)	0.815[b]
Adenomyosis	3 (12)	3 (12)	1.0[d]
Chronic PID	2 (8)	3 (12)	0.954[d]
Endometriosis	1 (4)	2 (8)	1.0[d]

TLH-Total Laparoscopic Hysterectomy, TAH-Total Abdomi- nal Hysterectomy. Values are given as mean ± SD, median (Interquartile range) or n (%) as appropriate. [a]Student's t test, [b]Chi-square test, [c] Mann Whitney U test, [d]Fisher's ex- act test.

Operation time was significantly longer in TLH group com- pared to TAH group (90.12±9.12 minutes versus 55.48±10.11 minutes, p<0.001). There was no internal or- gan injury during operation in TLH group, but in one cases in TAH group bladder was injured during operation. Only five patients in TAH group and two in TLH group had ex- cessive per-operative bleeding that necessitate blood transfusion and the difference was not statistically signifi- cant (Table II).

Table II : Comparison of per-operative events between two groups.

Variables	TLH (n=25)	TAH (n=25)	p value
Operating time (Minute)	90.12±9.12	55.48±10.11	<0.001[a]
Excessive peroperative bleeding	2 (8)	5 (20)	0.221[d]
Bladder injury	0 (0)	1 (4)	NA
Bowel injury	0 (0)	0 (0)	NA
Uterine injury	0 (0)	0 (0)	NA

TLH-Total Laparoscopic Hysterectomy, TAH-Total Abdomi- nal Hysterectomy. Values are given as mean ± SD, or n (%) as appropriate. [a]Student's t test, [d]Fisher's exact test. NA: Not Applicable.

Mean hospitalization time was shorter for patients who un- derwent TLH than patients who undergone TAH and this was statistically significant (3.1±1.0 day vs. 6.3±1.0, p=0.001). Ambulation was early and injectable antibiotic was required for less duration in TLH group compared to their counterpart. There were no significant differences be- tween the two groups regarding complications like fever, secondary hemorrhage, wound infection, wound dehis- cence (Table III).

Table III : Comparison of post-operative outcome between two groups.

Variables	TLH (n=25)	TAH (n=25)	p value
Ambulation within 12 hours	22 (88)	4 (16)	0.001[b]
Days on injectable antibiotic	1 (1-2)	2 (1-3)	0.001 [c]
Postoperative pain score (Scale of 10)	4.24±1.53	5.36±1.89	0.074[a]
Need blood transfusion	1 (4)	2 (8)	0.552[d]
Secondary hemorrhage	1 (4)	2 (8)	0.552[d]
Fever	1 (4)	1 (4)	1.0[d]
Wound infection	1 (4.0)	3 (12.0)	0.415[d]
Wound dehiscence	2 (8.0)	1 (4.0)	1.0[d]
Length of hospital stay in days	3.10±1.00	6.30±1.0	0.001[a]

TLH-Total Laparoscopic Hysterectomy, TAH-Total Abdominal Hysterectomy. Values are given as mean ± SD, median (Interquartile range) or n (%) as appropriate. [a]Student's t test, [b]Chi-square test, [c] Mann Whitney U test, [d]Fisher's exact test.

The overall patient's satisfaction was better in the group of TLH than TAH. 96% of the patients underwent TLH were highly satisfied compared to 72% in the TAH group (Figure 1).
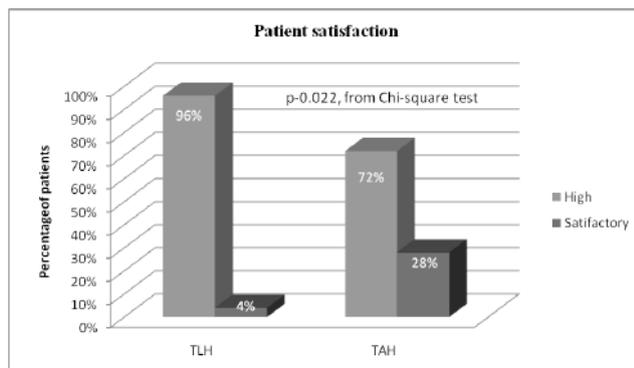
Figure 1 : Overall satisfaction of the patients with their operation.

Discussion

Laparoscopic hysterectomy is currently accepted as a safe and efficient way to manage benign uterine pathology in selected patients. The present study was aimed to compare the safety, efficacy, complications and acceptability between TLH and TAH in patients with pelvic pathology which traditionally required abdominal approach for hysterectomy in our context. It has been widely reported that TLH was associated with lower complication incidence and lower postoperative pain, less blood loss, shorter hospitalization period, shorter healing time and earlier turn back to daily activities[11]. Here we have discussed the previous reported outcomes with present study.

Previous studies consistently reported the shorter hospitalization with TLH compared to TAH[11]. In the current study the mean duration of hospital stay was around 3 and 6 days in TLH and TAH group respectively. According to the previous study it has been reported that per-operative blood loss is less in the TLH group compared to the abdominal surgery[12]. In agreement with this study we found that per operative blood loss in the TLH group was less than in the TAH group. Two of the subjects required in the TLH group, whereas 5 patients in TAH required so.

The overall complication rate in the current study compared favorably with that reported in other TLH studies[10-12]. Relatively low rate of complications encountered in the present study was probably attributable to the small number of patients. Some studies have demonstrated that a low complication rate can be achieved by extensive training in laparoscopy and optimizing the technique[13,14]. Johnson et al published a meta-analysis of prospective randomized trial and stated that the rate of urinary complications were higher with laparoscopy[11]. The complication rate for TLH is decreased due to increased surgical experience at our institute, thus less experienced gynaecolocal surgeons may experience higher complications when attempting TLH. In our study no internal organ injury was observed in TLH group. However, bladder injury was noted in one case in TAH group. Few patients from both groups developed fever wound infection and wound dehiscence. Though there were no statistical differences regarding the complication rates between two groups, a higher trend was observed in TAH group.

Limitations
Some factors should be kept in mind during consideration of the study results. Sample size was small and selected purposively which limits its ability to generalize the results. Lack of randomization was another limiting factor.

Conclusion
Laparoscopic hysterectomy is superior to conventional hysterectomy for surgeons in terms of well visualization of pelvic anatomy, ability to minimize blood loss, substantial and dynamic access to uterine vessels, vagina, rectum from many angles. Though operating time in TLH is longer, it is more beneficial than the traditional TAH for decreasing the length of postoperative hospital stays and intra operative blood loss with some difference in operative complications. Overall patients' satisfaction was in favor of TLH compared to TAH.

Recommendations
A large scale study with randomized design is necessary to validate the results of the present study. In the meantime initiative should be strengthen to develop infrastructure and train up personnel in all public institutes for laparoscopic gynecological surgery.

Disclosure
Both the authors declared no competing interests.

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Visitors Effect in Patient Care in A Military Hospital

A S M Zulfiquer Ali[1*]

ABSTRACT

Background: Visitors are an important part of the recovery process and are welcome in hospitals. But too many visitors or disorganised visits bring about a tremendous bad effect on the health of patient and efficient delivery of hospital care services. The more visitors the more chances of catching another disease. Uncontrolled Visitors may also create problems for the patient and deteriorate working environment for the health care provider. The objectives of the study was to identify problems and asses impact in patient care due to excess flow of visitors in a military hospital.

Materials and methods: This descriptive cross sectional study was conducted at Combined Military Hospital (CMH) Rangpur from January 2018 to June 2018. Study populations were admitted patient, visitors and hospital staffs. Data were collected by face to face direct interview using a self administered questionnaire.

Results: CMH Rangpur visited daily by an average 500 visitors. Bed occupancy rate was 100% and Patient-Visitors ratio was 1:4. Visitors used to stay average 2 hours in each visit. 23% visitors attended during visiting hour and 77% visited during non- visiting hour. 50% of the visit were due to boost up or give psychological support to the patient. 60% of hospital staff opined visitors creates problem for the hospital and patient care, 30% opined visitors are helpful for the patient but create problems in patient care and 10% given opinion that visitors are helpful for both the hospital and patient. 30% patient feels disturb in taking rest, 50% feels uncomfortable and 20% feels tired due to presence of visitors.

Conclusion: Too many visitors tire patients also create disturbances, deteriorate working atmosphere for health care providers and increases risk of cross infection. Mechanism to be evolves as to control visitors, systematized, organized and purposeful. There should be a midline between the visitors, patients and hospital staff. Considering the situation visitors need to be allowed with limitations and there should be synchronised rhythm. Once the rhythm is established hospital can serve the community in the true sense. Community people should have confidence upon hospital care services.

Key words : Hospital Visitor; Patient care; Visiting hour.

Introduction

Patients are in hospital because they are ill, not for a rest or enjoy holiday. But there is no "rest" for patients in hospital these days. Too many visitors tire patients. Human relationships is generally regarded as one of the most important areas in life and Hospital as an integral part of the society and a place for treatment and recovery. Hospitals typically restrict visiting hours to ensure a restful environment for patients and to allow clinical staff to work[1]. Hospitals are organised for the convenience of patient and staff. Visitors are an important part of the recovery process and are welcome in hospitals. Visitors can help people recover faster and also help to reduce their anxiety and stress. It is important to keep to a hospital's visiting hours, so patients can get plenty of rest. Visitors must respect hospital policies and visiting hours. Usually Hospital has three sets of people

frequently its premises viz, the patients, the hospital staffs and the visitors of the patient to deal with. The third set of people are those who accompany and support the patient, sometimes that's need hospital can't provide. As such they can't be denied access to the hospital premises, usually a visitor would like to visit hospital for-to accompany a patient for admission and treatment, to see admitted patients, to provide assistance and moral support to the patients and to meet the staff of the hospital[2].

Visitors of all kinds and descriptions come to the hospitals daily. No matter who the visitors may be or what the nature of his visit, he should be treated with courtesy and consideration. Visitors must not be antagonized by any means[3]. Despite of many directives and recommendations that have been made by the different hospital authorities at different situation and places on amount of visiting that should be taken into considerations. There is also variation in the way in which staff in different units react and respond to visitors. Visitors create problems and staff must learn how to cope with them[4].

Patients are usually eager to see their visitors and presence of loved ones and close friends is beneficial to recovery. Care given by the relatives of the patient, no matter how small, could act as a valuable means of support in a ward that is often understaffed. On contrary, prolonged and

1.   Course Member, Mphil (MPH)
     Armed Forces Medical Institute (AFMI)
     Dhaka Cantonment, Dhaka.

*Correspondence: **Col (Dr.) A S M Zulfiquer Ali**
                 Cell: +88 01711 46 33 03
                 Email: zulfiquer19gmail.com

disorganized visit certainly hamper the working atmosphere of the hospital and exhaust the patient and annoying the staffs. Naturally several objections are raised against the visitors. All hospitals have visiting restrictions. Such restrictions are not only for the benefit of the patient but also for the convenience of the staffs too. They can efficiently discharge their duties. In some hospital only two visitors are permitted at a time. However the hospital regulations are meant for the better patient care. Necessary measures needed to be taken if the rules were broken[5]. But whatever the rules are, its limitations and implications, facts remains that a patient needs to see his friends and relatives. There are plenty of evidence to show that a patient's recovery of health, as well as his feeling of wellbeing while in hospital, is closely related to peace of mind. One of the most effective ways of achieving this is through positive use of visiting arrangements[6]. There are two forms of medical decision: In the technical sense, Patients might benefit from long periods of rest and sleep, as this is most likely to aid their recovery. In the contextual sense, Patients might prefer to have friends and family visit whenever choose and might also be better for them emotionally[7].

Materials and methods

This descriptive cross-sectional study was conducted among the admitted patients, visitors attending those patients and the hospital staff of Combined Military Hospital of Rangpur, from January 2018 to June 2018. Total 498 respondents that included 298 patients, 150 visitors and 50 Hospital staffs were interviewed. Patients aged more than 18 years, irrespective of sex and willing to participate were selected. Patients with severe physical and mental illness were excluded from the study. Counting of visitors were done in different entry points for 07 days, period covering 0600 hours-0600 hours of the next day as to observe the total number of visitors per day. Hospital staffs of different status and levels were selected purposively and they were interviewed according to the requirement. A set of structured questionnaire each for patients, visitors and hospital staffs were used. Collected data were analysed. Data were expressed as frequency and percentage.

Results

The study revealed that average 500 visitors attended in CMH Rangpur per day. Out of 500 visitors 115(23%) visited during scheduled visiting hour and 385(77%) visited during non-visiting hour. Maximum 113(22.6%) visitors visited between 1600-1800 hrs. Average patient –visitors' ratio was 1:4. In this study out of 498 respondents 298 were admitted patient, 150 visitors and 50 were hospital staff. Table-I showed, 47(31%) visitors spent time 1-2 hours/visit. 71(47%) visitors were family members of their patient. 50(33%) visitor visited for mental support to the patient. 69(46%) visitors visited once daily and all the visitors were aware of hospital visiting time.

Table-II showed, maximum 113(37.91%) patient stayed in hospital 4-6 days. The entire patient expressed they need

visit of their family members or near ones. 89(30%) patient opined they need visit for mental boost up or psychological support. 22(74.55%) patient expressed they were facing problem occasionally.

Table–III showed, Hospital staffs given opinion that there were excess number of visitors. As per 30(60%) staff, excess visitors create problem for hospital and patient. 20(40%) staff opined visitors create disturb to other patient.

Table I : Distribution of visitors by visiting hour, Time spent by visitor, patient-visitor relationship, purpose of visit, frequency of visit & awareness of hospital visiting hour.

		Frequency	Percentage
Visiting hour	Visiting hour	115	23%
	Non visiting hour	385	77%
Number of Visitors by time	0600 – 0800 hrs	34	6.8%
	0800 – 1200 hrs	112	22.4%
	1200 - 1400 hrs	54	10.8%
	1400 – 1600 hrs	64	12.8%
	1600 – 1800 hrs	113	22.6%
	1800 – 2200 hrs	92	18.4%
	2200- 0600 hrs (Next day)	31	6.2%
Time spent/visit	Up to 30 minute	16	11%
	30m – 01 hr	26	17%
n=150	01 hr – 02 hr	47	31%
	02 hr – 03 hr	23	15%
	03 hr – 04 hr	12	8%
	12 hr – 24 hr	26	18%
Visitor by relation	Family member	71	47%
n=150	Relatives	60	40%
	Friend	16	11%
	Neighbour	3	2%
Purpose of visit	To give mental support	50	33%
n=150	Supply medicine	40	26.7%
	Supply food	30	20%
	Any other	30	20%
Frequency of visit	Once daily	69	47%
n=150	Twice daily	24	16%
	As & when required	57	38%
Aware of visiting time	Yes	150	100%
	No	0	0

Table II : Distribution of patients by duration of hospital stay, patients' need of visitors, reasons of visit, facing problems and nature of problems by visitors.

		Frequency	Percentage
Hospital stay n=298	1 – 3 days	87	29.19%
	4 – 6 days	113	37.91%
	7 – 10 days	65	21.81%
	10 – 15 days	33	11.07%
Patients' need visitors	Yes	298	100%
	No	0	0%

		Frequency	Percentage
Reasons for visit n=298	Psychological support	89	29.86%
	Helps in nursing care	89	29.86%
	Supply food	60	20.13%
	Supply medicine	60	20.13%
Facing problems n=298	Yes	76	25.50%
	No	0	0%
	Occasional	222	74.50%
Nature of problem n=298	Feels uncomfortable	149	50%
	Feels tired	60	20.13%
	Disturb in taking rest	89	29.86%

Table III : Distribution of opinions of Hospital staff regarding number of visitor, effect of visit, nature of problem created by visitors.

		Frequency	Percentage
Opinion regarding number of visitor	Excess	50	100%
	Normal	-	-
	Low	-	-
Opinion regarding effect of visit n=50	Helpful for the hospital & Patient	5	10%
	Create problem for hospital & patient	30	60%
	Both helpful & Create problem	15	30%
Nature of problem N=50	Make hospital unclean	10	20%
	Deteriorate working atmosphere	12	25%
	Threat to security	3	5%
	Change of cross infection	5	10%
	Disturb other patient	20	40%

Table IV : Patient-Visitors ratio.

	Day	Visitor	Patient	Ratio
	1st day of 1st week January 2018	551	110	1:4
	2nd day of 1st week January 2018	500	135	1:4
	3rd day of 1st week January 2018	449	129	1:4
	4th day of 1st week January 2018	589	117	1:5
	5th day of 1st week January 2018	411	102	1:4
	6th day of 1st week January 2018	530	132	1:4
	7th day of 1st week January 2018	470	156	1:3
Patient – visitor ratio	1st day of 4th week March 2018	480	120	1:4
	2nd day of 4th week March 2018	520	130	1:4
	3rd day of 4th week March 2018	465	116	1:4
	4th day of 4th week March 2018	535	133	1:4
	5th day of 4th week March 2018	485	121	1:4
	6th day of 4th week March 2018	515	128	1:4
	7th day of 4th week March 2018	389	129	1:3

Discussion

In this study the respondents were categorised into three groups, viz visitors, patients and hospital staff. The total number of visitors attended the hospital in scheduled visiting hour and non- visiting hour in a day were estimated by counting the visitors in all the two entry points of CMH Rangpur from 0600 hours to 0600 hours of the next day for 07 days. It was found that an average 500 visitors attended in CMH Rangpur daily. Out of them only 23% visited in scheduled visiting hour and rest 77% visited in non-visiting hour (Table I). The enormous number of visitors to see the ailing patients during non-visiting hour hampered hospital care services which consistent with the study done by Hoque M Shahidul[8].

This study revealed that patient-visitors ratio was 4 visitors per patient per day (Table I). A study done by Capt J. E stone that a patient is allowed to have 6 visitors per day but not more than 2 at a time, which is consistent with the study[9].

In fact hospital staffs neither have any record nor any idea about the estimated number of visitors attending daily in CMH Rangpur. But they have the opinion that the number of visitors are unusually high (Table I).

This study revealed that all the respondent that included Patient, visitors and hospital staff of this study realized that excess number of visitors create problems. In a study done by Jacqui salt found that the increased number of visitors leads to overcrowd. Noisy wards hindering rest and carrying out care, which is consistent with this study[10].

Family members and relatives are always worried for the welfare of the patient. This study also revealed that family members constitute the bulk of the visitors (Table I)

Visitors attended daily once, twice or as and when required (Table I) as to provide psychological support, nursing care, to supply food and medicine according to opinion of visitors (Table I) of patients (Table II). In this study it is found that neighbour are least in number among the visitors which depicts the picture of segregated life of the urban population.

Schedule visiting hour of CMH Rangpur is, In Summer (15 April-14 October): 1700 hours to 1900 hours and in Winter (15 October to 14 April):1600 hours to 1800 hours and in holidays it is 0900 hours to 1100 hours.

Presence of visitors from 1400-1600 hours was probably due to influx of huge number of visitors before the start of schedule visiting time and to stay a longer period with the patient.

Professors and other specialist doctors usually go round the wards between 0900 hours to 1000 hours and give necessary advice to the patient. Visitors can procure those prescribed non- available medicines (In case of CNE and RE patients) items from outside. A huge number of visitors found present in between 0800 hours to 1200 hours were probably to meet those requirements.

Visitors attended in between 1200 to 1400 hours and 1800 hours to 2000 hours found carrying foods for their patients. Patients usually do not like the hospital diet and prefer to take food cooked in their home.

In this study majority of the hospital staff with variety percentage from all status expressed regarding implication of rule to control visitors. In a study by Ruth Hawker found that in the interest of the patient, the visitors and the hospital visit only be made under certain regulation[5]. Which is consistent with this study.

Conclusion

Visitors must respect the rules and policies of the hospital and respect wishes of the patient. Visitors should keep in mind to avoid anything that create problems, disturbances to the patient, deteriorate working environment for health care providers and increase risk of cross infection. Considering the influx of visitors the management of hospital need support from the visitors for early recovery of patients and to keep the environment clean. Mechanism to be evolves as to control visitors, more systematized, organized and purposeful. However there should be a midline between the visitors, patients and hospital staff. In view of the present situation, visitors need to be allowed with limitation and there should be synchronised rhythm. And once the rhythm is established hospital can serve the community in the true sense. Community people should have confidence upon hospital care services. Now a days, hospital is not an isolated institution rather a part of community. Therefore to build rapport, there is need to allow visitors within the frame work of Hospital ethics.

Disclosure

The author declared no competing interests.

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Antitubercular Drug-Induced Hepatotoxicity : A Comprehensive Review

Saifun Nahar Faiz[1*]   Mahmudul Haque[2]   S M Kamrul Hoque[3]

ABSTRACT

Background: Hepatotoxicity is one of the most frequent and serious adverse effects of Antitubercular therapy (ATT) in the whole world including Bangladesh. It may reduce treatment effectiveness by compromising treatment regimens. Our aim is to motivate the physician so that they can identify Antitubercular drug induced hepatotoxicity and manage the problem accordingly.

Materials and methods: We reviewed several literatures in the major medical databases with the subject search terms "Antitubercular drug induced hepatotoxicity" .We then performed a systematic review.

Results: After reviewing the papers we found old age and female sex are more prone to develop hepatotoxicity. Moreover malnutrition, HIV, Hepatitis B, Hepatitis C are also risk factors for developing Antitubercular drug induced hepatotoxicity. It is also found that hepatotoxicity by anti TB therapy is more in developing countries due to high incidence rate of tuberculosis and lack of awareness. About 7% -34% patient developed hepatotoxicity in different study. This paper describes the mechanism of hepatotoxicity, risk factors, and treatment modalities of the hepatotoxicity associated with antitubercular therapy.

Conclusion: Early recognition of risk factors with close follow-up of patients and subjecting them to repeated liver function tests will significantly reduce morbidity and mortality. It will also improve the compliance of the patients receiving antitubercular therapy.

Key words: Hepatotoxicity; Antitubercular drugs; Isoniazid; Rifampicin; Pyrazinamide; Anti TB -DIH.

Introduction

Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. The disease has become rare in high income countries, but is still a major public health problem in low income countries like Bangladesh. The challenge in the treatment of tuberculosis lies in the necessity of long duration of the treatment, multiple drug administration and toxicities related to them. One of the important complications associated with Anti-Tubercular Therapy (ATT) is hepatotoxicity. Liver is the most susceptible organ to toxicity from foreign agents. The majority of drug metabolism process is found to be associated with this organ.

People in all age groups are affected by TB, but the highest burden is among adult men, who accounted for 56% of all cases, compared with 32% of cases in adult women and 12% in children[1].

1. Associate Professor of Biochemistry
   Army Medical College Chattogram, Chattogram.
2. Professor of Biochemistry
   Chittagong Medical College, Chattogram.
3. Post Graduate Students of Internal Medicine (Thesis Part)
   Chittagong Medical College, Chattogram.

*Correspondence: **Dr. Saifun Nahar Faiz**
              Cell: +88 01978 01 00 81
              Email: dr.snahar35cmc@yahoo.com

Some medicines when taken in overdoses and sometimes even when introduced within therapeutic ranges, may cause hepatotoxicity. Hepatotoxic drugsinclude -Antitubercular Drugs (Rifampicin, Isoniazid, Pyrazinamide) Non Steroidal Anti-Inflammatory Drugs (Acetaminophen, Nimesulide, Diclofenac, Ibuprofen, Sulindac) Anti-Retroviral Drugs, Anti-Hyperlipidemic Drugs, Anaesthetic Agents, Anti-Rheumatic Drugs, Anti-Epileptic Drugs (AED) Anti-Depressants, Anti-Hypertensive Drugs, Neuroleptic Drugs or Anti-Psychotic Drugs, Acetylcholinesterase Inhibitors, Drugs of Abuse etc. Few other drugs also reported to cause hepatotoxicity are Glucocorticoids, Antibiotics (Amoxicillin, Ciprofloxacin, Erythromycin) Oral contraceptives and antifungal drugs (Fluconazole, itraconazole)[2,3].

Tuberculosis (TB) remains a huge health burden worldwide. The currently recommended first-line treatment for TB is a regimen of Isoniazid (INH) Rifampicin (RMP) Pyrazinamide (PZA) and Ethambutol (EMB) for 2 months, followed by 4 months of INH and RMP and/or EMB, which are more or less hepatotoxic[4,5].

This article attempts to provide a comprehensive review of diagnosis and probable management strategies for this global problem of ATT-induced hepatotoxicity. Regular liver function tests and follow up by the primary care providers might be helpful to minimize the morbidity and mortality.

Search Strategy

Available studies and abstracts were identified through data PubMed and Medline data bases (From 2001-2020) and Cochrane data bases. Key search topic were "Antitubercular

Drug Induced Hepatotozicity : A Comprehensive Rev iew"
and relevant articles.

The reference list of review article were also searched. The
search term were following key words used in verious com-
bination : Hepatotoxicity; Antitubercular drugs; Isonizaid;
Rifampicia; Pyrazinamide; Anti TB-DH.

Discussion

Tuberculosis continues to remain a significant infectious
disease across the developing world. Globally, an estimat-
ed 10 million people fell ill with TB in 2019 AD, a number
that has been declining very slowly in recent years. There
were an estimated 1.2 million TB deaths among HIV-nega-
tive people in 2019 AD (a reduction from 1.7 million death
occurred in 2000 AD) and an additional 2,08,000 deaths
among HIV-positive people (a reduction from 6,78,000 in
2000 AD). Men (Aged≥15 years) accounted for 56% of the
people who developed TB in 2019 AD; women accounted
for 32% and children (Aged<15years) for 12%. It exacts a
significant socioeconomic burden on the individual and so-
ciety. According to the Global Tuberculosis Report 2019
AD, 47,000 people die of TB in Bangladesh every year. The
estimated incidence rate is 221 per 100,000 people[1-5].

The overall incidence of antitubercular drug induced hepa-
totoxicity (Anti-TB DIH) in the population is unknown and is
probably unrecognized. Toxicity is dependent on the dy-
namics of drugs, drug- disease and drug-host interactions.
Among the first-line drugs (Isoniazid, Rifampicin, Pyrazina-
mide and Ethambutol), the first three have the potential for
hepatotoxicity with Pyrazinamide being the most hepato-
toxic followed by isoniazid and rifampicin[6]. Rifampicin com-
bined with Pyrazinamide (PZA) is more hepatotoxic than
with Isoniazid (INH)[7,8]. About 7% -34% patient developed
hepatotoxicity in different study. However, when hepatotoxic-
ity occurs following the use of 4-drug combination regimen, it
is impossible to quantify the contribution of each drug in the
development of Drug Induced Hepatotoxicity (DIH)[9-11].

1. Definition of Hepatotoxicity

In the absence of symptoms, elevation of transaminases
up to 5 times the Upper Limit of Normal (ULN) and in the
presence of symptoms up to three times the ULN or twice
the ULN of bilirubin constitutes DIH, provided competing
causes such as acute viral hepatitis, autoimmune hepatitis
and other liver diseases are ruled out[4,12].

**2. Antitubercular Therapy Induced Hepatotoxicity:
(Mechanism)[5,12,13].**

Isoniazid (INH) is metabolized toacetylisoniazid via hepatic
enzyme N-acetyl Transferase 2 (NAT2) and is followed by
hydrolysis to acetyl hydrazine. Further, acetyl hydrazine is
oxidized by Cytochrome P450 2E1(CYP2E1)to form hepa-
totoxic intermediates, which destroy hepatocyte resulting in
liver injury.

Hepatotoxicity by Rifampicin (RIF) can take place when
taken concurrently with other anti-TB drugs. RIF is an ef-
fective inducer of CYP2E1 isoenzyme and plays a key role
to increase INH induced toxicity, most probably by increas-
ing the formation of its toxic metabolite hydrazine.

Pyrazinamide (PZA) is only used in combination with other
drugs such as INH and RIF inthe treatment of TB. PZA is
metabolized to Pyrazinoic Acid (PA) by the enzyme liver mi-
crosomal amidase and further oxidized to 5-Hydroxy Pyra-
zinoic Acid (5-OH-PA) by xanthine oxidase. These two re-
active metabolites of PZA are considered to have hepato-
toxic effect.

Ethambutol (ETH) and Streptomycin are also used as anti-
TB therapy. The mechanism of liver injury due to ETH is
still unclear. It has been found to be associated with minor,
transient and asymptomatic elevations inserum amino-
transferase levels. Streptomycin (STR) has no known hep-
atotoxicity.

3. Risk Factors:[6,7,8,9,14, 15]

Age: Patients more than 35 years are noticed to be associ-
ated with increased risk of anti-TB-DIH .

Gender: Many studies have implicated female gender to be
at increased risk for anti-TB-DIH. In another report of Mah-
mood et al. a higher incidence of anti-TB-DIH in female
than males (26.3% vs. 19.7%).

Diabetes: After reviewing several articles it is found that di-
abetic patients are more prone to develop DIH.

Malnutrition: Malnutrition also contributes to increased inci-
dence of DIH, which is more in South-East Asian regions
Measures of malnutrition such as skin fold thickness, body
mass index, and mid-arm circumference did not significant-
ly predict DIH. Malnutrition measured in terms of hypoalbu-
minemia (Serum albumin levels <3.5 g/dl) predicted two-
fold higher incidence of DIH.

Site and Stage of TB: It is found that abdominal TB has in-
creased risk of DIH. This may be due to subclinical liver in-
volvement. Severity of TB also was an independent predic-
tor of DIH. Higher the severity of TB infection, higher the in-
cidence of DIH.

Genetic Factors: A study showed that slow acetylators had
increased risk of hepatotoxicity than rapid acetylators. Fur-
thermore, slow acetylators had more severe hepatotoxicity
in comparison with rapid acetylators. This basis can be ex-
plained by the fact that slow acetylators convert the toxic
intermediate monoacetyl hydrazine to diacetyl hydrazine
slowly. Furthermore, several studies indicate that Rifampi-
cin, a well known human PXR agonist and P450 inducer,
can potentiate Isoniazid induced hepatotoxicity in man, es-
pecially in slow acetylators[15]. Other factors like enzymes,
Human Leukocyte Antigens (HLA) have shown significant
association in the development of hepatotoxicity.

Table I : Risk of AT -DIH.

Risk factors		Risk of AT -DIH
Physiologic	Age	Increased age is associated with increased risk of AT-DIH
	Gender	Females have increased risk of AT-DIH
Pathologic	Liver disease Nutrition	HCV infection Malnutrition (Serum Albumin <3.5gm/dl)
TB site and stage	Abdominal TB And Severe TB infection	Increased Risk
Associated condition-	Hepatitis B, C HIV	Increased Risk
Genetic factors	Slow acetylators	Increased Risk

Table II : Hepatotoxic potential of first line ATT drugs.

Hepatotoxic potential	Drugs
High	INH, Rifampicin, , Pyrazinamide
Less	Streptomycin, Ethambutol

4. Management of Antitubercular Drug Induced Hepatotoxicity: [8,9,19].

All hepatotoxic first line drugs of ATT should be discontinued at the first sign of symptomatic hepatitis. It is observed that in mild hepatotoxicity clinical and biochemical improvement occurs just after withdrawal of responsible drug. In severe cases presenting with acute liver failure should be managed with N-acetyl Cysteine (NAC) which is non toxic. First line ATT is re-introduced sequentially to prevent rapid dissemination of TB.

Rechallenge of Anti-TB Therapy:

American Thoracic Society[10-12].
i) After returning of serum Alanine-aminotransferase (ALT) level to less than two times the Upper Limit of Normal (ULN) Rifampicin may be restarted with or without Ethambutol.

 ii) After 3 to 7 days, Isoniazid may be reintroduced, subsequently rechecking ALT.

iii) If symptoms recur or ALT increases, the last drug added should be stopped.
iv) For those who have experienced prolonged or severe hepatotoxicity, but tolerate reintroduction with Rifampicin and Isoniazid, rechallenge with Pyrazinamide may be hazardous. In this circumstance, Pyrazinamide may be permanently discontinued, with treatment extended to 9 months.

Although Pyrazinamide can be reintroduced in some milder cases of hepatotoxicity, the benefit of a shorter treatment course likely does not outweigh the risk of severe hepatotoxicity from Pyrazinamide rechallenge.

British Thoracic Society:[13,19].
Once liver function is normal challenge dosages of the original drugs can be reintroduced sequentially in the order: Isoniazid, Rifampicin, Pyrazinamide with daily monitoring of the patient's clinical condition and liver function. Isoniazid should be introduced initially at 50 mg/day, increasing sequentially to 300 mg/day after 2–3 days if no reaction occurs, and then continued. After a further 2–3 days without reaction rifampicin at a dose of 75 mg/day can be added, increasing to 300 mg after 2–3 days, and then to 450 mg (50 kg) as appropriate for the patient's weight after a further 2–3 days without reaction, and then continued. Finally, Pyrazinamide is added at 250 mg/day, increasing to 1.0 g after 2–3 days and then to 1.5 g (50 kg). If there is no further reaction standard chemotherapy can be continued and any alternative drugs introduced temporarily can then be withdrawn.

If there is a recurrence of hepatotoxicity subsequent to the use of a first-line drug, then that particular drug responsible is stopped and therapy should be continued with the use of second-line agents in its place.

5. Risk of Co-infection for DIH[7,20-22].
Coinfection with HIV, hepatitis B, hepatitis Cmarkedly increasethe risk of hepatotoxicity. HIV alone and coinfectionwith hepatitis C increases the risk of TB DIH 4 and 14fold respectively, in patients on antitubercular therapy.

6. Anti-TB-DIH in Children: [23-29,30].
In children anti-TB-DIH occurs less frequently than adults but not uncommon[30]. Use of pyrazinamide increases the risk of hepatotoxicity.
The patients need to follow them up more closely, to identify hepatotoxicity at the earliest possible time to design new drug regimen. Routine monitoring for hepatotoxicity in patients receiving ATT is important to prevent morbidity and mortality.

7. Monitoring:[31-35].
Therapeutic drug monitoring has been shown to improve clinical response. It is recommended that baseline Liver Function Tests (LFT) values are obtained prior to starting ATT therapy and they are monitored every 2 weeks for the first 2 months and monthly until regimen is over. This is essential for high-risk groups such as alcoholics, Hepatitis B carrier, Hepatitis C infected, HIV-infected, pregnant females and at extremes of age (<5 and >65).Regular clinical review of patients is helpful to monitor treatment adherence and effectiveness.

8. Prevention of DIH : [36-38,39,40].
Education of the patient and their family members about the risk of TB drugs should be emphasized. The primary

care providers should emphasize on the importance of im-mediate discontinuation of the drug immediately on devel-opment of symptoms in order to prevent progressive liver disease. Since old age is a risk factor, a recent study con-cluded that co-prescription with N-acetylcysteine (NAC) in patients above 60 years prevented DIH, when compared to those who did not receive NAC. Further studies are needed to confirm this finding.

Conclusion

After analyzing the articles on drug induced hepatotoxicity we found the incidence of anti-TB drug induced hepatotox-icity ranges from 7% -34%. At the same time full dose and course of ATT (Anti-TB therapy) is also necessary. So it is important for the clinician to follow up the patients regularly. They should counsel the patients about sign and symptoms of hepatotoxicity, so that they can report to the hospital as soon as they develop hepatotoxicity. This practice will de-crease morbidity and mortality.

Disclosure

All the authors declared no competing interests.

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