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Editorial

Unveiling the Prolonged Impact of COVID-19 on Mental Health

Syed Faheem Shams[1], Bulbul Ahmed Khan[1], Syeda Shara Chowdhury[2]

Introduction

The global healthcare landscape has witnessed a seismic shift in the wake of the COVID-19 pandemic. While the initial focus rightly centered on unraveling the physical consequences of the virus, an emerging concern spotlights the psychiatric aftermath associated with persistent COVID-19 symptoms[1]. This editorial endeavors to delve into the burgeoning realm of psychiatry concerning prolonged COVID-19, shedding light on its profound implications for both survivors and healthcare practitioners.

The Silent Battle: Mental Health Amidst the Pandemic

Beyond the acute respiratory distress caused by COVID-19, a growing cohort of survivors contends with enduring symptoms long after initial recovery. Recent research underscores a significant correlation between prolonged COVID-19 and various psychiatric disorders, including anxiety, depression, and cognitive impairment[2]. The toll on mental health transcends the immediate physical impact, posing a formidable challenge for patients striving to regain a semblance of normalcy in their lives.

The Neurological Enigma:

Prolonged COVID-19 unravels as a multifaceted adversary, with neurological symptoms occupying a central role in its manifestation. Individuals grappling with the aftermath of the virus report cognitive dysfunction, memory lapses, and concentration difficulties, reflecting a profound impact on both brain function and mental well-being[3]. Addressing the convergence of psychiatry and neurology in the context of prolonged COVID-19 necessitates a comprehensive, holistic approach to patient care that considers the interconnectedness of physical and mental dimensions.

Additional Research Findings

Post-Traumatic Stress Disorder (PTSD): Recent investigations, including a longitudinal study by Johnson et al. (2023), reveal a heightened risk of PTSD among prolonged COVID-19 survivors. This underscores the imperative for a nuanced and comprehensive mental health approach to support individuals grappling with the psychological aftermath of the virus[4]. Mood Disorders: Expanding on the research front, a study by Garcia and colleagues (2022) establishes a potential link between prolonged COVID-19 and an increased susceptibility to mood disorders. Survivors face a higher risk of developing mood disorders, underscoring the intricate interplay between physical and mental health[5].

The Stigma Surrounding Mental Health

Despite advancements in mental health awareness, stigma remains a significant impediment to seeking help, particularly in the context of prolonged COVID-19. The condition not only presents physical challenges but also amplifies societal misconceptions surrounding psychiatric disorders, emphasizing the need for concerted efforts to cultivate an environment of understanding and empathy[6]. Destigmatizing mental health issues is crucial to ensure that healthcare professionals can provide the necessary support.

The Role of Healthcare Professionals

As frontline warriors against the psychological aftermath of prolonged COVID-19, healthcare professionals must be equipped with the knowledge and resources to address the diverse array of symptoms that may manifest[7]. Interdisciplinary collaboration between psychiatrists, neurologists, and other healthcare providers is vital for a comprehensive approach to patient care. Integrating training on the psychological aspects of prolonged COVID-19 into medical education programs enhances the preparedness of future healthcare practitioners[8].

Conclusion

The enduring impact of COVID-19 on mental health is a burgeoning area of concern that demands immediate attention. The health researcher recognizes the need for sustained research, awareness, and advocacy surrounding the psychiatric consequences of prolonged COVID-19. By acknowledging the intricate interplay between physical and mental well-being, the medical community can pave the way for comprehensive and compassionate care, supporting survivors navigating the uncharted territory of post-COVID-19 life.

(J Uttara Adhunik Med Coll. 2022; 12(1) : 1-2).

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Original Article

Bacteriological Profile and Antimicrobial Susceptibility Pattern of Bacterial Isolates from Wound Infection in a Tertiary Care Hospital of Dhaka City

Farha Rahman[1], Mahfuza Nasrin[2], Ishrat Binte Reza[3], Mohammad Moniruzzaman Bhuiyan[4]

Abstract

Background and objectives: *Wound infection is the leading cause of morbidity and mortality throughout the world and also regarded as one of the most common causes of hospital acquired infections. The current study was done to isolate and identify the causative agents of wound infection and to determine the antibiotic susceptibility pattern of the isolates.*

Methodology: *This cross sectional study was carried out in the Department of Microbiology, Popular Medical College, Dhaka over a period of January 2019 to December 2019. Two wound swabs were taken from each patient. Gram stained with first sample and second sample was streaked on Blood agar and MacConkey agar media. The bacterial isolates were identified by standard microbiological techniques and antimicrobial susceptibility test was done by Kirby Bauer disc diffusion method.*

Results: *A total of 319 pus samples from wound infection suspected patients were collected in the study period of one year of which, 196 (61.44%) samples showed bacterial growth. Among these 196 bacterial isolates, the most predominant organism was* Staphylococcus aureus *(28.57%) followed by* Pseudomonas *species (27.55%),* Escherichia coli *(19.40%),* Klebsiella *species (12.75%) and* Enterobacter *species (11.73%).Higher level of sensitivity was observed with cloxacillin (94.64%) followed by gentamicin (82.14%) pertaining to* Staphylococcus aureus.*In case of* Pseudomonas *species, increased level of susceptibility was found in case of piperacillin-tazobactam 92.60%, amikacin 90.74%, meropenem and netilmicin both individually 88.89%. All the isolates of* E.coli *were susceptible to imipenem and higher level of susceptibility were seen in case of meropenem (97.37%), amikacin (94.74%), piperacillin-tazobactam (94.74%), gentamicin (89.47%) and netilmicin (89.47%).*

Conclusion: *As drug susceptibility among bacterial pathogens is changing with time and place, regular surveillance and continuous monitoring is very essential to provide physicians updated information on most effective treatment of wound infections. The choice of antibiotic in treatment should be based on the knowledge of local prevalence of causative microorganisms and their antibiogram not on universal guidelines.*

Key words: *Wound infection, Antibiotic susceptibility pattern*

(J Uttara Adhunik Med Coll. 2022; 12(1) : 3-8).

Introduction

Wound is a breach in the skin and exposure of subcutaneous tissue following loss of skin integrity. Wounds can be pathological, accidental or post-operative[1]. These wounds span from minor cuts and burns to major surgical wounds. Organisms infecting wound can originate either from the external source or from the patient's own endogenous flora[2]. The usual presentation of wound infection can be characterized by pain, tenderness, warmth, erythema, swelling and pus formation[3].

Wound infection is the leading cause of morbidity and mortality throughout the world and also regarded as one of the most common causes of hospital acquired infections. Wound infections have been reported to differ between 3 and 11% in developed countries and estimated to be as excessive as 40% in developing countries[4]. Development of such infection can cause

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delayed healing, prolonged hospital stays and anxiety for the patients and also add to the cost of the health care services significantly[1].

Pathogens responsible for causing wound infection may differ with geographical location and also differ from hospital to hospital and with various surgical procedures performed[2].Wounds can be infected by variety of microbes such as bacteria, fungi and parasites. The most common Gram positive bacteria that cause wound infections are *Staphylococcus aureus*, while the Gram negative bacteria are mainly *Pseudomonas aeruginosa* followed by *Escherichia coli*, *Klebsiella species*, *Enterobacter* species and *Proteus* species[5].

Continual use of systemic antimicrobial agents to treat wound infections provided the selective pressure that has led to the emergence of antibiotic resistant strains which in turn has driven the search for new agents. Unfortunately, the increased costs of searching for effective antimicrobial agents and decreased rate of new drug discovery has made the situation increasingly worrisome for the clinicians, microbiologists and also for the patients[6].

Hence the present study was aimed to determine the bacteriological profile of wound infections and its antimicrobial susceptibility pattern, which will be helpful in the management of wound infections and also will formulate a rational antimicrobial policy for the hospital.

Materials and Methods

A cross sectional study of pus samples were done at Microbiology Department of Popular Medical College, Dhaka from January 2019 to December 2019. A total of 319 pus samples were collected from both inpatient and outpatient Department of Popular Medical College Hospital and sent to the Microbiology Laboratory for culture and antimicrobial susceptibility testing. Two wound swabs were taken from each patient. Gram stained smear was prepared directly using the first sample and it was screened for presence of pus cells, morphology and arrangement of microorganisms. The second sample was first analyzed macroscopically for their colour and odour and then streaked on Blood agar and MacConkey agar media and incubated at 37ºC for 24 hours. The inoculated plates were examined for bacterial growth and organisms were identified by colony morphology, pigment production and hemolytic criteria.

Gram stain and different biochemical tests like catalase and coagulase tests for Gram positive isolates and in case of Gram negative isolates series of biochemical tests like indole, citrate, urease, catalase, oxidase, triple sugar iron, H_2S production was performed[7]. Antimicrobial susceptibility tests were done by using Kirby Bauer disc diffusion method and susceptibility patterns were determined following Clinical and Laboratory Standards Institute (CLSI) guidelines[8]. All the media and antibiotic discs were procured from Oxoid Ltd, UK.

Quality control:

Reference strains of *Escherichia coli* (ATCC 25922), *Pseudomonas aeruginosa* (ATCC 27853) and *Staphylococcus aureus* (ATCC 25923) were used as a control reference strains for identification and drug susceptibility testing. Quality control for media was done by randomly taking the prepared culture media and incubating over night to see for any growth. In this study isolates of *Staphylococcus aureus* were further tested for methicillin resistance according to the CLSI guidelines by using cefoxitin disc.

Results

A total of 319 pus samples from wound infection suspected patients were collected in the study period of one year of which, 196 (61.44%) samples showed bacterial growth and 123 (38.56%) samples showed no bacterial growth (Figure 1).

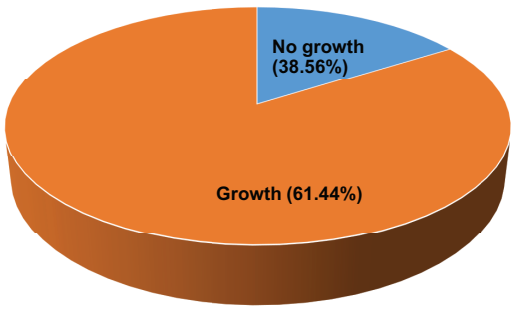

Figure 1: Rate of isolation of organisms from pus samples (n=319)

Among bacterial growth samples (n=196), the most predominant organism was *Staphylococcus aureus* (28.57%) followed by *Pseudomonas* species (27.55%), *Escherichia coli* (19.40%), *Klebsiella* species (12.75%) and *Enterobacter* species (11.73%). In comparison to Gram positive isolates the Gram negative isolates were predominant in this study (Figure 2).

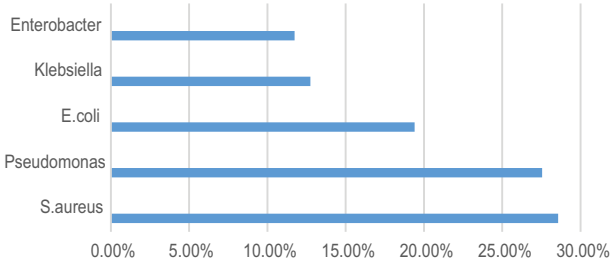

Figure 2: Distribution of bacteria in culture positive pus samples (n=196)

Antimicrobial susceptibility pattern of *Staphylococcus aureus* was shown in Table-I. In case of *Staphylococcus aureus* higher level of sensitivity was observed in case of cloxacillin(94.64%) followed by gentamicin (82.14%). In case of co-trimoxazole, erythromycin and ciprofloxacin 69.64%, 60.71% and 57.14% sensitivity was found respectively.

Table I

Antimicrobial susceptibility pattern of S.aureus isolates (n=56)

Antimicrobial Agents	*Staphylococcus aureus* (n=56)
Penicillin	18 (32.14%)
Cloxacillin	53 (94.64%)
Gentamicin	46 (82.14%)
Azithromycin	25 (44.64%)
Erythromycin	34 (60.71%)
Ciprofloxacin	32 (57.14%)
Co-trimoxazole	39 (69.64%)

In case of *Pseudomonas* species, increased level of susceptibility was found in case of piperacillin-tazobactam(92.60%), amikacin(90.74%), meropenem and netilmicin both individually (88.89%), gentamicin (79.63%), ciprofloxacin and levofloxacin both individually (77.78%).

All the isolates of *E.coli* were susceptible to imipenem. In case of *E.coli*, higher level of susceptibility was seen in case of meropenem (97.37%),amikacin (94.74%), piperacillin-tazobactam (94.74%), gentamicin (89.47%) and netilmicin (89.47%). All the isolates of *Klebsiella* species were sensitive to piperacillin-tazobactam, imipenem, meropenem, gentamicin, amikacin, netilmicin and levofloxacin. In case of *Enterobacter* species all the isolates were susceptible to piperacillin-tazobactam, imipenem, meropenem, amikacin and netilmicin (Table-III).

Table II

Antimicrobial susceptibility pattern of Pseudomonas species (n=54)

Antimicrobial Agents	*Pseudomonas* species (n=54)
Piperacillin-tazobactam	50 (92.60%)
Ceftazidime	41 (75.93%)
Cefepime	41 (75.93%)
Aztreonam	37 (68.52%)
Imipenem	41 (75.93%)
Meropenem	48 (88.89%)
Gentamicin	43 (79.63%)
Amikacin	49 (90.74%)
Netilmicin	48 (88.89%)
Ciprofloxacin	42 (77.78%)
Levofloxacin	42 (77.78%)

Table III

Antimicrobial susceptibility pattern of Enterobacteriaceae isolates (n=86)

Antimicrobial Agents	*Escherichia coli* (n=38)	*Klebsiella* spp. (n=25)	*Enterobacter* spp. (n=23)
Amoxicillin-clavulanate	23 (60.53%)	19 (76.00%)	-
Piperacillin-tazobactam	36 (94.74%)	25 (100)	23 (100%)
Cefuroxime	26 (68.42%)	21 (84.00%)	22 (95.65%)
Cefixime	27 (71.05%)	20 (80.00%)	17 (73.91%)
Ceftazidime	29 (76.31%)	24 (96.00%)	20 (86.96%)
Ceftriaxone	28 (73.68%)	22 (88.00%)	22 (95.65%)
Cefepime	30 (78.95%)	24 (96.00%)	22 (95.65%)
Aztreonam	29 (76.31%)	22 (88.00%)	22 (95.65%)
Imipenem	38 (100%)	25 (100%)	23 (100%)
Meropenem	37 (97.37%)	25 (100%)	23 (100%)
Gentamicin	34 (89.47%)	25 (100%)	20 (86.96%)
Amikacin	36 (94.74%)	25 (100%)	23 (100%)
Netilmicin	34 (89.47%)	25 (100%)	23 (100%)
Ciprofloxacin	27 (71.05%)	22 (88.00%)	22 (95.65%)
Levofloxacin	27 (71.05%)	25 (100%)	22 (95.65%)
Co-trimoxazole	23 (60.53%)	19 (76.00%)	20 (86.96%)

Discussion

Despite the application of the basic principles in wound care, a number of patients develop infections that require proper identification of the organisms for appropriate management. A changing pattern of isolated organism and their antimicrobial sensitivity which varies from hospital to hospital is a usual feature. Development and spread of antibiotic resistance can be controlled by appropriate antimicrobial use, strict infection control and continued surveillance[9].

In present study, total 319 pus samples were collected among which 196 (61.44%) showed bacterial growth, whereas 123 (38.56%) showed no bacterial growth (Fig. 1). Similar rate of isolation of bacteria was reported in two studies done in Nepal respectively by Pant et al., (60.3%) and Rai et al., (59%)[5,10]. In contrary to our finding, astudy done in India by Bhumbla and Bishnoi observed increased rate of isolation where the percentage was 81.3%[11]. The reason behind the low percentage in current study might be due to prior antibiotic therapy taken by the patients before submitting the samples.

In current study, among 196 bacterial isolates 71.43% isolates were Gram negative whereas 28.57% isolates were Gram positive. Like present study, a study done in Bangladesh by Jobayer et al., also observed increased percentage of Gram negative bacteria (86.4%) in comparison to Gram positive bacteria[9]. Isolation of Gram negative bacteria in the present study was higher as they are more common aerobes and facultative anaerobes in abscesses and skin wound. In hospital acquired infections, Gram negative bacteria are more and the reason might be due to increased level of resistance towards antimicrobials showed by them compared to Gram positive bacteria and therefore they persist in infected wounds[12]. In perverse to present study, Gram positive bacteria was predominant in a study done in Nepal by Duwadi et al., where the percentage was 63.9%[13].

In this study, five different bacterial species were isolated where *Staphylococcus aureus* was the predominant organism 56 (28.57%) followed by *Pseudomonas* species 54 (27.55%), *Escherichia coli*38 (19.40%), *Klebsiella* species 25 (12.75%) and *Enterobacter* species 23 (11.73%) (Fig. 2). Similar study done by Mama et al., also found *Staphylococcus aureus* as a predominant organism (32.4%) like present study[6]. Various studies done in different countries like Tanzania, Nepaland Pakistan also observed *Staphylococcus aureus* as a most prevalent organism[4,5,14]. The reason behind the high prevalence of *Staphylococcus aureus* might be due to the organism is an endogenous source of infection. Infection with this organism might also be due to contamination from the environment and with the disruption of natural skin barrier *Staphylococcus aureus*, which is a common bacteria on the surface easily find their way into the wounds[6]. Like present study two studies done in Bangladesh and Pakistan also observed *Pseudomonas* species the second most prevalent organism[2,14]. *Pseudomonas* produces both cell associated and extracellular virulence factors that mediate a number of processes including adhesion, leucocyte killing, tissue destruction, immune system evasion and blood stream invasion that makes it an efficient agent for burn wound infection[9]. Unlike current study a study done in Ethiopia by Misha et al., found *Escherichia coli* the predominant organism[15].

In present study, 94.64%, 82.14% and 60.71% isolates of *Staphylococcus aureus* were respectively sensitive to cloxacillin, gentamicin and erythromycin (Table-I). In agreement with our study similar rate of isolation was observed in a study done by Azene and Beyenewhere the percentage of sensitivity in case of cloxacillin, gentamicin and erythromycin was 89.7%, 87.6% and 65.5% respectively[16]. Another study done in Tanzania also observed similar rate of susceptibility in case of gentamicin which was 82.6%[4]. Like current study, in case of ciprofloxacin similar rate of sensitivity (57.14%) was observed in a study done in Nepal where the rate of susceptibility was 53.8%[5]. In contrast to our study,in case of *Staphylococcus aureus*lower level of sensitivity was observed in a study done in India where the rate of susceptibility in case of cloxacillin, ciprofloxacin and co-trimoxazole were32%, 37% and 31% respectively[1]. Remarkable susceptibility of cloxacillin and gentamicin in present study might be due to lesser use of these drugs as a result of their less availability, cost and toxic effect[6].

In this study in case of *Pseudomonas* species, increased level of susceptibility was found in case ofpiperacillin-tazobactam(92.60%) followed byamikacin(90.74%), meropenem and netilmicinboth individually (88.89%), gentamicin (79.63%), ciprofloxacin and levofloxacin both individually (77.78%), ceftazidime and cefepime both individually (75.93%) (Table-II). Like present study in case of *Pseudomonas* species increased level of susceptibility was observed in a study done in China by Guan et al., where the susceptibility rate in case

ofceftazidimewas (95.5%), cefepime(93.9%), piperacillin(90.9%), amikacin(90.9%), gentamicin (87.9%), meropenem(86.4%), ciprofloxacin (86.4%), levofloxacin (84.8%), imipenem(77.3%) and aztreonam(75.8%)[17]. In contrast to our finding a study done in India observed lower rate of susceptibility in case of piperacillin-tazobactam, ceftazidime, amikacin and levofloxacin[1]. Increased susceptibility in current study might be due to lesser use of these drugs in the hospital.

All the isolates of *E.coli* were susceptible to imipenem. In case of *E.coli*, higher level of susceptibility was seen in case of meropenem (97.37%), amikacin (94.74%), piperacillin-tazobactam (94.74%), gentamicin (89.47%) and netilmicin(89.47%). All the isolates of *Klebsiella* species were sensitive to piperacillin-tazobactam, imipenem, meropenem, gentamicin, amikacin, netilmicin and levofloxacin. In case of *Enterobacter*species all the isolates were susceptible to piperacillin-tazobactam, imipenem, meropenem, amikacin and netilmicin (Table-III). A study done in China where*E.coli* observed 73.9%, 75.4%, 82.6%, 59.4%, 84.1%, 85.5%, 98.6%, 100%, 73.9%, 100% susceptibility in case of piperacillin, cefuroxime, ceftazidime, ceftriaxone, cefepime, aztreonam, imipenem, meropenem, gentamicin, amikacin respectively. In case of *Klebsiella* species observed 90%, 80%, 85%, 70%, 95%, 87.5%, 95%, 95%, 70%, 100% susceptibility in case of piperacillin, cefuroxime, ceftazidime, ceftriaxone, cefepime, aztreonam, imipenem, meropenem, gentamicin, amikacin respectively. In case of *Enterobacter* species observed 84.2%, 68.4%, 78.9%, 73.7%, 84.2%, 78.9%, 100%, 94.7%, 89.5%, 100% susceptibility in case of piperacillin, cefuroxime, ceftazidime, ceftriaxone, cefepime, aztreonam, imipenem, meropenem, gentamicin, amikacin respectively[17].

Conclusion

As drug susceptibility among bacterial pathogens is changing with time and place, regular surveillance and continuous monitoring is very essential to provide physicians updated information on most effective treatment of wound infections.The choice of antibiotic in treatment should be based on the knowledge of local prevalence of causative microorganisms and their antibiogram not on universal guidelines.

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Original Article

Waist Hip Ratio as a Tool for Chronic Conditions among the Adolescents

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Abstract

Background: *Bangladesh has witnessed an increase in the prevalence of obesity and overweight in line with the global trend and they remain worryingly high. It is well known that overweight in adolescence is associated with overweight or obesity in adulthood, and there is a higher probability that such individuals will remain overweight, with the accompanying risk of chronic conditions.*

Objective: *The study was done with a view to predict chronic disease conditions among the adolescents by using Waist circumference (WC), hip circumference (HC) and waist-to-hip ratio (WHR) potentially useful parameters to identify the risk of comorbidity.*

Materials and Methods: *A cross-sectional study was conducted among 353 adolescents aged 10-19 years of Dhaka city to find out the risk of comorbidity among them for a period of 6 months from April 2023 to September 2023. The areas screened were Uttara, Mirpur, Tejgaon and Mohakhali area who were willing to take part in the study. Data was collected by a structured research instrument, different anthropometric measurements were undertaken. Detailed analysis was performed by using SPSS software.*

Results: *Majority respondents (75.4%) were between the age group of 15-19 years and about half of them (52.7%) were females, 96.3% were Muslims, 46.5% completed matriculation, >2/3rd belongs to nuclear family, little above than half (53.3%) had income of 0.5-1 lac taka. Women had significantly lower mean height, weight, WC, HC, WHR and BMI than the men (P=0.000). High risk group for comorbidity of the male and female were 18.6% & 42.5% respectively. Correlations between height & weight, hip and waist circumference, gender and waist circumference, waist hip ratio & waist circumference were r = 0.593, 0.858, 0.184, 0.504, respectively (p<0.01).*

Conclusion: *The risk of comorbidity of adolescent should be considered as a public health problem. WHR can provide important information about an individual's health status. The present study showed the chances of chronic diseases among the adolescents. Regular screening, surveillance and orderly health campaigns, linked with Lifestyle modification will contribute to the prevention and control of lifelong chronic health liabilities.*

Key words: *Waist Hip ratio (WHR), Adolescent, Risk of comorbidity.*

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Introduction

The World Health Organization (WHO) defines adolescence as the period in human growth and development that occurs after childhood and before adult-hood, from ages 10 to19.[1] Adolescence is a crucial part of life. During this period, adolescents gain up to 50% of their adult weight, 20% or more adult height and 50% of their adult skeletal mass.[2] About 1200 million adolescents in the world's and about 19% of the total population faces a series of serious nutritional challenges in developing country.[3]

The waist-to-height ratio (WHtR), calculated by dividing WC by height, has recently gained attention as an anthropometric index for measuring central adiposity. WHtR is a more sensitive universal screening tool than BMI to detect health risks and is cheaper and

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easier to use.[4,5] Waist-to-hip ratio (WHR) may be more accurate than body mass index (BMI) in predicting serious health outcomes like cancer, heart disease, and death, a new study finds. The main limitation with BMI is that it doesn't differentiate between muscle and fat, making it less useful for those with large amounts of muscle mass. BMI doesn't take into account body composition, and also tends to exaggerate thinness in short people and fatness in tall people.[6]

WC, HC and WHR are potentially useful parameters to identify the risk of comorbidity among the adolescents. WHR can classify body types into two main categories: Apple and pear. Apple shaped body type is more common among men and is caused by abdominal obesity. Women usually accumulate fat around the hip and the thighs to develop a pear-shaped body type.[7] Apple shaped fat distribution is considered more dangerous than Pear shaped fat distribution because of the accumulation of fat in the deep abdominal area around the visceral organs. This hidden fat can lead to development of metabolic disorder, diabetes type II and increases cardiovascular risk. If the waist circumference in women is >80 cm and in man is >94 cm, it may lead to development of insulin resistance and arterial hypertension. Increased hip circumference is associated with increased hip subcutaneous fat, gluteal muscle and total leg muscle mass.[8]

A high WHR is associated with an increased risk of chronic diseases such as diabetes, cardiovascular disease, and some cancers.[9] A WHR of >0.90 for men and >0.85 for women indicates an excess of abdominal fat and an increased risk of chronic diseases.[10] Among the Waist Circumference- the high-risk waist circumferences are- for men >102 cm and for women >88 cm. By measuring the Waist to hip ratio, the predominant dispersion of fat in a fatty person in lower or upper part may reveal the disease pattern.[11]

Assessing the risk of comorbidity by measuring the WHR can provide important information about an individual's health status. However, it is important to note that these measures have limitations and should not be the sole determinants of an individual's risk of comorbidity. Other factors such as diet, physical activity, and medical history should also be considered when assessing the risk of comorbidity among adolescents.

Materials and Methods:

A cross-sectional study was conducted among 353 adolescents aged 10-19 years of Dhaka city to find out the nutritional status related to future chronic health conditions. The study was conducted in Uttara, Mirpur, Tejgaon and Mohakhali area during the period of April to September, 2023. The data were collected purposively by face-to-face interview after taking consent from the participants. Waist circumference was measured at the approximate midpoint between the lower margin of the last palpable rib and the top of the iliac crest. The cut off points of the waist circumference were taken as WC >90 cm for men and >85 cm for women were consider to have increased risk of metabolic complications and the WC >102 cm for men and >88 cm for women were consider to have substantially increased risk of metabolic complications. Hip circumference was measured around the widest portion of the buttocks with the help of measuring tape. WHR was calculated by dividing the waist circumference with hip circumference. According to WHO expert committee, WHR should be >0.90 in male and >0.85 in female. These values were taken as cut off points above which were correlated with increased risk of metabolic complication.[1] Height is measured using a stadiometer and weight is measured using a calibrated scale. The participants were asked to remove their shoes, any heavy clothing or accessories, and stand straight with their feet together on the stadiometer and the scale. The measurement is recorded in centimeters (cm) for height and kilograms (kg) for weight. The collected data were processed, compiled and analyzed by computer using SPSS (Statistical Package for Social Science) version 22.0. The results were expressed in descriptive statistics as frequency, percentage, mean and standard deviation. Crosstab, Correlation and regression techniques were used as needed. Univariable linear regression was conducted to explore the association between predictors and health status parameters of the participants.

Results:

The study was carried out to identify the risk of comorbidity among the adolescents of selected area of Dhaka city by using height, weight, waist circumference, hip circumference, BMI, waist hip ratio

(WHR). About three-fourth of the respondents (75.4%) were between the age group of 15-19 years and about half of them (52.7%) were females. Nearly 96.3% of the respondents were Muslims and 46.5% were educated up to SSC. More than two third of the respondent belongs to nuclear family. A little above than half (53.3%) had income of 50000 to 100000 Tk, 27.5% had <50000 Tk and 19.3% had >100000 Taka. The living status of the respondents showed that about 91% were living with their parents, 7% with siblings and 2% with their relatives.

Summary of the continuous variables shows mean age of the students was 15.92±2.28 years, height 1.59±0.11m, weight 55.20±10.86kg, hip circumference 88.17±10.95 cm, waist circumference 75.17±10.82 cm, WHR of 0.85±0.06, BMI 21.94±3.56 kg/m^2. Women had significantly lower mean height (P=0.000), weight (P=0.000), waist circumference (P=0.001), hip circumference (P=0.001), WHR (P=0.005) and BMI (P=0.000) than the men. Age was not significant (P=0.438).

On the basis of WHR, high risk group for comorbidity of the male and female were 18.6% & 42.5% respectively.

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Table-I

Distribution of respondents according to their socio-demographic characteristics. (n=353)

Variables	Frequency	Percentage
Age		
10-14	87	24.6
15-19	266	75.4
Gender		
Female	186	52.7
Male	167	47.3
Religion		
Muslim	340	96.3
Hindu	10	2.8
Christianity	3	0.8
Education		
Illiterate	3	0.8
Primary	87	24.6
SSC	164	46.5
HSC	99	28.1
Type of family		
Nuclear	275	77.9
Joint	74	21
Extended	4	1.1
Total Family Income (Tk)		
<50000	97	27.5
50000-100000	188	53.3
>100000	68	19.3
Living Status		
Parents	321	91.0
Relatives	7	2.0
Siblings	25	7.0

Table-II

Cross tabs between variables with significance. (n=353)

Variable	All	Male	Female	P-value
Age (yrs)	15.92±2.28	16.09±2.38	15.77±2.17	0.438
Height (m)	1.59±0.11	1.63±0.11	1.55±0.10	0.000
Weight (kg)	55.20±10.86	59.02±11.73	51.77±8.69	0.000
WC (cm)	75.17±10.82	77.28±10.56	73.29±10.73	0.001
HC (cm)	88.17±10.95	88.84±10.40	87.57±11.41	0.001
WHR	0.85±0.06	0.86±0.05	0.83±0.06	0.005
BMI	21.94±3.56	22.32±3.60	21.60±3.50	0.000

Table-III

Risk of comorbidity on the basis of WHR

Type of comorbidity		Frequency	Percentage (%)
Female (n=186)	Low risk comorbidity	107	57.5
	High risk comorbidity	79	42.5
Male (n=167)	Low risk comorbidity	136	81.4
	High risk comorbidity	31	18.6

Weight and height of the sample population was positively correlated (Pearson correlation 0.593, P=0.000) and so was waist and hip circumference (Pearson correlation 0.858, P=0.000). The results of the anthropometric measurements (WHR, WC, HC, weight, Height) were analyzed further in regard to their correlation to sex, age and other studied parameters. HC & WC were highly correlated (r=0.86, P<0.001). WHR & WC were strongly correlated as well (r=0.50, P<0.001). Linear regression was performed between variables; Gender and WHR (female) was highly significant, F=14.30, P=0.000; although prediction proportion was low R^2=0.03. Gender and male WHR was not significant though.

Discussion

WHO supports the rising trends of obesity as imminent global threat and rapidly growing public health problems.[12] Prospective studies show unequivocally that being obese at the age of 15–17 years is associated with a 17.5 times higher risk of obesity in adulthood.[13] WHO classifies abdominal obesity in men as having a waist-to-hip ratio of at least 0.90, for women the ratio is 0.85 or higher. A ratio greater than 1.0 for either sex indicates a significantly increased risk of health complications. A 2015 study of almost 15,000 individuals discovered that participants with a normal BMI but an elevated WHR were at a higher risk of premature death.[14]

The researchers estimate that a waist-to-hip ratio cut-off of 0.83 for women and 0.9 for men would result in a 3-fold increase (OR 2.52, 95% CI: 2.31–2.74) in population attributable risk for myocardial infarction, especially in Asia. This is particularly important in regions such as Asia, which have not had significant problems with obesity as measured by BMI but would have considerably greater cardiovascular risk if waist-to-hip ratio was used. Furthermore, unlike that for BMI, this association was evident across all world regions.[15] The present study results showed highly significant gender differences of their WHR (male-0.86±0.05, female 0.83±0.06, P=0.005); high risk comorbidity being 42.5% and 18.6% respectively.

Waist circumference was also more strongly related to myocardial infarction risk than BMI (OR 1.77, 95% CI 1.59– 1.97). Among Chinese and black African people it was the strongest predictor of myocardial infarction.[16] The said variable in our study revealed strong association of 75.17±10.82, P=0.001; indicating a worse consequence prediction for condition like Myocardial infarction. According to our study findings, the waist measurement of the female respondents had 91.4% and 8.6% risk of comorbidity high vs low). The WHR of the female respondents showed that majority of the respondent's 57.5% had low risk comorbidity and the rest 42.5% had high risk comorbidity. Many investigators advocated that WC as well as WHR have strongest relationship with the elevation of blood pressures especially in females. About 98.8% of the male respondents had low risk of comorbidity and the rest 1.2% had high risk of comorbidity for their waist circumference.[17] According to the WHR of the male respondent's our study findings showed that, majority 81.4% had low risk comorbidity and the rest 18.6% had high risk comorbidity. Waist Hip Ratio (WHR) is suggested and further evaluated in terms of fat distribution. WHR is an indicator for abdominal adiposity. Studies have indicated that BMI and WHR could be used independently to identify Overweight and Obesity.[18]

BMI and waist to hip ratio are among the most popular methods to measure obesity due to their simplicity, ease of execution and low cost.[19] Waist-to-hip ratio (WHR), have been shown to be superior to BMI in their association with disease or mortality risk in observational studies.[20] According to a meta analysis by Lee et al. which included more than 88,000 adults mainly from Asian countries, WHR was the best discriminator for hypertension, diabetes, and dyslipidemia in both sexes, whereas BMI was the poorest discriminator for cardiovascular risk factors.[21] Our study also revealed that WHR could be better predicted than BMI (R^2=0.91 vs 0.82); accumulative of the independent variables (height, weight, WC & HC), the regression model could predict >90% of the dependent variable (WHR); $F_{4,348}$=889.52, P=0.000. The independents variables also showed a very significant relationship with WHR i.e. height, weight, WC & HC (P<0.001). The independents variables also produced very significant prediction for BMI (R^2=0.82, $F_{4,348}$=400.73, P=0.000.)

Overall, using Waist-hip ratio provides a more comprehensive assessment of an individual's nutritional status and can help to identify those at risk of chronic diseases related to obesity. Obesity is

a rapidly emerging concern in most of the countries today. There is also a dual burden of over-nutrition and under-nutrition in these countries.[22] The prevalence of overweight and obesity has increased slightly over the past decade in India and it has reached a relatively high level in the urban and high socio-economic groups.[23] One of the most significant effects of being overweight or obese is an increased risk for a range of chronic diseases. These include type 2 diabetes, cardiovascular disease, hypertension, stroke, certain cancers, and respiratory problems. Overweight and obesity can also contribute to joint problems, such as osteoarthritis, and can increase the risk of developing sleep apnea and other respiratory conditions[24].

Our study findings suggests that WHR can evaluate the risk of comorbidity of individuals easily, so every adolescent should get their WHR measured that may help to maintain better health and prevention of obesity related diseases.

Conclusion:

The male participants of this study had a higher prevalence of overweight. The results can be considered useful as they describe anthropometric parameters and markers of early onset of metabolic and cardiovascular diseases in a group of teenagers that has not been thoroughly studied. Nationwide large group survey and experimental researches with policies and programs dedicated to lifestyle modification can help alleviate the damaging health conditions. WHR can be used as an appropriate predictor and screening tool to foresee metabolic consequences like hypertension, diabetes mellitus, coronary heart disease, obesity, cancer, indicating the importance of excess weight among adolescents. Public health approach on this matter can be used to prevent lifelong alarming morbidity.

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Original Article

Post-Tonsillectomy Hemorrhage at Uttara Adhunik Medical College Hospital

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Abstract

Background: *Tonsillectomy is one of the commonest operation carried out throughout the world. Most significant complications after tonsillectomy is post-operative hemorrhage. Episodes of post tonsillectomy hemorrhage are unpredictable and sometimes life threatening. The aim of the study is to find out the incidence of Reactionary hemorrhage and Secondary hemorrhage following tonsillectomy.*

Materials and Method: *A cross sectional study was conducted among 1150 Patients, at ENT and Head-Neck Surgery Department Uttara Adhunik Medical College Hospital, Uttara, Dhaka, Bangladesh, for the period of last five years from January 2018 to December 2022, Post-operative hemorrhage after tonsillectomy done by Bi-polar Diathermy and cold steel technique, to evaluate the incidence of Post Tonsillectomy hemorrhage.*

Results: *Postoperative hemorrhage occurred in 57 (4.9%) out of 1150 patients. According to operation technique post-tonsillectomy hemorrhage was higher among patients who underwent bipolar diathermy compared to cold dissection technique. Incidence of reactionary hemorrhage was (1.9%) and secondary hemorrhage was (3%) respectively.*

Conclusion: *Commonest complication of tonsillectomy is Hemorrhage, which may occur in few occasions and more common in male patients. Conversely, it was able to show that incidence of hemorrhage after tonsillectomy can be avoided by proper hemostasis technique and proper instruction to the patient after operation. Our findings indicate that tonsillectomy is a safe procedure and can be performed as day case surgery if the patients are carefully selected for operation.*

Keywords: *Hemorrhage, Tonsillectomy.*

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Introduction

Tonsillectomy is one of the most common ambulatory surgeries[1]. The concept of implementing it as a day case operation has become increasingly popular. In addition to surgical procedures performed by steel knife or guillotine, the so-called 'cold method', some new techniques, known as 'hot technique' have been developed and include electrocautery, harmonic scalpel, bipolar diathermy dissection, radiofrequency and coblation. Hot techniques have improved the outcome of tonsillectomy, including achieving lower intraoperative blood loss, shorter operation time and lower postoperative pain[2,5]. Hemostasis is achieved using ligatures, diathermy or coagulation of the bleeding vessels. In spite of these new techniques, however, a number of postoperative complications have been documented, most common and potentially life-threatening of which is Post-tonsillectomy hemorrhage (PTH). Post-tonsillectomy hemorrhage (PTH) is one of the most serious complications that may occur at any time in the postoperative period. PTH is termed into primary and secondary (24 hours after surgery). About 0.2% to 2.2% and 0.1% to 3.3% of patients experience primary and secondary PTH, respectively. Patients might be hospitalized to control PTH or surgery[3,4,8]. Therefore, identifying patients who need surgical treatment is more important to ensure timely and proper management considering that it is an elective procedure, it is often connected with a

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comparatively high bleeding rate. Reactionary hemorrhage after tonsillectomy is not uncommon, occurring in about 0.5-1% of operations[6,7]. Reactionary hemorrhage is hemorrhage within 24 hours after surgery and is usually caused by dislodgement of clot, after resuscitation from general anesthesia, normalization of blood pressure and vasodilatation. Reactionary hemorrhage may also result from technical failure such as slippage of ligature. Most significant immediate complication of tonsillectomy is reactionary hemorrhage. By definition this occurs up to 24 hours postoperatively, but the vast majority of reactionary hemorrhage occurs within the first eight hours. Secondary hemorrhage is caused by sloughing of the wall of a vessel. It usually occurs 7-14 days after surgery and is precipitated by factors such as infection, pressure necrosis or Malignancy. Incidence of Hemorrhage varies according to technique, using cold steel technique or bipolar diathermy technique for tonsillectomy, use of postoperative antibiotics not significantly affects the incidence of hemorrhage. Routine prescription of antibiotics to prevent secondary hemorrhage is probably not useful. In this study we tried to find out the incidence of reactionary and secondary hemorrhage after tonsillectomy. Multiple studies recommend using cold techniquesInstead of hot instruments due to the increased risk of postoperative hemorrhage related to hot techniques[914]. This study reported 1150 cases undergoing tonsillectomy, Tonsillectomy was done by bipolar diathermy technique and cold steel dissection technique to evaluate the incidence of this hemorrhage and to identify the possible risk factors associated with its occurrence. PTB is most common in bipolar diathermy technique than cold steel dissection technique, and among adults, predominantly in male and most of the patients are between 21-30 age group.

Materials and Methods

It is a cross sectional study, done at Uttara Adhunik Medical College Hospital, Uttara, and Dhaka, Bangladesh. Period of study was five years from January 2018 to December 2022. Aim and objectives of this study are to assess the incidence of reactionary and secondary hemorrhage after tonsillectomy operation. Technique of tonsillectomy was bipolar diathermy and Cold steel dissection technique under general anesthesia. Among 1150 patients, 910 patients (79%) of them done by bipolar diathermy technique, and 240 patients (79%) by cold dissection technique. Methods of sampling done by Patients who underwent tonsillectomy for different indications and evaluated properly by detailed history taking, clinical examinations and relevant investigations. Post operatively every patients was treated with analgesic (diclofenac sodium paracetamol), antibiotics (amoxicillin with Clavulanic acid or Cefuroxime) and hydrogen peroxide mouth wash in both techniques.

Results

Postoperative hemorrhage occurred in 57 (4.9%) out of 1150 patients. According to operation technique post-tonsillectomy hemorrhage was higher among patients who underwent bipolar diathermy than cold dissection technique. Incidence of reactionary hemorrhage was (1.9%) and secondary hemorrhage was (3%) respectively. Three patients of Reactionary hemorrhage were returned to theatre for arrest of hemorrhage under general anesthesia within 24 hours of operation and ten patients of secondary hemorrhage had to return to operation theatre to secure hemostasis under general anesthesia. Use of post-operative antibiotics did not play significant effect on incidence of hemorrhage. There was no mortality in this study. Post-operative follow up was done till the tonsillar fossa healed completely.

Table I

Age distribution of Patients underwent tonsillectomy (N=1150).

Age group	Number of Cases	Percentages (%)
0-10	112	9.7
11-20	350	30
21-30	520	45.2
31-40	160	13.9
41-50	5	0.4
51-60	3	0.2

In this table mean age was 22.21 years. Maximum age group 45% was of 21 to 30 years. Next to that 30% were of in the age group 11-20 years. Among the patients, the age of the youngest was 3 years and oldest one was 59.

Table II

Indications of Tonsillectomy (N =1150)

Diagnosis	Number of Patents	Percentage (%)
Chronic tonsillitis & Recurrent Tonsillitis	910	80%
Pressure symptoms (Dysphagia/ sleep disturbance)	170	14%
CSOM, OME where tonsil was thought to be cause of Disease	58	5%
H/O Quinsy	12	1%
Total	1150	100%

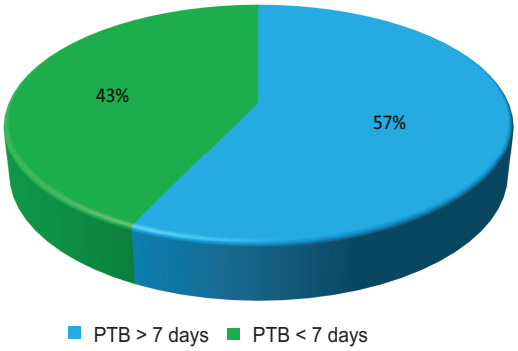
Table III

Incidence of Post Tonsillectomy Hemorrhage.

Variables	Technique (Bipolar Diathermy)	Technique (Cold Steel Dissection)	Incidence of Hemorrhage
Reactionary Hemorrhage	(910) 19(2.1%)	(240) 3(1.25%)	22(1.91%)
Secondary Hemorrhage	29 (3.18%)	6 (2.5%)	35(3%)
Total Number of Hemorrhage	48	9	57

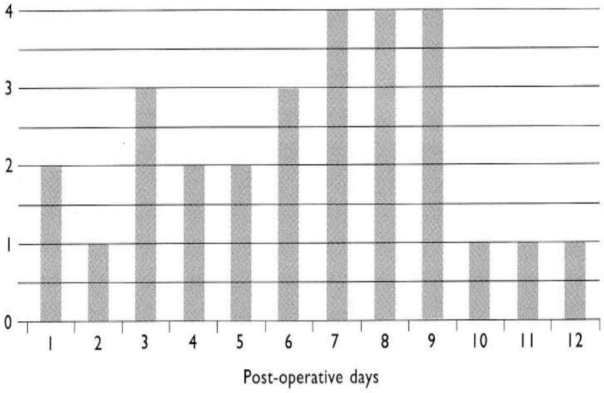
Post-tonsillectomy hemorrhage according to operation technique was significantly higher among patients who underwent the bipolar diathermy 46 out of 910 compared to cold dissection technique in which 9 out of 240. On the other hand, there were no statistically significant differences in age groups, other illness, vital signs and sites of bleeding according to patients' operation technique.

Out of 1150 patients, 755 (65.6%) were males and 395 (34.4%) were female patients for tonsillectomy during this period of time, 56 patients were treated in our center with post tonsillectomy hemorrhage (PTH). However, seven patients had their tonsillectomy in another hospital and hence were excluded from the study. Only 12 children with PTH were included among all the pediatric tonsillectomies. Average time interval between the tonsillectomy and the incidence of secondary bleeding was 7.7 days However; the range of days was 2 - 15 days' post tonsillectomy. No patient came with PTB beyond the 16th day.



*Post tonsillectomy hemorrhage patients in relation to Duration.

Nonetheless, (3.9%) of the patients who had their PTB were managed conservatively. Only (1%) out of the total tonsillectomy patients (1150) needed taken back to the operating room for bleeding control who had their PTB Within the first 7 days after tonsillectomy. None of the patients required any extensive interventions like angioplasty or neck exploration for bleeding control.



*Post tonsillectomy hemorrhage in relation to post-operative days.

Post Tonsillectomy hemorrhage on day six, eight and nine: required bleeding control under general anesthesia, due to profuse blood loss. In each incident, they were readmitted, kept on IV fluid, IV antibiotic, tranexamic acid in their recurrent bleeding episodes. However, four patients of the PTB (0.5%) needed blood transfusion due to significant blood loss. Moreover, there was no death reported in this study.

Table IV
Post Tonsillectomy Complications.

Hemorrhage:	Number of patients	Percentage (%)
Reactionary hemorrhage	22	(1.9%)
Secondary hemorrhage	35	(3%)
Local Infection In tonsillar bed	06	(0.6%)
Operative trauma to tooth, lip, tongue, posterior pillar of tonsil	04	(0.4%)

Complications that encountered after tonsillectomy operation were Hemorrhage both reactionary and secondary, 1.9% and 3% Respectively, Operative local trauma in 0.4% cases and local Infection in of tonsillar bed in 0. 6% cases.

Discussion

Tonsillectomy-related morbidity and mortality are sources of Potential malpractice claims in the field of otolaryngology. The previously reported clinical risk factors for post-tonsillectomy hemorrhage included age, sex, surgical technique and device, surgeon's skill level, and tonsillectomy indication[15-18]. One of the most significant complications is post-operative hemorrhage. Other complications like tonsillar bed infection & trauma to tooth, lips, tongue, palate and post pharyngeal wall may occur in a significant number of cases. Patient's age play as a significant risk factor for PTB[19,20,21], Tomkinson reported that patients older than 12 years had a 3-fold higher likelihood of severe post-tonsillectomy hemorrhage, and this finding was agreed with our study results which indicate that most of the patients with post-tonsillectomy hemorrhage were in older than 20 years. This is probably related to the fact that older than 20 years patients, who were the majority of the bleeder group in our study. Hemorrhage after tonsillectomy more common in male patients. Several studies have shown male patients as being at a greater risk of postoperative bleeding, although other studies have not found a significant difference between male and female risk[22,23]. In our study, males aged ≤15 years had a higher risk for secondary hemorrhage than females in the same age group. However, in patients older than 15 years, there seemed to be no difference between sex. Aggressive operation technique also have more chance to get infected which leads to hemorrhage. Several studies found that there was association between the indications of tonsillectomy with post-tonsillectomy Hemorrhage. In our study, most common indication of tonsillectomy was chronic & recurrent tonsillitis is about 80% patients. Incidence of post-operative hemorrhage was 4.9%, among them reactionary hemorrhage was 1.9%, and secondary hemorrhage was 3%. In Bipolar Diathermy technique, Hemorrhage after operation was observed 46 out of 57 PTH, which is higher than cold steel dissection technique. Our result was similar with the study done by Weimert, who performed a double blinded study to compare bipolar diathermy tonsillectomy and cold dissection[24]. Bipolar diathermy may cause increased severity of pain and may increase the risk of delayed hemorrhage. However, this technique state that it is a much faster procedure with minimal intraoperative blood loss, compared to cold steel dissection technique. In cold steel dissection technique post tonsillectomy hemorrhage occur 11 out of 57 PTH Patients and found within second week. So, the incidence of post-operative hemorrhage was slightly higher in Bipolar Diathermy technique. In the NPTA (National Prospective Tonsillectomy Audit, UK) the use of 'cold steel' dissection without diathermy was associated with the lowest hemorrhage rate[25]. There was no statistical association found with operative time and post-tonsillectomy hemorrhage. Though all the patients in this study was treated by post-operative antibiotics, yet presented with PTH. Hence it seems that antibiotics did not have a protective effect against post-operative bleeding[26]. Study suggest that as day case tonsillectomies are a reasonable option can provided if the patients are carefully selected.

Conclusion

Incidence of Post tonsillectomy hemorrhage at Uttara Adhunik medical College Hospital is similar to the expected incidence of worldwide. Incidence of Post tonsillectomy hemorrhage by bipolar diathermy is more in comparison with cold steel dissection technique. Post tonsillectomy morbidity like hemorrhage can be reduced by proper preoperative evaluation of patients like recent history of upper respiratory tract infection, known patient's coagulopathies, Selection of suitable operation techniques, post-operative resuscitation, adequate analgesia and swallowing exercise may minimize the risk of post-tonsillectomy hemorrhage.

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Original Article

Circumference of Right Atrioventricular Orifice in Both Sexes in Different Age Group of Bangladeshi Cadaver

Tania Farzana[1], Anjuman Ara[2], Taslima Begum[3], Auni Kamal[4]

Abstract

Background: *The human heart valve is an integral structure and the valvular heart disease is one of the most common diseases of the heart. Such cardiac disease requires repair of the valve and valve replacement surgery where the patient's diseased valve is replaced by a prosthetic valve.*

Objective: *The aim of this study was to measure the annular circumferences of right atrioventricula rorifice in cadavers. The study was conducted to record normal annular circumferences of right atrioventricular orifice which would serve as baseline data for the Bangladeshi population.*

Materials and Methods: *The study was carried out in the department of Anatomy, Mymensingh Medical College, Mymensingh from July 2013 to June 2014. A total of 80 human hearts were collected by purposive sampling from October, 2013 to April, 2014, among them 49 were male and 31 were female. The specimens were collected from Bangladeshi cadavers of age ranging from 6 months to 60 years, from autopsy laboratory of the Department of Forensic Medicine of Mymensingh MedicalCollege.All thespecimens were grouped into three categories Group A (up to 20 years), Group B (21 to 40 years) and Group C (41 to 60 years) according to age. Dissection was performed according to standard autopsy techniques.*

Results: *The range of circumference of right atrioventricular orifice was 4-9.5 cm; 7.60-11cm; 7.8-11.4 cm in group A, B, & C respectively.The mean difference of circumference of right atrioventricular orifice between Groups A & B, B & C and A & C was statistically significant ($p<.05$). The measurements obtained were assessed using SPSS software. Statistically significant that the measurement of circumference of right atrioventricular orifice was increased with the increase of age both in men and women in different age group.*

Conclusion: *There were few literatures available on the study of cadaveric heart valves in Bangladesh, thus this study will provide a guideline to the clinicians, radiologists and to cardiothoracic surgeons performing various valve surgeries to assess the prosthetic valve of appropriate size and to the anthropologists also to maintain a standardized data on cardiac valves as well.*

Key words: *Circumferences, right atrio-ventricular orifice, both sexes, Age, Bangladeshi cadaver.*

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Introduction

Rapid progress in the field of interventional cardiology has caused research in the field of morphometry of the heart to be in constant demand. The heart is a pair of valved muscular pump combined in a single organ[1]. Despite intense interest in cardio anatomy there are many issues to be examined with great care. The problem of the morphology of the atrio-ventricular orifice is still an open question. The tricuspid valve orifice is best seen from the atrial aspect. It is roughly triangular;

its margins are described as antero-superior, inferior, and septal, corresponding to the lines of attachment of valvular cusps. The tricuspid valve guards the right atrio-ventricular orifice. It has three, roughly triangular shaped cusps that projects into the right ventricle - anterior (superior), posterior (inferior) and septal. The tricuspid valvular complex comprises of the following: orifice and its associated annulus, 3 leaflets, supporting tendinous cords and papillary muscles. Harmonious interplay of all these together with the atrial and ventricular myocardial masses depends on the conducting tissues and the mechanical cohesion provided by the fibro-elastic cardiac skeleton[1].

The AV valve develops from the excavation of the supporting ventricular myocardium[2]. The tricuspid valve is more differentiated during evolution than the mitral valve[3, 4].

According to Silver et al[5] circumference of tricuspid valve annulus measures around 11.4cm (114 ± 11mm) in males and 10.8cm (108 ± 13mm) in females and is best seen from its atrial aspect. It is roughly triangular and its margins are described as antero-superior, inferior, and septal corresponding to the lines of attachment of the valvular leaflets. The dynamic progress in therapeutic and diagnostic cardio invasive procedure implies a marked rise in interest in studies of cardiac anatomy and it is reasonable therefore to resume research on the tricuspid valve. Primary valve replacement of tricuspid valve is preferred to valve repair in extensive tricuspid valve destruction as a result of acute endocarditis[6]. However, knowledge and interest in tricuspid valve has always lagged behind that of mitral valve[7]. The work on normal dimensions of tricuspid valve is surprisingly scanty. Hence this work will be of great help for both the anatomist as well as cardiac surgeons.

Methods

The study was carried out in the department of Anatomy, Mymensingh Medical College, Mymensingh from July 2013 to June 2014. A total 80 human heart were collected by purposive sampling from October 2013 to March 2014, among them 49 were male and 31 were female. The specimens were collected from Bangladeshi cadavers of age ranging from 6 months to 60 years, from autopsy laboratory of the Department of Forensic Medicine of Mymensingh Medical College and all the collected specimens of cadavers were from medico-legal cases (unnatural death). Only fresh specimens from persons who died within the preceding 12 hours were chosen. Each specimen was duly tagged by a piece of waxed cloth which bore an identifying number representing individual serial number. Then the specimen was allowed to get fixed for 48-72 hours and preserved in 10% formol-saline solution. Ignoring a little hardening and shrinkage by fixation, the present study was carried out with these fixed specimens. For convenience of differentiating the circumference of right atrioventricular orifice in relation to age and sex, the collected specimens were divided into three groups: e.g., Group A (up to 20 years), Group B (21 to 40 years) & Group C (41 to 60 years) according to age. Each group was again divided into male and female groups.

Dissection was performed according to standard autopsy techniques. For the purpose of getting into the interior of the heart, it was cut open in the following way. At first a cut was made along the atrioventricular sulcus covering almost the whole extent of the sulcus leaving only a small part anteriorly to keep the two parts of the heart attached to each other. The cutting exposed the two atrio-ventricular orifices along with their valves, the tricuspid and mitral valves from above. Now the interatrial septum was cut from back to front up to the aortic opening.

Now for opening the right atrioventricular orifice, an incision was given to cut through the antero-posterior commissure, beginning at first to cut along the right margin of the heart. This cut was extended along the inferior border to avoid injury to the papillary muscles of the ventricle up to the apex of the heart. Now the valves were exposed and the right ventricle was flattened and tricuspid valve along with circumference of orifice was then examined.For the measurement of different dimensions of the right atrioventricular orifices the annulus of orifice was cut open and stretched flat. A metric scale and non-stretchable nylon thread were used for this purpose. The latter was used on base (annulus) of the cusps and subsequently stretched and compared with the metric scale. The values were expressed in centimeter. All data were recorded in the predesigned data sheet, analyzed by SPSS program (version 21, 2012) and compared with the findings of other national and international studies & standard text books.

Results

This study revealed that the mean circumference of right atrioventricular orifice increases with age. From Table-I, the range of circumference of right atrioventricular orifice was 4-9.5 cm; 7.60-11cm; 7.8-11.4 cm in group A, B, & C respectively. The mean difference of circumference of right atrioventricular orifice between Groups A & B, B & C and A & C was statistically significant ($p<.05$).

The mean (±SD) circumference of right atrioventricular orifice was 7 ± 1.57, 9.03 ± 1.15 and 9.51 ± 0.94 cm in group A, B & C respectively.

Table I (a)

Mean circumference of right atrio ventricular orifice in Different Age Groups

Age Group	Number of specimens	Range of circumference (cm) of right atrio ventricular orifice	Circumference (cm) Mean ± SD
A (up to 20 years)	27	4.00–9.50	7.00 ± 1.57
B (21 to 40 years)	31	7.60 – 11.0	9.03 ±1.15
C (41 to 60 years)	21	7.80 – 11.40	9.51±0.94

Table I (b)

Comparison of mean circumference of right atrio ventricular orifice among the age groups

Comparison between Variables		Mean difference	SE	P value
A	B	2.03	0.33	0.073*
B	C	1.47	0.26	0.018*
A	C	1.51	0.35	0.021*

*Significant

Table II (a)

Mean circumference of right atrio ventricular orifice in different sexes

Age Group	Gender	Number of specimens	Circumference ofright atrio ventricular orificein cm (Mean± SD)
A (up to 20 years)	Male	18	7.62±1.25
	Female	09	6.75±1.44
B (21 to 40 years)	Male	15	9.98±0.97
	Female	17	9.20±0.38
C (41 to 60 years)	Male	16	9.90±0.70
	Female	05	9.28±0.30

Table II (b)

Comparison of circumference of right atrio ventricular orifices between sexes

Age group	Mean Difference between sex	t	p
A	0.87	2.47	0.062*
B	0.68	1.92	0.240
C	0.62	1.87	0.231

As shown in Table II (a); {fig.1}, the maximum mean (±SD) circumference of right atrio ventricular orifice in male was 9.98 ± 0.70 cm in group B and minimum 7.62 ± 1.25 cm in group A. In female the maximum mean (±SD) circumference of right atrio ventricular orifice was 9.28 ± 0.30 cm in group C and minimum 6.75 ± 1.44 cm in group A. It is evident from the results that mean circumference of right atrioventricular orifice of male hearts was greater than that of female hearts among the age group. Mean difference between sexes in group A was statistically significant but mean difference between sexes in group B & C was statistically not significant.

Discussion

In present study, the maximum mean circumference of right atrioventricular orifice was in Group A 9.50 cm, in Group B 11 cm and in Group C 11.40 cm. The minimum circumference of right atrioventricular orifice was in Group A 4 cm, in Group B 7.60 cm and in Group C 7.80 cm.

The mean (±SD) circumference of right atrioventricular orifice was 7 ± 1.57, 9.03 ± 1.15 and 9.51 ± 0.94 cm respectively and it was also observed that the mean circumference of right atrioventricular orifice was increased with age. The mean difference of circumference of right atrioventricular orifice between Groups A & B, B & C and A & C was statistically significant at $p<0.05$ level.

The maximum mean (±SD) circumference of right atrio ventricular orifice the in male was 9.98 ± 0.70 in group B and minimum 7.62 ± 1.25 in group A. In female the maximum mean (±SD) circumference of right atrio ventricular orifice was 9.28 ± 0.30 cm in group C and minimum 6.75 ± 1.44 cm in group A. It is evident from the results that mean circumference of right atrio ventricular orifice of the male hearts was greater than that of the female hearts among the age group. In age-related changes in normal human hearts study in1988 reported that mean valve circumferences were usually higher in men than in women, but the opposite pertained when values were indexed by body surface area[8]. In both sexes, all indexed mean valve circumferences increased progressively during adult life, although this trend was greater for semilunar than for atrioventricular valves. Mean difference between sexes in group A was statistically significant.

Another study in Athens, Greece Xanthos et al in 2011[9] described that the mean circumference of the tricuspid orifice in males 11.63 cm and 10.4 cm in females. In Bangladeshi people, Begum J in 1996[10] studied that the mean circumference of the tricuspid orifice ranges from 6 to 9.8 cm in males and 6 to 11.5 cm in females. Aktas, et al in 2004[11] measured the mean circumference of the tricuspid orifice was 12.4 ± 1.1 cm in males and 11.8 ± 1.3 cm in females. Mannan S in 2004[12] measured the mean circumference of the tricuspid orifice in 50 post-mortem hearts of Bangladeshi people. Her finding was 9.12 cm in males and 8.53 cm in females. Datta A k (2006)[13] described that the right atrio-ventricular orifice is somewhat oval or circular in outline (depending upon the phase of the cardiac cycle) and the circumference of the opening, on an average, varies between 10 cm. and 12 cm. Standring et al[1] stated that circumference of the tricuspid orifice in males 11.4 cm and 10.8 cm in females. No age grouping was mentioned though.

Thus, the mean value of group B & C of the present study are nearly similar with that of Begum J, Mannan S. But little less than Xanthos et al, Datta A k and Standring et al and much less than Aktas et al.[11]

From the above-mentionedfindings, it is clear that heart of Bengali people on which the present study was carried out were shorter in comparison with the hearts of Western people. Comparative smaller size of heart was reasonably due to smaller size of the bodies of Bangladeshi people.

The findings of the present study are within the range of above authors. In the above literature, there is no mention of any particular race and age of the subjects; these literatures suggested the specimens were from adult people.

From the present study, it was concluded that the measurement of circumference of right atrioventricular orifice was increased with the increase of age. Almost all the mean values of different parameters found to be highest in group C and lowest in group A. All parameters found somewhat less in Bangladeshi people than those described by European & American authors.It may be said that the observations and results of the present study are expected to provide an idea about the values of heart and their changes in relation to age of Bangladeshi people and these findings will standardize the various measurements obtained by other observers in different country.

Thus, the results of the observations of the present study will help the physicians and surgeons getting an idea about the normal circumference of rightatrioventricular orificeof heart during their treatment on Bangladeshi patient.

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Original Article

Socio-demographic Aspects of Injuries Incurred from Fatal Road Traffic Accident: A Tertiary Care Hospital Based Study

Tarana Chowdhury[1], Tanima Ahmed[2]

Abstract

Background: *Road traffic injuries (RTIs) are one of the major public health issues, especially in developing countries due to privation of wide-ranging legislative measures. Road traffic injuries accounted 7902 lives in Bangladesh last year. This study analyzed the socio-demographic profile and circumstances of injuries in victims of road traffic accidents (RTAs).*

Methods: *Retrospective record-based study was carried out at Mortuary of Dept. of Forensic Medicine, Dhaka Medical College for the period of June, 2015 to March, 2016. Data were collected using the case sheets of 106 patients from the medical records section of hospital and analyzed using SPSS computer software version 26.0. Results are interpreted in terms of percentage and mean.*

Results: *A total 106 data sheets were studied during the study period where it was found that mean age of the victims were 29.05 ± 11.67 years. Majority of the victims (54.7%) were in between 16- 30 years. Most commonly male (65.1%) were the sufferers. Fatal RTA was found highest among the four wheelers victims (44.34%) and lowest in two wheeler victims (1.9%). More event occurred in urban area (72.6%) and during daytime (50%) in between 8am to 6pm. Majority of the victims had head injuries (36.8%) involved mainly the pedestrians and the four wheeler victims followed by multiple (24.5%) and abdomen (14.2%) injuries.*

Conclusion: *RTA registry is needed to highlight risk factors, circumstances and chains of events leading to accidents. This would be immensely beneficial for further policy making and health management in Bangladesh.*

Key words: *Road traffic accident, Socio-demographic factors, Injuries.*

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Introduction

Worldwide 1.35 million lives are taken on roadways each year. Every day almost 3,700 people are killed in Road Traffic Accident (RTA) involving cars, buses, motorcycles, bicycles, trucks, or pedestrians. More than half of those killed are pedestrians, motorcyclists, or cyclists[1]. The WHO has defined RTA as when a vehicle collides with another vehicle, pedestrian, animal, road debris, or other stationary obstruction, such as a tree or utility pole. Any injury occurring as a result of RTA referred to be as road traffic injury[2]. Recently RTA was classified as the eight major cause of death or disability out of a total of over 50 separately identified causes. However, by the year 2030 forecasts suggest that as a cause of death, RTA will move up to fifth place[3]. Despite great progress in international traffic safety works, traffic accidents are still increasing which causing significant number of fatalities and severe injuries particularly in developing countries.A developing country like Bangladesh is not apart from its effects[4]. According to the Bangladesh Road Transport Authority (BRTA) in 2023 the country witnessed a shocking 5,495 road accidents, with 5,024 deaths and 7,495 sustaining injuries. On an average, 14 deaths and 21 injuries took place per day last year[5]. RTA, trauma, and death are increasing gradually with an increase in a number of vehicles on

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road, more prosperity leading to increased travel and a host of other factors associated with poor engineering of the roads, negligent and rash driving, unchecked speed of vehicles on the road, driving under the influence of various substances, lack of alertness and diversion of mind and numerous other factors[6]. Information on the injury pattern, nature, and outcome are extremely limited in Bangladesh, as trauma registries and hospital-based research have not developed systematically. Therefore, this study has been done to determine the demographic factors related to injury by RTA among the victims attended to a tertiary care hospital of Dhaka City.

Materials and Methods

A retrospective record based study was carried out under the auspices of the Department of Forensic Medicine and Toxicology of Dhaka Medical College (DMC). It is a tertiary level health care and medical training institute.

For the purpose of the study RTA was defined as accident, which took place on the road between two or more objects, one of which must be any kind of a moving vehicle. Following accidents victims were excluded from the study:

- Injury involving a stationary vehicle (e.g. persons getting injured while loading or repairing a vehicle).
- Road injuries in which there was no involvement of vehicle, such as a person falling and slipping on the road and sustaining injury.
- Injury incurred due to any fault in vehicle (e.g. gas cylinder burst in vehicles)

A total 106 case sheets were collected from hospital record to collect data from the period of June 2015 to March 2016. Most of the information like age, sex, history of the accident like the vehicle used by the victim, time and location of incident was available in the Police paper. Injuries were recorded concerning site of injuries. Data was entered and analyzed in SPSS software version 26.0.

Results

This study included the victims of RTA who were brought for medico legal autopsy. The socio-demographic characteristics of the victims revealed that mean age of the victims were 29.05 ± 11.67 years. Majority of the victims (54.7%) were in between 16-30 years aged. Male was higher in percentage among the sufferers (65.1%). About 25.5% of the victims were illiterate and 13.2% were graduated. Among the victims 28.3% were students, 18.9% were day labour, 17.9% were housewives, 14.2% were farmers and businessman and professionals both were 10.4% individually.

Table I

Socio-demographic distribution of the RTA victims (n = 106)

Variable	Frequency	Percentage
Age (years)		
0-15	11	10.4
16-30	58	54.7
31-45	29	27.4
46 & above	8	7.5
Mean ± SD	29.05 ± 11.67	
Sex		
Male	69	65.1
Female	37	34.9
Education		
Illiterate	27	25.5
Primary	25	23.6
Secondary	25	23.6
Higher secondary	15	14.2
Graduate	14	13.2
Occupation		
Labour	20	18.9
Student	30	28.3
Businessman	11	10.4
Housewife	19	17.9
Farmer	15	14.2
Professionals	11	10.4
Total	106	100

The victims of RTA were grouped in different types depending on the type of vehicle used by the victims. In this study, the victim using two-wheeler, three-wheeler and four-wheeler; and the pedestrian were included. It was found that many of the victims were four wheeler (44.34%), around 33.96% were three wheeler, only 1.9% was two wheeler and 19.8% were pedestrians.

Table II

Distribution of vehicles of RTA victims with age and gender (n = 106)

Age	Pedestrian		2 wheeler		3 wheeler		4 wheeler		Total
Sex	M	F	M	F	M	F	M	F	
0-15	3	1	0	0	5	0	2	0	11
16-30	3	7	1	0	13	11	17	6	58
31-45	3	2	0	0	2	5	12	5	29
46 & above	2	0	1	0	0	0	5	0	8
Total	11	10	2	0	20	16	36	11	
	21 (19.8%)		2 (1.9%)		36 (33.96%)		47 (44.34%)		106 (100%)

M = male, F = female

The area of RTA were shown along with vehicles used by the victims, where it is found that most of the causality occurred in urban area (72.6%) among the four wheeler users (44.3%). About 27.4% incident occurred in rural area.

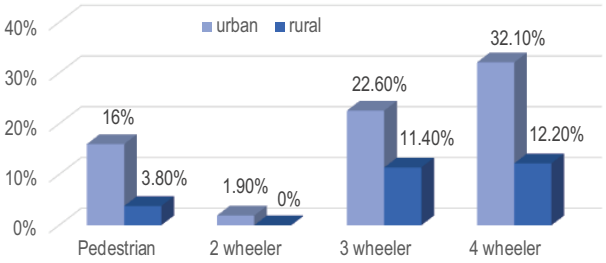

Figure 1: Area distribution of RTA victims (n = 106)

Area and timing distribution in RTA has found that almost half of the occurrence (50%) happened during daytime in between 8:00am to 6:00pm and higher in urban area (38.7%). Around one third (25.5%) RTA took place at Night in between 7:30pm to 5:00am and also higher in urban area (17%). Only 8.5% RTA found in Evening in between 6:00pm to 7:30pm which was comparatively higher in rural area (5.7%).

With regards to involvement of different region of human body in RTA, head injury (36.8%) was commonest among the four wheeler victims and the pedestrians followed by multiple (24.6%) and abdomen (14.2%) injuries.

Table III

Time distribution with area of RTA (n = 106)

Time	Urban	Rural	Total
Morning 0501-0800hrs	15 (14.2%)	2 (1.8%)	17 (16%)
Daytime 0801-1800hrs	41(38.7%)	12 (11.3%)	53 (50%)
Evening 1801-1930hrs	3(2.8%)	6(5.7%)	9 (8.5%)
Night 1931-0500hrs	18(17%)	9(8.5%)	27 (25.5%)
Total	77 (72.6%)	29 (27.4%)	106 (100%)

Table IV

Involvement of different region in human body of RTA victims (n = 106)

Site of injury	Vehicle used by the victims				
	pedestrian	2 wheeler	3 wheeler	4 wheeler	Total
Head	9(8.5%)	1 (0.9%)	13 (12.3%)	16 (15.1%)	39 (36.8%)
Thorax	1 (0.9%)	0 (0%)	0 (0%)	3 (2.9%)	4 (3.8%)
abdomen	4(3.8%)	1(0.9%)	4(3.8%)	6(5.7%)	15 (14.2%)
Abdomen and thorax	0 (0%)	0 (0%)	0 (0%)	5(4.7%)	5 (4.7%)
abdomen and pelvis	1(0.9%)	0 (0%)	6(5.7%)	1(0.9%)	8 (7.5%)
head and pelvic	1(0.9%)	0 (0%)	6(5.7%)	0 (0%)	7 (6.6%)
head and thorax	2(1.8%)	0 (0%)	0 (0%)	0 (0%)	2 (1.9%)
multiple	3 (2.9%)	0 (0%)	7(6.6%)	16 (15.1%)	26 (24.6%)
Total	21 (19.8%)	2 (1.9%)	36 (34%)	47 (44.3%)	106 (100%)

Discussion

The general trends of road traffic accident (RTA), deaths and injuries reveal that the number of RTA, deaths and injuries increased gradually in Bangladesh.This study aimed to understand the socio-demographic pattern of road traffic injuries (RTIs) among the victims of Bangladesh. This study revealed that most of the victims (54.7%) were in between 16- 30 years aged and mean age of the victims were 29.05 ± 11.67 years. Male (65.1%) were more victimized than the female and higher percent of the victims (25.5%) were illiterate.This difference may be due to in Bangladesh female mostly do their activities in and around home whereas man mostly work outside which is showing consistency with the findings of Islam et al, Sango et al. and Ahmed et al.[7,8,9].

Most of the victims in this study were from the urban area (72.6%) by four wheeler vehicles (44.3%). This is quite likely due to more vehicles movements inside the cities than the rural areas and also similar with the statistics of BTRA that showed that in 2023 out of 7,837 RTA major involvements was found with the four wheelers vehicles[10]. In another study it was revealed that maximum accidents took place on city main roads in Bnagladesh[9]. In India different literatures have found that the commonest offending vehicle for the accident was the four wheeler vehicles[11-13].

Maximum accidents occurred at daytime in different studies[9]. In this study 50% of the occurrence also found to take place in daytime which links with increase traffic load on road at daytime and due to rush of travelers towards their destinations in urban areas. It also reflected that in rural area scenario was varied, where RTA shappened higher in evening time comparison to urban area.

Commonest site of fatal injuries was head (36.8%) and found highest among the pedestrians and four wheeler victims in this study. Multiple injuries (24.5%) were found to be second commonest following abdomen and thorax injuries. May be the victims did not use safety measures (like seat belts, helmet, following traffic rules) resulting in forward jerk during a collision and higher rate of injury. Different literatures also came across with similar findings[14-17].

Conclusion

High percentage of RTA among males of younger age group those were using motorized four wheelers has been revealed in this study. Motivational program to raise public awareness about accidents, personal safety measures and road safety, proper training of drivers, maintenance and repair of unfit vehicles from city roads, repair of roads etc. are needed. Head injuries remain the most common along with other RTA traumas and demand the urgency to establish good emergency care and provision of efficient and prompt trauma services at site. Monitoring rules and regulation through setting up mobile court at each and every road can be done. Through systematic investigation and scientific research on RTA can lessen its incidence and severity.

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Original Article

Taste Disturbance after Tonsillectomy - A Cross Sectional Study in a Tertiary Level Hospital

S M Tariful Hasan[1], Md Arifuzzaman[2], Tapas Chakraborty[1], Abul Hossan[1], S M Nafeez Imtiaz[3], Samir Mohammad Tasrif[3]

Abstract

Background: *Tonsillectomy is one of the most common surgical procedures in otolaryngology. Although prevalent complications are pain and postoperative bleeding but taste disorders following tonsillectomy have been reported.*

Objective: *The study was conducted to find out the proportion of patients underwent tonsillectomy with complaints of taste disturbance.*

Methods: *This cross-sectional study was conducted at the department of Otolaryngology, Uttara Adhunik Medical College & Hospital, Bangladesh for a period of 6 months from January 2016 to June 2016. All patients were aged between 12 years and 60 years undergoing tonsillectomy were included and observed meticulously. Following tonsillectomy, four tastants Citric acid (sour taste), Caffeine or Quinine hydrochloride (bitter taste), Sodium chloride (salty taste) and Glucose (sweet taste) were used as stimuli in chemogustometry for assessment of disturbance of taste. For objective assessment, visual analog scale (VAS) was used during assessment.*

Results: *Out of 113 patients, majority were males (56%) and rest were females (44%). Mean age was 22.18 ± 12.8 years and majority age group was 12-20 years (31.9%). About 60% lived in rural areas and 40% were in urban area. About 24% had taste disturbance immediately after tonsillectomy, of which only 8% showed long-lasting taste disturbance at 6 months assessment. Mean value of VAS score at day 1, 6 weeks, 3 months and day 180 (6 months) were 72.5 ± 11.6, 58.7 ± 9.8, 68.4 ± 10.3 and 68.4 ± 10.3, respectively. Mean duration of both diathermy and dissection method were 17.9 ± 5.2 & 23.1 ± 5.8 min, respectively, which have no effect on taste disturbance (P value= 0.08).*

Conclusion: *The study will enrich our current knowledge about the actual occurrence of taste disturbance after tonsillectomy. It will also help otolaryngologists to take precautions during tonsillectomy and provide more detailed information regarding the potential risk of tonsillectomy to the patients undergoing surgery who rely upon their sense of taste sensation.*

Keywords: *Taste Disturbance, Tonsillectomy.*

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Introduction

Tonsillectomy is one of the most frequently performed surgical interventions in industrialized countries[1]. It is also one of the most common surgeries in our country. Most frequent and relevant complications are hemorrhage, infection and velopharyngeal insufficiency with rhinophonia and nasal regurgitation[2]. In addition, taste disturbance following tonsillectomy has been

described in a number of case report[3], but only a limited number of prospective trials are available investigating this potential complication[4]. There are several possible causes of taste disturbance: (I) injury of the lingual branch of the glossopharyngeal nerve (LBGN) when the inferior part of the palatine tonsil is removed, (II) pressure of the retractor on the tongue, (III) Zinc deficiency due to lack of intake after surgery and (IV) adverse effects of medications[5].

The close anatomic relationship between the palatine tonsil and the lingual branch of the glossopharyngeal nerve makes the nerve vulnerable during tonsillectomy. Clamping tonsillar branches of the lingual or facial arteries to control hemorrhage at the inferior tonsillar pole as well as using electrocautery can injure the nerve. Inadvertent extension of lingual nerve and its compression during tonsillectomy may be prevented by ensuring that the tongue retractor is not fasten too tightly in the mouth, especially in cases where the mouth opening is naturally limited[6]. Collet et al. notes that also LBGN may be damaged in the mechanism of stretching and compression by depression of the tongue[7]. Occurrence of taste disorders after tonsillectomy is not affected by the length of surgery, including the length of the use of tongue retractor[8]. Neuritis or cicatrisation during postoperative infection is considered to be another possible cause of the LBGN dysfunction.

Altered taste perception seems to be more frequent than previously thought. However, long-lasting and disabling dysgeusia, such as absent, but more often badly distorted taste perception has repeatedly been described after tonsillectomy[9]. As one of the most important senses, correct perception of taste determines proper physical and mental functioning. Some claim that both taste and smell are responsible, to a large extent, for the food selection, affect human nutritional status, and their dysfunction can lead to diseases such as depression[10]. Taste perception is mediated by individual taste buds, which located mainly in the primary taste organ; tongue[11]. The sensation of taste can be categorized into four basic tastes: sweetness, sourness, saltiness, bitterness. Application of taste substances is the method of taste examination. There are various methods of applying taste substances during gustometric examination. The stimuli used in gustometry are: citric acid (sour taste), caffeine or quinine hydrochloride (bitter taste), sodium chloride (salty taste), glucose (sweet taste)[12].

Materials and Methods

After obtaining ethical approval, 113 patients were included in the study for the period of 6 months from January 2016 to June 2016. Purposive sampling was done. All patients those included as sample were aged 12 years and above undergoing Tonsillectomy, as younger children could not evaluate the nature of taste disturbance. Patients who have pre-existing taste disturbances, neurologic disorder, diabetes, renal insufficiencies or malignancies were excluded. Samples were collected from Otolaryngology OPD of Uttara Adhunik Medical College & Hospital, Dhaka by subjective judgment. Sample size was calculated by the following formula:

After taking medical history, patients rated their taste using visual analog scale (VAS). The score range from 0 (no sense of taste) to 100 (excellent sense of taste). In all cases, Tonsillectomy was performed under general anesthesia by experienced surgeon. Dissection method and bipolar diathermy were two preferred methods for the patients chosen by the surgeon according to the best method suited for the patients. Four tastants were used as stimuli in chemogustometry. They are: Citric acid (sour taste), Caffeine or Quinine hydrochloride (bitter taste), Sodium chloride (salty taste), Glucose (sweet taste). One drops of each tastant was presented to the four regions of the tongue (anterior right, anterior left, posterior right and posterior left) by using a plastic disposable sterile pipette. After that, Mouth was rinsed with purified water in between trials, presented to patient in plastic disposable cups. Intervals of thirty seconds were given in between each trial. Nostrils was occluded with vaslinated cotton to prevent odor inhalation. The patients was asked to verify the taste as identified on a list presented to them (sweet, salt, sour, bitter or no taste).

Results:

Among the 113 patients, the mean age with standard deviation was 22.18 ± 12.8 years. Most of the patients were in-between 12 to 20 years (31.9%) with a range of 12 years to 58 years.

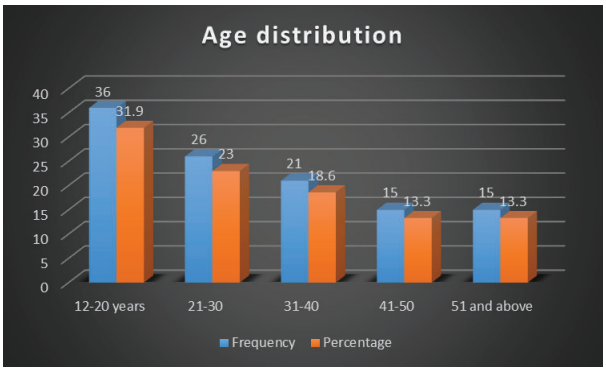

Figure 1: Age distribution of the patients (n=113)

Among the evaluated 113 cases, tonsillectomy was done by dissection method in 52% cases and by bipolar diathermy in 48% cases.

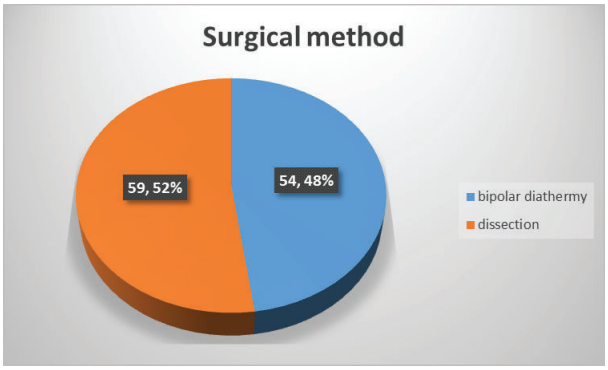

Figure 2: *Surgical method of tonsillectomy of the patients (n=113)*

Taste function of the patients was rated by Visual analog scale (VAS). The score ranged from 0 (no sense of taste) to 100 (excellent sense of taste). Taste function was assessed for four times in all patients (n=113); 1 day before surgery and then three times following surgery (six weeks, three months and 6 months after surgery). Mean value of VAS score was decreased markedly after six weeks of tonsillectomy, but again increased gradually after three months and six months of surgery. However the mean VAS scores were lower than pre-surgery state of the patients.

Table I

Mean value of VAS score for taste functions before and after surgery (n=113)

Time of testing	Mean value of VAS score ± SD
1 day before surgery	72.5 ± 11.6
6 weeks following surgery	58.7 ± 9.8
3 months following surgery	65.8 ± 9.4
6 months following surgery	68.4 ± 10.3

On repeat testing after three months taste disturbance was found in 16 cases (14%) and on repeat testing after six months taste disturbance was found in 9 cases (8%).

Among the 27 cases showing taste disturbance after two weeks of tonsillectomy 22 patients showed dysgeusia and only 2 cases showed hypogeusia. Majority of the patients (25 cases) showed taste disturbance for metallic or bitter taste and 4 cases showed taste disturbance for sweet taste.

Table II

Nature of the taste disturbance after tonsillectomy (n= 27)

Nature of the taste disturbance	Frequency	Percentage
Ageusia	00	00
Dysgeusia	22	81.5
Hypogeusia	02	7.4
Disturbance for Sweet taste	04	14.8
Disturbance for Sour taste	01	3.7
Disturbance for Salt taste	00	00
Disturbance of Metallic or Bitter taste	25	92.6

Taste function was assessed in right and left anterior and posterior site of the tongue. Among the patients showing taste disturbance (n=27), posterior part of the tongue was affected in 19 cases (70.4%).

Table III

Site of the taste disturbance after tonsillectomy| (n= 27)

Site of the taste disturbance	Frequency	Percentage
Anterior right side of tongue	05	18.5
Anterior left side of tongue	03	11.1
Posterior right side of tongue	11	40.7
Posterior left side of tongue	08	29.7

Taste disturbance among tonsillectomy cases (n=113) showed no significant difference among different age groups in our study (χ^2 value= 5.4, P value= 0.24, n=113).

Table IV

Age group study of taste disturbance among tonsillectomy cases (n=113)

		Age group (years)					Total	P value
		12-20	21-30	31-40	41-50	>50		
Taste disturbance	Yes	6	6	9	3	3	27	
	No	30	20	12	12	12	86	0.24
Total		36	26	21	15	15	113	

Discussion

Mean age of the 113 patients included in this study was 22.18±12.8 years. Majority were aged between 12 to 20 years (31.9%). Heiser et al[13] conducted a prospective study on 223 patients to determine the effect on taste sensation of tonsillectomy. Similar to our study they found a mean age of 33±13 years. A higher mean age is due to the fact that children aged 12 or below were not included in the study.

Among the evaluated 113 cases, tonsillectomy was done by dissection method in 52% cases and by bipolar diathermy in 48% cases.

In this study post tonsillectomy taste disturbance was noted in 24% patients. At six months 16% recovered their sensation of taste and 8% had long lasting taste disturbance. Similar to our study, Windfuhr et al[14] found disturbance 29% after tonsillectomy which lowered down to 6% in 21 days and to none at 3 months. Tomofuji et al[15] reported a very low prevalence of 8.6% taste disturbance after tonsillectomy.

Among patients who had disturbances in taste 81.5% had dysgeusia and 7.4% had hypogeusia. Majority patient's had problem with metallic or bitter taste (92.6%). This concordant with that of Heiser et al[13] who found metallic taste disturbance in majority cases 6 months after surgery. Although, immediately after surgery they found disturbance in metallic and bitter taste in 40% patients each which dissimilar to our findings.

Majority bitter taste involvement could be explained by the site of tongue where taste alteration is perceived most. In the study by Heiser et al[13] this was posterior part of the tongue in majority cases both at 2 weeks and at 6 months after surgery. We found a very similar finding in relation to site of tongue involved. Posterior aspect of the tongue was found affected in 70.4% of the affected patients in our study. In this study the most common immediate post-operative complication was pain followed by infection and haemorrhage.

In 2002 Tomita and Ohtuka analyzed retrospectively the data of 3,583 outpatients consulting for taste disorders for the previous 15 years, where 11 (0.31%) cases occurred after tonsillectomy[16] .

Most authors consider a direct injury of the lingual branch of the glossopharyngeal nerve[17]. However, other factors, such as tongue compression during surgery, post-inflammatory process during wound healing, postoperative pain with consecutive nutritional changes, and medication side effects have been taken into account[18]. The reason for persistent taste disorders is yet unknown, but we could imagine that the observed taste disorders in the present study reflect injuries to the small LBGN, as this was already suggested by many authors and seems to be corroborated by anatomical data[17].

With regard to the high rate of postoperative dysgeusia, informed consent before surgery needs to include notification of potential postoperative taste disorders. Especially in taste professionals who depend on an intact sense of taste, this taste complication after tonsillectomy should be carefully explained.

Conclusion

One fourth of the patients have complained about taste disturbance immediately after tonsillectomy. But significant proportion of patients resolves symptoms and finally eight percentage of patients were found have alternation of taste during taste assessment 6 months after tonsillectomy. Among the different taste, disturbance for Metallic or bitter taste were the most common but dysgeusia, hypogeusia and disturbance for sweet taste, sour taste, and salt taste were not uncommon. This taste disturbance are not associated with age, sex, duration of surgery and methods chosen by surgeons. However, the study will enrich our current knowledge about the actual occurrence of taste disturbance after tonsillectomy. It will also help otolaryngologists to take precautions during tonsillectomy and provide more detailed information

regarding the potential risk of tonsillectomy to the patients undergoing surgery who rely upon their sense of taste sensation (e.g. cooks, food specialists, sensory experts).

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Review Article

Assessing the Effectiveness of Cognitive Behavioral Therapy, Medications, and Weight Management Therapy as a Treatment for Binge Eating Disorder

Daaniya Ahmed[1], Rezina Karim[2], SM Moslehuddin Ahmed[3]

Abstract

Background: *Binge eating disorder (BED) is characterized by regular binge-eating episodes – eating unusually large quantity of food too quickly, not even when hungry, eating alone to avoid embarrassment and finally feeling guilty, disgusted or depressed after over-eating. Individuals with EDs are at greater risk of suicide attempts, mortality and poorer quality of life. Cognitive behaviour therapy (CBT) is now recommended by the majority of evidence-based national guidelines as the first line of treatment (BED).*

Objective: *This review aimed to identify the binge eating disorder and its relationship between different forms of treatment modalities like behavioral therapy, weight management & medications.*

Materials and Methods: *Scholarly articles were researched through pub med central and the results were filtered out by 10 years period. Surveys, Randomized control trials, clinical research were included.*

Results: *Approach that is comprehensive and comprises of cognitive behavioral therapy, medications, and weight management is considered to be efficacious to treat binge eating disorder. All of these approaches create a wide variety of options for the treatment of BED. It can improve both the psychological and behavioral aspect of the condition. Even though the approaches are efficacious to treat BED, it is crucial to know if it's sustainable for the long run. Additionally, a combined approach of CBT and weight management therapy is considered to be more effective than either of the treatments alone.*

Conclusion: *Adding weight management or pharmacotherapy to the binge-eating disorder intervention did not exhibit much of beneficial nor deleterious effect; cognitive psychotherapy individually could demonstrate better outcome, although mixing up of different techniques were found to be more efficacious to treat BED.*

Key words: *Binge eating disorder (BED), Causes of BET, Effect of BED, Cognitive behavioral therapy (CBT),*

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Introduction

Most prevalent diagnoses among the eating disorder (ED) categories include anorexia nervosa (AN), bulimia nervosa (BN), and binge-eating disorder (BED) in addition to other specified feeding or eating disorder (OSFED), or unspecified feeding or eating disorders (UFED)[1]. Binge eating disorder (BED) occurs when a person goes through repetitive binge eating episodes[1]. Binges are connected to medical complexities, reduced adaptive function, and at times elevated BMI. Many treatment approaches that are versatile may be beneficial for this condition[2]. BED is the latest formal diagnosis in the DSM-5 (Diagnostic and Statistical Manual of Mental Illnesses – 5th). It is defined as repetitive episodes of binge eating and noticeable distress without any compensatory bearing for weight, having abnormally high amounts of food and experiencing being out of their minds. BED is

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related to having uplifted rates of psychological disorders, in addition to psychosocial incapacitation[3]. Studies show that patients who suffer from BED have much poorer quality of life than normal people[1]. The prevalence of this condition suggests that BED occurs in about 2.8% in women and 1.0% in men. Numerous approaches from multidisciplinary teams that include dietitians, psychologists, and psychiatrists are required for support[2]. It is known that individuals with BN or BED can present with impaired hematologic and metabolic profiles. Structural equation modeling analysis confirmed the relation between the altered eating behaviors of BED and the metabolic and inflammatory profile. ED obese exhibited significantly higher altered eating behaviors, BMI (P<0.001), WC (P<0.01), fat mass (P<0.001), and a lower lean mass (P<0.001) when compared with non-BED obese. Binge eating disorder obese also had a worse metabolic and inflammatory profile, exhibiting significantly lower HDL levels (P<0.05), and higher levels of glycated hemoglobin (P<0.01), uric acid (P<0.05), ESR (P<0.001), high-sensitive CRP (P<0.01), and white blood cell counts (P<0.01). Higher fasting insulin (P<0.01) and higher insulin resistance (P<0.01), assessed by homeostasis model assessment index and visceral adiposity index (P<0.001), were observed among BED obese[4].

Cognitive behavioural therapy (CBT) is a time-limited, structured approach used to treat a variety of mental health disorders, it explores the links between thoughts, emotions and behaviour[5]. CBT is 'guided discovery' - a therapeutic stance involves trying to understand the patient's view of things and help them expand their thinking to become aware of their underlying assumptions, and discover alternative perspectives and solutions for themselves; central to the interventions aimed at each level of cognition just as 'Socrates questioning'. CBT uses both cognitive and behavioural techniques[6]. CBT has proven to be an effective treatment for many psychiatric conditions like treatment of major depression[7], adult and adolescent bipolar disorder, generalized anxiety disorder, panic disorder and/or agoraphobia, social phobia, post-traumatic stress disorder, and childhood depressive and anxiety dis orders[8].

DSM-5 criteria for BED[9]

A. Repetitive episodes of binge eating.

1. Over consumption of food while in a discrete period of time
2. Having a feeling of loss of control while in the episode

B. Episodes of binge eating that are linked to three or more of the following:

1. Consuming at a quicker rate than the usual
2. Consuming until the feeling of fullness arrives at an uncomfortable level
3. Consuming high levels of food even when they're not feeling hungry
4. Consuming food unattended because of being ashamed by the amount of food intake
5. Feeling repulsed with themselves after the episodes

C. Noticeable distress related to binge eating there.

D. Episodes of binge eating happens at least once per week for about 3 months

E. The binge eating is not linked to repetitive use of compensatory actions that's not appropriate as it is in bulimia nervosa and does not happen during the course of either bulimia nervosa or anorexia nervosa[9].

Etiology and Epidemiology of Binge Eating Disorder

Binge eating disorder (BED) may be caused by a great many factors that include psychological, social, and biological. Examples of those factors include obesity from childhood, problems of conduct, family troubles, physical abuse, destruction of mental health, and many more. Binge eating disorder is typically more usual in females than males. However, according to the nutrition care manual (NCM), it is not totally atypical in men. In the USA, the lifetime prevalence of this condition is 2.6%[10]. An Australian general population study showed a significant increase in the prevalence of binge eating (3.2 to 11.1%) between 1995 and 2015[11]. An estimated rate of 79% of the individuals who have BED have one psychological disorder and the other 49% have more than two comorbid disorders. Co-existing conditions along with BED comprise a particular phobia (37%), social anxiety disorder (32%), posttraumatic stress disorder (26%), and dependence on alcohol (21%). Anxiety disorders, mood swings, impulse control difficulties, and substance addiction are common in people with multiple diagnoses, according to one analysis[10].

Assessments and Risk Factors of Binge Eating Disorder

Risk factors associated with BED were found to be multiple after researching on various cross sectional

& interventional studies. Most relevant were genetic, high BMI, parental teasing about weight, perceived pressure from parents to eat, post-traumatic stress disorder, borderline personality disorder, impulsiveness, bipolar disorder, body dissatisfaction, food insecurity, involvement in elite sports. Although not all of these will be discussed pertaining to their association with BED[12]. Increased numbers of eating disorders are occurring in adolescents and adults over the years, and it's happening in individuals who are overweight/obese rather than individuals who are of healthy weight. But there remain not many clinical practice guidelines on the screening and assessment process of eating disorders in the situation of an obesity treatment. McMaster et al. mentions that appropriate measures regarding the recognition and monitoring of eating disorders is very important. Application of eating disorder assessment could be better for identification and management earlier than later in individuals with a higher weight[13]. The Nutrition Care Manual states that childhood obesity, deteriorated behavior regarding weight and shape, lack of self-esteem, reduced social functioning are some of the significant risk factors or traits of binge eating disorders[9]. Striegel-Moore et al. found elevated level of perceived stress was associated with the development of BED. They examined 45 women (>14 - <20 yrs) with a history of BED and suggested that elevated levels of perceived stress may precede the onset of BEDs[14].

Cognitive Behavioral Therapy and Medications alone and combined for the treatment of Binge Eating Disorder

Analyses revealed both antidepressant monotherapies were significantly inferior to CBT conditions and that neither SSRI (Selective serotonin reuptake inhibitors) antidepressant significantly enhanced CBT outcomes. Cognitive behavioral therapy seems to have factual support for BED, that results in 50% rates of remission and consist of long-lasting benefits within a follow up of 1 year. However, these therapeutic treatments do not have any significant effect on weight loss. Naltrexone/bupropion and behavioral weight loss therapy (BWL) seemed to be an effective treatment for patients with binge eating disorder. BWL therapy had greater improvements than no behavioral weight loss therapy. Naltrexone had greater improvements than when compared with the placebo. Notable findings for weight loss are a -5.7% mean value of both BWL and placebo and for BWL+ naltrexone/bupropion. They had at-least 5% of weight loss. This study was a randomized double-blind placebo controlled single site trial that used naltrexone/bupropion and behavioral weight loss therapy (BWL) to test for an effective approach for binge eating disorder (BED). A total of 136 participated in the RCT who had BED, among them 81.6% were women with a mean age of 46.5 and BMI of 37.1kg/m^2. They were randomly placed in one of the four 16-week treatment. Results show that remission rates for treating binge eating disorders were 17.7% for placebo, 31.3% for naltrexone/bupropion, 37.1% for behavioral weight loss therapy and placebo. The goal here was to test medications and therapy alone and combined for the treatment for BED[3]. For adults with moderate-to-severe BED symptoms; evidence also supports the efficacy of pharmacotherapy alone or in conjunction with psychotherapy. Although no drug has been developed specifically for binge eating or BED, several psychotropic medications targeting other conditions have shown to also have beneficial effects on binge eating and have been re-purposed for BED treatment. Currently, Lisdexamfetamine (LDX) - a stimulant is the only FDA-approved medication in the United States for BED treatment, though antidepressants and antiepileptics have also shown modest efficacy in reducing binge eating in BED.[15] Evidence supports the efficacy of several treatment modalities in adults, including self-help treatment, clinician-led psychotherapy, and pharmacotherapy; the strongest statistical support was found for psychotherapies, most of which were cognitive-behavioral in orientation[15]. Similar to adult studies, bariatric surgery in adolescents is associated with improvements in binge-type eating from pre-surgery through up to six years post-surgery[16,17]. To date, the few RCTs testing combined pharmacologic plus psychological treatments for eating disorders have yielded mostly non-significant findings. One critical review of 12 RCTs for BED was analyzed; only 2 (both with antiseizure medications) significantly enhanced both binge-eating and weight outcomes, and only 2 (with orlistat, a weight-loss medication) enhanced weight loss but not binge-eating outcomes[18]. Grilo et al examined rapid response (65% or greater reduction in binge eating by the 4th treatment week) on 108 patients with BED who were randomly assigned to 1 of 4 16-week treatments: fluoxetine, placebo, cognitive-behavioral therapy (CBT) plus fluoxetine, or CBT plus placebo.

Participants with rapid response were more likely to achieve binge-eating remission, had greater improvements in eating-disorder psychopathology, and had greater weight loss than participants without rapid response[19].

Cognitive Behavioral Therapy and Weight Management Therapy

Hay et al. recruited 98 adults who had BED and other eating disorders, who were either randomly selected for a multidisciplinary program - the Healthy approach to weight management and Food in Eating Disorders (HAPIFED) or placed at the cognitive behavioral therapy-enhanced (CBT-E). Results suggest that both HAPIFED and CBT-E showed statistical significance for the time effect, with reduction in stress ($p<0.001$), improvement in mental health-related quality of life ($p=0.032$), reduction in binge eating severity ($p<0.001$), and also in global ED symptoms scores ($p<0.001$), with the significant changes found at end of treatment and sustained at 12-month follow-up[2]. Similarly, Morillo Sarto et al. aimed to explain methods in a cluster randomized trial that targets to assess the efficacy of mindfulness eating (ME) program in order to decrease emotional eating (EE) in individuals who are overweight/obese. About 76 adults who were either overweight or obese were recruited from health centers. Participants were randomly assigned to two groups. One consisted of ME along with usual treatment and the other was usual treatment only. The major outcome (EE) was measured by the Dutch Eating Behavior Questionnaire. The ME group consisted of 7 weekly group sessions with a 2-hour time frame, and had a combination of conceptual content and practice. Programs that are based on mindfulness were considered to be an effective approach for individuals who had obesity related eating behaviors that includes binge eating[20]. The first ME study showed that, through a 7-session group programme, it was possible to reduce the number of binge eating episodes, as well as depressive symptom etiology. The meditative practice related to eating was the best predictor regarding the improvement in eating control[21]. It has recently been stated that ME seems to be an effective approach to weight and glycaemic control in people with diabetes, and thus, promoting mindfulness could be one of several behavioural tools to support key self-care aspects to regulate glycosylated haemoglobin[22]. ME has also shown efficacy in binge eating disorders and could contribute to weight loss and a reduction in sweets consumption and fasting glucose levels[23].

Peckmezian & Hay in their systematic review highlighted that ED symptoms, health-related quality of life and weight status are associated; although the interventions that joint psychological or behavioural elements are less effective in weight loss, they can favour improvements in ED and general psychopathology. They eventually hint a dual focus for weight loss interventions including weight loss strategies (life style approaches, pharmacotherapy or surgery) and psychological well-being (treatment of disordered eating symptoms)[24].

Online Cognitive Behavioral Therapy

Toro et al. aimed to assess the effectiveness of an online CBT at a workplace for individuals with eating disorders. Introductory efficacy had promising results. The therapy resulted in a decrease in work harm that led to a betterment in productivity. At a workplace, there are external factors that may trigger a person; heavy workload, stress that's related to the job. On the other hand, there are also opportunities that allow an individual to be more interactive. According to this study, it is mentioned that the workplace can also be a great place to take the initiative of an online based therapy for better productivity. Qualitative findings indicated a wide range of positive impacts of the therapy and the workplace as the therapeutic setting. Of the 24 participants who completed the online questionnaire at 1-month follow-up (CBT), majority (70.8%) mentioned they preferred workplace appointments over a clinical setting, while 16.7% indicated no preference. About 1 participant out of 5 (20.8%) had offered treatment after they sought help from family doctors. Advantages & disadvantages of therapy in the workplace over clinical settings were 83.3% and 29.2%[25].

A study by Grammer et al. found factual results, stating that having an online approach that is established resulted in a higher number of participants completing the program. Dieting by oneself without professional guidance may lead to the onset of ED behavior, hence supervision is required when dealing with binge eating disorder or any eating disorder at all. Even though the results are good, further research is required to see if these results are sustainable for the long run. This is because Grammer mentioned that previous research that were systematic reviews indicated that the results of an online intervention start to deteriorate over time.

Researchers randomized 60 participants (18-39 years) to either a combined approach (n=30) or the CBT only (n=30). Their mean BMI was 34.37 kg/m^2. Results noted that there was no notable change in BMI, weight management or ED symptoms but significant reductions in ED attitudes, binge episodes, and compensatory behaviors from baseline to 8-weeks were found (p<.05). Limitations to this study were height and weight reports that were self-done via an online platform, generating biasness[26].

Improvement of Psychological Distress after CBT

Sockalingam et al. carried out a tele-based intervention aimed to evaluate the effectiveness of CBT for risk factors such as psychological distress and episodes of disordered eating. The methodology was a multisite clinical trial and had 314 adults who had fluency in English. Among the participants, 3.3% were Arab or West Asian, 7.5% were black, 2.9% were Latin American, 6.2% were other races and 76.5% were White. Evaluations for primary (total weight loss%) and secondary results (Binge Eating Scale and Emotional Eating Scale) were done about 15 months post-surgery, and a follow up of 18 months post-surgery. Data analysis was performed from January to February, 2023. There were notable improvements in binge and emotional eating, along with betterment in symptoms that were depressive. Furthermore, anxiety symptoms were also improved. Results suggest that the engagement rate increased. This included 123 partakers (80.9%) going through with both the treatment and follow up after surgery. Additionally, psychological agony had also been improved by the help of this approach such as anxiety and depressive symptoms. Of 306 patients, tele CBT included 152 patients and the control group consisted of 154 patients. No significant values were observed for weight loss (F_1,160.61 = 2.09; P = .15). Notable interactivity for mean Binge Eating Scale (F_2,527.32 = 18.73; P<.001), Emotional Eating Scale (F_2,530.67 = 10.83; P<.001), Patient Health Questionnaire (F_2,529.93 = 17.74; P<.001), and Generalized Anxiety Disorder-7 item scale ((F_2,535.16 = 15.29; P<.001) were observed. Thus, the researchers had factual evidence that a tele based CBT for psychological factors had been deemed effective for patients who had suffered from binge eating. Study had its strengths such as higher sample size, care control for bariatric surgery postop, increased rate of retention, and improved results for psychological distress. However, it had its limitations as well that included inability to evaluate weight loss outcomes since intake and expenditure of energy had not been collected. So, results for short term weight loss had not been observed. Data collection needs to have prolonged periods such as 3 years to see if the results are sustainable for the long run. Nevertheless, it is to be noted that the psychological factors had significant improvements[27].

Mindfulness eating study, through a 7-session group programme, could reduce the number of binge eating episodes along with the depressive symptom, regulate HbA1C and fasting glucose levels. For both severity of binge eating and global self-reported ED symptoms, a significant time effect was found (p<0.001) at the end of treatment and at the 12-month follow-up[20].

Conclusion

Various psychological & behavioural measures, specific medication categories and weight management techniques were appreciated to control different binge eating disorders to varying degrees – supported by considerable systemic and critical reviews. Experts are still continuing to search for even a better technique to address the problem. Yet patient satisfaction remains unappeasable from all those existing treatments. Participants with rapid response were more likely to achieve binge-eating remission, had greater improvements in eating-disorder psychopathology, and had greater weight loss than participants without rapid response. Research with BED has found that failing to have a rapid response to initial treatments, particularly to pharmacotherapies or to behavioral weight loss, is a signal to consider the need to either switch treatments or to add medications. Future research should focus on adding medications with effective psychological interventions for the management of BED.

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Review Article

Sunlight as a Scheme for Procuring Vitamin D: Encounters & Going Ahead

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Abstract

Purpose: *To conduct a systematic review of studies to investigate the relations between proper sunlight, climate, lifestyle and vitamin D in humans.*

Objective: *Hypovitaminosis-D is expected among apparently healthy individuals (definite age group; children/adolescent/adult).*

Methods: *We systematically searched Web of Science, PubMed (MEDLINE), and Google databases for a period of 2 months (Feb-Mar 2024). We concentrated on scientific articles published after 2000. Cross referencing articles retrieved through the databases were also evaluated additionally so more relevant research findings could be accumulated. The studies investigating the prevalence of vitamin D deficiency in population-based studies were included. Key words used for the search engines were: "Sources of Vit-D, Vit-D and Sunlight, toxicity, latitude & altitude, treatment & prevention, Vit-D Supplements, worldwide prevalence,".*

Result: *Regular sun exposure improved blood levels of vitamin-D. Studies confirmed association of vitamin D deficiency with increased risk for depression, Alzheimer disease, epilepsy, and neurocognitive decline. Outdoor workers with the sunlight exposure daily have been reported to have higher serum 25(OH) D compared to indoor workers. Observers found that cancer mortality increased with increasing distance from the equator indicating closer to sunlight decreases chances of cancer. The urban inhabitants required about three times more sun exposure index (SEI) when compared to the rural counterparts.*

Conclusion: *Sunlight was recognized to be the foremost source of Vitamin D. Numerous other influences were proved to be involved in acquiring vitamin D even if people obtaining UV radiation from the sun like clothing, plastic & glass covering, sunscreen use, altitude, geographical regions, comorbidity. Globally people' attitude for the advantage of free sunlight needs to be improvised.*

Key words: *Sunlight & vitamin D, Exposure to sunlight, Sunlight & lifestyle.*

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Introduction

In an era where privileged lifestyles inside & under the enclosed roofs and office-centric work settings have become the standard, a silent health concern emerges as colossal: vitamin-D (Vit-D) deficiency. Obvious cases of Vit-D deficiency signify only the tip of an iceberg of Vit-D insufficiency. Vit-D is crucial for bone health, immune function besides overall well-being. However, modern lifestyles that keep us indoors don't offer themselves to getting enough sun for sufficient Vit-D production. As a result, experts reckon that a substantial proportion of population are keeping them away from enough natural vitamin-D.

Vit-D plays an essential role in the regulation of metabolism, calcium and phosphorus absorption of bone health. However, the effects of Vit-D are not limited to mineral homeostasis and skeletal health maintenance. The presence of Vit-D receptors (VDR) in other tissue and organs suggest that Vit-D physiology extends well above and beyond bone homeostasis[1].

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Popularly known as the sunshine vitamin, Vit-D is a steroid with hormone like activity. It regulates the functions of over 200 genes and is essential for growth and development. There are two forms of Vit-D. Vitamin D2 (ergocalciferol) and vitamin D3 (cholecalciferol). Vit-D status depends on the production of vitamin D3 in the skin under the influence of ultraviolet radiation from sun and Vit-D intake through diet or Vit-D supplements. Usually, 50 to 90% of Vit-D is produced by sunshine exposure of skin and the remainder comes from the diet. Natural diet, most human consume, contain little Vit-D[2].

Nomenclature of Vit-D precursors and metabolites[3,4] is: 7-Dehydrocholesterol (Pro-vitamin D3), Cholecalciferol (Pre-vitamin D3), Ergocalciferol (Pre-vitamin D2), Calcidiol (25-Hydroxyvitamin D), Calcitriol (1,25-Dihydroxvitamin D).

Vit-D deficiency has been considered a global health issue because it can cause the bone hypomineralization disorder osteomalacia in humans. Existing studies have reported that Vit-D deficiency is also associated with infectious diseases like Covid-19 and upper RTI. Many studies also reported the links between Vit-D deficiency and other diseases, for instance, muscle weakness, multiple sclerosis, diabetes, hypertension, metabolic syndrome, cancers, autoimmune diseases, cardiovascular disease, and hip or vertebrae fracture in later life. Vit-D can be obtained from skin exposure to UVB radiation, dietary intake, and foods fortified with Vit-D[5].

Vit-D obtained from sun exposure, foods, and supplements is biologically inert and must undergo two hydroxylations in the body for activation. The first hydroxylation occurs in the liver, converts Vit-D to 25-hydroxyvitamin D/hydroxycholecalciferol [25(OH)D], also known as calcidiol. The second hydroxylation occurs primarily in the kidney and forms the physiologically active 1, 25-dihydroxyvitamin (dihydroxycholecalciferol) D [1,25(OH)2D], also known as calcitriol[6].

Children one year and older should receive at least 600 IUs of Vit-D daily. The Endocrine Society recommends at least 600 IUs and up to 1000 IUs daily is safe and effective to prevent Vit-D deficiency and insufficiency. Infants and toddlers who received 50,000 IUs of vitamin D2 once a week or 2000 IUs of vitamin D2 or vitamin D3 daily for 6 weeks corrected their Vit-D deficiency without any untoward side effects[7]. A study done in the young Lebanese girls who received 14,000 IUs of Vit-D weekly for one year were able to maintain their blood level of 25(OH)D in what is considered to be a healthy physiologic range above 30 ng/mL[8].

Serum 25(OH)D concentration is the parameter of choice for the assessment of Vit-D status. Recently, many studies[6] have used >30 ng/mL as sufficient and most experts now recommend the normal level to be 30 ng/mL, insufficiency between 20-29 ng/mL and at levels of d”20 ng/mL the patient is considered Vit-D deficient. Exposure to sunshine each day helps human body to manufacture the required amount of Vit-D. However, due to fear of developing skin cancer most people avoid the sun exposure. To prevent Vit-D deficiency, one should spend 15-20 minutes daily in the sunshine with 40% of the skin surface exposed. High concentration of melanin in the skin slows the production of Vit-D; similarly aging greatly reduces skin production of Vit-D[10].

Foremost reasons of Vit-D deficiency are sunscreen, skin pigment & dark skin, season/time of day, aging, Cystic fibrosis, Celiac disease, Crohn’s disease, gastric bypass, medications that reduce cholesterol absorption like anti-convulsant, glucocorticoid, breast feeding, Obesity, Hepatic failure, Nephrotic proteinuria, Chronic renal failure, Vit-D resistance[11]. Gailor et al mentioned that over the last decade, the frequency of measurements of 25(OH)D in the healthy population has significantly increased due to an increased awareness of vitamin-D deficiency and its potential association with many diseases. This also resulted in an increased demand for vitamin-D metabolite measurements[12].

Use

Vit-D promotes calcium absorption in the gut and maintains adequate serum calcium and phosphate concentrations to enable normal bone mineralization and to prevent hypocalcemia. It is also needed for bone growth and bone remodeling by osteoblasts and osteoclasts. Without sufficient Vit-D, bones can become thin, brittle, or misshapen. Vit-D sufficiency prevents rickets in children and osteomalacia in adults. Together with calcium, Vit-D also helps protect older adults from osteoporosis. Vit-D has other roles in the body, including reduction of inflammation as well as modulation of such processes as cell growth, neuromuscular and immune function, and glucose metabolism. Many genes encoding proteins that regulate cell proliferation, differentiation, and apoptosis

are modulated in part by Vit-D. Many tissues have Vit-D receptors, and some convert 25(OH)D to 1,25(OH)2D[13].

Regular sunlight exposure, besides a definite source, is considered a preventive measure against Vit-D deficiency. Vit-D deficiency, related to inadequate exposure to UVB radiateon, may result from the common lifestyles of many urban populations, who spend long periods of time indoors in residence & office. Inadequate dietary intake, being overweight, having dark skin pigmentation, advanced age, sunscreen use, passing through glass and plastic, and covered clothing style can also predispose to hypovitaminosis D, all of which are influenced by UV radiation according to time of year and latitude[14].

Worldwide Prevalence

Vit-D deficiency has emerged as a pandemic among all ages[15]. Globally 1 billion people are suffering from Vit-D deficiency or insufficiency. A study estimated that deficiency in Vit-D is responsible for 4 billion cases of bone diseases and loss of 3.3 billion disability adjusted life years[16]. This pandemic of Vit-D deficiency and insufficiency is attributed to a modern lifestyle and environmental factors that restrict sunlight exposure, which is essential for endogenous synthesis of Vit-D in the skin[17]. The prevalence of vitamin D deficiency was 7.8% overall, with a higher prevalence of 13.5% in South Africa. Previous studies of healthy young children have reported higher prevalence estimates of 13.6% in Kenya, 15.0% in Uganda, and 25.8% in Nigeria. Prevalence estimates were also higher in young children from other continents, including estimates of 15% in the USA, 14% in Japan, and 11% in China[18]. A study estimated that deficiency in Vit-D is responsible for 4 billion cases of bone diseases and loss of 3.3 billion disability adjusted life years[18]. Vit-D deficiency might even be found in the sunniest areas of the world if most of the skin remains shielded from the sun due to clothing or indoor activities[19-21]. South Asian countries are no exceptions as a high prevalence of Vit-D deficiency has recently been documented among women and young infants residing within this geography[22].

The prevalence of Vit-D deficiency and insufficiency among pre-school children in Dhaka, Bangladesh varies from 2 to 84%. The Bangladesh National Micronutrient Survey' 2011–2012 indicated that 32.1% of all the preschool children and 39% of school-age children were living with Vit-D insufficiency[23]. Another study revealed that the prevalence of Vit-D deficiency among underweight children was 40%, which was higher than the prevalence in normal population[24]. Three nationally representative studies in younger age groups in the USA reported the prevalence of Vit-D deficiency as 9% in 1–21 year olds[25], 14% in 12–19 year olds[26] and 32% in 12–17 year olds[27]. A nationally representative Iranian study reported a high prevalence of deficiency (40%) in participants aged 10–18 years[28]. Of 188 participants (12–13 years) included in a Korean study, 94% were Vit-D deficient[29], with a similar prevalence (97%) reported in Chinese 12–15 year olds[30], Saudi Arabian 6–17 year olds (100%)[31] and Turkish 4–16 year olds (98%)[32] (all serum 25 (OH)D concentration.

The 2011–2013 Australian Health Survey (AHS) found that Vit-D deficiency among ≥25 years was not uncommon (20%), despite the opportunity for ultraviolet (UV) irradiation being relatively high in many regions of Australia, compared to many other countries. Independent predictors of Vit-D deficiency were determined using survey-weighted Poisson regression models at the individual level. Potential predictors of deficiency for young adults were sex, age, region of birth, season, BMI, smoking, education, physical activity and socioeconomic status[33]. Season was an independent predictor of Vit-D deficiency in both adolescents and young adults, which supports previous studies of children and/or adolescents in Australia[34], Norway[35] and the USA[36], where the prevalence of Vit-D deficiency was higher in winter than summer.

Discussion: Sunlight and Vitamin D

Schizophrenia has been associated with inadequate sun exposure and Vit-D deficiency. Schizophrenia is more common in the Scandinavian countries. Winter births have been associated with an increased risk for developing schizophrenia later in life even in Australia. In British immigrants, incidence in schizophrenia is higher in children of immigrants from the Caribbean who moved to cities in countries farther North. Finnish male infants who received 2000 IUs of Vit-D daily during their first year of life reduced their risk of developing schizophrenia by 77% compared with infants who received less than 2000 IUs of Vit-D daily[37]. There are a variety of association studies relating Vit-D deficiency with increased risk for depression, Alzheimer disease, epilepsy, and neurocognitive decline[37].

It is well documented that seasonal differences in cutaneous vitamin D3 production have a dramatic influence on both children's and adults' Vit-D status. A study of 7437 Caucasian men and women from the 1958 British birth cohort at age 45 y revealed that the peak blood levels for 25(OH)D were observed in September (~30 ng/mL) and the nadir was observed in February (~14 ng/mL)[38]. A similar observation was made in postmenopausal women in Denmark. Those who had regular sun exposure achieved a blood level of 25(OH)D of ~45 ng/mL compared with women who avoided direct sun exposure had a 25(OH)D of ~23 ng/mL[39].

Cross-sectional studies have also been conducted to understand the association between sun exposure and Vit-D. One study from Delhi, India, has examined the role of sun exposure in acquiring daily requirement of Vit-D[40]. Men with varying degrees of outdoor sun exposure were studied during August-September 2015. Outdoor workers with prolonged sun exposure had sufficient vitamin D based on blood markers. Sun exposure was the only significant determinant of Vit-D status, increasing serum 25(OH)D by about 2 ng/ml/h of sun exposure per day [95% confidence interval (CI) 1.8-2.3; P<0.001]. Outdoor workers with an average exposure of 4.4 h daily have been reported to have higher serum 25(OH)D compared to indoor workers with an exposure of 0.9 h per day from Israel[41]. Rural women in Malaysia who spent more hours in sun had mean 25(OH)D levels almost double than that of urban women[42].

Wintertime and old age was found to be associated with higher prevalence of vitamin D inadequacy, reported by Gaugris et al. In winter season, the prevalence of vitamin D inadequacy escalated by 51.2% among the women aged 70+ years vs. 38.5% for the whole study population (41–80 years). On the other hand in summer time, it was 16.7% against 12.5%. Another striking finding of their investigation was the high prevalence of vitamin D inadequacy in those with a history of osteoporosis and fracture. Supplementation with Vit-D may be useful in helping increase bone mineral density in these patients[43]. Oliosa PR et al. performed a cross sectional study on 708 children & adolescents to explore the relationship of Vit-D concentration variation against different seasons & indoor to outdoor. Lower prevalence of hypovitaminosis D was found during the summer and autumn; the proportion of inadequate levels of vitamin D was greater in the participants whose vitamin D was measured during spring and winter (P<0.001). Also, a greater proportion of inadequate vitamin D was observed for those engaged in indoor activities (PR=1.08, P=0.020, 95%CI=1.01–1.15)[44].

Interesting though, several clinical features can be misdiagnosed as a musculoskeletal disorders that are actually due to the deficiency of vitamin-D and its consequences (Ricket, Osteomalacia). Patients typically complain of proximal muscle weakness causing difficulty with transitioning from a sitting to a standing position; and in some cases, patients are unable to lift their head due to severe proximal muscle weakness in the shoulder girdle muscles. In addition to proximal muscle weakness, patients often complain of generalized fatigue and are often misdiagnosed as other rheumatologic diseases such as fibromyalgia, chronic fatigue syndrome and polymyalgia rheumatica[45]. Patients can also display a characteristic waddling gait which may result from thigh weakness and hip pain[46].

Vitamin D deficiency (<20 ng/mL) and insufficiency (20–29 ng/mL) are common among patients with chronic kidney disease or undergoing dialysis[47]. In a meta-analysis, Kandula et al. reported that nutritional vitamin D leads to increased 25(OH)D levels without any hypercalcemia or hyperphosphatemia and with a decrease in serum PTH level (41% decrease), mostly in dialysis patients[48].

One of the first association studies relating sun exposure with reduced risk for cancer was reported in 1916 by Hoffman, who found that living at a higher latitude was associated with an increased risk for mortality from cancer. He compared cancer mortality between 1908 and 1912 and observed that cancer mortality increased with increasing distance from the equator. Researches also reported that there was a strong significant negative correlation with colon cancer mortality and mean daily solar radiation in the United States[49].

Vit-D status and sun exposure index (SEI) among rural and urban residents were examined by a group of researchers from Belgium. SEI was derived from their reported sun exposure times and percentage of body surface area exposed. 25(OH)D serum levels increased linearly as the index of sun exposure increased. For the same 25(OH)D level, the urban inhabitants required about three times more SEI when compared to the rural counterparts. For any given SEI,

the Vit-D status among the urban population was lower when compared to the rural dwellers. This indicated that the amount of UVB reaching the earth may have been significantly altered due to air pollution in case of urban setting[50]. In Romania, where the prevalence of vitamin D deficiency was about 65 per cent, it was found that the total body bone mineral density was inversely associated with indicators of air pollution[51]. Marwaha et al concluded that there is a high prevalence of clinical and biochemical hypovitaminosis D in apparently healthy school children in India. They noted Vit-D deficiency features in 10.8% of the children in northern India. Children in the LSES (low socioeconomic status) group had a significantly (P 0.01) lower 25(OH)D concentration (10.4 vs 13.4 ng/mL) than did those in the USES (high socioeconomic status) group. Boys had significantly higher Vit-D concentrations than did girls (P 0.004). Mean forearm bone mineral density was significantly (P 0.01) higher in the USES group than in the LSES group[19].

Veleva et al. tried to retrieve (RCT) differences between UV light (n=22) and Vit-D (n=22) supplementation on 61 subjects with dementia (normotensive & mild hypertensive) in a nursing home residents, Holland. UV light had only a short-term effect on BP reduction compared to Vit-D use; although observational studies have reported an inverse association between UV radiation and hypertension. After 1 month of treatment, the mean systolic BP in the UV group was 24.5 mmHg lower (95% CI 7.6, 41.3, p=0.008) than at baseline; mean systolic BP did not change significantly among the Vit-D group[52]. Similar findings was also reported by a systemic review mentioning no significant differences in SBP and DBP changes between the vitamin D and control groups[53].

WHO reported that exposure to UVB radiation in a clinical setting not only improved circulating concentrations of 25(OH)D by more than 160% but also significantly reduced both systolic and diastolic blood pressure in patients with hypertension. A control group was exposed to the same UV lamps that were covered by an acrylic shield absorbing all UVB radiation and thus was exposed to UVA radiation only. The control group's subjects demonstrated no significant change in their circulating concentrations of 25(OH)D as well as no change in their hypertension[54].

Darker skin absorbs more UVB in the melanin than the skin of White people and, therefore, to acquire the same amount of Vit-D, they may require a higher amount of sun exposure[55]. The amount of Vit-D production based on skin type can be optimized using minimal erythemal dose (MED, a measure of redness of skin with UV radiation). Immigrant Asian population, in temperate countries where the intensity and duration of sunshine are less, show higher incidence of Vit-D inadequacy. One study from the UK reported that an optimized sun exposure that equals to holiday sunshine in the UK did not produce sufficient Vit-D in immigrants with darker skin type[56].

Experiences from the African continent (Tanzania, 2-4°S of Equator) among indigenous population also support the above evidence. The participants from different African five ethnic groups were found to have high concentrations of 25(OH)D in their blood (115 nmol/L), irrespective of the fish consumption and their darkest complexion. Therefore, available evidence from Asia and Africa suggests that despite the darker skin type of people, sun exposure may be an effective strategy to prevent vitamin D deficiency[57,58].

Altitude can also have a dramatic influence on the amount of solar UVB that reaches the earth's surface because the higher the altitude the shorter the path length that UVB has to travel through the atmosphere and thus the skin can produce more vitamin D3. This was dramatically demonstrated in Agra (169 M altitude), Katmandu (1400 M), and mount Everest base camp (5300 M), India (27° North). An analysis of sun-induced vitamin D3 synthesis in vitro was conducted at higher altitudes at the same latitude during the same month. In November in Agra very little previtamin D3 was produced during exposure to the sun. It was observed that there was a direct correlation with increased previtamin D3 production with increased altitude. At Mt Everest base camp (5300 M) there was almost a 5-fold increase in previtamin D3 production compared with what was observed in Agra[59].

Kafle et al. concluded that there is an association between low levels of Vit-D and tuberculosis infections. Vit-D has also shown its immunomodulatory effects to suppress mycobacterial growth. they conducted a systematic review and meta-analysis of the available evidence to explore the association between Vit-D levels and tuberculosis; performed a systematic search for articles from May 2021 in multiple databases. Their search included 26 studies in qualitative synthesis and 12 studies in meta-analysis

or quantitative synthesis. They used a random-effect model to calculate the odds ratio of Vit-D deficiency in tuberculosis patients compared to the healthy controls. On pooled analysis, they found that the odds of the participants having Vit-D deficiency was 3.23 times more in tuberculosis patients compared to the healthy group (OR=3.23, CI = 1.91-5.45, p<0.0001)[60]. Significant burden of Vit-D insufficiency and deficiency in both underweight and normal-weight children were quantified in Bangladeshi urban slum. Shamsir et al in their study concluded that 23.1% were sufficient, 42.3% insufficient, and 31.2% deficient (N=468) among the underweight children, and 3.4% severely Vit-D deficient. Among 445 normal-weight children, 14.8% were sufficient, 39.6% insufficient and 40.0% deficient and 5.6% severely deficient[61].

Implication

Vit-D deficiency is pretty common and most people even do not realize it. Getting enough Vit-D is a challenge being essential for human body; and body does not produce enough if not supplied through vitamin-D rich food or sunlight – a purely natural source. Globally various health education measures can be employed to improve the Vit-D status of the people. Scientific reasoning as evidenced by the analytic and interventional researches can be used to motivate the world population in this regard.

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Case Report

Pilonidal Sinus (PNS) of the Nose: A Case Report

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Abstract

Pilonidal sinus is very commonly associated with the sacrococcygeal area, but its presence within the head and neck is still unknown to many. A 6 years old female patient presented to us with a small opening in the middle of the dorsum of the nose since birth. She developed pain & swelling near the left medial canthus, diagnosed clinically and treated by several consultants over two months but her condition did not improve. The lesion was excised by a curvilinear incision in the nose connecting two sinus openings. The sac was excised. Histopathological examination revealed granulation tissue densely infiltrated with acute and chronic inflammatory cells. The granulation tissue also contains few hair shafts.

Key words: *Pilonidal sinus, Nose, Hair drafts.*

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Introduction

A pilonidal sinus (PNS) is a small hole or tunnel in the skin. It may fill with fluid or pus causing the formation of a cyst or abscess. It commonly occurs in the sacrococcygeal region and having a tendency to recur[1,2] and other atypical sites including the axilla, perineum, suprapubic region, umbilicus, interdigital space, a mid-thigh amputation stump[3-5], scalp and ear[6,7], Nose[8,9]. PNS mostly occur in people in their late teens to early 20s. Rarely do they involve people over the age of 45 years[10]. PNS is a condition that mostly affects men and is also common in young adults. It's also more common in people who sit a lot, like cab drivers. The exact cause of this condition isn't known, but changing hormones, hair growth, and friction from clothes or from spending a long time sitting considered causes. Activities that cause friction, like sitting, can force the hair growing in the area to burrow back under the skin. The body considers this hair foreign and an immune response against it. This immune response forms the cyst around your hair. Sometimes a person may have multiple sinuses that connect under the skin collects).

Case History

A 6 years old female patient presented to us in department of ENT and Head neck surgery, UAMCH with a small opening in the middle of the dorsum of the nose since birth. She developed pain & swelling near the left medial canthus and treated by several consultants over two months but her condition did not improve. We examine the patient and found a small pit in middle of nose, a discharging sinus in Left sided nose near medial canthus. Sinogram shows a small irregular linear sinus tract is opacified, which pass upward and posterior and is placed within soft tissue of upper part of nose. CT scan of PNS shows small soft tissue mass in Lt sided nose. The lesion was excised by a curvilinear incision in the nose connecting two sinus openings under general anesthesia. The sac was excised. Histopathological examination revealed granulation tissue densely infiltrated with acute and chronic inflammatory cells. The granulation tissue also contains few hair shafts.

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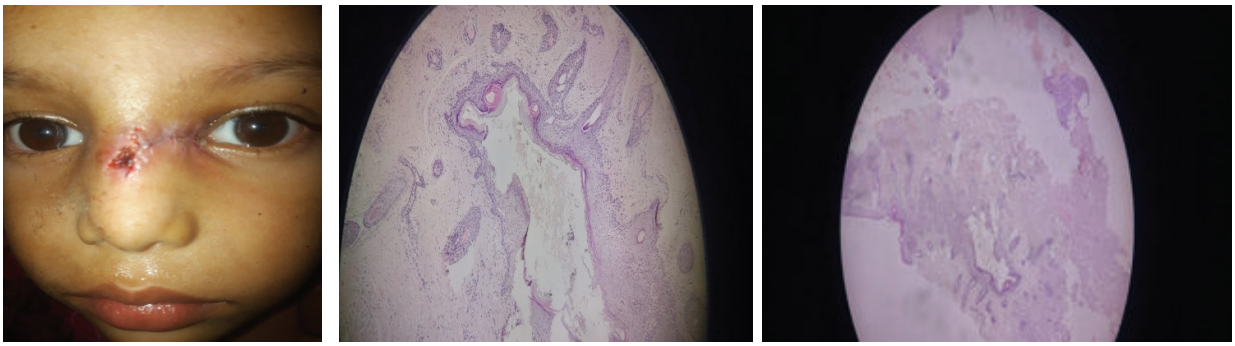

Discussion

PNS was first described by Herbert Mayo in 1833[1] then Hodge in 1880. There is a constant debate about whether it is a congenital or an acquired condition. While initial hypotheses favoured the congenital theory, recent evidence proves otherwise. One of the most diagnostic signs for the presence of a pilonidal sinus is the occurrence of free hairs within the sinus tract. This finding, along with others, has led many to believe that pilonidal disease is indeed an acquired condition.

PNS remain asymptomatic, symptomatic when both acute and chronic infection occur. Acute presentation involves a painful, swollen, erythematous abscess, which may or may not drain, and can form a secondary tract if drainage to the surface. The chronic presentation involves a single or branching abscess containing loose hair. This variant is usually due to prolonged neglect of symptoms but can also occur in spite of appropriate treatment[11].

Diagnosis of PNS is based on the history and examination of the site. Imaging does not play a vital role in its diagnosis. Dogru et al.[12] used crystallised phenol application to treat pilonidal sinus, with a less than 1% recurrence rate within the first year. Use of cauterisation, alcohol injection and simple phenol solution has been mentioned in the literature, but an optimal treatment option has not been formed out of them.

Surgical treatment follows the principle of excision and thorough cleansing of hair and debris. Senapati et al.[13] reported a recurrence-free rate of around 90%, with debridement and a lay open technique. This was also supported by Al-Hassan et al, when he reported a mean healing time of 13 weeks and recurrence rate of 12% using the lay open technique. However, excision of a pilonidal sinus with primary closure has showed an even shorter healing time[14].

Pilonidal sinus disease involving the nose generally requires complete excision followed by primary closure, if small in size. For larger sized defects, an advancement flap is required. However, the treatment option depends on the surgeon's preference, the anatomical site and the size of the pilonidal sinus, among other factors.

Conclusion

Pilonidal sinus in nose is a rare condition. So any patient presented to us with discharging sinus in nose should be kept in mind as a differential diagnosis of pilonidal sinus.

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Case Report

A Case Report on Covid -19 Positive, Hypothyroid (Controlled) Woman with Abruptio Placenta

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Abstract

The impact of COVID-19 on the fetomaternal outcome is widely variable. The exact association is yet to be explored. This is a report of a 34 weeks pregnancy with abruptio placentae & foetal distress in hypothyroid (controlled) woman who was diagnosed later to be positive for the SARS-CoV-2. Other then mild cough she had no other features of respiratory distress during admission. She had a healthy male baby on emergency LUCS. The patient insisted on leaving the hospital with DORB despite medical advice of shifting to the COVID unit. The case became SARS-CoV-2 negative after 17 days. Considering the significance of uncertain clinical outcomes, clinicians need to be mindful of the potential risk of the exposure in pandemic and ensure timely screening even in otherwise asymptomatic COVID-19 pregnancies.

***Keywords**: Abruptio placentae; Covid 19 positive; Hypothyroid (controlled).*

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Introduction

Like any other viral infection, Covid-19 was also suspected to impose threat to both pregnant women and their foetus. Initial studies in newly emerged SARS-CoV-2 infected mothers demonstrated mild to asymptomatic outcomes with no significant risk for perinatal mortality. But, with increasing spread of newer strains during the successive waves of the pandemic, more evidences became available suggesting COVID-19 pregnancies are more susceptible to higher risk of preterm birth, as well as maternal and/or fetal death[1-4]. This worsens in unvaccinated mothers[5] and pregnancies with co-morbid conditions like DM, thyroid dysfunction etc.[6,7]

We encountered a 34 weeks, unvaccinated, known hypothyroid pregnant woman with abruption placenta and fetal distress along with RTI (COVID-19 positive) delivering a healthy infant in emergency LUCS, during the third COVID-19 wave in Bangladesh.

Case

On January 2022, a 32 year old nondiabetic woman (gravid 4, para 1) of 34 weeks pregnancy presented to the emergency department of a busy tertiary care Medical College at Gazipur, Dhaka, Bangladesh with lower abdominal pain (LAP) for 6 hours. The pain was continuous in nature which didn't subside even with antispasmodic medications. There were neither any symptoms of UTI (increased frequency or, burning sensation during micturation) nor any H/O per vaginal bleeding (PVB).

Her vital signs were normal, with blood pressure of 100/60 mmHg, pulse rate of 92 min and body temperature of 37°C. However, the patient was ill-looking & had mild cough with peripheral oxygen saturation of 92%. On palpation, local tenderness over uterus was noticed. At this point, the patient was admitted to the Gynae & Obs department for further management. Fetal heart rate was irregular (150 min). Estimated fetal weight (2073 g) and the volume of amniotic fluid were normal in USG. Emergency LUCS was conducted on that day afternoon. Peroperatively, placenta was found to be partially separated with retroplacental clot. Liquor was adequate & clear. A healthy male baby was delivered weighing 2.4 Kg, with Apgar scores of <8, and 9 at 1st and 5th minutes. The Laboratory tests advised during operation revealed signs of maternal infection. Considering the ongoing 3rd wave of COVID pandemic, a SARS-CoV-2 RT-PCR; the gold standard test, from a nasopharyngeal swab sample was immediately carried out, showing a

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positive result. A serum sample obtained at the same day tested positive for Anti- SARS-CoV-2-IgM but negative for IgA and IgG indicating a recent infection.

Table I
Post-admission Laboratory findings.

Variables	Normal	Case findings
*CRP (mg/L)	6.0	141.0
Hemoglobin (g/dl)	11.5 – 15.5 (Female)	11.9
WBC (10^9 /L)	4,000 – 11,000	20.4
Serum ferritin (ng/ml)	6.0 – 159 (3^{rd} Trimester)	132.6
*D-Dimer (mg/L)	< 0.5	1.46

* suggesting maternal infection.

So, she was finally diagnosed as a case of 34 weeks pregnancy with abruption placenta and fetal distress along with RTI (COVID-19 positive). Moreover, the case was identified to be one of the outdoor patients taking antenatal checkups irregularly at the same department for her current issue. She was also recently diagnosed with hypothyroidism (controlled with Tab. Thyrin) during her pregnancy. Besides this rest of the relevant investigation reports of her antenatal visits were insignificant.

On admission, other than coughing she had no clinical signs of COVID-19 (no headache, malaise, shortness of breath or, fever). The patient confirmed to have no travel history in the last 6 month and no contact with persons diagnosed with COVID-19. She also wasn't vaccinated against COVID-19. However, her other EPI immunization was completed as per schedule.

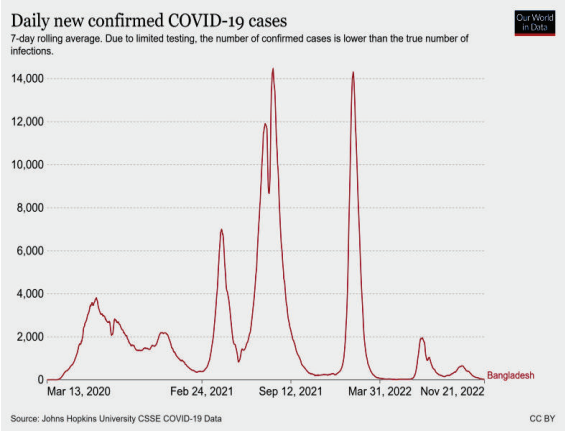
On the 4th hospital day, the otherwise asymptomatic patient was referred to the COVID – unit of the hospital. But, the patient had to be released with DORB from the hospital at her own risk despite medical advice. She was prescribed tab. Moxibac 400mg, tab. Dirozyl 400mg, tab. Thyrin 50 μg along with tab. Fexofenadin 120 mg. After 17 days the case became negative in SARS-CoV-2 RT-PCR. The same test for the newborn was recommended but unfortunately was not conducted by the parents.

Discussion

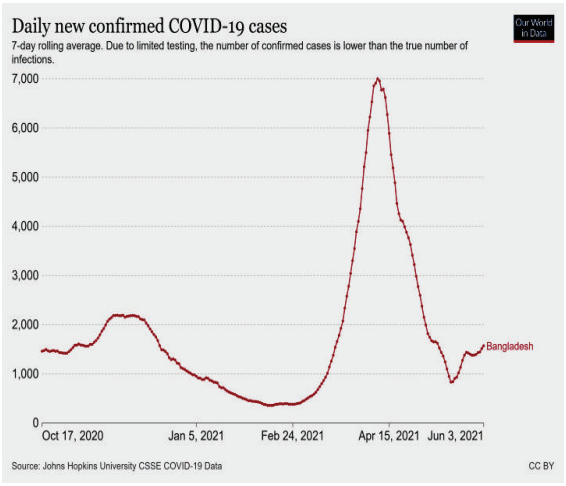
Since the beginning of COVID pandemic, there has been dynamic changes in every aspect of life –most prominently experienced in medical sector; starting with patient management, data preservation unto publishing research findings. Over the period of two years a number of studies related to COVID 19 was conducted yet very limited among those address the issues of pregnancy in COVID positive mothers. Luckily we came across a few case studies similar to ours[8-10]. The closest one was a 32 years old COVID-19 Positive patient with abruptio placentae[9]. However, unlike ours the patient presented with antepartum haemorrhage (APH) and decreased foetal movements followed by adverse fetal outcomes (stillbirth). Signs of fetal distress was documented here which is common in other cases[8,10]. Gestational ages in all these cases were between 32 to 36 weeks[8-11].

Most women experienced mild or asymptomatic disease with no long lasting consequences. On the other hand, some centres have experienced increased rates of ICU admission, the need for mechanical ventilation in pregnant women, even unexplained maternal death immediately after child birth[12]. Fortunately, the outcome in our case was rather optimistic, both in terms of the mother and the newborn. Studies suggest, increased chances of miscarriage or birth defect in mothers being infected during their 1^{st} trimester (during organogenesis)[13]. This might explain the uncomplicated outcome of our case despite conceiving during the peak of regional infections presuming the mother was uninfected. But then again, evidence of placental injury at a microscopic level are being documented in asymptomatic or mildly symptomatic SARS-CoV-2 positive pregnant women, with otherwise uncomplicated pregnancies[14]. This is also supported by another case report by Mongula et al.[8] with extensive Histopathological examination of placental sections (100x magnification; H&E stain, CD68-stained and Myeloperoxidase-stained). Moreover, positive vaginal SARS-CoV-2 PCR test suggesting perinatal transmission was also notified in the same. None of which unfortunately could be recommended in our case at the time of emergency LUCS; before receiving the supporting lab reports.

Our case was admitted on the last day of January'22, which according to world reports coincides with the highest peak *(3^{rd} wave*) of Covid new infections of 2022 in our country (Figure 1a). At this point, the possibilities of under expressing the actual rate and missing out the exact date of infection in this chart cannot be ignored. This could be explained by limited testing & delayed reporting[15]. Moreover, a rough estimated time of her conception (as per USG & uncertain LMP) was around May 2021 which again coincides with the 2^{nd} wave (Figure 1b).



(a)



(b)

Figure 1: Daily New Confirmed COVID-19 Cases[15]

In Bangladesh, from 3 January 2020 to 5:12pm CET, 21 November 2022, there have been 2,036,393 confirmed cases of COVID-19 with 29,431 deaths, reported to WHO. As of 14 November 2022, a total of 328,860,835 vaccine doses have been administered[16]. However our case was not one of the vaccinated ones. Cohorts along with individual case studies demonstrated stillborn foetuses delivered to unvaccinated mothers with COVID-19 most probably resulted from placental insufficiency associated with SARS-CoV-2 placental infection (supported by microscopic findings of SARS-CoV-2 placentitis)[5]. Moreover, her susceptibility further increases as she also happens to be a known case of hypothyroidism under treatment. Hypothyroidism is independently associated with fetomaternal complications. One of the recent studies has established fetal distress, IUD, Low birth weight, APGAR score <6 were significantly higher in patients with clinical hypothyroidism[6]. The first case series in Bangladesh presented twelve cases of miss-abortion or fetal death in COVID-19 positive pregnant women of which two were known controlled hypothyroidism and one with DM[7].

Despite all the impending risks, our case demonstrated satisfactory outcome. Another similar report was available with normal vaginal delivery in 33 weeks Covid 19 infected pregnant woman. However, this report shared evidence of placental transfer of antibodies. High titres of Anti-SARSCoV-2-IgG were detected in the infant's blood whereas SARS-CoV-2 PCR Test was negative[11]. Foetal infection could not be evaluated in our case.

Conclusion

Pregnancy outcomes largely vary in Covid positive cases which may not match with the consequences anticipated. Despite the available studies and reports, little is clearly known about the effects of COVID-19 on the placenta or on the foetus till today. Histopathological examination of placental tissue can provide significant information regarding the etiopathogenesis of the adverse perinatal outcomes associated with COVID-19.

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