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Message from the Hon'ble Chairman

It gives me immense pleasure to know that our Medical college is going to publish its journal to make the current information update for that I congratulate faculty members of the college as well as the other stakeholders including medical community of Bangladesh. It is fact that education is a dynamic process in which new-fangled thoughts are supplemented persistently to construct the education in progressive approach. It is also realism that the medical sector is as strong as its education system. A country with well-developed health system has strong and depth rooted medical education system where every medical professional has to have current advancement in the medical field.

The college is organizing seminar, symposium under continuous medical education (CME) and scientific medical journal is a method for updating current knowledge. They are actual indicators of quality education that is imparted by the college. The way of working of the management and the teachers are very innovative and appreciable, they do all the things for the welfare of the students and society. I wish every success of the journal.

Zainul Haque Sikder
Chairman
Governing body
Zainul Haque Sikder Women's Medical College

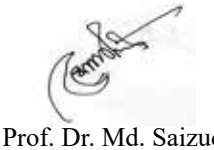
From the Principal desk

Zainul Haque Sikder Women's Medical College & Hospital is a monumental & glaring example of female education in Bangladesh. Medical science is constantly advancing with the advancement of science & technology. Global changes are happening in medical education & medical care in accordance and conformity of these advancement & changes. With the application of modern knowledge & skills of medical science, doctors should satisfy their patients with the changing needs of the community.

To meet the changing needs of community with proper knowledge, skills & attitude, our academic council has taken the decision to publish a Medical Journal twice a year where with kind permission from college management authority.

I appreciate the journal committee for their hard work & enthusiasm throughout. Finally, I express my heartfelt thanks to Mr. Zainul Haque Sikder, honorable Chairman, Mrs. Monowara Haque Sikder, honorable Managing Director and all the members of the committee for their active cooperation & support in developing the journal.

I do hope that this journal will have a positive role in equipping our students, doctors & teachers with appropriate knowledge & skill to meet up the changing concepts & needs of the community at large.



Prof. Dr. Md. Saizuddin

Principal

From the desk of Editor in chief

Dear colleagues,

Wishing you all a very happy new year. Its been a great year for ZHWMC as our dream come true. Since long we were trying to publish a journal and finally it happened with all our efforts and chairman's kind cooperation.

I thank each and every one from bottom of my heart for exchanging their best effort to get the journal published. It was a herculean task for us to compile the journal but our entire committee specially executive editor have worked extremely hard and proved their capability.

As it is our first issue, we try to focus on different arena of subjects. Hope all of you will enjoy this journal.

The review articles "Health and environmental sustainability: Public health issues for present and future" and "Health promotion at work place: Enhancing health status of work force", are very time demanding and these will be eye opening for all the health professionals. If we can not stabilize our environment we will not be forgiven by our innocent next generation. It is our utmost duty to fertilize a heavenly environment and ensure safe workplace for all.

We are sure any lacuna will be pardoned. I am confident that in this journal will be indexed and will be seen online and the popularity of the journal will increase by leaps and bound.

It's a challenge long drawn battle to uphold the standard of the journal and I wish kind and continuous support from you all.

With Best regards.

Prof. Dr. Shaikh Zinnat Ara Nasreen

Editor-in-Chief

Editorial

Noise pollution in Dhaka city: What can we do about it?

Dr. Nawshad Ahmed Phd

The alarmingly high noise level in Dhaka city is associated with increased number of vehicles on the city roads caused by irresponsible honking by the drivers. They do not understand the impacts of this on health of the people. Although there are several sources of noise pollution such as loud speakers, building construction, damaged roads, street markets, mechanical workshops and small factories, vehicles are the major problem and they produce about three quarters of all noise in the city.

In technical terms, noise above 50 decibels can adversely affect the public health, especially those having hypertension and heart diseases. Laud noise also make small boys and girls nervous on the street. The World Health Organization (WHO) cautions that any sound above 60 decibels can temporarily make a man deaf and prolonged exposure to high sound above 100 decibels can cause hearing impairments.[1] Several empirical studies have found sound levels ranging between 70 and 120 decibels in selected Dhaka city road intersections. According to the Noise Pollution (Control) Rules 2006,[2] the acceptable sound limit is 50 decibels during the daytime and 45 decibels in the nighttime in residential areas of the city.

Many commercial and business activities like car workshops, welding shops, flour mills etc. are allowed to operate and in fact expanding in every residential area of the city causing traffic congestion as well as serious noise problems for their residents. In busy residential areas, loudspeakers are used to advertise goods and services, microphones are used to celebrate weddings and cultural functions.

Drivers are asked to stop honking on the street and it is extremely difficult to fully convince the drivers not to use their horns so frequently and very difficult to change the drivers' attitude towards honking. The honking can be controlled by law and by imposing fines. In Calcutta, any area within a 100-metre radius of a hospital, nursing home, educational institution, library and the court is officially designated a "silence zone". Calcutta also has imposed a fine for unnecessary honking.[3]

The Noise Pollution (Control) Rules 2006 should be implemented strictly with the help of traffic police, Ministry of Environment and Forest, Ministry of Home Affairs and Dhaka City Corporation who need to join hands and enforce the law and make Dhaka a bit more livable in future. A general awareness campaign should be rolled out, particularly targeting the drivers and vehicle owners on the health consequences of arbitrary use of horns. We as citizens also need to educate our drivers about the negative effect of excessive use of horns.

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Dr. Nawshad Ahmed is an economist and urban planner. He worked previously as a UN official in Bangladesh and outside the country.

Original Article

Study on Dengue fever in children: A Tertiary care hospital during dengue out-break.

Tamanna Begum[1], Sadika Kadir[2], Khayerul Islam[3], Rafiqul Islam[4], Romela Yeasmin[5], Salina Nasrin[6] Asif Imran [7]

Abstract:

This is a prospective observational study conducted in the department of Paediatrics from June to August 2019 during the time of dengue outbreak. All children age up to 14 years with either positive NSI antigen or serological Gg, IgM test Kit or ELISA methods were taken into the study**.** Total 39 cases were enrolled in this study. Mean age was 7.2 ± 2 years, majority were in the age group of 5-10 years (51%) followed by <5 years (38%),> 10 years (35%) respectively. Male predominance was observed in this study (69.20%). Most of the patient admitted in August (73%), then July (33%) and June (15%) during dengue outbreak. The common symptoms were fever100%, rashes (6.8%), body ache (25% and warning sign like vomiting (45%) and others. Among the enrolled cases dengue fever was (75%) than DHF (7.5%), DSS (2.5%) respectively. About 75% were NSI positive and 2.5% were 1gM ±IgG. Thrombocytopenia present in100% cases, among them 38% with plate <15000.Lowest limit was >20-30 thousands (5%) cases. All patient was treated with IVF, platelet was transfused in 20%, FFP was given (20%). Dengue has wide range of symptoms mild to severe. Complication is rare platelet transfusion is not randomly required despite of thrombocytopenia. Supportive treatment and patient monitor are very important in management of Dengue**.**

Keywords: Dengue, Children, Thrombocytopenia

Introduction

Dengue is a viral infection caused by four types of viruses (DENV-1, DENV-2, DENV-3, DENV-4) belonging to the *Flaviviridae* family. The viruses are transmitted through the bite of infected *Aedes aegypti* and *Aedes albopictu*s female mosquitoes that feed both indoors and outdoors during the daytime (from dawn to dusk)[1,2]. These mosquitoes thrive in areas with standing water, including puddles, water tanks, containers and old tires. Lack of reliable sanitation and regular garbage collection also contribute to the spread of the mosquitoes.[34.]

Recently there has been report of fifth serotype according to the meeting in Bangkok 2013. In some cases. The first confirmed epidemic of DHF was recorded in PHILIPPINES in 1953-1954 and in Thiland in 1958[1,3,5]. Since then member countries of the WHO South –East Asia and Western Pacific regions have reported major

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dengue outbreaks at regular frequencies. World Health Organization estimate indicate that 390 million manifests clinically. A study of prevalence of dengue (2012), estimated that 3.9 billion people in 128 countries are at risk of infection with dengue fever3,4,7.

The first epidemic of dengue haemorrhagic fever in Bangladesh occurred in mid-2000 when 5,551 dengue infection were reported, mainly among in adult. The case-reported deaths. According to WHO, the woarst outbreak occurred in 2002 with 6,232 cases and 58 deaths. The prevalent seretypes of dengue until 2000 in Bangladesh were DENV1, DENV2 and DENV3 with the highest number of reported cases attributed to DENV3.A similar situation can be seen in other countries such as India and Srilanka, where DENV3 has been reportrd most of the time in DF/DHF related illnesses[2,4,7].

Diagnosis is confirmed by either isolation of the virus, viral antigen or genome by "severe dengue "polymerase chain reaction analysis as well as demonstration of a 4-fold or greater increase in antibody titer. In 2009 the WHO formulated new guide lines for the diagnosis of probable dengue, dengue with warning signs and a category called "severe dengue" [1,3,5].

Treatment of uncomplicated dengue fever is supportive such as antipyretics, fluid and electrolytes replacement. Aspirin is contraindicated and should not be used because of its effects on hemostasis.

Methods:

It was a prospective observational study conducted in department of paediatrics, Z. H. Shikder Women's medical college Hospital from June 2019 to August 2019. All children aged up to 14 years with positive dengue tests, either NS1 antigen, IgM, IgG antibody rapid serological test kit or ELISA, were taken into as the sample study group. As the duration of history of fever might be fallacious the patients were subjected to all three serological tests. Children who were positive for malaria, meningitis, and enteric fever were excluded from the study. The total number of patients included in our study was 39.

The clinical history, physical findings and laboratory investigations that help in diagnosis of Dengue fever were analyzed and recorded. All data were entered in the Microsoft Excel worksheet and analyzed using proportions. The diagnosis of Dengue fever, Dengue Haemorragic fever, Dengue Shock Syndrome and expanded Dengue Syndrome was based on the ' Pocket guideline for Dengue case management July 2019 'written consent was taken from the parents before enrolling in the study

Observations and Results

The total number of cases was 39, Mean age was 7.2±2 years. Majority were age group of 5-10 years 51% followed by<5 years 38% and 35% were >10 years age group (table-1).Male predominance (69.20%) was observed in this study (fig 1) .Majority of the patient were admitted in August (73%) than July (33%) and in June (15%) during the period of dengue outbreak. Among the enrolled children most common symptoms were fever (100%), followed by body-ache (25%) and rashes (6.8%). Some children were presented with warning sign as vomiting (45%) and bleeding episode in the form of bleeding gum, epistaxsis malena, haematemesis (Table-2). Clinically dengue was diagnosis as dengue fever, dengue haemorrhagic fever (DHF), dengue shock syndrome (DSS) and Expanded dengue syndrome (EDS) (Table-3). Distribution of plateles count was shown in (Table-4). Serological tests as NSI antigen and IgG, IgM antibody was done all the cases (Table-5). Treatment was given mainly fluid and supporting and few cases were given plateles, FFP (Fresh frozen plasma). Table - 6

Table I: Age distribution of enrolled children (n=39)

Age (in years)	N=39	Percentage (%)
<5 yrs	7	17.95%
5-10 yrs	20	51.28%
>10 yrs	12	30.77%
Total	**39**	**100%**

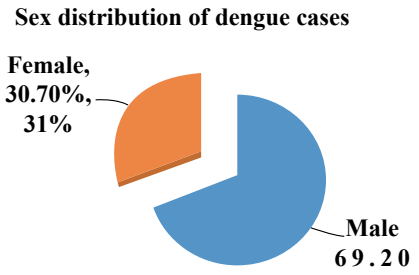


Figure 1: Sex distribution of dengue cases admitted (n-39)

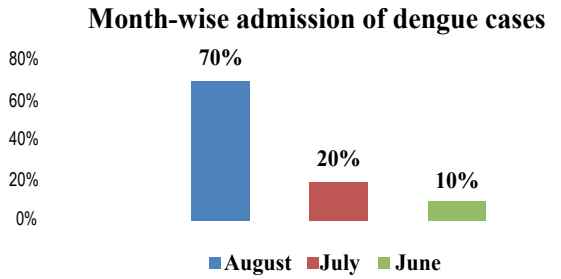


Figure 2: Patient admitted in month (%) during Dengue outbreak.

Table.2: Clinical parameter of Dengue patients (including Warning sign)**

Symptoms	N	Percen1tage(%)
Fever	39	100
**Vomiting	20	45.45
Bodyache	11	25
Joint pain	4	9.09
Rash	3	6.81
Headache	9	20.45
Diarroea/loose stool	4	9.09
**Subconjunctivalhge	1	2.27
**Gum bleeding	1	2.27
**Restlessness/lethergy	1	2.27
**Epistaxis	1	2.27
**Haematemesis	1	2.27
**Malena	3	6.81

***Multiple response**

Table 3: Diagnosis of Dengue in studied children (n-39)

Type of Dengue	Frequency (%)
Dengue fever	30(76.9%)
DHF	3(7.6%)
DSS	1(2.5%)
EDS	1(2.5%)
Dengue with other disease	4(10.2%)

DHF-Dengue haemorragic fever, DSS-Dengue shock syndrome, EDS - Expanded dengue syndrome

Table 4: Distribution of platelet count according to type of Dengue

Platelet Count	DF	DHF	DSS	EDS	Dengue with Others	Number (n=39)	%
20-30 thousand	2	0	1	0	0	3	7.6
30-40 thousand	4	1	0	1	1	7	17.9
40 -50 thousand	9	1	0	0	0	10	25.6
50-100 thousand	8	0	0	0	1	9	23.07
100-150thousand	4	0	0	0	2	6	15.3
>150 thousand	4	0	0	0	0	4	10.2

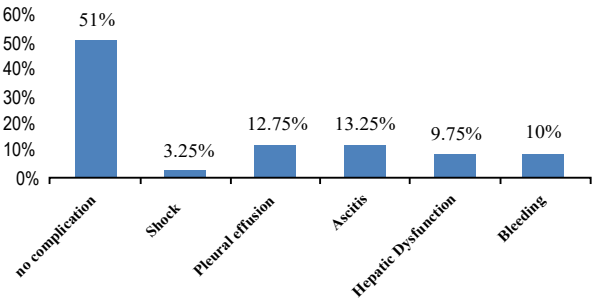
Table 5: Serological tests in studied children

Serological test	Frequency (%)
NS1	31(79.48%)
IgM ± IgG	4(10.25%)
NS1+Antibody positive	4(10.25%)

Table 6: Management of enrolled children

Management	N (%)
Paracetamol	39(100%)
IV fluid	39(100%)
Platelet	8(20%)
Fresh frozen plasma	8(20%)
Inj. Albumin	2(5%)

***Multiple response**



***Multiple response**

Discussion:

In this prospective study 39 cases were analyzed. Male predominance (69.2%). Majority of the patient age were within 5-10 years (51%) and mean age was 7.2±2, which was similar carried out in Banglore, Karnatak and India[9,10,11].

Majority of the case found in month of August during rainy season and outbreak than subsequently July and June 2019, which was similar as the outbreak of 2000 and 2002[1,12,13].

Among the enrolled children dengue fever was more common (100%) than dengue hemorrhagic and then dengue shock syndrome. About (75%) were NS1 positive and (25%) were negative and dengue IgM and or IgG positive. Similar result was found in Ramkisna et al[5,6,9]. Symptoms found on this study were fever followed by bodyache, rashes, vomiting, abdominal pain. hemorrhagic manifestation in the form of melena and hematemesis. Majeed et al 2017 showed similar findings[3,4,14,15].

If thrombocytopenia was present among the children platelet count was between ±20,000 thousands or less than Haemorrhagic manifestation in the form of hematemesis and melena found in children. Majeed et al 2017 showed only 3% had bleeding episode in the form of gum bleeding and hematemesis, in north Indian state by Seema A et al[16,17,18,19]. All patients were treated with intravenous fluid and antipyretic. A small percentage of patients that is required platelets transfusion and Fresh frozen plasma.[17,18]

In this study, complication observed children like shock, pleural effusion and hepatic dysfunction. In our study few dengue cases came associated with pneumonia and enteric fever. Another study by Honwarth from Australia found hepatic dysfunction[20]

Conclusion:

Dengue has a wide range of symptoms at presentation. Careful history and clinical examination are very important. Supporting treatment and close monitoring can prevent the complications. Platelet transfusion is not randomly required despite of thrombocytopenia. Other acute disease diagnosed simultaneously during course of illness may influence the outcome of dengue syndrome. Prevention is important to reduce the recurrent attack and out-break of the diseases.

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Original article

Study on Community awareness regarding psychological violence against women

Afroza Begum[1], Farzana Arzu Khan[2], Ashfia Saberin[3], Tanmoy Sarker[4], Rezwana Parveen[5], Jannatul Ferdous[6].

Abstract:
A community based cross-sectional study was carried out in a selected village of Dhamrai, Dhaka with a sample size of 191 to explore the status of community awareness regarding psychological violence against women (PVAW) among respondents > 18 years of age with a semi-structured questionnaire employing purposive sampling method; data was collected by face to face interview. Female respondent were higher (51.8%) in number. This study found that 26.2% and 29.3% respondents were in the age group between 28-37 years and 38-47 years respectively (Mean ±SD = 37.35 ±11.95 years). Most of the respondents were married (86.4%); mean duration of marriage was 18.41 ±10.438 years. The mean monthly family income was 21989.53 ±12391.419 Tk, This study found that nuclear family (58.1%) was higher. The findings of the current study shows that 57.6% respondents have average (30 % to < 60%) knowledge regarding psychological violence. Association between the psychological violence with educational status of the respondents was statistically significant. (p = .018), also there is statistical significant association between psychological violence with family income of the respondents. (p = .018) and psychological violence with the type of family of the respondents. (p = .033). Violence against women is a burning public health issue and a serious threat to human rights. Intervention like social awareness programmes can be arranged to improve the knowledge and awareness of the community people.

Key words: Community awareness, Psychological violence against women.

Introduction

Violence against women (VAW) is a worldwide epidemic; around 1 in every 3 women has experienced it in any form in her lifetime. It exists beyond cultural, geographical, religious, social and economic context all over the world.[1]

Moreover in our country context, there is a social taboo regarding VAW which is culturally acceptable to both party. And the fact is, this taboo complicating the situation more and make the women more vulnerable to violence. Things that can help women is awareness and education regarding violence. According to a study conducted in the year 1999, World-wide researchers considered psychological violence to be a consequence of other forms of violence[2] specifically physical and sexual violence.[3]

According to WHO world report on violence and health 2002, violence against women is subdivided under three distinct form named self-directed, Interpersonal and collective.[4] Self-directed violence again subdivided into two parts, they are suicidal behavior and self-harm. Interpersonal violence subdivided into family/partner violence and community violence. And last one is collective form of violence against women in the social, political and economic sphere of life.[5]

Psychological, mental, or emotional violence describe acts such as prohibiting a woman from seeing her family and friends, repeated insult or humiliation, economic restrictions, harm or threats against cherished objects and other forms of restriction and controlling behaviors. It is difficult to define and determine the psychological violence as it can't be seen or measured, moreover it can take various form.[6]

Now, it is confirmed that psychological violence is a common and remarkable form of interpersonal violence in terms of its frequency, and it's short and long term consequences.[7]However, there are several argument that

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victims experience greater trauma, from ongoing, severe psychological violence than from experiencing infrequent physical assault.[8]

Psychological violence against married women is extremely common and persistently practiced by their husbands in Bangladesh, as over 80% have ever experienced it in their life time with 72% in the past 12 months. The prevalence seems slightly higher in rural areas than urban. Insulting is the most commonly reported act as 27% of women ever experienced and over 18% experienced more than twice in the past 12 months. This is followed by humiliation in front of other and verbal threatening, both of which were ever experienced by 16% of the women.[1]

Materials and methods:

A community based cross-sectional study was carried out in a selected village of Dhamrai upazilla, Dhaka, Bangladesh with a sample size of 191 to explore the status of community awareness regarding psychological violence against women (PVAW) among community people aged over 18 years. A semi-structured questionnaire was used and the sampling method was purposive; data was collected by face to face interview. Descriptive and inferential statistics were used in analyzing the data by SPSS software version 25.0.

Result:

The current descriptive type of cross sectional study was conducted to explore the community awareness regarding psychological violence against women. A total 191 respondents were interviewed. Female respondents (51.8%) were higher than male respondent (48.2%). This study found that 26.2% and 29.3% respondents were in the age group between 28-37 years and 38-47 years respectively (Mean ±SD = 37.35 ±11.95 years). Most of the respondents were married (86.4%); 36.6% respondents were married for 13-24 years group with mean duration of marriage for 18.41 ±10.438 years. The mean monthly family income was 21989.53 ±12391.419 Tk, This study found that nuclear family type (58.1%) was higher than the joint family type (42.9%). The findings of the current study shows that 57.6% respondents have average (30 % to < 60%) knowledge regarding psychological violence.

Table 2 depicts that association between the psychological violence with educational status of the respondents is statistically significant. (p = .018). Table 3 shows that there is statistical significant association between psychological violence with family income of the respondents. (p = .018) Table 4 shows that there is association between psychological violence with the type of family of the respondents. (p = .033)

Table 1: Socio-demographic characteristics of the respondent by sex

Characteristics	Male (92) 48.2 %	Female (99) 51.8%	Total (191) 100 %
Education			
Illiterate	10 (10.9 %)	11 (11.1%)	21 (22%)
Primary	11 (12%)	11 (11.1%)	22(23.1)
SSC	44 (47.8%)	59 (59.6%)	103(107.4)
HSC	16 (17.4%)	8 (8.1%)	24 (25.5%)
Graduation and above	11 (12.0%)	10 (10.1%)	21(22.1%)
Occupation			
Housewife	---	81(81.8%)	
Service	19 (20.7%)	---	
Business	37	2	
student	2	7	
others	34	9	
Types of family			
Nuclear	64	47	
Joint	28	52	

Table 2: Association between psychological violence with educational status of the respondents

Distribution Of All Psychological Violence scoring in category	% within Distribution of the respondents according to family income category			df	p value
	1000-10000 Tk.	10001-20000 Tk.	> 20001 Tk.		
< 30 %	54.1%	37.9%	22.4%		
30 % to < 60%	40.5%	57.5%	67.2%	4	.018
> 60 %	5.4%	4.6%	10.4%		

Table 3: Association between psychological violence with family income of the respondents

Distribution Of All Psychological Violence scoring in category	% within Distribution of the respondents according to educational status category					df	p value
	Illiterate	Primary	SSC	HSC	Graduation and above		
< 30 %	57.1%	42.9%	30.9%	25%	14.3%		
30 % to < 60%	42.9%	45.7%	67.3%	66.7%	76.2%	8	.018
≥ 60 %	0.0%	11.4%	1.8%	8.3%	9.5%		

Table 4: Association between psychological violence with the type of family of the respondents

Distribution Of All Scoring of psychological violence in category	% within Distribution of the respondents according to type of family category		df	p value
	Nuclear	Joint		
< 30 %	41.4%	27.5%		
30 % to < 60%	55.0%	61.2%	2	.033
≥ 60 %	3.6%	11.2%		

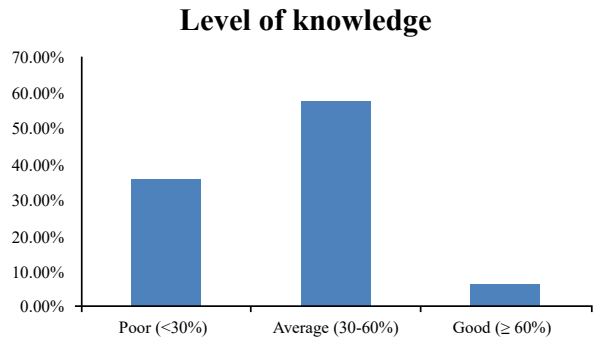

Fig1: Distribution of the respondents by level of knowledge regarding psychological violence

Discussion

This research aimed to explore the level of community awareness regarding violence against women. In the present research a sample size consisting of 191 adult community people was interviewed. This research is unique in nature as it is done to find out the awareness about violence against women within the community of Bangladesh, where discussion on such topics is not normal.

Among the respondents in the current study, female were more (51.8%), majority of the respondents were (38-47) years old of age. This finding is consistent with previous study. According to the present study most of them were muslims and this finding is consistent with previous study. In the study most of the respondents were married with duration (13-24) years. This finding was not consistent with the previous study. In the study majority of the respondents completed primary education and majority of the respondents was housewife followed by businessman and other services.[9]

Our study shows no significant association between gender and knowledge of psychological violence which is not consistent with previous study where knowledge was found to be higher among female participants. This discrepancy could be due to higher number of female participants.[10]

According to this study a wide range of socio-demographic factors has a significant relationship with the knowledge of the respondents regarding violence against women and among the respondents living in nuclear family had average level of knowledge on psychological violence. Almost similar relationship was observed in a study conducted in Shahroud, in northeast of Iran in 2010.[11]

In case of respondents living in joint family had average level of knowledge on psychological violence. Category of the family of respondent was found to be significantly associated with the knowledge of psychological violence. Similar findings were observed in a study in 2008 in Philippines.[12]

Our study shows that the respondents with family with low income had strong statistical association with poor knowledge on psychological violence and is supported by a study conducted by a study conducted in United States in the year 1999.[13]

Conclusion:

Violence against women is a burning public health issue and a serious threat to human rights. A wide range of socio-demographic factors has a significant relationship with the knowledge of the respondents regarding this issue. Intervention like social awareness programmes can be arranged to improve the knowledge and awareness of the community people.

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Original Article

Study on knowledge and practice of nursing mother regarding exclusive breast feeding irrespective of socio-demographic characteristics.

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Abstract:

This descriptive type of cross- sectional study was conducted in Dhamrai, Dhaka among nursing mother with a sample size 120 using semi-structured questionnaire to determine the knowledge and practice regarding exclusive breast feeding irrespective of socio-demographic characteristics from January 2018 to February 2018 employing purposive sampling method. The percentage of mother-infant pair were highest within 20-30 years (65%) of age group. About 13.33% of mothers were illiterate, 33.33% had primary level and only 2.50% completed graduation; more than half (56.67%) of the mothers were housewives. It was revealed that 55.83% of the respondents had knowledge of exclusive breast feeding, however 42.50% of them gave only breast milk up to 6 months. The initiation of breast feeding within 1 hour was 47.50%, 32.50% within 1-2 hours. 8.83% after 2 hours, 9.16% of the respondents did not remember about the exact time and 2.50% did not breast fed their babies, the reason of not feeding breast milk was insufficient milk secretion. Premature complementary feeding was associated with an increased occurrence of vomiting (47.50%), diarrhea (59.16%), dyspnea (19.16%) but 55% of the respondents did not mentioned specific condition. One of the ten steps to successful breastfeeding is initiating breastfeeding within the first hour of delivery, the major barrier to achieving the recommendations of the Global Strategy for Infant and Young Child Feeding.

Key words: Exclusive Breast Feeding, Prelacteal Feeding,

Introduction:

Breast feeding (BF) is defined as the method of feeding a baby with milk directly from the mother's breast. According to a WHO report on instant feeding recommendations, BF is classified as 'an unequalled way of providing ideal food for the healthy growth and development of infants'.[1]

Exclusive breastfeeding (EBF) has been defined by the WHO as the situation where "the infant has received only breast milk from his/her mother or a wet nurse, or expressed breast milk and no other liquids, or solids, with the exception of drops or syrups consisting of vitamins, minerals, supplements or medicines". Breastfeeding is a natural food that serves as a complete source of infant nutrition for the first six months of life.[2]

Breast milk contains the nutrients that a baby needs in the right quantity. Nutrients of Breast Milk are quickly and easily digested in the body systems of infants. Breastfeeding activities are carried out worldwide in order to fulfill the WHO and United Nations Children Emergency Fund (UNICEF) recommendation that infants be breastfed exclusively for six months and thereafter until 24 months.[3]

Successful breastfeeding is an interactive process of both the mother's and baby's physical and psychological needs. The risks associated with the addition of liquids and food to the diets of infants under six months old include: reduction of breast milk intake (with the consequent reductions of all associated benefits); lower milk production (resulting from reduced milk extraction); higher odds of shortening the duration of breastfeeding; difficulty establishing efficacious breastfeeding; and reduction of the mother's confidence.[4]

Several factors might account for the decision of mothers to start complementary feeding; The factors include "lack of milk", "weak milk" and that breast milk does not suffice to satiate the child's hunger or thirst. It is observed that the mothers were influenced by the children's grandmothers to introduce other types of food at the time when breastfeeding ought to be exclusive; that was

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particularly the case of the first time mothers and lack of experience.[5]

In Bangladesh, the trend of practicing exclusive breast feeding among the lactating mothers remained mostly unchanged for a long time. The prevalence of exclusive breast feeding was nearly 45% in 1993–94 and 1999–2000, 42% in 2004 and 43% in 2007. The prevalence of exclusive breast feeding markedly increased to 64% but declined to (55%) in the recent report of BDHS in 2014.[6]

Globally infant and young child deaths occur mainly due to inappropriate infant feeding practices and infectious diseases. Directly or indirectly, malnutrition has been responsible for 60% of 10.9 million under five deaths. More than two third of these deaths were often associated with inappropriate feeding practices during the first year of life. In order to reduce infant and young child mortality, exclusive breastfeeding has been recognized as one of the major interventions worldwide. [7]

Materials and Methods:

This descriptive type of cross- sectional study was conducted in Dhamrai among nursing mothers with a sample size 120 using semi-structured questionnaire to determine the knowledge and practice of nursing mother regarding exclusive breast feeding irrespective of socio-demographic characteristics employing purposive sampling method from January 2018 to February 2018. The data was cleaned, edited and analyzed with the help of SPSS version 22.

Results:

Table 1:Distribution of respondents according to socio-demographic characteristics (n=120)

Characteristics	Categories	Respondent	
		Frequ	Percentages
Age of mother (years)	<20	11	9.16
	20-30	78	65.00
	>30	31	25.83
Religion	Muslim	97	80.33
	Hindu	23	19.17
Mothers education	Illiterate	16	13.33
	Informal	14	11.67
	Primary	40	33.33
	Secondary	27	22.50
	Higher Secondary	20	16.66
	Graduate	3	2.50
Occupation of mother	housewife	68	56.67
	day-labor	18	15.00
	Service holders	25	20.83
	Business	3	2.50
	others	6	5.00
Number of children	<2	15	12.50
	2-3	64	53.33
	>3	41	34.16
Monthly Family Income	<10,000 BDT	16	13.33
	10,000 --20,000 BDT	67	55.83
	>20,000 BDT	37	30.83

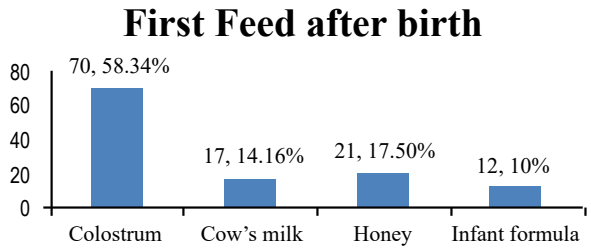

Fig 1:Distribution of respondent, according to type of feeding just after birth (n=120)

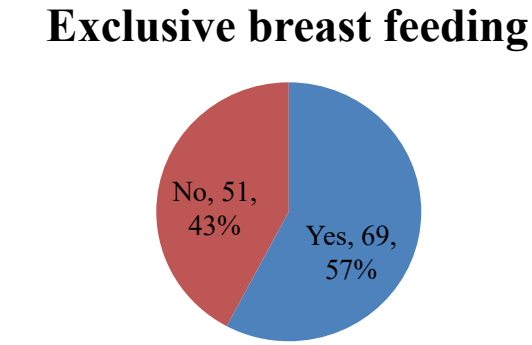

Fig 2:- Distribution of respondents according to Exclusive breast feeding practice (n=120).

Table 2:- Distribution of respondents by knowledge and practice regarding Exclusive Breast Feeding (n=120)

Variable	Frequency	Percentages
Knowledge of exclusive breast feeding		
Only breast feeding up to 6 months	67	55.83
Only breast feeding up to 2 years	16	17.00
Breast milk with cow's milk	8	6.66
Breast milk with powder milk	10	8.33
Have no idea	19	15.83
Time of initiation of breast feeding		
<1 hour	57	47.50
1-2 hour	39	32.50
>2 hour	10	8.83
Did not remember the exact time	11	9.16
Did not attained breast milk	3	2.50

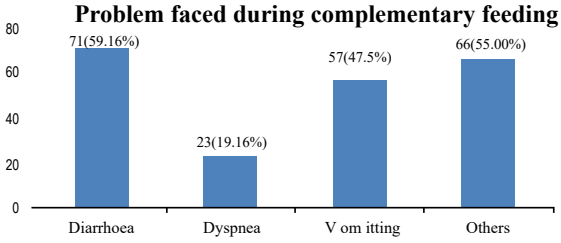

Fig 3: Problem faced during complementary feeding (Multiple response)

Discussion:

The study was conducted on sample of 120 mothers and their infants selected purposively to assess the knowledge and practice of exclusive breast feeding among nursing mother irrespective of socio-demographic characteristics. Exclusive breastfeeding during the first 6 months and therefore timely introduction of complementary feeding have many proven advantages to both the mother and the child and are therefore the prime focus in infant feeding promotional activities.

In the present study it was observed that only 42.50% of the infants were exclusively breastfeed which is lower from studies observed by Dipen V Patel 57.5%[8] and D Kumar et al (55.3%),[9] Another Indian studies by Kulkarni et al. (70.2%)[10] observed much higher rates. Last NFHS-3 data of India and Gujarat shows 46.3% and 47.8% of infants in 0–5 months of age exclusively breastfeed. And from the 6th month onwards 55.8% and 57.7% of infants received complementary feeding in India and Gujarat, respectively.[11] There was another study by Murad Hossain (2018) where he presented BDHS 2016 report which showed it was 55%. The prevalence of Exclusive Breast Feeding in Bangladesh according to this study was higher than that reported in some other countries such as Egypt (9.7%),[12] India, (34%), Saudi Arabia (24.4%)[13] and the USA (16.8%).[14] But the prevalence of exclusive breast feeding was found higher in some other parts of the world such as Malaysia (Peninsular, 43.1%),[15] Southern Ethiopia (46.5%),[16] Northwest Ethiopia (50.3%), Debre Markos of Northwest Ethiopia (60.8%), Western India (61.5%) and the Goba district of South East Ethiopia (71.3%).[17]

The practice of feeding colostrum has improved in the past decade (53.33%) and 55.83% of mother have idea about exclusive breast feeding that is only breastfeed for the first six months of life, among them 42.50 % of mother was found to breast feed exclusively in our current study.[18]

In present study as 17.50% mother use honey just after birth as prelacteal food. Almost similar findings also showed by Mohidul Islam (2013) only 21% of studied mothers were shown to give pre-lacteal feed. The use of honey and other sweet item as pre-lacteal feeding were more common as a cultural believe that the first milk is dirty and as a believer to give honey. The potential contamination for pre-lacteal feeding is more and there are chance of developing allergic manifestation in the future life.[19] According to Sumera Ali (2011) study showed that giving sweet pre-lacteals is thought to be related to the belief that these will ensure a pleasant personality.[20]

Mothers' education and occupation were found inversely proportional to Exclusive Breast Feeding practice in many studies. Maternal education plays a huge role in increasing the receptivity of mothers towards correct practices. Studies from India have suggested significant association of maternal literacy and timely initiation of complementary feeding. Lower literacy in mothers, in addition to lack of knowledge about correct practices and recommendations, makes routine counseling by community health workers also ineffective.[21]

Present study showed 33.33% mother completed their primary education whereas only 2.50% graduate and among them 56.67% were housewife whereas 20.83% were service holder. According to Edite Pintoa (2017) Women with low literacy levels have a lower maternal affection.[5] Faleiros et al. (2006) indicate that educational

level affects motivation for breastfeeding because of the possibility of having greater access to information about its advantages.[22]

It could also be seen that there is less affection in women whose education is below the secondary level (136.55) and more affection in women who have secondary education (105.51).[5]

A study conducted by Murad Hossain (2018) showed illiterate mothers were more likely to provide Exclusive Breast Feeding to their infants and the practice rate of Exclusive Breast Feeding was significantly reduced with the increase in mothers' educational status.[6] These findings are in agreement with the findings of at Saudi Arabia, Bahir Dar district Ethiopia, Debre Berhan district Ethiopia , Debre Markos district Ethiopia, Goba district Ethiopia , Peninsular Malaysia and Tamil Nadu India.[13] This could be explained as the fact that educated mothers have better job opportunities in Bangladesh and they are likely to join services. Therefore, educated and employed mothers may not have or may not be able to manage sufficient time during working hours to breastfeed their infants.

A study by Dipen V Patel (2015)[8] did not find significant association of maternal occupation with initiation of breastfeeding and duration of exclusive breastfeeding despite housewives supposedly having more time available to feed their infants. One of the probable reasons for this is that working mothers carry their children at workplace and they are able to provide breastfeeding.

Regarding knowledge about exclusive breast feeding present study showed 55.83% mother have knowledge whereas a study by Alessandra Marcuz de Souza Campos et al (2015) 30% of the respondents reported feeding their children other liquids in addition to breast milk, which suggests a lack of understanding of the EB concept.[23] These findings are supported by the results of other studies; study conducted in Horizonte, Ceará, 89% of the participants admitted that the proper duration of EB is six months.[4] The Ethiopia Demographic and Health Survey 2016 (EDHS) shows breast feeding within one hour of birth does not vary significantly by the type of assistance at delivery. The likelihood that a child is breastfed in the first hour after birth increases with the mother's educational status and wealth quintile. [7]

Conclusion:

Breastfeeding is a complex process and awareness about exclusive breastfeeding is influenced by antenatal care, postnatal care and initiation of breastfeeding within 1st hour of life, having attended formal education.

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Original Article

Study on the dietary habits of women in antenatal period in rural area of Bangladesh

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Abstract:
This descriptive type of cross-sectional study was conducted at Gazipur,Bangladesh to assess the dietary habits of women in antenatal period in rural area of Bangladesh. A sample of 160 respondents was selected purposively and a semi structured questionnaire was used to collect data by face to face interviews. Data were tabulated, checked and finalized manually and analyzed in Microsoft Word & Excel.The studies revealed that, majority of the respondents 60 (37.5%) were within the age group of 15-24 years. The mean age of the respondents was 29 years. Their monthly family income was more than 10000taka.Regarding duration of pregnancy, majority of the respondents 155(96.875) were full term pregnant andamong them, 110(68.75%) took their meal with family members. Majority of the respondents 87(54.375%) used to eat 3 times daily during their antenatal period. Most of them 147(91.88%) took rice followed by vegetables 114(71.25%) daily. Most of them 95(59.375%) discarded rice ban during cooking. Majority of the respondents 101(63.125%) used to wash vegetables after cutting, more than half of them 90 (56.25%) took advice from health center during antenatal period. Most of them were advised to take nutritious food and eat frequently. So counseling programs may be taken to counsel the women about dietary habits during antenatal period and government should be more concerned about this.

Keywords: Dietary habits, Antenatal period.

Introduction:

Antenatal care is the care of the women during pregnancy. The primary aim of antenatal care is to achieve at the end of a pregnancy –a healthy mother and healthy baby.[1] Increased nutrient requirements protect maternal health while others affects birth outcome and infant health. Inadequate weight gain during pregnancy often results in low birth weight, which increases infant's risk of dying. Pregnant women also require more protein, iron, iodine, vitamin, folate and other nutrients. Deficiencies of certain nutrients are associated with maternal complications and death, fetal and newborn death, birth defects and decreased physical and mental potential of child.[2]

Maternal body undergoes a lot of anatomical and physiological changes in adaptation of increasing demand of the growing fetus. Thus, they require a balanced proportion development of the fetus.[3] The pregnancy diet ideally should be light, nutritious, easily digestible and rich in protein, minerals and vitamins. The diet should consist in addition to the principal food at least half liter of milk, plenty of green vegetables and fruit. At least, half of the total protein should be containing all the amino acids and majority of the fat should be animal origin which contains vitamin A and D. [1]

Dietary habits during antenatal period should be directed towards promoting the health and well-being of the mothers as well as of their growing fetuses. Most of the women in our country are illiterate and are not well conversant about antenatal and postnatal care which leads to maternal and child morbidity and mortality. From the very beginning of pregnancy, the prevalent customs and beliefs are given importance in our society instead of providing them with satisfactory healthcare.[4] Energy requirements increase in pregnancy by about 12 percent. This is because of the increase in maternal body weight, an average 10-15 percent increase in basal metabolic rate (BMR) and the energy costs of the growing fetus and maternal physiological changes in pregnancy.[5]

Materials and methods:

This descriptive type of cross-sectional study was conducted at Gazipur, Bangladesh from 1st November 2014

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to 3rd November 2014 to determine the dietary habits of women during antenatal period with a sample size of 160 Women of reproductive age having at least one child. A pre-tested semi structured questionnaire was used and data were collected by face to face interview using purposive sampling technique. After collection, data were checked and verified for any inconsistency and presented in graphs and tables.

Results:

This descriptive type of cross-sectional study was conducted at Gazipur, Bangladesh from November 1st 2014 to November 3rd 2014 to determine the dietary habits of women during antenatal period. A sample of 160 women of reproductive age having at least one child was selected purposively. Most of the respondents were within the age group of 15-24 years 60(37.5%) and 25-34 years 60(37.5%). The mean age of the respondents was 29.62 years.Majority of the respondents were Muslim 146(91.25%) followed by Hindu 14(8.75%). Most of the respondents(50,31.25%) had secondary level of education.Most of the respondents' husbands were illiterate 40(25%) followed by secondary level of education 35(21.87%). Most of the respondents were housewives 123(76.87%) followed by garments workers 29(18.12%). Most of the respondents' husbands had other occupations 51(37.87%) followed by garments workers 44(27.5%) and service holder 39 (24.375%). Majority of the respondents 84(52.5%) had monthly family income more than 10,000 Taka. The median monthlyfamily income was Taka 10238 ranging from Taka >10,000. Most of them 90(56.25%) had ≤4 family members. Most of the respondents 118(73.75%) were nuclear family.

Majority of the respondents 155(96.87%) were 9 month pregnant. Majority of the respondents 80(50%) did light work followed by 55 (34.37%) heavy work during their antenatal period. Most of the respondents 157(98.12%) took rice followed by vegetables 154(96.25%) then fish 144(90%) and meat 138(89.38%) during their antenatal period. Most of them 147(91.88%) took rice followed by vegetables 114(71.25%) on daily basis and then meat 117(73.13%) followed by fish 77(48.13%) took 1-3 days. Majority of the respondents 87(54.35%) ate 3 times followed by 58 (36.25%) ate >4 times during their antenatal period. Most of them 95(59.37%) discarded rice bran during cooking, only 65(40.62%) did not. Most of the respondents 101(63.12%) used to wash vegetables after cutting and 59 (36.87%) used to wash before cutting vegetables. Most of the respondents 110(68.75) took their meal with family members followed by 21(13.12%) took meal last of all and 16(10.62%) took meal after husband and children. Most of the respondents 90 (56.25%) took advice and only 70 (43.75%) took no advice from a health center during antenatal period. Most of them 88(55%) took advice about taking nutritious food followed by 43(26.87%) about eating frequently.

Table 1: Distribution of the respondents by socio-demographic characteristics (n=160)

Characteristics	Categories	Respondent	
		No	Percent
Age of the respondents	15-24	60	37.50
	25-34	60	37.50
	35-44	22	13.75
	45-54	14	8.75
	>55	04	2.50
Mean age 29.62 years			
Educational level of respondents	Illiterate	38	23.75
	Primary	44	27.50
	Secondary	50	31.25
	SSC	17	10.60
	HSC	10	6.25
	Graduate	01	0.62
Husband's educational level	Illiterate	40	25.00
	Primary	31	19.37
	Secondary	35	21.87
	SSC	21	13.12
	HSC	23	14.37
	Graduate	08	5.00
	Madrasa	02	1.25
Husbands occupation	Rickshaw puller	08	5.00
	Garments worker	44	27.50
	Laborer	18	11.25
	Service holder	39	24.37
	Others (dorji, cloth business, decorator)	51	31.87
No. of family members	≤ 4	90	56.25
	5-9	64	40.00
	≥ 10	06	03.75

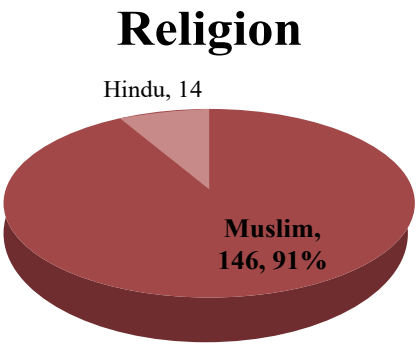

Fig 1Distribution of respondents according to religion (n=160)

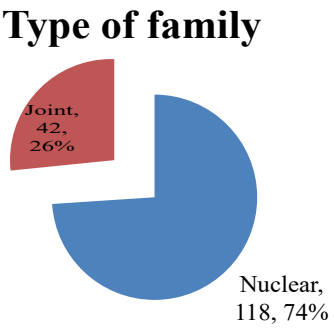

Fig 2 Distribution of respondents according to family type (n-160)

Table 2: Distribution of the respondents by their antenatal period and dietary pattern during that period (n=160)

Characteristics	Categories	Respondent	
		No	Percent
Duration of pregnancy (months)	7	01	0.62
	8	04	2.50
	9	155	96.88
Nature of working	Light	80	50.00
	Moderate	25	15.62
	Heavy	55	34.37
Type of food intake during antenatal period(multiple answer)	Rice	157	98.12
	Meat	138	89.38
	Fish	144	90.00
	Bread	68	42.50
	Vegetable	154	96.25

Median monthly family income Taka 10,238

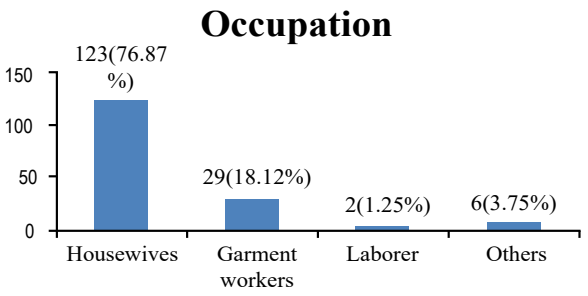

Fig 3: Distribution of respondents according to occupation

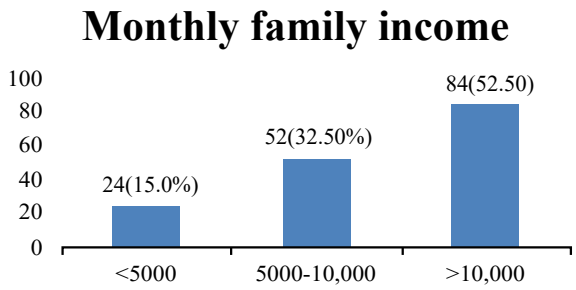

Fig 4: Distribution of respondents according to monthly family income (n=160)

Table 3:Distribution of respondents by their food intake pattern (n=160)

Type of food intake	Did not take at all		1-3 days		4-6 days		Daily (7days)	
	No.	%	No.	%	No.	%	No.	%
Rice	2	1.25	5	3.13	6	3.75	147	91.88
Fish	12	7.5	77	48.13	22	13.75	49	30.63
Meat	22	13.75	117	73.13	14	8.75	7	4.38
Pulse	16	10	51	31.88	22	13.75	71	43.13
Egg	16	10	49	30.63	30	18.75	64	40
Milk	20	12.5	50	31.25	17	10.63	73	45.63
Vegetable	3	1.88	22	13.75	21	13.13	114	71.25
Fruits	30	18.75	64	40	23	14.38	43	26.88

Table 4- Distribution of the respondents according to dietary habit (n=160)

Characteristics	Categories	Respondent	
		No	Percent
Frequency of food intake daily	1 time	1	0.62
	2 time	14	8.75
	3 time	87	54.37
	>3 time	54	36.25
Whether Rice bran is discarded	Yes	95	59.37
	No	65	40.62

Washing vegetables for cooking	Before cutting	59	36.87
	After cutting	101	63.13
Time of taking meal	With family members	110	68.75
	Lonely	13	8.13
	Last of all	21	13.12
	After husband and children	16	10.00

Table 5: Distribution of the respondents according to dietary advice (n=160)

Took advice about diet	Yes	90	56.25
	No	70	43.75
Types of Advice (multiple responses)	To eat frequently	43	26.87
	To take more food	22	13.75
	To take nutritious food	88	55.00

Discussion:

This descriptive type of cross-sectional study was conducted among 160 respondents residing in rural areas of Shafipur upazilla of Gazipur district, Bangladesh from November 1st 2014 to November 3rd 2014 to determine the dietary habits of women during antenatal period. Data were collected purposively by face to face interview using a pre-tested semi-structured questionnaire. The study revealed that the mean age of the respondents was 29.62 years. Majority of the respondents 37.5% were in 15-24 age groups. In a study in the South West region of Bangladesh similar findings was observed, where the majority of the women belong to 20-24 years age group.[1] In the current study, most of the respondents (91.25%) were Muslim followed by Hindu 8.75%. Majority of the respondents 31.25% had completed secondary level of education. Another study shows that, mothers in the rural and urban region of Bangladesh were 15% and 18%, 44% and 17%, 29% and 25%, 10% and 39%, 2% and 11% Illiterate, Primary, Secondary, Under Graduate and above Graduate, respectively.[2] So, most of the respondent in both studies completed secondary level of education.

In this study, most of the respondents 76.87% were housewives followed by garments workers 29 (18.12%). However, maximum of their husbands were illiterate 40 (25%) followed by 35 (21.87%) who had secondary level of education and they worked mostly as dorji,cloth business and decorator etc. 51 (37.87%) followed by garments workers 44 (27.5%). The Maximum monthly income of the family was 100,000 Taka whereas majority of the respondents had monthly family income ranges from above Taka > 10,000 (52.5%). The median family income was Taka 10238 ranging from Taka >10,000. In south west region of Bangladesh, 60% of pregnant women had family income <5000, 20% had family income in 5000-8000 range and 13.25% had family income in 8000-10000 range while only 6% had family income >10000[1]which differs from our study. Our study also revealed that most of the respondents 118 (73.75%) were in nuclear families followed by joint families 42 (26.25%). Most of the respondents 56.25% had ≤4 family members followed by 40%; who had 5-9 family members. Another survey indicated that 50.50% had family size >4, 42.75% had family size 3-4, 6.75% of pregnant women have family size < 3. So, in that study, the majority family sizes were >4.

In this study, most of the respondents 96.87%completed full term pregnancy. Comparatively, another study revealed that, majority of the respondents 37 (33.6%) went through 7 months of pregnancy. [3]Most of the respondents 50% did light work during their antenatal period followed by heavy work 34.37%. Another study showed that, 70.9% did light work during antenatal period and 27.3% did moderate work.[3]The study revealed that, 68.75% respondents took their meal with family members followed by who took meal last of all members 13.12%.Majority of the respondents 54.37% used to eat 3 times daily during their antenatal period followed by those who used to eat more than 4 times a day 36.25%. Most of the respondents 95 (59.37%) discarded rice bran during cooking, only 65 (40.62%) did not. Also, maximum number of respondents 101 (63.12%) used to wash vegetables after cutting and 59 (36.87%) used to wash before cutting vegetables. Most of the respondents 147 (91.88%) took rice followed by vegetables 114 (71.25%) on daily basis and then meat 117 (73.13%) followed by fish 77 (48.13%) taken 1-3 days/week. It is comparable to a study about "Dietary habits of women during their antenatal period" conducted on antenatal mothers who attended in Comilla Medical College hospital, in which, out of 110 respondents, 78 (70.90%) took vegetables 4-6 times/week and 55 (50%) of them took egg 4-6 times/week.56.25% respondentstook advice and only 43.75% took no advice from a health center during antenatal period and those who took advice, most of them 88 (55%) were advised about taking nutritious food followed by 43(26.87%) about eating frequently.

Conclusion:

Unlike hereditary or pre-existing disease condition, the nutritional status of pregnant mother is easily modifiable. Grass root level health workers should be trained in basic nutrition so that they can motivate the mothers about the importance of good dietary habit during pregnancy. Family members for example, husband and mother in law

should be motivated regarding the extra needs of food and dietary habit during pregnancy.

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Original Article

Study on tetanus toxoid vaccination coverage among female garment workers in two selected factory

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Abstract:

This was a cross sectional descriptive study conducted to assess the coverage of tetanus vaccine immunization among the female garment workers using a semi-structured questionnaire employing purposive sampling technique with a sample size of 214 by face to face interview from March to June 2018. Most of the respondents (44%) belonged to the 25-30 years age group. Majority (68%) of them were illiterate and Only 15% of the respondents had education level of HSC or more. More than half of the respondents were unmarried. The mean monthly income was taka 2275. It was revealed that 160, (74.76%) of the respondents completed immunization schedule, 40, (18.70%) not completed while 14, (6.54%) were not immunized against EPI diseases. There is statistically significant association between education and immunization status (p=<0.05). Prevention of tetanus specially depends on tetanus immunization and early diagnosis. Health education and positive public attitude will play significant role in prevention and control the tetanus. The study recommends for effective strategies to increase TT5 vaccination coverage countrywide especially among vulnerable women.

Key words: Tetanus, Female garments worker, Prevention. Vaccine, Tetanus toxoid

Introduction:

Tetanus Toxoid (TT) is administered to women of reproductive age (15-44 years) to protect them from tetanus and their newborn babies from neonatal tetanus. Neonatal tetanus is a grave disease caused due to contamination of umbilical stump of the child during childbirth usually in an unhygienic condition.[1, 2] Tetanus toxoid is a vaccine used to immunize the people to protect against the fatal infectious disease 'tetanus'. Inadequate immunization service, home delivery, unhygienic cutting of umbilical cord increases susceptibility to tetanus[2]. In Bangladesh where most women still do not have access to clean birth or skill birth attendant, approximately 90% reduction of neonatal tetanus mortality has been achieved in the last 20 years. Mental and neonatal tetanus is a swift and painful killer disease that killed 58,000 newborns in 2010 alone[3]. Massive increase in tetanus toxoid immunization among childbearing age ensures that both mothers and babies are protected against tetanus infection[4].

In developing countries delivery takes place mostly at home and attended by untrained 'dais', who usually cuts the umbilical cord of the new born by unsterilized instruments and the umbilical stump is sometimes covered with dung, dirt, mud, ashes etc. due to this type of unhygienic practice Clostridium tetani gains entry through the umbilical stump and causes neonatal tetanus, which was the major cause of neonatal death[5]. Another important factor is that in the developing countries most of the women are illiterate and are from lower socioeconomic classes who are not aware of professional cleanliness and have very little knowledge of safe delivery, these factors also favours the development of neonatal tetanus in the children as well as puerperal tetanus of the mother.

Tetanus toxoid immunization of women of child bearing age and proper practice of safe delivery can prevent neonatal tetanus almost completely[6]. Tetanus causes 1 million deaths in the world and half of these being in the new born infants[7]. Although neonatal tetanus (NT) has been declared eliminated from Bangladesh in June 2008, it is not uncommon in Infectious Disease Hospital

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(IDH) in Dhaka.[8] In Bangladesh neonatal mortality rate is 25/1000 live birth.[9]

About 85% of women with a child under 1 year of age had received 2 tetanus toxoid immunization, only 11% of women of reproductive age had obtained the complete series of 5 TT vaccine and only 52% of women of reproductive age had receive 1 or more tetanus immunization[8]. To eliminate neonatal tetanus at least 90% coverage of tetanus vaccine in the target group should be done and sustained. In addition to this safe delivery, provision of training to the traditional birth attendance, supply of safe delivery kits to be ensured. Improvement of maternal and child health care service and awareness of the illiterate groups can prevent tetanus[10]. This study was carried out to know the tetanus immunization coverage of the female workers of garments factory in Dhaka city.

Materials and methods

This was a cross sectional descriptive study conducted to assess the coverage of tetanus vaccine immunization among the female garment workers using a semi-structured questionnaire employing purposive sampling technique with a sample size of 214 by face to face interview from during the period of March to June 2018. Data were cleaned, edited and was analyzed with the help of SPSS 17 version software and expressed in frequency and percentage.

Results

A total of 214 female garment workers from selected factory was the study group. Among them (48, 44.86%) was between age group of 25-30 years (Table-1). It was observed from the study that majority of respondents (146, 68.22%) were illiterate, (32, 14.95%) had primary education, (20, 9.35%) passed high school and only (16, 7.48%) of them had education higher secondary and above (Figure I). Among the respondents Almost (94, 43.92%) were married and (120, 56.07%) were unmarried. Among the married women (76, 80.86%) had 1-3 children. More than one third (79, 37.14%) of the respondents had monthly income between 2500-3500 taka with a Mean 3275 taka (Figure-2). Almost three fourth of the respondents (160, 74.76%) were immunized against tetanus, (14, 6.54%) were not vaccinated; of them (187, 87.5%) got vaccinated inside the factory (Table-2 & Table-3). Almost (170, 79.44%) of the total respondents have no knowledge about advantages of tetanus toxoid vaccination. There is a significant association between educational level of respondents & tetanus immunization ($p<0.05$) (Table-4).

Table-1: Age distribution of the respondents. (n=214)

Age in years	Frequency	Percentage (%)
15-20	16	7.48
20-25	54	25.23
25-30	96	44.86
30-35	30	14.02
35-40	18	7.41
Total	**214**	**100**

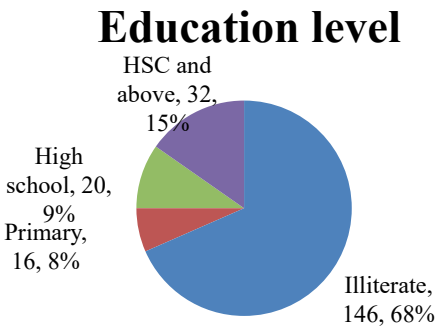

Figure-1: Educational level of the study population (n=214)

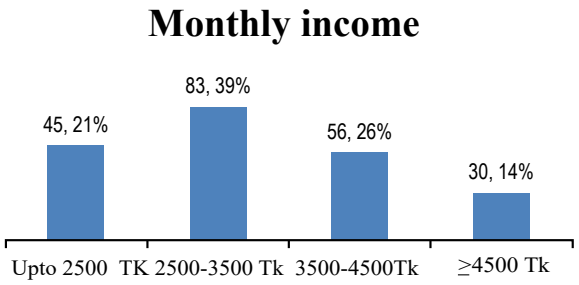

Figure-2: Monthly income of the respondents (n=**214**.)

Table-2: Immunization status of study population

Immunization status	Frequency	Percentage (%)
Complete immunization	160	74.76
Incomplete immunization	40	18.70
Not immunized	14	6.54
Total	214	100

Table-3: Distribution of the respondents according to the

place of vaccination.

Place of vaccination	Frequency	Percentage (%)
Inside factory	140	87.5
Govt. institution	20	12.5
Total	160	100

Table-4: Relation between educational level of the respondents and TT vaccine taken.

Educational level	Taking TT	Not taking TT	Total	P value
Illiterate	88	58	146	
Literate	60	8	68	<0.05
Total	148	66	214	

*P value from pearson's chi square test

Discussion

The present study was aimed to explore the status of tetanus immunization among the garment worker. Total 214 respondents of child bearing age were selected. It was found that 44% of the garment workers were from age group 25-30. Similar findings were observed in a longitudinal study in China 2000-2012, where the mean age of the mothers was found 27.2±4.8 years.[10] In this study we found that more than half of the respondents about 68.22% were illiterate and the mean monthly income was 3274 taka. A study conducted in Dhaka city, found that 61.11% of neonatal tetanus occurred in low socioeconomic condition by Bose and Begum which is much similar with this study[10]. WHO and UNICEF estimate of national immunization coverage shows in 2010 that 93% coverage of tetanus immunization has been achieved in Bangladesh[12]. This study also shows a higher coverage of tetanus immunization among the respondents which corresponds with the survey mentioned above but this study does not reflect the whole country as most of the respondents (87.5%) took vaccine inside the factory. Respondents had no idea about importance of tetanus vaccination is (79.44%). The present study shows that the rate of taking tetanus vaccination was more in case of literate respondents than illiterate. A significant association was found between the educational level of the study population and taking tetanus toxoid ($p<0.05$) which was similar to the study conducted by WG Haldy et all.[13]

Conclusion

Broad based campaign is needed to promote access to tetanus immunization and completion of all five doses of tetanus and to achieve the goal of complete protection against tetanus and awareness in women in Bangladesh.

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Volume 1, Number 1, January 2019

Review article

Health and Environmental Sustainability:Public health issues for present and future

Monowar Ahmad Tarafdar[1]

Abstract:
The medical definition of environmental causes of diseases would be all those factors that are not genetic. Environmental factors include all those factors those affect human health mediated by social conditions and individual choice or environment. 'Sustainable' includes the environmental issues and 'development' includes the economic issues. Climate change alters or disrupts natural systems, making it possible for vector, water, and food-borne diseases to spread or emerge. Climate change can affect the incidence of diseases associated with air pollutants and aeroallergens. Clean air is considered to be a basic requirement of human health and well-being. Poverty increases vulnerability to climate-sensitive health outcomes directly by reducing the capacity to adapt to changing conditions. For countries in the early stages of development the major environmental hazards to health are associated with widespread poverty and severe lack of public infrastructure, such as access to drinking water, sanitation, and lack of health care as well as emerging problems of industrial pollution and also urban waste based pollution. A healthy population is a prerequisite for a productive and creative society, which in turn is needed to sustain national development. Social determinants affect the environmental conditions of an individual and may contribute to the fact that specific individuals or population groups more often experience less adequate or potentially harmful environmental conditions; may directly affect exposure beyond and in addition to the exposure. Enhancing environmental sustainability, through reducing carbon emissions, curtailing waste, and managing resources efficiently, will deliver healthy outcome, and provide broader social and economic benefits.

Key words: Environment, Sustainability, Public Health.

Introduction:
The strict medical definition of environmental causes of diseases would be all those factors that are not genetic. This is the classic dichotomy between "nature" and "nurture," in which environmental factors include all those that affect the organism after conception regardless of whether they are mediated by social conditions and individual choice or through environmental media. Even mutation, natural selection, and other mechanisms of evolution have changed the genetic composition of humanity according to environmental conditions existing in the past.[1]

The term sustainable development, as originally conceived by the 1987 World Commission on Environment and Development (the "Brundtland Commission"), was meant to entail "Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It was coined as part of an effort to bring "environmental" issues into the mainstream of development, recognizing that in order to address the escalating problems related to the environment, the root causes which lay in the broader development process and the global economic system needed to be addressed.[2]

As originally articulated, 'sustainable' captures the environmental issues (assumed to centre on the needs of *future* generations), while 'development' captured the economic/poverty issues (assumed to centre on the needs of the *present* generation). The concept has since been broadened, in recognition of the non-environmental aspects of sustainability, and the non-economic aspects of development.[3]

Effects of Climate change:
Climate change can affect health directly and indirectly. Directly, extreme weather events (floods, droughts, windstorms, fires, and heat waves) can affect the health of people and cause significant economic impacts. Indirectly, climate change can alter or disrupt natural systems, making it possible for vector, water, and food-borne diseases to spread or emerge in areas where they had been limited or not existed, or for such diseases to disappear by making areas less hospitable to the vector or pathogen. Climate change can also affect the incidence of diseases associated with air pollutants and aeroallergens. The cause-and-effect chain from climate change to changing patterns of health outcomes is complex and includes factors such as initial health status, financial resources, effectiveness of public health programs, and access to medical care. Therefore, the severity of future impacts will be determined by changes in climate as well

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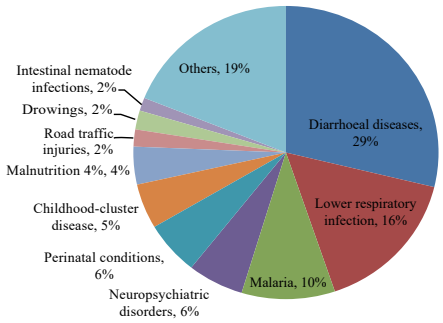
as by concurrent changes in non-climatic factors and by adaptations implemented to reduce negative impacts.[4]
There is increasing recognition that environment and health impacts require economic assessment in order to receive adequate consideration in policy. Studies confirm that approximately one-quarter of the global disease burden, and more than one-third of the burden among children, is due to modifiable environmental factors.

Global situation of Under five children disease burden



*****Source: World Health Organization. Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease. Available online: http://www.who.int/quantifying_ehimpacts/publications/preventingdisease/en/index.html** (accessed 24 September 2019).[5]
Clean air is considered to be a basic requirement of human health and well-being. However, air pollution continues to pose a significant threat to health worldwide. According to a WHO assessment of the burden of disease due to air pollution, more than two million premature deaths each year can be attributed to the effects of urban outdoor air pollution and indoor air pollution (caused by the burning of solid fuels). More than half of this disease burden is borne by the populations of developing countries.[6]
Climate variability records suggest ambient temperature change will affect domestic water supply from surface water source. Therefore, it seems reasonable to speculate that global scale climate variability may influence water supply in river basins around the world. River basin managers seek tools to address climate variability.[7]
Poverty, which was identified as a risk factor, increases vulnerability to climate-sensitive health outcomes directly by reducing the capacity to adapt to changing conditions and is often positively correlated with increasing susceptibility to climate-sensitive health outcomes. Because the conditions associated with being poor may change over time, the future risk associated with being poor also may change. The degree of risk associated with being poor will reflect not only a changing climate but also changes in the number of people living in poverty and their associated standard of living, both of which are uncertain.[8]

Table 1: Mechanism by which above average rainfall can affect health

Event	Type	Description	Potential health impact
Heavy precipitation event	Meteorological	Extreme event	Increased mosquito abundance or decreased (if breeding sites are washed out)
Flood	Hydrological	River/stream over tops its banks	Changes in mosquito abundance, contamination of surface water
Flood	Social	Property or crops damage	Changes in mosquito abundance, contamination of surface water with faecal matter and rat urine (leptospirosis)
Flood	Catastrophic flood/ disaster	Flood leading to >10 killed, and/ or government call for external assistance	Changes in mosquito abundance, contamination of surface water with faecal matter and rat urine and increased risk of respiratory and diarrhoeal disease deaths, drowning, injuries, health effects associated with population displacement, loss of food supply and psychosocial impacts.

*****Source: Kovats R. El Niño and health. Geneva, Switzerland, World Health Organization 1999. Available from: URL:** https://www.who.int/globalchange/publications/climatechangechap5.pdf[9]

Table 2: Mechanism by which below average rainfall can affect health

Event	Type	Description	Potential health impact
Drought	Meteorological	Evaporation exceeds water absorption, soil moisture decreases.	Changes in vector abundance if vectors breed in dried up river beds, for example
Drought	Agricultural	Drier than normal conditions leading to decreased crop production	Depends on socio-economic factors, i.e. other sources of food available and the means to aquire them.
Drought	Social	Reduction in food supply or income, reduction in water supply and quality.	Food shortage, illness, malnutrition, increased risk of infection.
Drought	Food shortage/ famine/drought disaster	Food shortage leading to deaths >10 killed, and/ or government call for external assistance.	Deaths (starvation), malnutrition (increases risk of infection) health impacts associated with population displacement.

*****Source: Kovats R. El Niño and health. Geneva, Switzerland, World Health Organization 1999. Available from: URL:** https://www.who.int/globalchange/publications/climatechangechap5.pdf[9]

Climate is a key determinant of health. Climate constrains the range of infectious diseases, while weather affects the timing and intensity of outbreaks. A long-term warming trend is encouraging the geographic expansion of several important infections, while extreme weather events are spawning 'clusters' of disease outbreaks and sparking a series of 'surprises'. Ecological changes and economic inequities strongly influence disease patterns. But a warming and unstable climate is playing an ever-increasing role in driving the global emergence, resurgence and redistribution of infectious diseases.[10]

However, huge economic development and population growth result in continuing environmental degradation. Intensification of agriculture, industrialization and increasing energy use are the most severe driving forces of environmental health problems. For countries in the early stages of development the major environmental hazards to health are associated with widespread poverty and severe lack of public infrastructure, such as access to drinking water, sanitation, and lack of health care as well as emerging problems of industrial pollution and also urban waste based pollution.[11]

Since many of the key determinants of health and disease provide insights into the fundamental problems in health transition, whilst an epidemiological transition enhances our concepts of diseases that are continuously evolving in diverse ways with many scientific investigations and findings supported, refined and unfolded our progressive understandings in the influence of the eco-environments on human health. Consequently, ecological reasoning as a developing theme in the sciences and arts, which must apply to epidemiology for an appreciation of complexity in the enhancement of public health thinking that human and ecosystems health is interdependent.[12]

The emergence of the concept of sustainable development as a guiding principle for policy formulation, the adoption at the UN Conference on Environment and Development (UNCED) in 1992 of Agenda 21, and subsequent adoption of the Programme for the Further Implementation of Agenda 21, have been important stimuli at international, national and local levels, for innovative programmes of action to address current environment, health and development problems. The Rio Declaration, for example, states that, "Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature." Further, Chapter 6 of Agenda 21 emphasizes the fundamental commitment within sustainable development to "protecting and promoting human health".[3]

Today, one-half of the world's population is exposed to malaria on a daily basis. Deforestation, drug and pesticide resistance and inadequate public health measures have all contributed to a recent resurgence. Warming and extreme weather add new stresses. Dynamic models project that the warming accompanying the doubling of atmospheric CO2 will increase the transmission capacity of mosquitoes some 100-fold in temperate zones, and that the area capable of sustaining transmission will grow from that containing 45% of the world's population to 60%.[10]

Since environmental health aims to protect not only present but also future generations, is very much in line with the concept of sustainable development, which is defined by the Brundtland Report as development that "meets the needs of the present without compromising the ability of future generations to meet their own needs". This link between environmental health and sustainable

development needs to be emphasized, and national and global policies in these areas should be complementary and mutually beneficial. A healthy population is a prerequisite for a productive and creative society, which in turn is needed to sustain national development. Uncontrolled and unsustainable development that overexploits the natural environment and its resources, however, is a major cause of environmental health problems.[13]

The prevalence of human diseases and is increasing rapidly worldwide, as is the number of deaths from diseases. The ecology of increased disease is exceedingly complex because of the diversity of infectious organisms and the effects of environmental degradation on the prevalence of disease. The rapid expansion of human populations is a major factor in the rise of human diseases: Humans living in crowded, urban areas are in an ecosystem that is ideal for the resurgence and rapid spread of old diseases as well as for the development and spread of new diseases. The unprecedented increase in air, water, and soil pollutants, including organic and chemical wastes, further stresses humans and increases disease prevalence. In particular, widespread malnutrition enhances the susceptibility of humans to infectious pathogens and other diseases. Global climate changes enhance the development of some disease vectors, increase the susceptibility of food crops to some pests and intensify food shortages and malnutrition. A concurrent problem is the rapid expansion in the number of "environmental refugees", living in poverty and desperate for food, flee their home areas in a search for survival. Their malnutrition, stress, and dislocation foster the resurgence of old diseases and the development of new ones.[14]

Several concurrent crises have either sprung up or accelerated during the last decade: crises in climate, biodiversity, fuel, food, water, and of late in the financial system and the economy as a whole. Accelerating climate-changing emissions indicate a mounting threat of runaway climate change, with potentially disastrous human consequences.[15] Socio-economic status (SES) plays a role in the susceptibility of a population to air pollution; people with a lower SES appeared to have an increased risk of death from respiratory causes, particularly COPD. Compared with the general population, infants and young children appeared to be more susceptible.[16]

Protection of Environment:

Social determinants affect the environmental conditions of an individual and may contribute to the fact that specific individuals or population groups more often experience less adequate or potentially harmful environmental conditions; may directly affect exposure beyond and in addition to the exposure. Given the same exposure, (socially) disadvantaged groups could show more severe health effects.[17]

Protecting and creating healthy environments is a critical component of sustainable development. Environmental health can be integrated into sustainable development by Improving environmental quality for the poorest populations with the greatest burden of environmental diseases, by reducing exposures to air pollution in homes and villages from biomass burning, and providing clean water and sanitation, identifying efforts to address environmental problems that can also provide health benefits. For example, creating environments that encourage biking and walking for transportation reduces greenhouse gas and toxic air pollution emissions (environmental benefit) and increases physical activity (health benefit) and above all recognizing that some policies, practices, and technologies designed to promote sustainability and economic development may have unintended adverse environmental health effects, and attempting to prevent or mitigate these before they are implemented.[18]

Conclusion:

Achieving environmental sustainability in health care is essential to improve the way health system functions. Enhancing environmental sustainability, through reducing carbon emissions, curtailing waste, and managing resources efficiently, will deliver better outcomes for patients, and provide broader social and economic benefits.[19]

The environmental health community can make three key contributions to achieving sustainable development objectives: 1) supporting efforts to reduce modifiable environmental exposures that continue to perpetuate poverty in low- and middle-income countries (LMICs);2) characterizing the environmental impacts of existing industries, technologies, and land-use patterns that are harmful to human health and 3) foreseeing potential unintended health effects of "green" technologies, industries, and occupations that will evolve out of efforts to promote sustainability.[20]

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Review article

Health Promotion at Workplace: Enhancing health status of workforce

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Introduction

The term "Health Promotion at Workplace" is a multidimensional concept that embraces at least two major philosophies about what health is and how it is influenced. The first philosophy sees health as largely the product of individual behaviour and as an individual responsibility. It may acknowledge the role of genetics and environment to some degree, but the type of health promotion arising from this set of beliefs focuses on individual behaviour. Consequently, the workplace is seen primarily as a venue through which various programmes can be delivered. Examples of programme areas are: fitness, stress management, smoking cessation, back care, weight reduction/nutrition, and medication. The second philosophy sees health as being influenced by a number of forces, a significant number of which are outside the individual's control. Consequently, the workplace is seen as an influence on health in its own right.[1]

The European Network for health promotion at workplace has defined as the combined efforts of employers, employees and society to improve the health and well-being of people at work. This vision of health promotion at workplaces particular emphasis on improving the work organization and working environment, increasing workers' participation in shaping the working environment and encouraging personal skills and professional development. Health promotion at workplace focuses on a number of factors that may not be sufficiently covered in the legislation and practice of occupational health programmes, such as the organizational environment, the promotion of healthy lifestyles, and non-occupational factors such as family welfare, home and commuting conditions and community factors which affect workers' health. [1]

Goals of Health Promotion at Workplace

Main goals of health promotion are improving the work organization and the working environment**;** encouraging personal development**,** promoting active participation of workers in healthy activities. Workplace health promotion supports a participatory process to help promote a stronger implementation of occupational and environmental health legislation. It suggests tools for maintaining or strengthening a national healthy workplace initiative, such as an awards system as an incentive for participating enterprises, and creation of healthy workplace networks. To be successful, workplace health promotion has to involve the participation of employees, management and other stakeholders in the implementation of jointly agreed initiatives and should help employers and employees at all levels to increase control over and improve their health.[2] While some health promotion activities in the workplace tend to focus on a single illness or risk factor (e.g. prevention of heart disease) or on changing personal health practices and behaviours (e.g. smoking, diet), there is a growing appreciation that there are multiple determinants of workers' health. In addition to person-focused interventions, workforce health promotion initiatives have moved toward a more comprehensive approach, which acknowledges the combined influence of personal, environmental, organizational, community and societal factors on employee well-being.[2] At workplace health promotion have organizational commitment to improving the health of the workforce. An healthful environment provides an appropriate information and establishing comprehensive communication strategies towards employees and involving them in decision making processes, implementing policies and practices, developing a working culture based on partnership.[2]

Strategies of Health Promotion at Workplace

Participation of all staff must be included in all program stages. Project management programs must be oriented toward the problem-solving cycle. Programs must be incorporated into company management practices and workplace health-promotion strategies should influence corporate planning. Comprehensiveness programs must incorporate interdisciplinary individual directed and environment-directed health strategies. Health education, focused on skill development and lifestyle behavior change along with information dissemination and awareness building.[3] Integration of the worksite program into the organization's benefits, human resources infrastructure, and environmental health and safety initiatives.[4] Strategies should include promotes health programs like health education class, access to local fitness facilities, employees health insurance, provide healthy food in cafeterias etc. Workplace program should involve a coordinated, systematic and comprehensive approach. Screening is required followed by counseling and education on how to best use medical and other services for necessary follow-up.[5]

The Workplace: A Priority Setting for Health Promotion

The workplace, along with the school, hospital, city, island, and marketplace, has been established as one of the priority settings for health promotion into the 21st century. The workplace directly influences the physical, mental, economic and social well-being of workers and

in turn the health of their families, communities and society. It offers an ideal setting and infrastructure to support the promotion of health of a large audience. The health of workers is also affected by non-work related factors.[5] The concept of the health promoting workplace is becoming increasingly relevant as more private and public organizations recognize that future success in a globalizing marketplace can only be achieved with a healthy, qualified and motivated workforce.[6,7] A health promoting workplace can ensure a flexible and dynamic balance between customer expectations and organizational targets on the one hand and employee's skills and health needs on the other, which can assist companies and work organizations to compete in the marketplace. For nations, the development of health promoting workplace will be a pre-requisite for sustainable social and economic development.[8, 9]

Health promotion at Workplace: Bangladesh Perspective

Health promotion and safety at work are considered to be very important issues as they are intrinsically linked with the overall well-being of working people. Occupational health have been repeatedly mentioned as a fundamental right of every worker, and are referenced in the Alma Ata Declaration on Primary Health Care in 1978, the WHO constitution, the UN's Global Strategy on Health for All by the year 2000, the ILO Convention in 1919 and in many other multilateral conventions and documents along with the National Labor Law of Bangladesh.[8]. However, status of occupational health in health promotion at workplace in developing countries like Bangladesh is especially problematic, with workers bound to work in an unsafe working environment where there is little regard for the promotion of health issues and inadequate monitoring from any public or civil society organization. [9, 10]

A comprehensive strategy is being developed by the Human Resource Development Unit of Ministry of Health & Family Welfare, Bangladesh Secretariat (MOHFW). Bangladesh Workforce Strategy focused on integrating the system of managing and accreditation of human resources across the public, private and NGO sectors.[10] The strategies were: development of a plan for health promotion at workplace, improved incentives to work in rural and remote areas, increased community-focused aspects into training programs, and improved quality of health workforce education and planning, including improving the capacity of teaching and training institutions with a shift from a more knowledge-based to skills-based approach; ILO Convention 155 on occupational health outlines action to be taken by our governments and within enterprises to promote occupational health and to improve working conditions. The challenges still remains in health promotion at workplaces are overcrowding and poor sanitation, lack of awareness, lack of training program regarding appropriate use of machine, and personal protective devices, poor implementation of law and commitment. It needs to be acknowledged that health, as we experience and observe it in the workplace, is produced or manufactured by two major forces.[11]

- What employees bring with them to the workplace in terms of personal resources, health practices, beliefs, attitudes, values.
- What the workplace does to employees once they are there in terms of organization of work in both the physical and psychosocial sense.

The connection between the physical and psychosocial environments, and the term "organization of work" that includes both, has been made by the fact that both are heavily influenced by high level management choices and decisions about how work will be organized. When this interaction between the physical environment ("the safety of places and things") and the psychosocial environment ("culture and climate") is taken into account, their joint impact on health is significant.[12] Organization of work can also affect productivity in two ways; directly and indirectly: directly, through the design of physical and psychosocial work systems; indirectly, through management practices that cause anxiety, depression, and other negative emotional states that are antagonistic to productivity and can also contribute to physical disease processes.[13]

Benefits of Health Promotion at Workplace

Health promotion at workplace improving the employability of workers, through workplace redesign, maintenance of a healthy and safe work environment; a well-managed training and retraining assessment of work demands and safety programme, medical diagnosis, health screening and assessment of functional capacities. Healthy workers are productive and raise healthy families; thus healthy workers are a key strategy, i.e., goal, for overcoming poverty. Occupational health is fundamental to public health, for it is increasingly clear that major diseases (e.g. AIDS, heart disease) need workplace programmes as part of the disease control strategy.[14-16] Workplace health risks are higher in the informal sector and small industry which are key arenas of action on poverty alleviation, where people can work their way out of poverty. Sustainable development, which is the key to poverty reduction. It also improved staff morale, reduced staff turnover and absenteeism, reduced risk of fines and reduced health and insurance cost. Health promotion at workplace enhanced self-esteem, increased job satisfaction; promote skills for health protection, improved sense of wellbeing of the employee. As a whole health promotion at workplace shows a positive and

caring image of an organization and a safe and healthy work environment to the workers. [17, 18]

To the organization	To the employee
a well-managed safety programme	a safe and healthy work environment
a positive and caring image	enhanced self-esteem
improved staff morale	reduced stress
reduced staff turnover	improved morale
reduced absenteeism	increased job satisfaction
increased productivity	increased skills for health protection
reduced health care/ insurance costs	improved health
reduced risk of fines and litigation	improved sense of well-being

Conclusion

Health promotion that introduces healthy lifestyles and supports the maintenance of such lifestyles with appropriate information, counseling and educational measures is a part of the occupational health and safety programme. Health promotion at workplace have been shown to have a number of beneficial outcomes - improvements in working relationships, supports the maintenance of lifestyles with appropriate information and this is for both employers and employees.[19] On the other hand, health promotion at workplace creates better public image for the organization by reduction in health indemnity and other expenditure that is associated with increases productivity and profitability of the organization.

Recommendation

Health promotion at workplace suggests that health promotion programmes will only be effective in enhancing the health status of the workforce when the interventions attend to both individual and environmental influences. A comprehensive approach to health promotion in the workplace is therefore needed for individual and organizational benefit and well being. Government, non government and stake holders should keep in mind that workplace health promotion is an important setting for the betterment of individual¸ organizations, community and as a whole for the nation for achieving global challenges for healthy, qualified and motivated workforce. [20]

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Hypokalemic Periodic Paralysis - A Case Study.

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Abstract

Hypokalemic periodic paralysis (HPP) is a rare autosomal dominant channelopathy characterized by muscle weakness or paralysis when there is a fall in potassium levels in the blood. Weakness may be mild and limited to certain muscle groups, or more severe causing full-body paralysis. During an attack, reflexes may be decreased or absent. Attacks may last for a few hours or persist for several days. Recovery is usually sudden when it occurs, due to release of potassium from swollen muscles as they recover. Some patients may develop chronic muscle weakness later in life. Here, we describe a case with history of recurrent muscle weakness who was diagnosed as hypokalemic periodic paralysis.

Key Words: Hypokalemic periodic paralysis, Autosomal dominant, Channelopathy

Introduction

Periodic paralysis is a group of rare neuromuscular disorders caused by channelopathies. Periodic paralysis is most commonly characterized by hypokalemia due to mutations in sodium or calcium channels.[1] Hypokalemic periodic paralysis (HPP) is an autosomal dominant channelopathy. In individuals with this mutation, attacks often begin in adolescence and most commonly occur on awakening or after sleep or rest following strenuous exercise high carbohydrate meals, meals with high sodium content, sudden changes in temperature and even excitement. Weakness may be mild and limited to certain muscle groups, or more severe causing full-body paralysis. During an attack reflexes may be decreased or absent. Attacks may last for a few hours or persist for several days. Recovery is usually sudden when it occurs, due to release of potassium from swollen muscles as they recover. Differentiating HPP from secondary hypokalemia is a diagnostic challenge. Some people only develop symptoms of periodic paralysis due to hyperthyroidism. This entity is distinguished with thyroid function tests, and the diagnosis is instead called thyrotoxic periodic paralysis.[2] Here, we present 1 case with history of recurrent muscle weakness who was diagnosed as hypokalemic periodic paralysis.

Case presentation

A 50-year-old hypertensive lady with recurrent history of - sudden onset of weakness of both upper and lower limbs. The patient had gone to bed at night with no weakness awoke at late night and was unable to move her upper and lower limbs. She also complaints weakness involved both the proximal and distal muscles. She had no respiratory or swallowing difficulty and was able to move her neck and fascial muscles. She denied any pain or paresthesia. Prior to this episode, the patient had been healthy and denied any recent diarrhea, chest pain, shortness of breath, or weight change. She did not take any medications and denied use of alcohol or drugs or significant changes in diet or activity levels. None of her family members had history of similar type of illness. Physical examination revealed preserved consciousness and orientation with pulse 80 beats/ min, BP- 160/105 mm of Hg, no jugular venous engorgement, goiter and lymphadenopathy. Cardiovascular system examination revealed no abnormalities and examination of lungs and abdomen were unremarkable. Neurological examination revealed flaccid paralysis of all extremities which involved the proximal and distal muscles with diminished reflexes but all sensory and the cranial nerve functions were intact. Investigations revealed normal hemogram, random blood sugar and creatinine. Serum electrolyte showed potassium level 2.16 mmol/L with urine spot potassium 10.17 mmol/L. Other serum electrolytes found to be normal. Serum osmolality was 280 mosm/ Kg. Electrocardiogram revealed LVH. Ultrasonogram of abdomen shows tiny gall bladder calculi and rest of the findings are normal, CT scan of abdomen and CT scan of brain showed normal findings. After intravenous potassium replacement, the patient's neurologic symptoms resolved completely. Blood pressure was controlled with a combination of Amlodipine and olmesartan. However, the patient has similar episodes of flaccid paralysis accompanying with hypokalemia. Further studies were carried out to determine the cause of recurrent hypokalemia. 24 hours urinary sodium and potassium, serum aldosterone and renin levels were found to be normal. Thyroid stimulating hormone (TSH), free triiodothyronine (FT3) and free thyroxine (FT4) levels were also normal. The patient was diagnosed as hypokalemic periodic paralysis.

Discussion

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In 1935 the Scottish physician Dr Mary Walker was the first to recognize the association between familial periodic paralysis and hypokalemia[3]. Familial hypokalemic paralysis (FHP) may occur sporadically. Usually, it is a rare autosomal dominant channelopathy in the form of hypokalemic periodic paralysis (HPP). Among the types of periodic paralysis associated with metabolic and electrolyte abnormalities, HPP is the most common with a prevalence of 1 in 100,000[4]. HPP is felt to be result of abnormal potassium regulation due to sodium or calcium channel abnormalities._Mutations of the CACNA1S and SCN4A genes have been identified that cause abnormalities in sodium channels resulting in abnormal potassium ion flux[5]. In patients with mutations in CACNA1S or SCN4A, therefore, the channel has a reduced excitability and signals from the central nervous system are unable to depolarize the muscle. As a result, the muscle cannot contract efficiently. The condition is hypokalemic because a low extracellular potassium ion concentration cause the muscle to repolarize to the resting potential more quickly, so even if calcium conductance does occur it cannot be sustained [6-8]. The most striking feature is the sudden onset of weakness ranging in severity from mild, transient weakness to severe disability resulting in life-threatening respiratory failure. As this is primarily a problem with muscle contraction rather than nerve conduction, tendon reflexes may be decreased or absent but sensation is generally intact. Although the serum potassium level is often alarmingly low, other electrolytes are usually normal. Indeed, total body potassium is normal with the change in the serum level reflecting a shift of potassium into cells. Electrocardiographic changes are common, but unlike patients who are truly potassium depleted, the changes do not correlate well with the measured serum level[9]. Differentiating HPP from secondary causes of hypokalemia can present a diagnostic challenge. Hypokalemia most often occurs secondary to dehydration (from chronic diarrhea, chronic laxative abuse, vomiting, or sweating), chronic kidney disease, diabetic ketoacidosis, or renal tubular acidosis[10]. The diagnosis may require an extensive search for the underlying etiology since the treatment varies according to the cause. Thyrotoxic periodic paralysis (TPP) occurs in the setting of hyperthyroidism. The clinical features are similar to those seen with other forms of HPP, but also include the symptoms of thyrotoxicosis. In patients who develop paralysis, however, the symptoms of hyperthyroidism are often quite mild and may be overlooked[11]. Rarely, HPP can result from substantial gastrointestinal or renal potassium losses. In these cases, total body potassium is depleted and requires aggressive replacement. Endocrine abnormalities such as hyperinsulinemia and primary hyperaldosteronism have been associated with HPP[12]. In our case, all the secondary causes were excluded by both clinically and the necessary investigations. In our case, it was felt in late night at awakening from sleep of which was typical for HPP. The serum potassium level of the was 2.16mmol/L and Serum potassium values less than 2.0 meq/L often suggesting secondary causes of hypokalemia[13]. The initial presentation of our cases with absent signs of secondary causes of hypokalemia, as well as the accompanying symptoms of this patient suggest HPP to be the most likely diagnosis. The recurrence of paralytic attack is also suggestive of HPP which were present in our cases. Autosomal dominant pattern of family history of our second case guided us positively to make this type of diagnosis in that patient also. In an acute paralytic attack, intravenous and oral potassium with 24-hours cardiac monitoring for rebound hyperkalemia are recommended for the management and were performed in our two patients. When a patient has persistent paralytic attacks, preventive lifestyle modifications have been suggested including avoidance of vigorous exercise and reduction in dietary carbohydrates. If lifestyle modifications are not effective, the clinician should consider adding medications. Oral potassium supplementation, acetazolamide and spironolactone have been shown to reduce frequency of attacks[14]. Our patients were described these things properly and were of our regular follow-up for further needful actions as recommendation.

Conclusion

In a patient with sudden onset of paralysis, especially those with no history or evidence of other diseases and no significant risk factors for stroke and there is recurrence of such reversible phenomenon, HPP is important to consider in initial work-up. So, high index of suspicion is necessary for making a diagnosis of HPP in an acute attack of paralysis with low serum potassium having no secondary causes of hypokalemia. In this case study, the patient presented with sudden onset of flaccid paralysis involving both sides of the body and markedly low serum potassium with normal TSH, T3 and T4 levels. The presentation was typical of HPP. The paralysis resolved completely following potassium replacement. Without proper diagnosis and treatment HPP can be fatal. Correction of potassium abnormalities can resolve the symptoms quickly and completely. Physicians should have appropriate attention to diagnose timely and manage such cases.

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