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Editorial

Original Article

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Editorial

Vitamin-D and Our Health

***Rahim MA[1]**

Vitamin D is a fat-soluble vitamin produced by the body when skin is exposed to sunlight. It can be found in some foods, including oily fish, liver and mushrooms, and is available as a supplement.

The National Institutes of Health (NIH) recommend a daily intake of vitamin D of 15 µg (400IU) for most adults, with people over 70 recommended an increased intake of 20 µg. These guidelines assume that a person gets minimal sun exposure.

Vitamin D plays numerous roles in the body, including promoting calcium absorption in the gut to enable normal bone calcification and growth, reducing inflammation and modulating cell growth.

The form of vitamin D found in food, supplements and produced in the skin must be metabolized before it can be used by the body. The first step occurs in the liver, where vitamin D is converted to a hydroxylated form called 25-hydroxyvitamin D (25(OH)D). 25(OH)D is then further hydroxylated in the kidneys to the physiologically active form, 1,25-dihydroxy vitamin D.

Deficiency or insufficiency

Clinicians use the amount of 25, di-hydroxycholecalciferol [25(OH)D] present in the blood as a marker of insufficiency or deficiency. The NIH guidelines define deficiency as a serum concentration of 25(OH)D as less than 12ng/mL, and insufficiency as less than 20ng/mL, although other health organizations my use different values.

"Vitamin D is a crucial player in bone health, immune function and the regulation of diverse metabolic processes. Recent studies reveal an alarming statistic – up to 42% of the population suffers from this deficiency," said Dr. Kevin Huffman, a primary care physician and Medical Director of Florida Injury Centers.

Symptoms of vitamin D deficiency include muscle weakness, bone pain, muscle pain and tingling sensations in the hands and feet.

Studies have suggested vitamin D deficiency is linked to a loss of brain plasticity, worsened polycystic ovarian syndrome symptoms and, for expectant mothers, an increased risk of diabetes in their children.

Vitamin D deficiency linked to increased cancer mortality

"The connection between Vitamin D and carcinogenesis is intricate; it encompasses its pivotal role in regulating cell growth, apoptosis – programmed cellular death – as well as immune function," said Huffman.

A recent study published in the *European Journal of Cancer* reviewed the impact of vitamin D deficiency on mortality in 18 different cancer types, as well as overall cancer mortality. The researchers analyzed data from 411,436 people in the UK Biobank using a cause-specific Cox regression model to adjust for other lifestyle or environmental factors that may influence the results.

Over a third (34.4%) of participants were vitamin D *insufficient* and 21.1% had vitamin D deficiency.

The paper reported that vitamin D deficiency was associated with increased mortality for total cancers and four specific cancers: stomach, colorectal, lung and prostate. Vitamin D *insufficiency* was also linked to increased lung and prostate cancer mortality.

The authors also investigated whether vitamin D or multivitamin supplementation influenced mortality outcomes and found that, compared to participants who didn't take supplements; vitamin D supplementation was associated with lower lung cancer mortality as well as lower overall cancer mortality. Taking a multivitamin was associated with lower mortality from melanoma.

This research underscores the importance of adequate vitamin D intake, although further research is needed to identify the exact mechanisms by which vitamin D lowers the risk of cancer mortality.

Vitamin D deficiency affect cardiovascular disease risk

Studies have identified that vitamin D plays a role in cardiovascular health by acting on endothelial and smooth muscle tissues to regulate blood pressure and further research has outlined the association between vitamin D deficiency and cardiovascular disease in people with pre-existing risk factors, like type 2 diabetes or high blood pressure.

However, a 2021 review argued that there is "no strong evidence for beneficial vitamin D effects on

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cardiovascular disease (CVD) risk", pointing out conflicting evidence from observational studies and randomized controlled trials.

A recent study aimed to assess the link between vitamin D levels and cardiovascular disease as well as cardiovascular events (such as heart attack and stroke) by analyzing 5,684 participants from Lausanne, Switzerland. The average follow-up time for this study was 14.4 years.

Vitamin D status was split into three categories based on serum 25(OH)D; normal, insufficiency (21-29 ng 25(OH)D/mL) or deficiency (less than 20 ng/mL). The researchers found that vitamin D deficiency was associated with an increased likelihood of cardiovascular events, but not cardiovascular disease or overall mortality.

The authors outlined that the number of cardiovascular events over the studied period was relatively small and suggested that analyzing a larger study cohort might clarify the effect of vitamin D on cardiovascular health.

Vitamin D deficiency causes increased sepsis mortality in the elderly

Another recent study, published in *Nutrients*, revealed the impact of severe vitamin D deficiency on mortality outcomes in the elderly with sepsis. Of the 129 patients recruited to the study, 96 had vitamin D deficiency and of those, 62 patients had severe deficiency (serum 25(OH)D of less than 12ng/mL.) The researchers used the Sepsis-3 definition to categorize patients with a sequential organ failure assessment score of 2 or more as having sepsis.

The researchers identified that severe vitamin D deficiency was associated with an increase in 14-day, 28-day and overall in-hospital mortality from sepsis. In their paper, the authors highlight the role of vitamin D in immunity as a potential mechanism for this link, although they outline that: "The pathophysiology whereby vitamin D deficiency affects the mortality rate from sepsis is not yet clear."

Vitamin D deficiency identified as a risk factor for young onset dementia

Young onset dementia – when dementia symptoms occur before age 65– was previously thought to have a genetic cause, but a new study published in *JAMA Neurology* has challenged this.

By assessing over 350,000 under 65s in the UK, researchers have pinpointed 15 risk factors for young onset dementia, which included vitamin D deficiency. Although there is still further research needed, the study illustrates how vitamin D status and other modifiable risk factors could be incorporated into dementia prevention strategies.

Huffman concludes that "It is crucial – indeed there can be no compromise – that we encourage patients to fulfill their vitamin D requirements; this may require them to integrate sunlight exposure with dietary intake and supplements when necessary."

Reference:

Katie Brighton, Scientific Copywriter.

Katie joined Technology Networks in January 2022 as a scientific copywriter. She holds a master's by research degree in molecular and cellular biology and a bachelor's degree in biochemistry from the University of Leeds.

Original Article

The Outcome of Congenital Deformity Clubfoot Age below 60 Months Treated by Conservative Ponseti Method

***Badhon MFA[1], Azad AK[2], Chowdhury NNA[3], Azad QA[4], Sultana S[5], Azad F[6], Azad QA[7]**

Abstract:

Background: *The most prevalent significant birth abnormality affecting human bones and joints is congenital clubfoot. Congenital clubfoot, also known as talipes equinovarus, is a complicated malformation that affects the muscles, ligaments, bones, and joints of the growing foot and ankle. It is visible at birth.*

Objectives: *The objective of this study was to see the outcome of congenital deformity clubfoot age below 60 months treated by conservative ponseti method at NITOR for last five years.*

Materials and Methods: *The present study was observational study carried out within the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR) in Dhaka, Bangladesh. The population of this study was 1200 participants of the baby with clubfoot age of below 60 months. Patient's age was below 60 month and with congenital deformity Clubfoot were included in the study and anyone who is not psychologically fit to understand the questions and not willing to participate were excluded from the study.*

Results: *Among 1200 participants 68.6% were male and 31.4% were Nearly 74.4% participants were lower class, 22.0% were middle class and only 3.6% were from upper class society. 4.4% respondent had family history of club foot. 83.8% respondents had to used tenotomy, 16.0% respondents did not have to use tenotomy. , 13.0% babies were reported that they had other medical condition. 82.9% less than 7 ponseti cast, 17.1% had more than 7 ponseti cast.83.8% respondents had to used tenotomy, 16.0% respondents did not have to use tenotomy. 24.8% used tenotomy in right feet, 15.8% used in left feet, 43.8% used in both left & right feet and 15.7% used none of these.61.3% participants came from Dhaka, 16.5% from Chittagong, 3.6% from Rajshahi, 2.6% from Khulna, 7.2% from Barisal, 0.5% from Sylhet, 2.0% from Rangpur and 6.4% came from Mymensingh division. 76.8% child born in hospital and 23.2% born in home, among them 6.6% were in preterm and 91.8% were born in term duration & 1.6% were in post term. 65.0% birth delivery case done by normal, 32.3% done by C-section and 2.8% by other procedure.4.4% respondent had family history of club foot. Around 4.0% children's mother had other medical condition while other 96.0% had not. 5.3% parents were smoker, 6.6% parents had habit of using Beetle nut, 88.1% had none of these habits.*

Conclusion: *Clubfoot is more common in male infants, and most cases are bilateral. In addition, there is data on clubfoot prevalence in untreated non-walkers and syndrome types. The majority of the incidents occurred in lower socioeconomic classes, and a considerable geographic impact was noted, particularly as the majority of the incidents originated in Dhaka and Chittagong.*

Keywords: *Clubfoot, Congenital clubfoot, Ponseti cast, Tenotomy feet*

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****For Correspondence***

Introduction:

The congenital clubfoot is the most common serious birth defect of human bones and joints. Congenital clubfoot, or talipes equinovarus, is a complex deformity that is apparent at birth and affects the muscles, ligaments, bones and joints of the developing foot and ankle. The exact cause of clubfoot is unknown. Hypotheses of cause refer to associated transient gene activity, as seen in developmental dysplasia of the hips and lack of fetal movement[1] as a cause of clubfoot. A higher risk among first-degree relatives than among more distant relatives has been noted in several epidemiological studies. Furthermore, the risk among first-degree relatives of female clubfoot cases is higher (4.3%) than that of male clubfoot cases (1.3%)[1,2]. Studies found smoking

during pregnancy has a higher risk of clubfoot[3]. It is a second-trimester developmental abnormality, usually after the sixteenth week of gestation. It can be seen on an antenatal ultrasound examination after the eighteenth week. It may be associated with myelodysplasia, arthrogryposis or multiple congenital abnormalities[4,5]. It occurs in nearly 1 in every 1,000 live births worldwide, representing a significant burden of disease[6]. The incidence of clubfoot varies widely among different populations, from 0.6 and 2.57 per 1000 live births in the UK and US, with males more affected than females in a ratio of 2:1[7] to 6.8 per 1000 births among the natives of Hawaii [8], and 6 to 7 per 1000 births among the Maori population in New Zealand[7]. In Africa, a rate ranging from 0.9 to 4 per 1,000 live births was reported with a male-to-female ratio of 2.4:1.06. The gross estimate is around 80% of all clubfoot cases are born in low- and middle-income countries ("National Strategy and Action Plan for Clubfoot Care in Bangladesh," 2017)[9]. According to the Global Clubfoot Initiative, the incidence of clubfoot is 1 per 1000 live births in the USA and 1.4 per 1000 live births in Sweden. In Australia, the incidence is higher among the Aboriginal population than the Caucasian (3.5 and 1.1 per 1000 live births respectively). The incidence is 0.76 per 1000 live births in the Philippines and 0.9 per 1000 live births in India (Global Clubfoot Initiative, 2014). Davies (1964) reported that the rate is much lower (about 0.6 per 1,000 live births) among Asians than among Pacific Islanders (more than 6 per 1,000 live births)13. About half of the infants with clubfoot have bilateral involvements and unilateral deformity occurs more often on the right side. It was found that syndromic CTEVs are often more severe and resistant to treatment. The March of Dimes (MD) Global Report on Birth Defects estimates that the incidence of birth defects in Bangladesh is 58.6 per thousand live births and it is estimated that out of them, there may be approximately 5,000 children born with clubfoot each year. The ankle is rotated downward and the toes point inward towards the opposite leg. Clubfoot does not show any symptoms at birth. It does not affect developmental milestones- sitting and walking. The four fixed deformities seen in clubfoot are Cavus, Adductus, Varus of the heel, and Equinus[10]. Clubfoot is treated by simple conservative treatment named ponseti method. It is a simple, easy, cheap and minor surgical procedure. The success rate is good and effective relative to surgical procedures[11,12]. It has three phases casting, tenotomy & bracing. The deformity is characterized by varying amounts of stiffness secondary to retracting fibrosis of the soft tissues posterior and medial to the ankle, subtalar and transverse tarsal joints[13.] The present study aims to see the outcome of congenital deformity clubfoot age below 60 months treated by the conservative ponseti method at NITOR for the last five years.

Materials and Methods:

This was an observational study and the data were collected retrospectively from medical record book of last five years (from June 2017 to June 2021) from national clubfoot care, NITOR. This study was taken in different places at the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR). This study was taken in National Clubfoot care at the National Institute of Traumatology and Orthopedic Rehabilitation (NITOR). NITOR is the mother Institute of orthopedic surgery in Bangladesh. National Institute of Traumatology and Orthopaedical Rehabilitation (NITOR) is a 1000 bed tertiary center, receiving referral patients from all over the country and it is the 2nd largest orthopedic hospital in the world. Various complicated clubfoot babies were referred to NITOR From the periphery.so I chose NITOR for my study site. The duration of the study was six months after collecting the data. The population of this study was the baby with clubfoot age of below 60 months. This study included 1200 sample which were available in the medical record book from last five years (from June 2017 to June 2021). Therefore, the total population considered as sample of this study. This study conducted with the retrospective record book. The whole data were administrated by the researcher along with two research assistants. The research assistants were trained and performed to collect data. Pre-tested data were analyzed to see the accuracy of collected data. Data has been presented by compatible mixture of three basic methods. They are textual method, tabular method and graphical method. The demographic table and chart will be introduced in Data presentation. The comparative analysis will be presented by a proper bar chart, pie chart. All tables of visual graphics representation will depend on statistical applications. Both descriptive and inferential statistics were performed in this study. Data quality management has been performed based on data integrity, completeness, validity, uniqueness, accuracy and consistency. Data quality management started with finding out missing value, omit the repeated data, managed multiple data carefully. By this following data quality management was done.

Results:

Among 1200 participants 68.6% were male and 31.4%

were female and the male female ratio is 2.18:1. 19.5% found left foot affected, 31.8% found right foot affected and 48.8% found both left & right foot affected. Nearly 74.4% participants were lower class, 22.0% were middle class and only 3.6% were from upper class society. 61.3% participants came from Dhaka, 16.5% from Chittagong, 3.6% from Rajshahi, 2.6% from Khulna, 7.2% from Barisal, 0.5% from Sylhet, 2.0% from Rangpur and 6.4% came from Mymensingh division. 76.8% child born in hospital and 23.2% born in home, among them 6.6% were in preterm and 91.8% were born in term duration & 1.6% were in post term. 65.0% birth delivery case done by normal, 32.3% done by C-section and 2.8% by other procedure.4.4% respondent had family history of club foot. 83.8% respondents had to used tenotomy, 16.0% respondents did not have to use tenotomy.

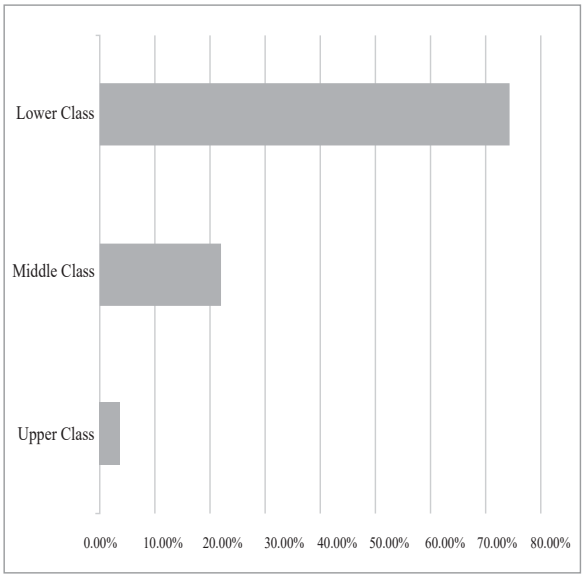

Figure-1: Socio-economic class and clubfoot

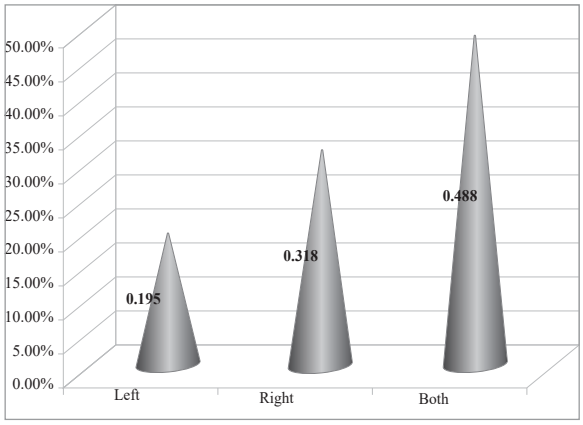

Figure-2: Affected Foot (n=1200)

Table-I: Socio economic scenario and history of clubfoot

Variable		Frequency	Percent (%)
Socio economic status	Upper class	43	3.6
	Middle class	264	22.0
	Lower class	893	74.4
Location	Dhaka	735	61.3
	Chittagong	198	16.5
	Rajshahi	43	3.6
	Khulna	31	2.6
	Barisal	86	7.2
	Sylhet	6	.5
	Rangpur	24	2.0
	Mymensingh	77	6.4
Place of Birth	Hospital	922	76.8
	Home	278	23.2
Birth History	Preterm (>37 weeks)	79	6.6
	Term (38-40 weeks)	1102	91.8
	Post term (>41 weeks)	19	1.6
Type of delivery	Normal	780	65.0
	C-section	387	32.3
	Other	33	2.8
Family History of club foot	No	1147	95.6
	Yes	53	4.4
Total (N) =1200 (100.0%)			

Around 4.0% children's mother had other medical condition while other 96.0% had not. 5.3% parents were smoker,6.6% parents had habit of using Beetle nut, 88.1% had none of these habits. 87.0% babies were free from other medical condition, 13.0% babies were reported that they had other medical condition. 82.9% less than 7 ponseti cast, 17.1% had more than 7 ponseti cast. 24.8% used tenotomy in right feet, 15.8% used in left feet, 43.8% used in both left & right feet and 15.7% used none of these. 10.7% diagnosed syndromic, 2.0% diagnosed untreated walking, 64.0% diagnosed untreated not walking, 1.2% diagnosed atypical, 0.4% post -surgical, 1.8% persistent, 15.1% diagnosed well corrected and 4.8% diagnosed unaffected.

During the last five years in NITOR the highest number of clubfoot patients (64%) were diagnosed as untreated not walking followed by 15.1 % well corrected, 10.7% syndromic. The following table shows the details.

Among 1200 participants 68.6% were male and 31.4% were female. 19.5% found left foot affected, 31.8% found right foot affected and 48.8% found both left & right foot affected. Nearly 74.4% participants were lower class, 22.0% were middle class and only 3.6% were from upper class society.

Table-II: Medical condition of the patient

Variable			Frequency	Percent (%)
Other medical Condition to Mother		No	1152	96.0
		Yes	48	4.0
Parents Personal History		Smoker	64	5.3
		Betel nut	79	6.6
		None	1057	88.1
Other medical Condition to baby		No	1044	87.0
		Yes	156	13.0
		Total	1200	100.0
Total number of ponseti cast		<7	995	82.9
		>7	205	17.1
Number of Tenotomy		Yes	1005	83.8
		No	192	16.0
Tenotomy feet		Right	298	24.8
		Left	189	15.8
		Both	525	43.8
		None	188	15.7
Diagnosis	1	Syndromic	128	10.7
	2	Untreated walking	24	2.0
	3	Untreated not walking	768	64.0
	4	Atypical	14	1.2
	5	Post-surgical	5	.4
	6	Persistent	22	1.8
	7	Well corrected	181	15.1
	8	Unaffected	58	4.8
Total (N) =1200 (100.0%)				

Among the 1200 children only 4.4% respondent had family history of club foot. And the relationship between family history and clubfoot is not significant. (P>.005).

Table-III: Classification of clubfoot in NITOR in last five years

Types of Clubfoot	Frequency	Percent
Syndromic	128	10.7%
Untreated walking	24	2.0%
Untreated not walking	768	64.0%
Atypical	14	1.2%
Post-surgical	5	.4%
Persistent	22	1.8%
Well corrected	181	15.1%
Unaffected	58	4.8%
Total	1200	100.0%

Clubfoot

Table-VI shows that association between parents' personal history with clubfoot was not significant p=.604.

The prevalence of clubfoot varies across regions in Bangladesh. In Dhaka, it was reported at 6.0% for syndromic cases, 1.3% for untreated walking cases, 39.2% for untreated cases not walking, 0.3% for atypical cases, 0.4% for post-surgical cases, 1.2% for persistent cases, 9.2% for well-corrected cases, and 3.8% for unaffected cases.

In Chittagong, the prevalence rates were 1.8% for syndromic, 0.3% for untreated walking, 10.8% for untreated not walking, 0.3% for atypical, 0.0% for post-surgical, 0.3% for persistent, 2.8% for wellcorrected, and 0.2% for unaffected.

Rajshahi reported syndromic cases at 0.7%, untreated walking at 0.2%, untreated not walking at 1.9%, with atypical, well-corrected, and unaffected all at 0.3%. Both post-surgical and persistent cases had a 0.0% prevalence.

In Khulna, syndromic cases were at 0.5%, untreated walking at 0.0%, untreated not walking at 1.6%, while atypical, post-surgical, and persistent cases all had a 0.0% prevalence. Well-corrected cases were at 0.3%, and unaffected cases were at 0.2%.

Barishal reported syndromic cases at 0.5%, untreated walking at 0.2%, untreated not walking at 5.5%, with both atypical and post-surgical cases at 0.0%. Persistent and well-corrected cases were both at 0.3%, and unaffected cases were at 0.4%.

Sylhet's prevalence rates were 0.3% for syndromic cases, 0.0% for untreated walking, 0.2% for untreated not walking, and 0.0% for atypical, post-surgical, and persistent cases. Well-corrected cases were at 0.1%, and unaffected cases were at 0.0%.

In Rangpur, syndromic cases were at 0.2%, untreated walking at 0.0%, untreated not walking at 0.8%, while atypical and post-surgical cases were at 0.0%. Persistent cases were at 0.1%, well-corrected cases at 1.0%, and unaffected cases at 0.0%. Mymensingh reported syndromic cases at 0.8%, untreated walking at 0.1%, untreated not walking at 4.2%, and atypical cases at 0.3%. Both post-surgical and persistent cases were at 0.0%. Well-corrected cases were at 1.0%, and unaffected cases were at 0.1%.

Table-IV: Relation with family history and Clubfoot

Variables	P value
Family history of clubfoot Club foot	.928

Among the 1200 respondents only 5.3% parents were smoker and the relationship between smoking history and clubfoot is not significant. (P>.005).

Table-V: Association between clubfoot and smoking

Variables	P value
Smoking Club foot	.651

Table-VI: Association between parents' personal history with clubfoot

Variables	x^2	df	p-value
Parents Personal History with clubfoot	10.135	12	.604

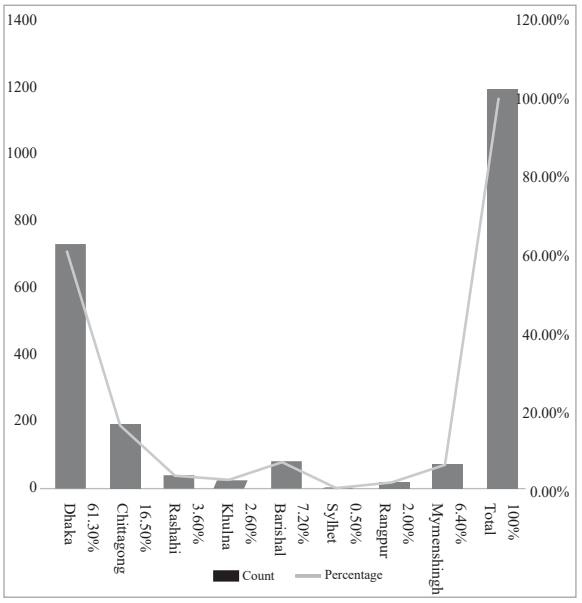

Figure-3: prevalence of club foot on respect at location (n=1200)

Table-VII: Distribution of club foot according to clinical features

Location	Club-foot							
	Syndromic	Untreated walking	Untreated not walking	Atypical	Post-surgical	Persistent	Well corrected	Unaffected
Dhaka	72	15	470	4	5	14	110	45
	6.0%	1.3%	39.2%	0.3%	0.4%	1.2%	9.2%	3.8%
Chittagong	22	4	129	3	0	4	34	2
	1.8%	0.3%	10.8%	0.3%	0.0%	0.3%	2.8%	0.2%
Rajshahi	8	2	23	3	0	0	4	3
	0.7%	0.2%	1.9%	0.3%	0.0%	0.0%	0.3%	0.3%
Khulna	6	0	19	0	0	0	4	2
	0.5%	0.0%	1.6%	0.0%	0.0%	0.0%	0.3%	0.2%
Barisal	6	2	66	0	0	3	4	5
	0.5%	0.2%	5.5%	0.0%	0.0%	0.3%	0.3%	0.4%
Sylhet	3	0	2	0	0	0	1	0
	0.3%	0.0%	0.2%	0.0%	0.0%	0.0%	0.1%	0.0%
Rangpur	2	0	9	0	0	1	12	0
	0.2%	0.0%	0.8%	0.0%	0.0%	0.1%	1.0%	0.0%
Mymensingh	9	1	50	4	0	0	12	1
	0.8%	0.1%	4.2%	0.3%	0.0%	0.0%	1.0%	0.1%

Discussion:

The prevalence of clubfoot is a complex and multifaceted issue that has been the subject of various studies and research articles across different regions. These studies shed light on the regional variations and the influence of various factors on clubfoot prevalence. One study conducted in Bangladesh by Siddique et al. (2018) examined the prevalence rates of clubfoot in different regions, including Dhaka, Chittagong, Rajshahi, Khulna, Barishal, Sylhet, Rangpur, and Mymensingh. This research provided valuable data on the regional disparities in clubfoot prevalence and highlighted the need for targeted interventions in areas with higher prevalence rates[14] similar to our study which indicates the need of proper treatment management is necessary especially in Dhaka city as the prevalence rate is very high among the patients and followed by Chittagong which is about 10.8%.

Based on the birth history, prevalence showed that in-term births had higher rates with syndromic at 9.9% while preterm births had lower rates with syndromic at 0.8%. Except with untreated not walking at 1.5%, post-term newborns generally had a low frequency. According to the study, gestational age less than 37 weeks has the lower incidence of club foot and the highest incidence was in in-term births. Similar to our study, the study by [15] investigated the same impact of birth history on clubfoot prevalence. Their research found that preterm births had lower clubfoot prevalence rates compared to in-term births, indicating the importance of gestational age as a contributing factor [15].

The role of the delivery method in clubfoot prevalence was explored in a study by Morcuende et al. (2005)[16]. Their research suggested that the type of delivery, whether normal or C-section, could influence the occurrence of clubfoot, with normal deliveries showing higher prevalence rates.

Maternal medical conditions and habits were investigated in a study by Zhang et al. (2017). This study found that syndromic cases of clubfoot were influenced by the presence or absence of other maternal medical conditions, highlighting the importance of considering maternal health during pregnancy in the context of clubfoot prevention[17].

Additionally, the impact of lifestyle factors such as smoking and betel nut consumption on clubfoot prevalence was discussed in a study by Margetts et al. (2014)[18]. This research emphasized the need for maternal lifestyle modifications to reduce the risk of clubfoot.

Finally, the influence of the baby's medical condition, the number of Ponseti casts, and tenotomies on clubfoot prevalence were addressed in a study by Zhang et al. (2017). This research highlighted the importance of effective treatment methods and their impact on clubfoot outcomes[19].

Conclusion:

In our study we identified that male babies are more affected by clubfoot and most of them are bilateral clubfoot. Beside this the prevalence of clubfoot is available in untreated not walking and syndrome type. Most of the incidence happened in lower socio-economic class and a significant geographical impact observed specially most of the incident was from Dhaka followed by Chittagong. Most of the baby born in hospital by normal term delivery and no significant impact of parent's personal (smoking, betel nut, alcohol) and family history and most of them needs less than 7 ponseti cast and required tenotomy which is internationally accepted.

Dr. Ponseti has developed a method of treatment that is effective, simple, minimally invasive, inexpensive, and ideally suited for all countries and cultures. So, early diagnosis and treatment should be started as soon as possible. Individual, national, international, different NGOs and organization collective approach can bring happiness of clubfoot babies and their families.

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Original Article

The Benefit of Spectacle Correction in Headache Treatment: Headache and Refractive Error Distinction

***Chowdhury SH[1]**

Abstract:

Background: *Headache sufferers typically attribute their pain to refractive defects, which are common. The International Headache Society's (IHS) headache categorization criteria include headaches associated with refractive errors (HARE), which is overstated. There are several causes of headaches, however uncorrected refractive errors (ametropia) are still debated. Some researchers discovered a correlation between these diseases, whereas others attributed it to their great frequency in the general population.*

Objective: *This research aimed to assess the benefit of spectacle correction in headache treatment: Headache and Refractive Error Distinction compared with case and control groups.*

Method and material: *The Bangladesh Medical College and Hospital Department of Ophthalmology conducted case-control research on headache history in 100 patients with uncorrected refractive faults and 60 people with properly repaired or no refractive defects from May 2021 to May 2022. We examined headache incidence, diagnosis, visual effort, and refractive errors in the two groups.*

Result: *The study group had 78% headache prevalence and the control group 70%. Photophobia or visual exertion-induced headaches differed. The research group was much more likely to say closing their eyes helped. Hyperopia and HARE are linked (P = 0.01). Visual strain behaviors did not affect headache frequency except staring at mobile (p=0.030). Five of the 39 reevaluation candidates in the research group were lost to follow-up. 27 (79%) of 34 subjects reported improved headache symptoms, whereas 7 (27.50%) reported no change. Post-spectacle correction headache is significant (p=0.00). Patients with headaches had fewer headache days per month but no change in headache length or severity (p= 0.00).*

Conclusion: *Refractive errors usually cause headaches, therefore correcting refractive errors with glasses significantly reduces headache frequency in patients with persistent headaches.*

Keywords: *Spectacle correction, Refractive error, HARE, Headache associated refractive error*

Introduction:

The most common functional sign in neurology is a headache. In recent research conducted in Bangladesh, almost 25% of patients were reported to suffer from headaches[1]. When proper management is lacking, it may have a substantial negative impact on the population's psycho-social functioning and quality of life. Although there are several causes of headaches, the significance of uncorrected refractive defects (or ametropia) remains contested. Indeed, some scientists identified a plausible correlation between these two illnesses, while others attributed this relationship to their great incidence in the general population[2]. The hyperactivity of the ciliary muscles (accommodation), the frontal, the scalp, or the neck muscles might be a potential reason for headaches associated with refractive error (HARE).

HARE standards were created by the International Headache Society (IHS). They are often characterised as moderate, frontal, and ocular headaches that are exacerbated by extended visual activities and primarily connected with hypermetropia or astigmatism[3]. An ophthalmologist is one of the most often sought experts for headaches because of the close connection between the eyes and headaches, which gives the ophthalmological examination all of its importance[4]. These are the HARE diagnostic standards

A. Incorrectly repaired refractive defects (e.g., hypermetropia, astigmatism, presbyopia, wearing of incorrect glasses).

B. Minor headaches in the forehead and around the eyes.

C. Pain that is absent after first wake-up and is made

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worse by extended visual activities performed at a distance or angle where your vision is blurry[5].

Refractive error is considered as one of the leading causes of correctable vision impairment[6].

In several East Asian nations, where the incidence of myopia in children is significant even at the start of school, the burden of impairment brought on by uncorrected refractive defects is especially great[7]. Recent research on refractive error and visual impairment in China, Nepal, India, Chile, South Africa, and Malaysia was published in the Refractive Error Study in Children[8-11].

In one place, namely Guangzhou, China, half of the youngsters requiring refractive correction (10.7% of the population) due to lack of glassesit is emphasized that uncorrected refractive errors may induce headaches, although their significance is often overstated"[5].Some writers emphasize the presence and significance of this condition because it is important to them personally or professionally, while others argue that the diagnosis may be incorrect or exaggerated because of how common both illnesses are in the general population[12]. Without implying a cause-and-effect link, one might argue that the occurrence of refractive defects and headaches in a particular person can be explained only by their accidental correlation.

Materials and Method :

From May 2021 to May 2022, the Department of Opthalmology at Bangladesh Medical College performed case-control research with 50 individuals with uncorrected refractive errors and a control group of 50 people (with appropriately corrected or without refractive defects) on their headache history. A cluster sample was recruited from a clinic specialized in the treatment of refractive problems and a clinic that did occupational health screenings of both genders and ages above 18 years old. Self-referred patients comprised the majority of those evaluated in the outpatient clinic; the majority of these patients complained of difficulty seeing, while some complained of headaches related to visual exertion. The majority of the people who presented to the checkup clinic for their yearly occupational health screening reported no concerns. The research only included participants who provided informed permission. This research eliminated all participants who presented with heterophoria, heterotopia (latent/manifest squint), glaucoma, or other visual problems recognized by the IHS as causes of headaches.

The first part of the evaluation included a structured interview and the use of a headache questionnaire that surveyed demographic data (e.g., gender, age, and occupation) as well as headache occurrence and characteristics and aid in the determination and quantification of headache types[13].

"Do you generally have headaches?" was the first query. If the response was negative, the person was classed as "without headache," if the answer was yes, the person was classified as "with headache," and the headache was classified by kind. The questionnaire next asked about the time of headache start, episodic vs continuous pain, the number of headache days per month (frequency of attacks), the average length of an attack (in hours), and the timeline (categorized into morning, afternoon, dinnertime, during the night, or none). There were questions on pain topography as well as the quality and degree of pain, which was classified as "light" (no difficulty with daily activities) or "moderate/severe" (activities inhibited or prohibited). The presence or absence of accompanying symptoms (nausea, vomiting, photophobia, phonophobia), as well as treatment patterns (nonpharmacological measures or medication), the presence or absence of aggravating factors (including physical or visual effort), and a family history of headache were all evaluated. The questions were constructed in line with current IHS diagnostic standards, enabling the investigators to categorize the headaches of such participants as migraine (IHS code 1), tension-type headache (IHS code 2), HARE (IHS code 11.3.2), and other (any headache not included in any of the previous categories)[14]. To validate inter-observer reliability, the described structured interview was followed by a clinical examination in an outpatient clinic specialized to headache patients, and the corresponding diagnoses were compared after the consultation.

Each participant was questioned about the average number of hours per day spent doing visually taxing activities (e.g., reading, watching television, using a computer) and if headaches followed these activities. In addition, the usage of eyeglasses or contact lenses, the age of commencement of eye diseases, any relevant medical history, and frequent medication use were documented.

Ophthalmologic evaluation:

Automated refraction was utilized to determine the refractive error, and subjective refraction was used to improve it. People were deemed to have "sufficient repair" of their refractive defects if their prior correction perfectly aligned with the outcomes of the current examination. Those whose current assessment was normal were deemed to be "refractive error-free." All patients were given appropriate corrective lenses if

their prior correction was deemed insufficient or if they had not previously had a correction. This group was referred to as having "miscorrected or uncorrected refractive errors." In line with the findings of their ophthalmologic exams, all participants were divided into groups. Therefore, all persons with refractive errors (miscorrected or uncorrected refractive errors) were included in the case group, whereas those without refractive problems were included in the control group (adequate correction or without refractive errors). Ten months following the necessary modification, research participants who reported headaches had another evaluation. A structured interview, identical to the one conducted at study admission, was used for the reevaluation.

The statistical program SPSS, version 23.0, was used to conduct the analysis. Both descriptive and inferential statistics were conducted for this study. P<.05 is considered statistically significant.

Results:

Table-1 shows the socio-demographic variable between the comparison groups. The prevalence of males was high (68%) in the case group and the mean age was 39.1±10.1. There were no significant differences in the relative rates of migraine or other main headache disorders between the two groups, and the total prevalence of headache was similar in both (78% in the study group vs70% in the control group). In 13% of the participants in the research group, headaches brought on by refractive defects were discovered. There are no HARE-type headaches in the control group when solely included in criteria B and C from the IHS definition of HARE. No differences were seen in headache features such as pain duration or pain severity. In comparison to controls, study group participants had more headache days per month, however, this difference was not statistically significant. A significant difference was seen in headaches caused due to photophobia or pain aggravated by visual exertion. Subjects in the research group were significantly more likely to claim that shutting their eyes relieved their discomfort.

There was no significant correlation between the prevalence of headaches and the type of refractive error present, according to analysis of the subgroup with both refractive errors and headaches (Table-II). Contrarily, we discovered a significant connection between hyperopia and HARE (P-value=0.01) but not with other refractive errors when we compared each kind of refractive error with each headache diagnosis. Refractive error severity was not associated with the

Table-I: Socio-demographic variable between the comparison groups

Variables		Case group,n =50 (%)	Control group n =50 (%)	p-value
Gender	***Male***	34 (68)	24 (48)	0.980
	Female	16 (32)	26 (52)	
Age, mean ±SD, year		39.1 ± 10.1	36.8 ± 5.1	0.066
Headache (overall)		39 (78)	35 (70)	
	Migraine	25 (50)	24 (48)	0.873
	HARE	14 (28)	0	0.012
Frequency, mean ±SD, day/month		6.8± 8.2	4.8± 5.1	0.0881
Duration/h	***<6***	19 (38)	21 (42)	0.091
	>6	13 (26)	16 (32)	
Intensity	***Mild***	33 (66)	22 (44)	0.073
	Moderate/severe	20 (40)	10 (20)	
Photophobia	***Yes***	27 (54)	13 (26)	0.032
	No	21 (42)	11 (22)	
Relieve by closing your eye	***Yes***	10 (20)	8 (16)	0.044
	No	42 (84)	28 (56)	

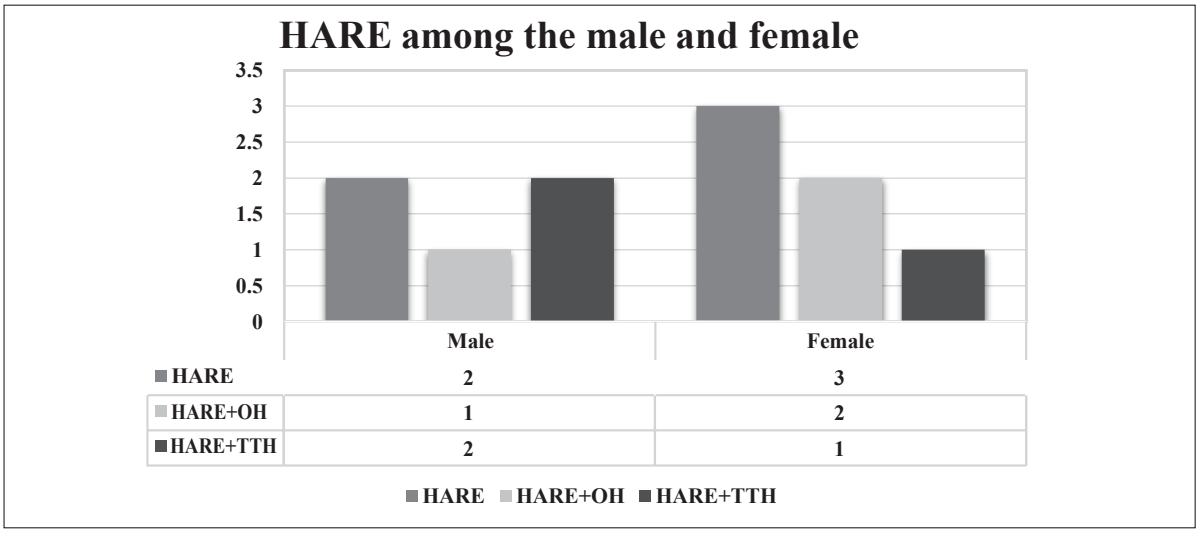
incidence of headaches in general or with any particular headache diagnosis. The frequency of headaches was not significantly influenced by visual strain behaviors except by staring at mobile (p=0.030). However, 11 people (4 men and 7 women, with an average age of 32 years) had refractive error-related headaches (HARE). Of them, 3 had "other" headaches, 3 had no other headache diagnosis, and 5 additionally experienced tension-type headaches (Figure-1).

The research group included 39 people scheduled for reevaluation, and 5 of them were later lost to follow-up. Of the 34 people who were left, 33 utilized their eye correction precisely as directed, and 1 did not. Following the first assessment, 1 participant said that their original prescription was impairing their vision.

27(79%) out of 34 participants indicated that their headache syndromes had improved, whereas 7 (27.50%) individuals claimed that their headaches had remained constant. No one reported increasing headache symptoms. 13(38%) participants with originally uncorrected or incorrectly repaired refractive error no longer suffered from headaches 10

Table-II: Headache occurrence and refractive error

Variable		Headache (n)	W/o Headache(n)	P value
Refractive Error	Mild	23	33	0.059
	Severe	4	6	
	Myopia ± Presbyopia	5	2	
	Hyperopia ± Presbyopia	2	0	
	Astigmatism ± Presbyopia	8	13	
	Myopia + Astigmatism ± Presbyopia	3	7	
	Hyperopia + Astigmatism ± Presbyopia	6	2	
	Presbyopia	3	10	
Reading/h	<6	35	76	0.088
	>6	19	44	
Watching television/ h	<6	29	49	0.061
	>6	12	4	
Staring at computer/ laptop/h	<6	38	44	4.137
	>6	11	7	
Staring at mobile/h	<6	15	51	0.030
	>6	18	21	



**TTH- Tension-type headache, OH- Other headache, HARE- headache associated refractive error*

Figure-1: HARE among male female

months after adequate correction. Significant assertion is found with headaches among the participants after spectacle correction (p=0.00). Those patients who continued to have headaches reported no improvement in headache length or severity, but a substantial decrease in headache days per month (p= 0.00) (Table-III).

12 individuals with HARE were thoroughly examined. 5 participants no longer had headaches, 3 continued to have HARE, and 2 had additional headache diagnoses. 2 did not wear the prescription glasses but reported no headaches (Figure-2).

Table-III: Re-evaluation of the study group

Variables	1st Evaluation	Re-evaluation	p-value
Gender			
Male	20	16	-
Female	19	18	
Headache			
Yes	39	21(61%)	0.00
No	0	13(38%)	
Frequency, mean±SD, day	12.1±8.4	8.4±5.9	0.00
Improvement by spectacle correction			
Better	-	27(79%)	0.088
Same	-	7(20%)	
Worse	-		
Duration/h			
<6	15	11	0.059
>6	9	3	
Intensity			
Mild	13	9	0.073
Severe	4	2	

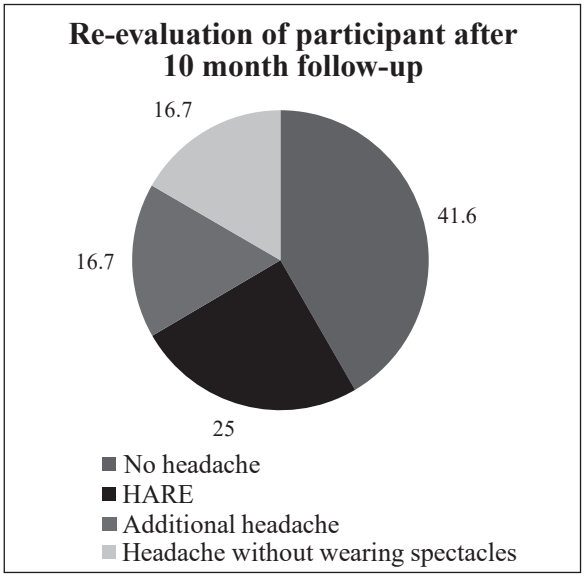


Figure-2: Re-evaluation of participant after 10 month follow-up

Discussion:

Based on our findings, we conclude that rare instances of HARE, as defined by IHS criteria, may occur in patients with refractive defects. It does not seem to substantially increase the incidence of chronic headache in persons with refractive errors compared to those without such errors. Headache related with refractive errors seems to be more strongly connected with hyperopia than with other refractive errors. Although the severity of refractive errors and visual strain habits did not influence the incidence of headaches initially reported by our patients, our results suggest that individuals with headaches and uncorrected refractive errors will frequently experience a reduction in headache frequency following correction.

Our findings show that a small fraction of patients with uncorrected or incorrectly corrected refractive defects have minor frontal or ocular headaches that are exacerbated by visual strain; i.e. HARE. The connection between headaches and refractive problems has not been confirmed explicitly. Due to the high incidence of both disorders in the general population (12.5% of the general population would have both of them at the same time), several writers assumed a coincidental link without implying a cause-and-effect relationship[5].Some writers associate HARE with a painful contraction of the ciliary muscle caused by the persistent accommodative effort required to adjust for near-sightedness impairment (as with hyperopia or astigmatism)[6].Visual impairment at close range is also a sign of presbyopia, which is a condition where the ageing lens loses its ability to accommodate changes in focal distance and is often accompanied by no other symptoms[15].

Others have discovered that people with untreated refractive problems have headaches more often. Kimbo et al.[16] and Mehboob et al.[17] reported that ametropia was the cause of 21.4% of all headache cases in children and that headache accounted for 44% of the overall symptomatology of patients seeking treatment for the condition. Another research by Hendricks and Whittington revealed between 45% and 70% of those seeking individual refractive error consultations had headaches[18,19].

The use of adequate eye correction reduces the frequency of headache episodes (days with headache per month) for all headache types tested, including HARE, by a substantial amount.According to research by Mehboob et al., 62.5% of patients had headache relief following optical correction after four weeks, 75% within eight weeks, and in 25% of instances, the headache remained despite the correction[17].This is

consistent with the findings of Gil-research, Gouveia's which indicates that a sufficient optical correction relieved 72.5% of participants with migraines related to their ametropia, while 38% had their symptoms completely vanish. The frequency of headaches was greatly decreased regardless of kind[20].According to a study by Lajmi et al., in 100% of cases, headaches improved. It occurred in 43 individuals in all (86% of instances), and after one month, there was no factor affecting its development[21].

Conclusion:

Headache associated with refractive errors (HARE) was rarely identified in individuals with refractive errors.In patients with persistent headaches, correcting refractive errors with spectacles dramatically improved headache symptoms, mostly by reducing the frequency of headache episodes.

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Original Article

Outcome of 50 Central Line Catheters and Associated Complications

***Rahman MS[1], Rahman MS[2]**

Abstract:

Background: *Central line or central venous catheterization was first use in 1929 when Dr. Werner Forssmann self-inserted a ureteric catheter through his cubital vein and into the right side of his heart. Since that time the central line technique has developed. CV line is become essential for the treatment of difficult peripheral venous access, delivery of certain medications or fluids, need for total parenteral nutrition administration, special drug administration such as high concentration of potassium,prolonged intravenous therapies, specialized treatment. Central lines come in different sizes, types, and sites of administration. Sometimes their use can be associated with complications.*

Objective: *To assess the clinical outcome & associated complication of central line catheters.*

Materials & methods: *This cross-sectional observational study was conducted in ICU (Intensive care unit) of Rangpur Community Medical College & Hospital, Bangladesh, from 02 July 2022 to 31 May 2023 a period of one year to find out the outcome of 50 central line catheters. In this study 50 case of patients who needs central line catheter for different indication (deliver multiple medications, difficult peripheral venous access, correction of severe electrolyte imbalance, measure of CVP, for continuous infusion chemotherapy, for total parenteral nutrition, and to deliver vesicant drugs). With all ascepticprecortion CV lines ware done by "seldinger technique" in subclavian vein, the internal jugular vein, and the femoral vein.*

Results: *Out of total 50 patients aged between 24 to 80 years. Most of the patients ware 41 to 60 years old. 68% patients ware male and 32% patients ware female. 54% CV line was inserted due to difficult peripheral venous access, 18% due to deliver multiple medications, 12% due to correction of severe electrolyte imbalance, 10% due to maintain total parenteral nutrition, 6% due to continues infusion chemotherapy. 62% patient CV Line ware removed after 8-14 days, 24% patient CV line ware removed after 1-7 days and 14% patient CV line ware removed after 15-21 days. 4% patient had complications during procedure out of 50 patients in this study.*

Conclusions: *Central venous catheterization can be lifesaving but is associated with complication. Appropriate catheter and site selection, sufficient operator experience, careful technique, and proper catheter maintenance with removal as soon as possible are associated with optimal outcome.*

Keywords: *Central venous catheterization, subclavian vein cv line, jugular vein cv line, femoral vein cv line, complications.*

Introduction:

Central line is often use in critically ill patients. The reasons a physician might decide that a patient needs a central line would be to deliver multiple medications, difficult peripheral venous access, correction of severe electrolyte imbalance, measure of CVP, for continuous infusion chemotherapy, for total parenteral nutrition, and to deliver vesicant drugs.[1] Common sites for CV line are the subclavian vein, the internal jugular vein, and the femoral vein. The ideal catheterization site would be one that has less chance of thrombosis, lower infection rates, and fewer mechanical complications.[2] The femoral vein is avoided because of a higher rate of infection and thrombosis as compared to the subclavian vein.[2,21] The subclavian vein tends to have a lower infection rate and less mechanical complication as compared to other central line sites.[2,21]

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Materials & methods:

This cross-sectional observational study was conducted in ICU (Intensive care unit) of Rangpur Community Medical College & Hospital, Bangladesh, from 02 July 2022 to 31 May 2023 a period of one year to find out the outcome of 50 central line catheters. In this study 50 case of patients who needs central line catheter for different indication (deliver multiple medications, difficult peripheral venous access, correction of severe electrolyte imbalance, measure of CVP, for continuous infusion chemotherapy, for total parenteral nutrition, and to deliver vesicant drugs). With all ascepticprecortion CV lines ware done by "seldinger technique" in subclavian vein, the internal jugular vein, and the femoral vein. Most of the CV line was done in right subclavian vein. "ABLE" tunneled CV line was use in the study. CV Line channels ware flashed by heparin mixed normal saline. Chest X-ray of the patients ware done to ensure the tip position of CV line.

Data analysis was performed by SPSS windows version 16.0 software.

Results:

Out of total 50 patients aged between 24 to 80 years. Most of the patients ware 41 to 60 years old. 68% patients ware male and 32% patients ware female. (Table-I)

Table-I: Demographic characteristics of the study patients (n=50)

Variables	Number of the patients	Percentage (%)
Age group (years)		
20-30	3	6
31-40	6	12
41-50	14	28
51-60	17	34
61-70	6	12
71-80	4	8
Sex		
Male	34	68
Female	16	32

54% CV line was inserted due to difficult peripheral venous access, 18% due to deliver multiple medications, 12% due to correction of severe electrolyte imbalance, 10% due to maintain total parenteral nutrition, 6% due to continues infusion chemotherapy. (Table-II)

Table-II: Patients distribution according to indication of CV line. (n=50)

Indication	Number of the patients	Percentage (%)
Difficult peripheral venous access	27	54%
Correction of severe electrolyte imbalance	6	12%
Deliver multiple medications	9	18%
Maintain total parenteral nutrition	5	10%
Continues infusion chemotherapy	3	6%
Total	50	100%

62% patient CV Line ware removed after 8-14 days, 24% patient CV line ware removed after 1-7 days and 14% patient CV line ware removed after 15-21 days. (Table-III)

Table-III: Distribution according to duration of catheter. (n=50)

Duration (Days)	Number of the patients	Percentage (%)
1-7	12	24
8-14	31	62
15-21	7	14

4% patient had complications during procedure out of 50 patients in this study.

Table-IV: Distribution according to complication during procedure. (n=50)

Number of the patients	Complications	Percentage (%)
50	2	4

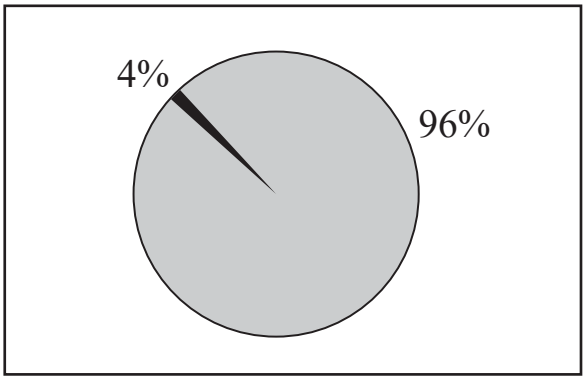

Figure-1: Complication of CV-line

Figure shows complication of CV-line 4% (number 02) out of 100% (number 50).

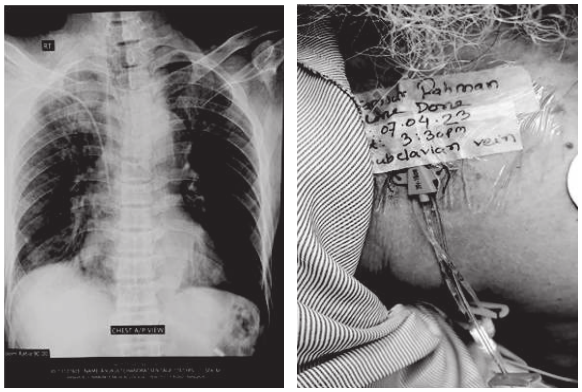

Figure-2: The central line insertion in to the subclavian vein.

Discussion:

Central line is often use in critically ill patients. The reasons a physician might decide that a patient needs a central line would be to deliver multiple medications, difficult peripheral venous access, correction of severe electrolyte imbalance, measure of CVP, for continuous infusion chemotherapy, for total parenteral nutrition, and to deliver vesicant drugs.[1,7] Common sites for cv line are the subclavian.[1,2,21] In this study 50 case of patients who needs central line catheter for different indication. Most of the CV line was done in right subclavian vein.[7] Most of the patients ware 41 to 60 years old. 68% patients ware male and 32% patients ware female. 54% CV line was inserted due to difficult peripheral venous access, 18% due to deliver multiple medications, 12% due to correction of severe electrolyte imbalance, 10% due to maintain total parenteral nutrition, 6% due to continues infusion chemotherapy. 62% patient CV Line ware removed after 8-14 days, 24% patient CV line ware removed after 1-7 days and 14% patient CV line ware removed after 15-21 days. 4% patient had complications during procedure.[1,7,8,21] In this study arterial puncture complication occurs during the procedure. So, be careful during insertion a central line catheter. We use the anatomic landmark technique. We suggest an ultrasound-guided approach and multidisciplinary teaching program to improve skills and reduce catheter-related morbidity.[1,2,4,7,21]

Conclusions:

Central venous catheterization can be lifesaving but is associated with complication. Appropriate catheter and site selection, sufficient operator experience, careful technique, and proper catheter maintenance with removal as soon as possible are associated with optimal outcome.

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Original Article

Histomorphological Spectrum of Renal Tumors in Nephrectomy Specimens at a Tertiary Care Hospital

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Abstract:

Background: *The kidneys are affected by various tumors amongst which the majority of renal neoplasms are reported as malignant, with renal cell carcinoma and Wilms tumor being the most commonly diagnosed entities. Partial or total nephrectomy remains the treatment of choice in these patients.*

Objective: *To determine the most common clinical presentation, with age and sex distribution of renal tumors and analyze the histomorphological spectrum of renal tumors from resected nephrectomy specimens.*

Material and Methods: *The study comprises of 52 patients who were diagnosed as having renal tumors and were registered in the Department of Pathology, Enam Medical College & Hospital, Savar, Dhaka from January 2013 to December 2022. The demographic and clinicopathological data was collected and analyzed carefully.*

Results: *Of the 52 renal tumors studied, 2 cases (3.85%) were reported as benign tumors and 50 cases (96.15%) were malignant tumors. Renal cell carcinoma (RCC) being the most common tumor (69.2%) followed by transitional cell carcinoma (TCC) and Wilms tumor. Clear cell variant of renal cell carcinoma was the most common variant reported in 31 cases (86.1%). There were 40 (76.92%) males and 12 (23.1%) females with male to female ratio 3.33:1. The age of the patients ranged from 1 to 82 years with a mean age 48.2 years. Majority of the cases were reported in the 51-60 years age group (15 cases, 28.8%). Mean age for RCC was 51.8 years and for Wilms tumor was 2.75 years.*

Conclusion: *Malignant renal tumors far outnumbered the benign tumors in our study with RCC being the most common malignant tumor in adults. Wilms tumor was the most common malignancy in pediatric age group.*

Keywords: *Clear cell carcinoma, Renal cell carcinoma, Transitional cell carcinoma, Wilms tumor*

Introduction:

Kidneys are vital organs responsible for various functions like excretion, maintenance of acid base balance and salt and water metabolism. The disorders of renal system account for a high degree of morbidity and mortality. The kidneys are affected by various disease processes range from inflammatory lesions causing extensive parenchymal damage to benign and malignant neoplasms.[1,2]

Renal tumors comprise a diverse spectrum of neoplastic lesions with patterns that are relatively distinct for children and adults. A wide variety of both benign and malignant tumors arise from different components of the renal parenchyma which includes the tubular epithelium, interstitial tissue and from primitive elements.[3,4] Majority of renal neoplasms are reported as malignant, with renal cell carcinoma and Wilms tumor being the most commonly diagnosed entities.[1]

Accurate diagnosis of most renal tumors is not possible before surgery and histopathological evaluation. A detailed and meticulous histopathological examination of tumor nephrectomy specimen is essential to establish histological type and to record accepted histopathological prognostic determinants i.e. tumor size, histological subtype, nuclear grade and stage in cases of malignant renal neoplasms. Radical or partial nephrectomy is the treatment of choice for a great proportion of patients with various benign and malignant lesions of the kidney.[5,6]

This study was carried out to determine the most common clinical presentation, with age and sex distribution of renal tumors, to analyze the histomorphological spectrum of renal tumors from resected nephrectomy specimens and to compare our

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experience with findings in the literature.

Materials and methods:

The present study was carried out in the Department of Pathology, Enam Medical College & Hospital, Savar, Dhaka over a period of ten years from January 2013 to December 2022. Retrospective analysis of all the 52 nephrectomy specimens of renal tumors received in the department was done. Inclusion criteria were nephrectomies either total, radical or partial, done for tumors, both benign and malignant. Nephrectomies and needle biopsies performed for non-neoplastic conditions were excluded.

The patients were radiologically evaluated using abdominal ultrasonography, intravenous pyelogram, contrast enhanced CT scan and radioisotope renal scan to assess differential renal function where necessary. Simple nephrectomy was carried out for patients with benign renal disease whilst radical nephrectomy and nephro-ureterectomy were carried out for those with malignant renal tumors and urothelial tumors of the renal pelvis respectively.

All the relevant data including the demographic profile and clinical presentation of the patients, gross features of the specimen, results of laboratory and imaging investigations and histomorphological findings were analyzed, followed by the review of Hematoxylin & Eosin stained slides.

Results:

The present study includes 52 cases of renal tumors reported in the Department of Pathology at Enam Medical College, Savar, Dhaka. Out of total lesions 50 (96.15%) were malignant, while 2 (3.85%) were benign. The age of the patients ranged from 1 to 82 years with a mean age 48.2 years. Majority of cases were reported within the 51-60 years age group (15 cases, 28.8%) followed by 31-40 years age group (10 cases, 19.2%). Mean age of malignant tumors was 48.2 years while that of benign tumors was 45.5 years.

Table-I: Histopathological types of renal tumors

Histopathological diagnosis	Male	Female	Total
Renal cell carcinoma	26	10	36
Clear cell carcinoma	22	9	31
Papillary carcinoma	4	-	4
Sarcomatoid RCC	1	1	-
Transitional cell carcinoma	6	-	6
Wilms tumor	3	1	4
Squamous cell carcinoma	2	-	2
PNET	2	-	2
Angiomyolipoma	1	1	2
Total	40	12	52

Table-II: Age wise distribution of renal tumors

Age in years	Male	Female	Total
<10 years	3	1	4
11-20 years	-	-	-
21-30 years	2	1	3
31-40 years	8	2	10
41-50 years	7	2	9
51-60 years	11	4	15
61-70 years	7	1	8
71-80 years	1	-	1
>80 years	1	1	2
Total	40	12	52

Commonest tumor in this study was renal cell carcinoma (RCC) (n = 36; 69.23 %) with a mean age 51.8 years, followed by transitional cell carcinoma (TCC) (n = 6; mean age = 60.5 years), and Wilms tumor (n = 4; mean age = 2.75 years).

Commonest type of renal cell carcinoma was clear cell type accounting for 31 cases (86.1%) followed by papillary RCC (4 cases, 13.9%) and one case of sarcomatoid RCC. Other malignant tumors include two cases each of squamous cell carcinoma in the renal pelvis and peripheral neuroectodermal tumors (PNET). Angiomyolipoma (02 case, 3.8%) was the benign tumor seen in the present study. Table-I shows the histomorphological spectrum of renal tumors.

Table-II shows the age wise distribution of renal tumors in our study. A higher number of renal tumors were seen in males (40 cases, 76.92%) as compared to females (12 cases, 23.1%) with male to female ratio of 3.33:1.

The most common clinical presentation was flank pain in 35 cases, followed by hematuria, fever, abdominal lump, burning micturition and vomiting. More than one clinical presentation was noted in some patients. The classical clinical diagnostic triad of hematuria, flank pain, and abdominal mass were seen in 6 cases.

Among the renal cell carcinomas it was observed that right sided involvement was more (28 cases, 53.8%) than left side (24 cases, 46.2%). No side difference was found in the benign tumors. None of the patients underwent bilateral nephrectomies. The tumor size ranged from 2 to 12 cm. Grossly, the upper pole was involved in 28 cases (54%), 13 cases (25%) involved the whole kidney, 8 cases (15%) in the renal pelvis and ureter and 3 cases (5.8%) in the lower pole.

The clear cell renal carcinoma was graded from 1 to 4 according to the Fuhrman nuclear grading system. Grade 2 nuclear features were the most common and

seen in 18 cases (60%) and 9 cases (30%) had Grade 3 nuclear features. Thus, the majority of patients (90%) demonstrated Grades 2 and 3 nuclear features.

Discussion:

The histological findings in nephrectomy specimens tend to vary according to age and geographical location globally.Histopathology is considered as a significant and essential tool to evaluate the spectrum of renal tumors. Renal tumors are a heterogeneous group of neoplasms which can be distinguished on the basis of histology. Classification of renal cell carcinoma is important as far as the treatment and prognosis part is concerned and also for the better understanding of histogenesis.[5] The kidneys can be affected by a variety of tumors, majority of which are malignant; of which renal cell carcinoma and Wilms tumor are the most common.[1]

Since, systematic gross and histopathological evaluation is very essential to grade and stage the tumor and guide in further management, we have attempted to evaluate the histomorphological spectrum of renal neoplasms and adopt the CAP guidelines reporting format for nephrectomy cases in a tertiary care hospital.

The present study includes 52 cases of renal tumors reported in the Department of Pathology. Malignant tumors were 50 cases (96.15%) and benign tumors were 2 cases (3.85%). Predominance of malignant tumors have been reported by Mohan et al.[7] and Datta et al.[3] who have reported malignancies in 90.3% and 91.6% cases respectively. Ajmera S and Ajmera R reported that 58.45% and 41.53% of their nephrectomy surgeries were due to malignant and benign neoplastic conditions respectively.[8]

The mean age of patients at clinical presentation was 48.2 years. Similar studies by Yamakanamardi et al.[9] reported mean age 43.4 years, Datta et al.[3] reported 47.3 years, and Abbas et al.[10] reported mean age 54.4 years. In the present study, the mean age for RCC was 51.8 years, for TCC 60.5 years and for Wilms tumor 2.75 years. Similar studies by Mohan et al.[7] reported mean age for RCC 54.4 years, for TCC 62.4 years and for Wilms tumor 2.6 years. Peak incidence in this study was between 51 to 60 years, seen in 15 (28.8%) cases, followed by 31-40 years age group (10 cases, 19.2%). Peak incidence in the 6th decade was also found by others.[5,8,9,11] Shanmugasamy et al.[12] and Chandanwale et al.[13] found peak incidence in the 7th decade, Mohan et al.[7] found peak incidence in the 5th decade, whereas Amin et al.[14] found peak incidence in the 1st decade of life (18 cases, 25.72%).

Majority of the cases in our study were males with male to female ratio 3.33:1. Male preponderance was also found in many other studies reported by Datta et al.[3], Yamakanamardi et al.[9] and Narang et al.[15] In similar studies done by Shanmugaswamy et al.[12] found equal male and female preponderance. However, in Sub-Saharan Africa, there is a preponderance of renal tumors in females.[16]

The most common malignancy encountered in our study was RCC in 72% cases. Of these, the clear cell variant was the most common histological subtype observed in 86.1% cases followed by papillary RCC in 13.9% cases. Datta et al.[3] reported RCC in 94.2% of the malignant lesions with clear cell variant in 85.8% cases and papillary RCC in 14.2% cases, Narang et al.[15] reported RCC in 85.3% cases with clear cell variant in 81.4% cases and papillary RCC in 4.3%, Abbas et al.[10] reported 87.8% RCC among malignant lesions with clear cell variant in 67% cases and papillary RCC in 22.8% cases.

The second most common malignant neoplasm was TCC in the renal pelvis and ureter which comprised 11.5% of renal tumors. Mohan et al.[7] and Narang et al.[15] also found TCC to be the second most common malignant neoplasm in their study (10% and 8.5% respectively). Thakur et al.[6] and Amin et al.[14] found Wilms tumor as the second common malignant neoplasm comprising 28.2% and 42.1% respectively. In the present study, Wilms tumor was observed in a total of 4 cases (8% of malignancy). Primary squamous cell carcinoma rarely appears in the upper urinary tract. We found two cases of primary squamous cell carcinoma arising from the renal pelvis.

Most of the patients in the current study presented with pain in the abdomen followed by hematuria, fever and abdominal lump. Similar results were observed in a study conducted by Jandial et al.[11], in which most of the patients (46.2%) presented with pain in the abdomen, this was followed by hematuria (18.4%), fever (15.4%) and lump in the abdomen (10.7%). In the present study, the majority of patients who presented with hematuria had malignant lesions. These observation was comparable to the studies conducted by Abbas et al.[10]

Among the renal cell carcinomas, it was observed that right sided involvement was more (28 cases, 53.8%) than left side (24 cases, 46.2%), though it has no clinical significance. No side difference was found in the benign tumors. None of the patients underwent bilateral nephrectomies. Amin et al.[14] found the prevalence of neoplastic lesions in the right kidney and left kidney was 53.1% and 46.9% respectively. Others observed more left sided involvement of the tumors than the right side.[3,5,6,8]Chandanwale et al.[13] foundno predilection of lesions to the right or left kidney.

Grossly, the majority of the tumors (54%) involved the upper pole, followed by 25% tumors that involved the whole of the kidney. This was similar to the results by Aiman et al.[2]and Jandial et al.[11] who found the majority of the tumors involving the upper pole of the kidney (52% and 55.4%, respectively). Amin et al.[14] found no significant difference between the involvement of the upper pole and lower pole. They found RCC with upper pole and mid portion being involved in 18.7%, lower pole in 16.6%, entire cut surface in 43.8% and pelvis in 6.3%.

The clear cell renal carcinoma was graded from 1 to 4 according to the Fuhrman nuclear grading system. Grade 2 nuclear features were the most common and seen in 18 cases (60%) and Grade 3 nuclear grade in 9 cases (30%). Thus, the majority of patients (90%) demonstrated Grades 2 and 3 nuclear features. According to Abbas et al.[10] nuclear Grade 2 was the most common (53.3%) feature, followed by nuclear Grade 3 (23.33%). Similar studies from Narang et al.[15] show low grade RCC (nuclear grade 1 and 2) comprised 63.1% case while high grade RCC (nuclear grade 3 and 4) comprised 36.9% cases.

Conclusion:

Malignant renal tumors far outnumbered the benign tumors in our study with RCC being the most common malignant tumor in adults. Wilms tumor was the most common malignancy in the pediatric age group. Majority of the tumors showed Fuhrman's nuclear Grade II observed in 60% of the cases.

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Original Article

Effectiveness of CTEV with Needle Tenotomy Following Ponseti Method

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Abstract:

Background: *Incidence rates range from 1-3 instances per 1000 live births, making congenital talipes equinovarus (CTEV) a somewhat common congenital deformity. When it comes to treating congenital talipes equinovarus (CTEV) in neonates, the Ponseti technique has established itself as the gold standard. The purpose of this study is to compare the ponseti technique of treating CTEV with and without a scalpel, and to determine whether or not a needle tenotomy is preferable.*

Materials and Methods: *This observational study was conducted in a Narsingdi Diabetic and General Hospital between January 2020 and December 2022. One hundred individuals with idiopathic Congenital Talipes Equinovarus (CTEV) were included in the study, along with 170 untreated foot. Only toddlers and younger will be admitted. Multiple prospects were researched for this procedure.*

Results: *As a result, individuals who met the inclusion criteria were chosen. The 100 people included as a representative sample included 60 men and 40 females. Sixty percent of patients had unilateral deformity, whereas forty percent had bilateral deformity.*

Conclusion: *Ponseti percutaneous needle tenotomy successfully treats clubfoot deformity, as previously discussed. This outpatient surgery causes no scarring and has a low risk of infection. Traditional blade tenotomy has a high success rate for correction, but it often has undesirable side effects such injury to neurovascular structures, bleeding, and pseudoaneurysms.*

Keywords: *Needle tenotomy, ponsetti, CTEV*

Introduction:

Congenital Talipes Equinovarus (CTEV), commonly known as clubfoot, is a complex and relatively common congenital orthopedic condition that affects thousands of newborns worldwide each year. This deformity is characterized by a combination of abnormal foot and ankle positioning, which can cause significant functional and cosmetic issues if left untreated. The impact of clubfoot extends beyond the physical aspects, as it poses emotional and psychological challenges for both the affected infants and their families. Fortunately, the Ponseti method, developed by Dr. Ignacio Ponseti in the mid-20th century, has emerged as a widely adopted and highly effective non-surgical approach for the treatment of clubfoot[1-7].

The Ponseti method relies on a series of gentle manipulations and the application of plaster casts to gradually correct the foot's positioning over a period of several weeks. However, in cases where the Achilles tendon, which runs down the back of the ankle, remains tight and resistant to correction, a minimally invasive procedure known as Needle Tenotomy is often recommended. Needle Tenotomy involves a controlled release of the Achilles tendon using a hypodermic needle, allowing for further correction and improvement in the child's foot alignment[7-13].

The purpose of this study is to delve into the effectiveness of performing Needle Tenotomy following the Ponseti method for the management of

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CTEV. We aim to provide a comprehensive understanding of the benefits, potential challenges, and outcomes associated with this technique. Our research will draw from a combination of clinical data and patient experiences, offering valuable insights to healthcare providers, parents, and caregivers of children with clubfoot.

Objective of the study was to asses the Effectiveness of CTEV with Needle Tenotomy Following Ponseti method.

Methods:

The current investigation was conducted at Narsingdi Diabetic and General Hospital over the course of three years, spanning from January 2020 to December 2022. This research employed an observational study design to explore its objectives.

The research focused on a cohort of 100 patients, specifically assessing 170 untreated feet afflicted with idiopathic congenital talipes equinovarus (CTEV). These individuals underwent a modified variation of the Ponseti technique for the treatment of clubfoot, and all subjects were children aged two years or younger. The selection process for this particular procedure involved a thorough evaluation of eligible candidates.

Children with congenital talipes equinovarus caused by factors such as neurological issues, syndromes, or post-traumatic conditions were excluded from the study. Furthermore, individuals older than two years of age were not considered in the research.

The treatment for clubfoot comprises two phases: Ponseti serial casting and bracing. This comprehensive approach is crucial, as clubfoot doesn't naturally improve with growth. The initial casting phase spans approximately 6 to 8 weeks, followed by a 3-month period during which the child wears a removable orthotic for 23 hours daily. Subsequently, the child continues orthotic treatment during sleep (naps and nighttime) until the age of 5. During the initial treatment, patients with a tight Achilles tendon causing the foot to be in a plantar flexion position may require a tenotomy to correct this equinus deformity. This tenotomy can be performed either using a scalpel or a needle. Following the tenotomy, a single cast is applied for the standard duration of three weeks. Importantly, for the percutaneous tenotomy of the Achilles tendon to correct the equinus deformity, a 19-gauge needle is used as an alternative to a scalpel blade. This modified approach has been observed to minimize bleeding, and all tenotomies were carried out with localized anesthesia.

A single surgeon performed the surgical procedures on all children with strict aseptic measures and under brief general anesthesia. The limb underwent a cleansing process with a 5% solution of povidone iodine and was subsequently draped without the use of a tourniquet. With the knee extended, the foot was dorsiflexed to create tension in the Achilles tendon, which was then palpated as a taut cord in the posterior region. A 19-gauge needle was employed to incise the tendon, inserted in close proximity to the medial border of the tendon, approximately 1 cm above its attachment point on the calcaneum. The choice of needle gauge was determined by the child's age, with 18 gauge preferred for infants under six months and 19 gauge for those over six months. As the individual fibers of the tendon were incised, a tactile perception of friction was experienced during the procedure. Dorsiflexion force across the ankle joint was consistently maintained. The tenotomy procedure concluded with an audible snap and a visible correction of the equinus deformity, resulting in a minimum of 15 degrees of dorsiflexion. Subsequently, the needle was removed, and passive dorsiflexion was reassessed. A knee immobilization plaster was applied for three weeks, with the knee positioned at a 90-degree angle of flexion, and the foot maximally abducted at 70 degrees and dorsiflexed at 10-15 degrees. After the removal of this plaster, a Pirani score assessment was conducted, and if the score was ≤0.5, an abduction brace was recommended.

Subsequent follow-up appointments were scheduled monthly for the first three months, followed by intervals of three months for one year, and finally, check-ups were recommended every four months for five years. This comprehensive post-operative care plan aimed to monitor the progress and outcomes of the procedure over time.

Results:

Age distribution of the patients. Where 60% cases were belong to 0-6 months followed by 20% were in 7-12 months and 15% were in 13-18 month.

Table-I: Age distribution of the patients

Age group	%
O-6 month	60%
7-12 month	20%
13-18 month	15%
19-24 month	5%

Figure-1 shows gender distribution of the patients. 60% were cases male.

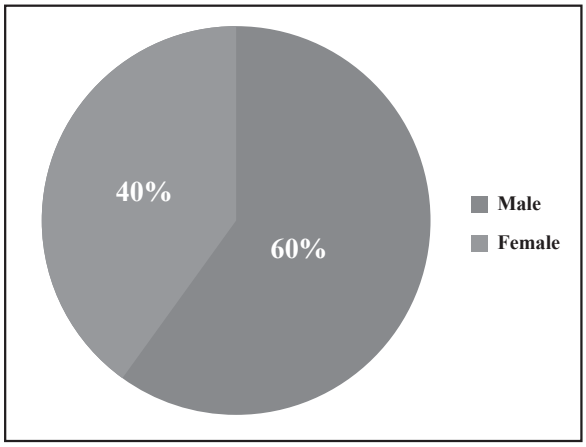

Figure-1: Gender distribution of the patients.

Table-II shows socio demographic status of the patients. 55% cases patients came from rural and 90% didn't have any family history.

Table-II: Socio demographic status of the patients

Patient comes from	Percent
Patient comes from	
Rural	55
Urban	45
Family History	
Yes	10
No	90

Table-III shows Distribution of clubfoot in the patients. The occurrence of deformity was observed to be unilateral in 60% of patients, while bilateral deformity was observed in 40% of patients.

Table-III: Distribution of clubfoot in the patients

Affected foot	Percent
Bi-Lateral	40
Uni-Lateral	60
Average Pirani score	4.75
Average Follow up period	4.5 months

Figure-2 shows complications related to surgical procedures. In this study, 7% of patients experienced plaster-related complications, and 1% experienced infection-related complications

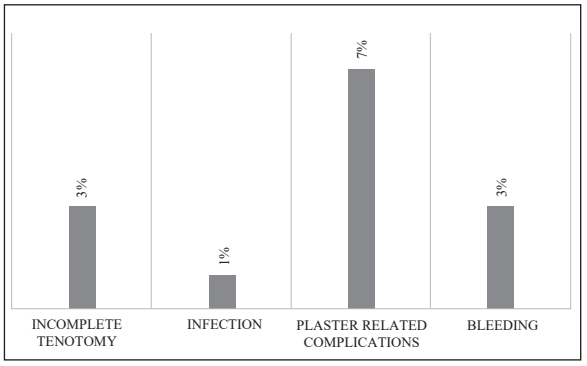

Figure-2: Complications related to surgical procedures

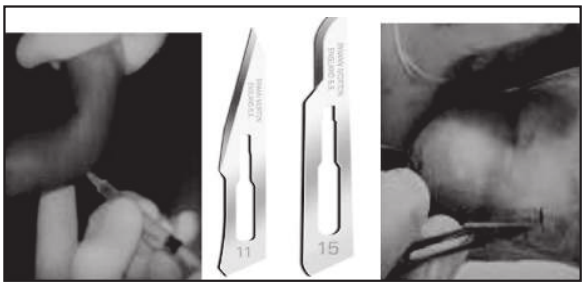

Figure-3a and 3b: Application Of Local Anesthetic and Scalpal Tenotomy

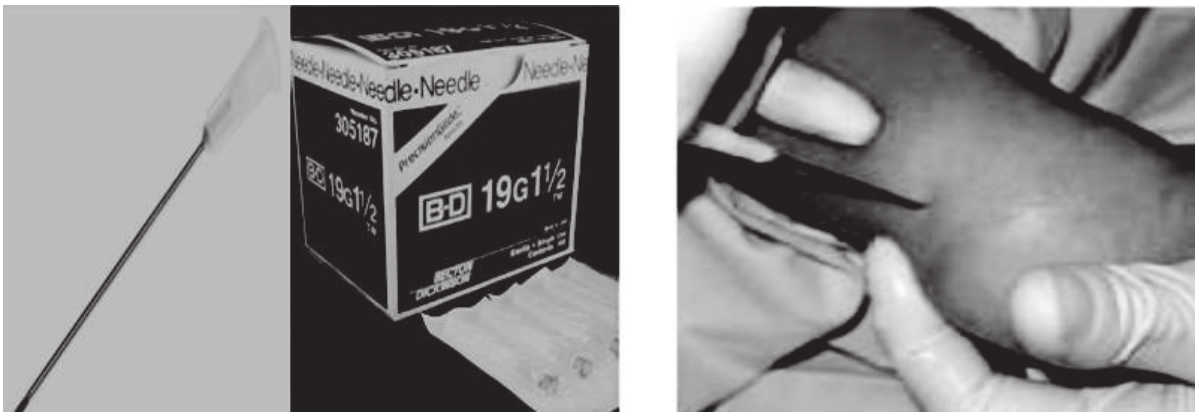

Figure-4a and 4b: Shows 19 g needle using for Tenotomy and needle tenotomy.

Discussion:

Problems that arise because of medical procedures. It has been determined that all abnormalities, with the exception of equinus, may be adequately addressed by the Ponseti approach for treating clubfoot. When subsequent manipulation and casting fail to alleviate a chronic equinus deformity, a tenotomy of the tendoachilles is performed. Ponseti performed a percutaneous tenotomy using a blade designed for use in the eye. The tendon and the anatomical structures beside it, especially those on the side, are vulnerable to injury from the blade's length and sharpness. The thickness of the tool used for tenotomy is inversely related to the likelihood of collateral damage. Consistent efforts have been made since then to locate a less invasive and more secure means of conducting a tenotomy. To lessen this threat, Dobbs et al.[14]used a shorter ophthalmic blade. A total of four patients (three with a possible peroneal artery damage and one with a potential lesser saphenous vein injury) undergoing percutaneous tendoachillestenotomy sustained life-threatening hemorrhage during the investigation of 219 idiopathic club foot. These days, doctors often use a surgical blade with a number 15 for percutaneous tenotomies.

There were a total of 170 clubfeet among the 100 individuals in the research. Of the total number of cases, 60 percent were male and 40 percent were female. Previous research by Desai et al. found a 2:1 male to female disparity in the prevalence of the condition. Haft, Walker, and Crawford (2007) said that men constituted 65 percent of their patient population[15]. We found that 40 percent of our sample of 100 individuals showed bilateral involvement, whereas the remaining 60 percent were affected on just one side. Similar results were reported by Laaveg and Ponseti in the past. According to Yamamoto's research [16], the frequency with which people are impacted on both sides is about the same. Changulani et al. [17] found that whereas club foot were more common in children, 52 percent of studied instances were bilateral. Of the people that were investigated, 90 percent had no family history at all, while just 10 percent had a good one. One-third of individuals with club foot [18] were observed to have a good family history, according to research by Dietz (2002).

The average pre-treatment Pirani score was 4.75, whereas Matuszewski, Gil, and Karski saw a range of 4.5-6 in their patients [19]. Our patients received an average of 5.8 plaster casts, with a wide range of values between 4 and 10. According to Dyer and Davis, their research required an average of 5.31 casts, with a range of 2 to 9.

During and after performing a percutaneous needle tenotomy, a number of problems manifested themselves. Results showed that infection accounted for 1% of reported problems and that incomplete tentomies caused for 3% of all reported difficulties. Figure-2 shows that problems arising from the use of plaster were seen in 7 percent of cases, with 3 percent of patients reporting bleeding. According to Changulani et al. [17], 68% of patients had a recurrence after therapy. Recurrence rates that required further treatment were reported at 31% by Janicki and colleagues (year not given) [20].

All patients in this study who had full tendon section reported adequate dorsiflexion of the foot. All participants in the current study had adequate dorsiflexion of the foot, allowing for the collection of full tendon sections. This result may also be surgeon-specific, with less experienced surgeons more likely to perform tenotomies that are incomplete.

Conclusion:

This percutaneous needle tenotomy is a safe and effective way to treat clubfoot deformity following the Ponseti procedure. This method causes no scarring, may be performed in an outpatient setting, and seldom causes any difficulties. Excellent correction can be achieved with traditional blade tenotomy, although problems including hemorrhage and pseudoaneurysms are not unheard of. Our collection of cases showed that no foot needed to be converted or undergo an open tenotomy. Achilles tenotomies may be performed with great success and little danger using the 19-gauge needle percutaneous tenotomy technique. When the Ponseti approach has been used to repair a clubfoot, the OPD therapy is a simple surgical operation.

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Original Article

A Study of Burst Appendix, 60 Cases in RCMCH

***Rahman MA[1], Yusuf MG[2], Begum N[3], Alam MM[4], Fahad SMI[5]**

Abstract

Background: *Acute appendicitis is the most common surgical emergency, with 16% of the population undergoing appendectomy. Burst appendix is one of the complications of acute appendicitis and occurs 25% cases that is associated with increased morbidity and mortality and hence regarded as a surgical emergency.*

Objective: *To focus on the pattern of presentation, risk factors, accuracy of clinical diagnosis, morbidity and outcome of patients managed for perforated appendicitis in RCMCH.*

Materials & methods: *This Cross-sectional study was carried out in the department of surgery, Rangpur Community Medical College, Rangpur from July 2021 to July 2023.A total of60 cases of suspected burst appendicitis were included in this study. Collected data was classified, edited, coded and entered into the computer for statistical analysis by using SPSS (Version 25.0). Minimum level of significance was used as $p<0.05$.*

Results: *Among the 60 cases of suspected burst appendix patients, the majority of the cases 36.67% were of 15 – 24 years age group. Most of the cases 68.33% were male and 31.67% were female. The higher income group of patients are less sufferer 18.33%, origin of pain from umbilicus 100% and from RIF 21.67%, nausea in 71.67%, vomiting in 58.33%, anorexia in 41.67%, fever in 61.67%, diarrhea in 3.33% and abdominal distension in 13.33% cases. Tenderness over RIF was present in 73.33%cases, rebound tenderness was present 55.00% cases, rigidity over RIF was 53.33% patients, Cough test was positive 45.00% cases, diffuse abdominal tenderness in 61.67% cases, abdominal distention in 13.33% cases and absent of bowel sound in 40.00% cases. Maximum number of patients reported after 3days of onset of symptoms. Ultrasonogram shows acute appendicitis in 45.00% and suggesting burst appendicitis in 55.00% cases. Operative findings of those patients, 35.00% cases presented with only burst appendix without local sequel and 21.67% cases present with generalized peritonitis, 15.00% cases present with localized peritonitis, 25.00% cases present with localized abscess, 3.33% cases present with periappendiceal fluid collection and extraluminal appendolith present in 0% cases.*

Conclusion: *The burst appendix present a challenge to the clinicians because it can be delay in diagnosis, result in delay in operation and can be developed fatal complication. So, we emphasize on careful history taking and physical examination in such cases can make the difference between life and death.*

Keywords: *Burst appendix, Tenderness, Abdominal distention*

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Introduction:

The appendix is a small, finger-shaped organ in the right lower quadrant of the abdomen. About 16% of the population undergoing appendectomy due to its inflammation.[1]The main cause of appendicitis is a blockage inside it. This organ tends to get blocked by feces or due to some infections caused by bacteria or virus.[2] As a result, pressure builds up inside it, the normal blood flow gets affected, and it swells up.[3]

When it is badly inflamed and infected, there is a possibility of a perforated appendix and perforation occurs in 25% of cases.[4] One of the major reasons for the perforation of the appendix is the delay in diagnosis and treatment of acute appendicitis. Usually, the perforation may happen after 36 hours of the onset of symptoms, but the chances are higher after 48

hours.[5] This is a life-threatening condition, as bursting of the appendix can result in spread of the infection in the entire abdomen. So, surgery is indispensable and should be performed without any unnecessary delay.[6] However, appendectomy can becomplicated after the perforation of the appendix, as compared to the surgery which is performed to remove an inflamed appendix which is intact.[7]

The symptoms and signs are more or less the same as appendicitis, but their intensity is more severe. The person with appendicitis will be having abdominal pain, especially in the right lower abdomen.[8] As the appendix perforates, the pain may subside briefly. But, as the surroundings get infected and inflamed, the pain resurfaces and worsens with time[9]. The area becomes tender, and the muscles guard appears. Even a small movement that involves the digestive system (like coughing, sneezing, deep breaths or walking) can cause extreme pain.[10]High fever is another key symptom found in these patients once the appendix perforates.[11] When there is only a minor swelling in the appendix, one gets a mild fever. The digestive system is badly affected due to this condition.[12] It leads to improper bowel movements, and the patient may suffer from diarrhoea. Signs of peritoneal irritation beyond the right lower quadrant indicate perforation.[13] Digital rectal examination may reveal tenderness, bogginess and mass in perforated cases. Peritonitis from a perforated appendix leads to shock if not treated.[14]

Materials and methods:

This was cross-Sectional study carried out in the department of surgery, Rangpur Community Medical College Hospital, Rangpur, Bangladesh, from July 2021 to July 2023.A total of60 cases of suspected ruptured appendicitis were included in this study.

Patients over the age of 10 years with a perforated appendix, as well as any patients with intraoperative findings like perforated appendicitis, gangrenous perforated appendicitis, or a disintegrated appendix and patients willing to participate.

All patients with appendicitis below 10 years of age with perforated appendicitis; all patients with appendicitis with intraoperative findings of acute nonperforated appendicitis; and all patients with intraoperative findings of an appendicular lump or mass.

Results:

Epidemiology of study population:

Distribution of respondents by age Group

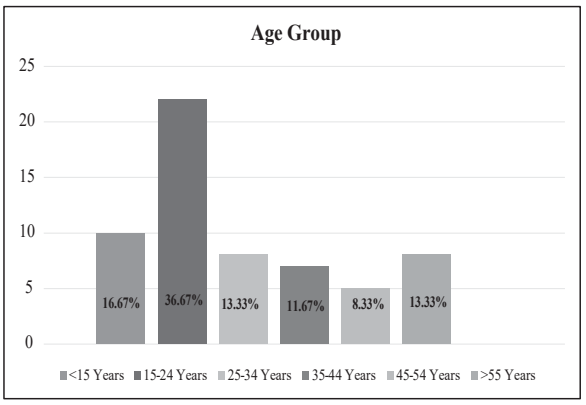

Figure-1: Age distribution of the study population

Figure shows age group distribution of the study population, majority of the cases 36.67% were of 15 – 24 years age group, 16.67% were <15 years age group, 13.33% were of 25 – 34 and >55 years age group and other age group patients were few in number.

Distribution by Sex

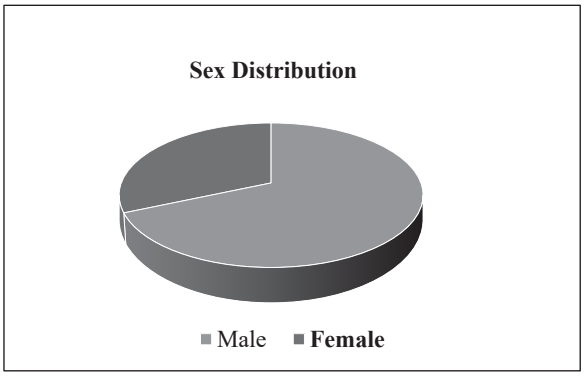

Figure-2: Sex distribution of the patients

Figure-2 shows that most of the cases 68.33% were male and 31.67% were female.

Table-I: Socioeconomic status of the patients

Status	Numbers of case	Percentage
High income group	11	18.33
Middle income group	27	45.00
Low income group	22	36.67

Table-I shows socioeconomic status of the study population, 18.33% were from higher income group, 45.00% were from middle income group and 36.67% were from lower income group, classification was made from monthly income of guardian.

Table-II: Presenting symptoms of burst appendix

Symptoms	Numbers of patients	Percentage
Pain in abdomen	60	100.00
Umbilicus to RIF	29	48.33
Shifting to RIF	13	21.67
Pain in whole Abdomen	21	35.00
Nausea	43	71.67
Vomiting	35	58.33
Anorexia	25	41.67
Fever	37	61.67
Diarrhea	2	3.33
Abdominal Distension	8	13.33

Table-II shows all the patients (100%) were presented with sudden onset of abdominal pain, 48.33% started around the umbilicus and then shifted to the right iliac fossa in 21.67% and whole abdomen in 35.00%

Table-III: Physical signs of burst appendix of study population

Signs	Numbers of patients	Percentage
General Examination		
Dehydration	23	38.33
Pulse (<100)	29	48.33
Pulse (>100)	19	31.67
Blood Pressure		
Normal (>90/60)	46	76.67
Hypotension (<90/60)	4	6.67
Temperature		
Normal	22	36.67
Temperature (>99F)	21	35.00
Abdominal Examination		
Tenderness in RIF	44	73.33
Diffuse abdominal tenderness	37	61.67
Rebound tenderness	33	55.00
Cough test	27	45.00
Pointing sign	2	3.33
Rovsing's sign	13	21.67
Psoas test (+ve)	17	28.33
RIF muscle rigidity	32	53.33
Abdominal distension	8	13.33
Bowel sound absent	24	40.00
Obliteration of liver dullness	1	1.67
Digital Rectal Examination		
Tenderness on the right side	5	8.33
Tenderness on recto vesical or recto uterine pouch	3	5.00

Table-IV: Duration of symptoms of burst appendix patients

Duration of symptoms before attending to hospital (Days)	Numbers of patients	Percentage
<1	1	1.67
1	3	5.00
2	7	11.67
3	21	35.00
4	17	28.33
>4	11	18.33

Table-IV shows maximum number of patients reported after 3days of onset of symptoms.

Table-V: Investigation findings of burst appendix of study population

Findings	Numbers of patients	Percentage
Leucocytes count-		
<11x 10^9/L	11	18.33
>11x 10^9/L	49	81.67
Neutrophil Count-		
>70%	49	81.67
<70%	11	18.33
Plain x-ray of abdomen in erect posture-		
Normal	33	55.00
Intestinal Obstruction (Multiple air fluid level small bowel)	17	28.33
Peritonitis (Ground glass appearance)	7	11.67
Free gas shadow under dome of the diaphragm	3	5.00
Ultrasonogram of abdomen-		
Acute appendicitis	27	45.00
Suggesting Burst Appendicitis	33	55.00

Table-V shows leucocytes count >11×10^9/L is 81.67% and neutrophil count >70% is 81.67%. Plain x-ray abdomen in erect posture is normal in 55.00%, intestinal obstruction in 28.33%, peritonitis in 11.67% and free gas shadow under doom of diaphragm in 5.00%. Ultrasonogram shows acute appendicitis in 45.00% and suggesting ruptured appendicitis in 55.00%

Table-VI: Diagnostic accuracy

Diagnosis	Numbers of patients	Percentage
Correct diagnosis	47	78.33
Incorrect diagnosis	13	21.67
Total	60	100.00

Table-VII: Site of perforation of appendix

Site	Numbers of patients	Percentage
At the tip	34	56.67
At the base	19	31.67
At the body	5	8.33
At the base with involvement of caecum	2	3.33
Total	60	100.00

Table-VII shows that appendix was perforated at the tip of appendix in 56.67% of patients, at the base of appendix in 31.67% of patients, at the body of appendix in 8.33% of patients and at the base with involvement of caecum in 3.33% of patients.

Table-VIII: Operative findings of burst appendix

Type of findings	Numbers of patients	Percentage
Burst appendix without local sequel	21	35.00
Generalized peritonitis	13	21.67
Localized peritonitis	9	15.00
Localized abscess	15	25.00
Periappendiceal fluid collection	2	3.33
Extra luminal appendolith	0	0.00
Total	60	100.00

Table-VIII shows that 35.00% cases presented with only burst appendix without local sequel and 21.67% cases present with generalized peritonitis. 15.00% cases present with localized peritonitis, 25.00% cases present with localized abscess, 3.33%cases present with periappendiceal fluid collection and extra luminal appendolith present in 0% cases.

Table-IX: Initial outcome of burst appendix

Outcome	Numbers of patients	Percentage
No complication	34	56.67
Fiver	43	71.67
Wound infection	22	36.67
Wound dehiscence	8	13.33
Burst abdomen	3	5.00
Pneumonia	2	3.33
Intra-abdominal abscess	1	1.67
Prolong paralytic ileus	16	26.67
Death	0	0

Table-IX shows that patients discharged from hospital without any complication was 56.67%. Fever in 71.67%, wound infection in 36.67%, wound dehiscence in 13.33%, burst abdomen in 5.00%, pneumonia in 3.33%, intraabdominal abscess in 1.67% and prolong paralytic ileus in 26.67% cases.

Discussions:

Appendicitis is the most common abdominal surgical emergency and most common complication of acute appendicitis is burst appendix. The diagnosis of burst appendix remains mostly on the basis of clinical manifestation as like acute appendicitis. The problem in making a clinical diagnosis of burst appendix is that in addition to appendicitis, there other possible surgical and non-surgical causes of lower abdominal pain. The signs and symptoms associated with appendicitis have been found to have sensitivity between 16 and 100 percent and specificity between 36 and 95 percent.[2] Therefore other diagnostic modalities such as plain abdominal radiographs,[3,4] ultrasonography[5] and CT scan of abdomen have been clinically employed to aid in clinical evaluation but none has demonstrated a clear advantageover a careful history and clinical examination.[6] In this present series, I have studied only 200 cases of clinically diagnosed ruptured appendicitis and admitted in different surgical units of Rangpur Community Medical College Hospital, Rangpur, Bangladesh, from July 2021 to July 2023 about two year.

There had been many studies on the same and related subjects at home and abroad with various results. The following pages describe the comparative studies of the present study with other studies done in the century and elsewhere.

Figure-1 shows age group distribution of the study population, majority of the cases 36.67% were of 15 –

24 years age group, 16.67% were <15 years age group, 13.33% were of 25 – 34 and >55 years age group and other age group patients were few in number.

Figure-2 shows that most of the cases 68.33% were male and 31.67% were female.

Table-I shows socioeconomic status of the study population, 18.33% were from higher income group, 45.00% were from middle income group and 36.67% were from lower income group, classification was made from monthly income of guardian. It is generally believed that the lesser cellulose content of the diet may be related to the incidence of acute appendicitis. In our country, because of urbanization, food habit also changing. They are taking less cellulose content diet. So, incidence of acute appendicitis or burst appendix is increasing in middle and low income group of people.

Table-II shows all the patients (100%) were presented with sudden onset of abdominal pain, 48.33% started around the umbilicus and then shifted to the right iliac fossa in 21.67% and whole abdomen in 35.00%. Nausea, vomiting and fever were present in majority of the cases. Diarrhea was present 3.33% patients, nausea, vomiting and fever were 71.67%, 58.33% and 61.67% of patients respectively.

Table-III shows that dehydration was present in 38.33% cases, tachycardia in 31.67% cases, hypotension in 6.67% cases and raised temperature in 35.00% cases. Tenderness over RIF was present in 73.33%cases. Cough test was positive in 45.00% cases, pointing sign was positive in 3.33% cases and rovsing's sign was positive in 21.67% cases. Diffuse abdominal tenderness was present in 61.67% cases, rebound tenderness was present in 55.00% cases, abdominal distention was in 13.33% cases, rigidity over RIF was present in 53.33% case, obliteration of liver dullness in 1.67% cases, and absent of bowel sound was in 40.00% cases. In digital rectal examination, tenderness over right side was present in 8.33% cases and tenderness on recto-vesicle or rectouterine pouch was present in 5.00% cases. Digital rectal examination done in 41 (68.33%) of patient out of which 24 (24.6%) of patient had tenderness. Based on the wide variation found on other studies we can say tenderness on rectal examination can be supportive but its absence should not lead to exclusion of diagnosis. Besides it indicates that most surgeons might be reluctant to do digital rectal examination in patients with suspected burst appendix.

Table-IV shows that 35.00% of patients suffered for 3 days, 28.33% of patients for 4 days were suffered from symptoms and 16.67% of patients for 1-2 days and 1.67%patients for <1 day were suffered from symptoms begore attending hospital. In Bickell N A[11], this study quantifies the changing risk of appendiceal rupture with time of untreated symptoms. Rupture risk was <2% in patients with less than 36 hours of untreated symptoms. For patients with untreated symptoms beyond 36 hours, the risk of rupture rose to and remained steady at 5% for each ensuing 12 hour period.

Table-V shows that leucocyte count >11×10^9/L was 81.67% and <11×109/L was 18.33%. Neutrophil count >70% was 81.67% and < 70% was 18.33%. Deneke A[10] showed that analysis of the WBC in relation to diagnosis of burst appendix as in most studies end up with controversial result. It was found that 50% of patients had WBC count above 11,000/mm^3, which is above normal. A high count is supportive to clinical diagnosis but a normal count (4,000-11,000/mm^3) cannot rule out appendicitis.

Plain x-ray abdomen in erect posture is normal in 55.00%, intestinal obstruction in 28.33%, peritonitis in 11.67% and free gas shadow under doom of diaphragm in 5.00%. Pneumoperitoneum on an upright abdominal radiograph suggests a diagnosis other than appendicitis. Rarely does a perforated appendix present with pneumoperitoneum (1 to 2%).

USG done for 100% cases. Ultrasonogram shows acute appendicitis in 45.00% and suggesting burst appendicitis in 55.00%. Ultrasonography is often used as the initial diagnostic imaging study in the majority of patients in whom the clinical diagnosis of appendicitis is equivocal. Ultrasound is noninvasive and rapidly available and avoids radiation exposure. Most studies of graded compression ultrasound demonstrate a sensitivity of more than 85% and a specificity of more than 90%. However, the sonogram for appendicitis is a highly operator-dependent study. In addition, perforation significantly decreases the diagnostic accuracy of graded compression of the appendix. Thus, the ultrasonographic diagnosis of perforated appendicitis depends on the secondary findings on periappendiceal fluid, mass, and loss of the integrity of the submucosa layer. Gaseous distention of the right lower quadrant bowel loops or prolonged symptoms suggesting perforation should make CT the preferred imaging study for improved accuracy and potential utility in planning intervention for appendiceal abscess or phlegmon.

Table-VII shows that appendix was perforated at the tip of appendix in 56.67% of patients, at the base of appendix in 31.67% of patients, at the body of appendix in 8.33% of patients and at the base with

involvement of caecum in 3.33% of patients.

Table-VIII shows that 35.00% cases presented with only burst appendix without local sequel and 21.67% cases present with generalized peritonitis, 15.00% cases present with localized peritonitis, 25.00% cases present with localized abscess, 3.33% cases present with periappendiceal fluid collection and extraluminal appendolith present in 0% cases. In Addis et al shows generalized peritonitis in 21.80% and Ehtasam[13] shows generalized peritonitis in 31.78% cases.

Table-IX shows that the early post-operative complication. Patients discharged from hospital without any complication was 56.67%. Fever in 71.67% of patients, wound infection in 36.67% of patients, wound dehiscence in 13.33% of patients, burst abdomen in 5% of patients, pneumonia in 3.33% of patients, intraabdominal abscess in 1.67% of patients and prolong paralytic ileus in 26.67% of patients. In Dandapat MC[15] shows wound infection in 50% of patients, prolong paralytic ileus in 26.67% of patients, intra-abdominal abscess in 21.70% of patients and urinary symptoms in 15.20% of patients.

Conclusion:

Burst appendix present a challenge to the clinicians because it can delay in diagnosis, result in delay in operation and can develop fatal complications. So we emphasize on careful history taking and physical examination in such cases which will make the difference between life and death.

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Original Article

Evaluation of Fetal Condition by Biophysical Profile in Term Pregnancy in Women Presenting with Reduced Fetal Movement

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Abstract

Introduction: *Biophysical profile is considered as important reliable test for assessment of fetal wellbeing in patient with reduced fetal movement in last trimester.It consist of five components first four components are obtained from Ultrasongraphy and last one is Non stress test (CTG).*

Objectives: *To see the reliability of biophysical profile test for the assessment of fetal wellbeing in patient with reduced fetal movement in last trimester.*

Material and method: *This was cross sectional observation study. A total of 50 pregmant women 37 weeks gestation with reduced fetal movement were included in the study who fulfilled inclusion and exclusion criteria. History was taken and clinical examination was done.CTG was done .Patients was managed with standared protocol. Pregnancy outcome and neonatal data were obtained from delivery note & neonatal chart review and correlated with biophysical profile.Appropriate statististical test were done where necessary.Results were presented in table and graphs.*

Results : *Age distribution was similar in btween groups.. Induction of labour was done 8(32%) in normal biophysical profile and 16(64%) in abnormal biophysical profile. This difference was statistically significant. Caesarian section was significantly higher in abnormal biophysical profile and whereas Normal vaginal delivery was higher in normal Biophysical profile[17(68%) vs 9(36%),8(32%) vs 16(64%)]. At 1 min APGAR score was >7 was found in 22(88%) vs 16(64%) normal biophysical profile vs abnormal biophysical profile.In 5 min APGAR score >7 was 24(96%) vs 18(72%) in between normal biophysical profile and abnormal biophysical profile.The difference was statistically significant. Admission in NICU rate was higher in abnormal biophysical 15(60%) whereas 3(12%) in normal Biophysical profile. The difference was statistically significant. Neonatal hospital stay time> 5 days is also higher in found in abnormal biophysical profile than in normal biophysical profile [15(60%) vs 6(24%)]. Hospital stay , Neonatal complications higher in abnormal biophysical profile.Among neonatal complications most of the patient had birth asphyxia, sepsis,Jaundice. Perinatal outcome was better in normal biophysical profile than in abnormal biophysical profile[24(96%) vs 20(80%)].*

Conclusion: *It was found that fetal outcome was good in normal biophysical profile incomparison with abnormal biophysical profile.Birth asphyxia, sepsis, Jaundice, muconium aspiration syndromes were most common complications of abnormal biophysical profile. Caesarian section, low apgar score , admission to NICU ,prolong hospital stay,neonatal complication, were higher in abnormal biophysical profile, perinatal outcome is good in normal biophysical profile. Biophysical profile is a very reliable test for fetal survillence in women presenting with reduced fetal movement.*

Keywords: *Biophysical profile, Reduced foetal movement, Non-stress test, CTG*

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Introduction:

The biophysical profile (BPP) is prenatal ultrasound evaluation of fetal well-being. It includes four discrete biophysical variables by ultrasound and one Non-stress test (cardiotocography), which is often used as standard tool in antepartum fetal assessment and usually assessed after 28 weeks of gestation[1]. The five components of the biophysical profile are as follows: (1) Non stress test; (2) Fetal breathing movements (one or more episodes of rhythmic fetal breathing movements of 30 seconds or more within 30 minutes); (3) Gross body movement (three or more discrete body or limb movements within 30 minutes);

(4) Fetal muscle tone (one or more episodes of extension of a fetal extremity with return to flexion, or opening or closing of a hand; and (5) Amniotic fluid volume (a single vertical pocket of amniotic fluid exceeding 2 cm is considered evidence of adequate amniotic fluid[2].

Each of the components is given a score of 2 (normal or present as defined previously) or 0 (abnormal, absent or insufficient).A composite score of 8 or 10 is normal, a score of 6 is equivocal and a score of 4 or less is abnormal. In the presence of oligohydramnios, further evaluation is warranted regardless of the composite score[3]. Biophysical profile is used widely in maternity care, both in the antepartum and intra partum periods[4].

Antenatal BPP is most commonly performed in the third trimester of pregnancy usually after 28weeks[5].According to Wayne State University Physician Group, they suggest BPP is done when Non stress test is non reactive[6]. According to American college of family medicine BPP generally performed after 32 weeks[6].

Maternal perception of Reduced fetal movement (RFM) is a great concern of both pregnant women and obstetricians in late pregnancy. RFM have bad perinatal outcome and neurological development in motor development and tempertment[7],while some clinicians believe that fetal movement counting is a good method as it allows the clinician to make appropriate interventions in good time. On the other hand, fetal movement counting may cause anxiety to women[8]. Maternal perception of gross fetal movement appears to be an accurate reflection of fetal activity. Active fetal movement patterns have been associated with good fetal outcome and conversely, RFM suggests the possibility of impending fetal death[8].

Guidelines pertaining to antenatal fetal surveillance varies. The National Institute for Health and Clinical Excellence has advised that formal fetal movement counting should not be recommended to patients[9], while the Society of Obstetricians and Gynecologists of Canada, conversely, has clearly recommended fetal movement counting for both low- and high risk pregnancies [10]. The American College of Obstetricians and Gynecologists approves of fetal movement counting, but remain undecided in relation to advice as to the number of movements duration of counting which require further assessment[11-12].

Perhaps effecting these uncertainties, criteria for what constitutes a normal fetal movement pattern, what definition of RFM mandates antenatal testing what testing is required, what subsequent action or follow-up appropriate after both normal and abnormal testing has been performed, and how RFM correlates with perinatal morbidity and mortality, all remain unclear[13-14].

Materials and Methods:

A cross sectional observational study was carried out in the department of Obstetrics and Gynaecology, Bangabandhu Sheikh Mujib Medical University from 1st July 2014 to 1st Dec 2014. A total of 50 pregnant women with 37 weeks or more gestation during the study period with reduced fetal movement (RFM) who fulfilled the inclusion and exclusion crtiteria were taken as sample. The Study population were grouped Group A(Normal biophysical profile) and Group B(Abnormal biophysical profile). Informed consent were taken. Patients were evaluated based upon History, Clinical examination and investigations. Daily fetal movement- counting from 37 weeks onwards, with recommendation to report (maternal appreciation of less than 10 movements in any 12 hours counting period of maternal perception of RFM was reported, BPP was performed within 1 hour of presentation. Women were reassured and discharged to attend their further routine antenatal care schedule.Routine antenata! care in the hospital included.The mean values was calculated for continuous variables. The quantitative observations was indicated by frequencies and percentages. Chi-Square test with Yates correction were used to analyze the categorical variables, shown with cross tabulation. Student t-test was used for continuous variables. P values 0.05 will be considered a statistically significant.

Results:

Table-I: Distribution of the study patients by Maternal age (n=50)

Age (years)	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
≤20	4	16	2	8	
21-25	10	40	5	20	
26-30	6	24	9	36	0.086 ^{ns}
>30	5	20	9	36	
Mean±SD	25.56±4.84		28.12±4.64		
Range (Min-Max)	(19-35)		(19-35)		

Table-I: Shows that the mean age was found 25.56±4.84 yrs in normal BPP and 28.12±4.64 yrs in abnormal BPP.The difference is not statistically significant (p>0.05).

Table-II: Distribution of the study patients by induction of labour (n=50)

Induction of labour	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Yes	8	32	16	64	0.0465[S]
No	17	68	9	36	

Table-II shows that induction of labour was done in majority (64%) in abnormal BPP and only (32%) in normal BPP. This difference is statistically significant (p<.05)

Table-III: Distribution of study patients by mode of delivery (n=50)

Mode of delivery	Normal BPP (n=25)		abnormal BPP (n=250		P value
	n	%	n	%	
Normal Vaginal delivery	17	68	9	36	0.0009[s]
Caesarian Section	8	32	16	64	

Table-III shows that normal vaginal delivery was higher(68%) in normal BPP than abnormal BPP where it was (36%).On the other hand Casesarian section rate was higher in abnormal BPP than normal BPP, It was (64%) in abnormal BPP and (32%) in normal. This difference is statistically significant (p<.05).

Table-IV: Distribution of the Study patients by neonatal Outcome of BPP (n=50)

Neonatal Outcome variables	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Apgar Score in 1 min					
<7	3	12	9	36	0.0124[S]
>7	22	88	16	64	
Apgar Score in 5 Min					
<7	1	4	7	28	0.0075[S]
>7	24	96	18	72	
Admission in NICU					
Yes	3	12	15	60	0.0009[S]
no	22	88	10	40	
Neonatal Complication					
yes	2	8	15	60	0.0001[S]
No	23	92	10	40	

Table-IV At 1 minnute APGAR score ≥7 was found 22(88%) in normal biophysical profile and 16(68%) abnormal biophysical profile. At 5 min APGAR score ≥7 was found 24(96%) in normal biophysical profile and 18(72%) in abnormal biophysical profile. Admission to NICU 3(12%) of normal biophysical profile and 15(60%) in abnormal normal biophysical profile.Neonatal complication 2(8%) of normal biophysical profile and 15(60%) in abnormal normal biophysical profile.The differences are statistically significant(p<.05)

Table-V: Distribution of study patients by Hospital stay (n=50)

Hospital stay period in days for neonatal complications	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
<7	19	76	10	40	0.0002[S]
>7	6	24	15	60	

Table-V shows that abnormal BPP have more hospital stay rate 60% where patients with normal BPP is 24% have hospital stay more than 5 days. This difference is statistically significant (p<.05).

Table-VI: Distribution of study patients by admission in NICU (n=50)

Admission in NICU	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Yes	3	12	15	60	0.0009[S]
No	22	88	10	40	

S= significant
P value reached from Fisher's exact test.
Table-VI shows Admission to NICU of abnormal BPP 60% is higher than normal BPP 3(12%). The Difference is statistically significant(P<0.05).

Table-VII: Distribution of study patients by admission in NICU (n=50)

Admission in NICU	Normal BPP (n=25)		abnormal BPP (n=25)		P value
	n	%	n	%	
Yes	3	12	15	60	0.0009[S]
No	22	88	10	40	

Table-VII shows that neonatal complication is higher in Abnormal Biophysical profile is 60% than normal Biophysical profile 8% .The difference is statistically significant (p<.05)

Table-VIII: Distribution of study patient by Neonatal complication (n=50)

Neonatal complication	Normal BP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Yes	2	8	15	60	0.0001[S]
No	23	92	10	40	

Table-VIII shows that MSean birth weight in normal BPP is3.06±0.46 and abnormal BPP is 3.03±0.45.The difference was not statistically significant between normal biophysical profile and abnormal biophysical profile.

Table-XIV: Distribution of patient by perinatal outcome (n=50)

Perinatal Outcome	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Live Birth	24	96	20	80	0.0455[S]
Perinatal Death	1	4	5	20	

Table-XIV Shows frequency distribution of neonatal complication amoung abnormal BPP. It is revealed the most common complication was found asphyxia 40%, sepsis 27%,Muconium aspiration syndrome 20% and Jaundice13%.

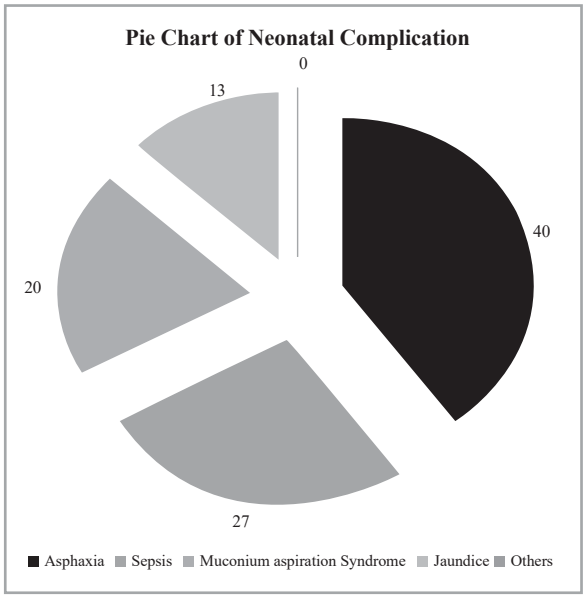

Figure-1: Frequency of Neonatal complication among abnormal BPP (n=15)

Table-XIV: Distribution of neonatal complication

Neonatal complication	Frequency	Percentage
Asphaxia	6	40
Sepsis	4	27
muconium aspiration Syndrome	3	20
Jaundice	2	13

Discussion:

In this study it was observed that majority patients were age belongs 21-25 in normal Biophysical profile and 26-30 in abnormal Biophysical profile. The mean age was found 25.56±4.84 in Normal BPP and 28.12±4.64 in abnormal Biophysical profile.There were no significant mean age difference in Between normal and abnormal Biophysical profile.F.Begum et all showed that mean of study age was 26.18±3.8yrs for both Normal and abnormal Biophysical profile[27] Another study taken in sao paulo, rapid biophysical profile mean age for normal Biophysical profile was 27±6 and abnormal Biophysical profile was 27±5.6.[22] In the current study it was observed that majority of patients were primiparous in both groups, it was 14(56%) in normal Biophysical profile and 16(64%) in abnormal Normal Biophysical profile. The difference was not statistically signigficant(p>0.05) between normal and abnormal Biophysical profile. Simillar Observation noticed in F.Begum et all study[22]

In this current study showed more than half(52%) of normal BPP and 48% abnormal BPP comes from lower Middle income group family. This difference is not statistically significant(p>0.05) between normal and abnormal BPP.

Current study showed mode of delivery of the study patients. It was observed that normall vaginal delivery was higher 17(68%) in normal BPP than abnormal BPP where it was 9(36%).On the other hand casesarian section rate was higher in abnormal BPP than normal BPP, It was 16(64%) in abnormal BPP and 8(32%) in normal. This difference is statistically significant between groups.

Current study showed study patients by hospital stay. Patients with abnormal BPP shows had more hospital stay for neonatal complication in comparison to normal BPP. Data shows abnormal BPP have more hospital stay rate 15(60%) where patients with normal BPP is 6(24%) have hospital stay more than 7 days. This difference is statistically significant (p>.05)between groups.

In this study we have seen admission to NICU, admission to NICU of abnormal BPP 15(60%) is

higher than normal BPP 3(12%) .The Difference is statistically significant(P>0.05).Observation showed neonatal complication is higher in abnormal Biophysical profile than normal Biophysical profile these are as neonatal complication in abnormal Biophysical profile is 15(60%) and in normal Biophysical profile is 2(8%). The difference is statistically significant(p<.01).

Conclusions:

The study was undertaken to determine the value of biophysical profile for evaluation of fetal out come in patient presenting with RFM in term pregnancy. It was found that Fetal outcome is good in normal biophysical profile whereas bad outcome in abnormal biophysical profile.Birth asphyxia, sepsis,Jaundice ,Muconium Aspiration syndromes are most common complications of abnormal biophysical profile. Caesarian section, low apgar score , admission to NICU ,prolong hospital stay,Neonatal complication, are higher in abnormal biophysical profile, Perinatal outcome is good in normal biophysical profile. Biophysical profile is a very reliable test for fetal survillence in women presenting with reduced fetal movement.

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Original Article

Association Between Cardiac Injury and Mortality in Hospitalized Patients with COVID-19

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Abstract

Background: *COVID-19 is multisystem disease involving mainly Respiratory system but also cardiovascular system, GIT and Nervous system. Cardiovascular involvement can cause cardiac arrest with cardiogenic shock, severe cardiac arrhythmia, STEMI, NSTEMI, Carditis etc. The aim of this study was to explore association between cardiac injury and mortality in patients with COVID-19.*

Objective: *To see the association of mortality in hospitalized COVID-19 patients due to cardiac injury.*

Materials & Methods: *This cross-sectional observational study was conducted on 110 patients with COVID-19 positive who were admitted in the department of Cardiology (In CCU and HDU) in Dhaka Medical college hospital, who fulfilled the inclusion and exclusion criteria. Serum Troponin-I level was measured after admission. The sample population was Grouped into Group A (Covid-19 positive with cardiac injury) and Group B (Covid-19 positive without cardiac injury). Patients were followed up regularly till discharge or death for evidence of in-hospital mortality.*

Results : *A total of 110 patients with COVID-19 were included in the analysis.It was observed that mean age was 52.54±12.9 years in group A, 47.2±9.69 years in group B.Gender distribution was uneventful. It was observed that 15% patients had cardiac injury. Patients with cardiac injury had more comorbiditiesi.e. Diabetes[31(62%) vs 23(38.0%), p<0.011], CAD[33(60%)vs23(38.0%), p<0.013], Hypertension [34(68%) vs 29(48.0%), p<0.027], raised CRP [11.41±3.48 vs 3.74±1.64, p<0.001], Raised serum creatinine [2.27±0.39 vs 0.71±0.12, p<0.001]. Complications such as ARDS [29(58%) vs 22(37%), p<0.005], AKI [29(58%) vs 22(37%), p<0.005], venous thromboembolism [9(18%)vs3(5%), p<0.045] also more in Group A patients. Group A patients required more hospital stay [13.08±2.72 days vs 9.02±1.97, p<0.004], ICU support [29(58%) vs 22 (37%), p<0.003], inotropssupport [29(58%) vs 22 (36.6%), p<0.003]. Multivariate logistic regression analysis showed that D-Dimer, Cardiac injury, ARDS were independent predictors of in-hospital mortality (OR=5.02, p<0.05, OR=7.56, p<0.003, OR=3.56, p<0.04). Receiver operator curve analysis found significant cut off value for troponin –I level (3 ng/ml) with 90.5% sensitivity and 80% specificity (AUC= 0.954, p value <0.01).*

Conclusions: *Cardiac injury is common condition among patients hospitalized with COVID-19 and it is associated with increased in-Hospital mortality. Although exact mechanism of cardiac injury needs to be further explored.*

Keywords:*Cardiac injury*, COVID-19, In-Hospital mortality

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Introduction:

Cardiac injury is refers to increase of cTn values (>99th percentile URL) in patients with normal baseline values (≤99th percentile URL) or a rise of cTn values >20% of the baseline value when it is above the 99th percentile[1].

In late December 2019, several cases of pneumonia with an unknown cause were reported in Wuhan, China, and later in January 2020, Chinese center for disease control and prevention (CDC) identified a new type of corona virus from those pneumonia cases. The World Health Organization (WHO) choose the official name of COVID-19 (stand for corona virus disease 2019), for the disease, as well as the term SARS−COV-2 (severe acute respiratory syndrome corona virus 2) for the virus[2]. WHO announced COVID-19 as a pandemic in March 11, 2020 after it had spread to more than 100 countries and resulted in tens of

thousands of cases within a few months[3].

SARS-CoV-2 is a member of the Corona viridae family that consists of a single-stranded positive sense RNA, named for the crown like spikes on its surface[4]. So far, two human infections by viruses related to Corona viridae family are known: Severe Acute Respiratory Syndrome (SARS), caused by SARS-CoV, which emerged in China in 2002 and spread across 37 countries, and the Middle-East Respiratory Syndrome (MERS), caused by MERS-CoV, which was first seen in Saudi Arabia in 2012. SARS-COV-2 is genetically related to SARS-CoV with both of them being beta-corona viruses[4].

COVID-19 is multisystem disease involving mainly respiratory system, cardiovascular system, GIT, Nervous system. Cardiovascular involvement causes cardiac arrest with cardiogenic shock, severe cardiac arrhythmia, STEMI, Non obstructive coronary disease[5-6].

Coronavirus disease 2019 (COVID-19) has resulted in considerable morbidity and mortality worldwide since December 2019.Although acute respiratory failure due to diffuse alveolar damage is the leading cause of the death from COVID-19, lungs are not the only organs involved in the disease. A few studies have found that a substantial proportion of patients with confirmed COVID-19 suffer from acute cardiac injury (ACI), which may progress to heart failure, and thus increase the risk of in-hospital mortality in some cases[5–8]. Moreover, it is unclear which factors or indicators (inflammatory or cardiac) have a greater value in predicting in-hospital mortality in COVID-19 patients[7]. Furthermore, studies have shown that several inflammatory factors, such as high sensitivity C-reactive protein (hs-CRP) and interleukin-6 (IL-6), and cardiac injury indicators, such as high-sensitivity cardiac troponin I (hs-cTnI) and N-terminal pro brain natriuretic peptide (NT-proBNP), play important roles in the progression of COVID-19 and death.[9]

COVID-19 associated clusters of severe respiratory illness have been independently associated with risk of mortality, and mounting evidence substantiates the presence of cardiac injury in patients with COVID-19, Although a recent study reported that 19% of patients had COVID-19 associated acute cardiac injury[17], manifesting as an ejection fraction decline and troponin I elevation, and the American College of Cardiology clinical bulletin has highlighted the cardiac implications of COVID-19.[8]

Although corona virus disease (COVID-19) clinical manifestations are mainly respiratory, major cardiac complications are being reported. Cardiac manifestations etiology seems to be multifactorial, comprising direct viral myocardial damage, hypoxia, hypotension, enhanced inflammatory status, ACE2-receptors down regulation, drug toxicity, catecholamine adrenergic status, among others.[9]

Overall case fatality rate COVID-19 based on publication remains as low as 3-4%. Case fatality rate varies widely it's in Italy-7.2%, China 3.5%, Iran 2.7%, less than 1% in cruise ship and 0.5% in South Korea. More than 80% of infected patient experience mild symptoms and recover with intensive medication[17]. Case fatality rates for comorbid patients are materially higher than the average population: that is in Cancer: 5.6%, Hypertension: 6.0%. Chronic respiratory disease: 6.3%, Diabetes: 7.3%, Cardiovascular disease: 10.5%[18]. Flu and COVID-19 death rate varies with age. Elderly patients are more vulnerable. Cardiac involvement bears high incidence of comorbidity in survivors. It also showed patients with COVID-19 develops a wide variety of cardiac complication ranging from direct myocardial injury to Cardiac arrest, Cardiogenic shock, severe Cardiac arrhythmia, STEMI, Non obstructive coronary disease. Mechanism of cardiac injury is illustrated above[18].

Materials and Methods:

This cross-sectional observational study was carried out in the Department of Cardiology (CCU and HDU), Dhaka Medical College Hospital, Dhaka from January 2021 to Dec 2021 All the patients with COVID 19 who full filled exclusion and inclusion criteria was be taken as sample. Patients with COVID-19 was briefed about the study and consent will be taken. Detailed history and thorough physical examination was done and risk factors wasnoted. Serum Troponin I was done on admission. About 5cc of blood was drawn from patient into test tube and serum was prepared. Then prepared serum was be poured into Automated machineand Troponin-I Value was measured at Pathological Laboratory of Dhaka Medical College with a Cut-off value of <0.1 ng/ml. 12 lead ECG was done on admission and whenever needed at a paper speed of 25 mm/s and 10 mm standardization. Other baseline investigations including CBC, Serum creatinine, SGPT, serum electrolytes, blood sugar, and lipid profile were done for each patient. CRP, CXR and HRCT of Chest were done whenever needed in selected cases. Patients was followed up in CCU and HDU with continuous ECG monitoring. Daily follow up of the patients was done by checking their Pulse, BP, lung base and other vital parameters.All the above information and In-hospital mortality were recorded in a data collection form consisting of relevant

questionnaire.Patient were divided into two groups- Group I with Troponin I >0.1 µg/ml and TroponinI ≤ 0.1 in group II. Then association of Cardiac injury with Troponin-I value and in-hospital mortality in both Groups were compared. The mean values was calculated for continuous variables. Thequantitative observations wasindicated byfrequencies and percentages. Chi-Square test with Yates correction was used to analyze the categorical variables, shown with cross tabulation. Student t-test was used for continuous variables. . P values 0.05 was considered a statistically significant. The study was approved by the Ethical Review Board of Dhaka Medical College. Written informed consent was provided by the participants. Data were collected andanalyzed with SPSS version 22.0.

Results:

Table-I: Distribution of the study patients according todemographic variables (n=110)

Demographic variables	With cardiac injury (n=50)		Without cardiac injury (n=60)		P value
	n	%	n	%	
Age (years)					
21-30	5	10	6	10	
31-40	10	20	9	15	
41-50	15	30	16	26.66	
51-60	12	24	18	30	
61-70	8	16	11	18.33	
Mean±SD	52.54	±12.9	47.2	±9.69	0.894^{ns}
Range (Min -max yrs)	25	-65	21-65		
Sex					
Male	22	44	27	45	0.535^{ns}
Female	28	56	33	55	**

Table-II: Comparison of study population according to preexisting riskFactor (n=110)

Preexisting risk Factor	Group A (n=50)		Group B (n=60)		P value
	No.	%	No.	%	
HTN					
yes	34	68	29	48.3	0.027^{s}
no	16	32	31	51.7	
DM					
yes	31	62	23	38.3	0.011^{s}
no	19	38	37	61.7	
CAD					
yes	33	66	23	38.3	0.013^{s}
no	17	34	37	61.7	
Chronic Renal failure					
Yes	19	38	19	31.7	0.310^{ns}
no	31	62	41	68.3	
COPD					
yes	19	38	19	31.7	0.310^{ns}
no	31	62	41	68.3	

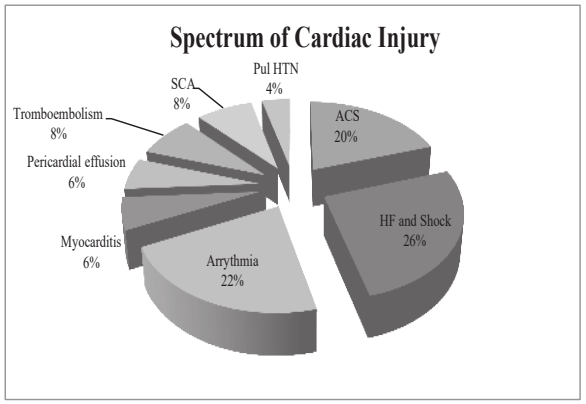

Figure-1: Showing Spectrum of cardiac injury amoung 50 patients

Table-III: Comparison of Laboratory finding between two groups (n=110)

Laboratory parameters	Group A (n=50) Mean±SD	Group B (n=60) Mean±SD	P value
Hb%	11.68±1.16	12.55±1.80	0.154^{ns}
ESR	8.30±3.55	8.85±3.09	0.388^{ns}
Troponin- I (ng/ml)	3.59±1.72	.048±0.025	0.001^{s}
Serum creatinine (mg/dl)	2.27±0.39	0.71±0.12	0.001^{s}
CRP	11.41±3.48	3.74±1.64	0.001^{s}
RBS	11.68±1.16	12.55±1.80	0.144^{ns}
D dimer(micg/ml)	4.16±0.37	1.08±0.20	0.001^{s}
Heart Rate	112±4.47	112.5±4.40	0.751^{ns}
O2 saturation (%)	95.20±2.58	86.57±4.5	0.351^{ns}

Table-IV: Distribution of the Study patients by neonatal Outcome of BPP (n=50)

Neonatal Outcome variables	Normal BPP (n=25)		Abnormal BPP (n=25)		P value
	n	%	n	%	
Apgar Score in 1 min					
<7	3	12	9	36	0.0124^{S}
>7	22	88	16	64	
Apgar Score in 5 Min					
<7	1	4	7	28	0.0075^{s}
>7	24	96	18	72	
Admission in NICU					
Yes	3	12	15	60	0.0009^{s}
no	22	88	10	40	
Neonatal Complication					
yes	2	8	15	60	0.0001^{S}
No	23	92	10	40	

Table-IV At 1 minnute APGAR score ≥7 was found 22(88%) in normal biophysical profile and 16(68%) abnormal biophysical profile. At 5 min APGAR score≥ 7 was found 24(96%) in normal biophysical profile and 18(72%) in abnormal biophysical profile. Admission to NICU 3(12%) of normal biophysical profile and 15(60%) in abnormal normal biophysical profile.Neonatal complication 2(8%) of normal biophysical profile and 15(60%) in abnormal normal biophysical profile.The differences are statistically significant (p<.05)

Table-V: Comparison of study patients by Hospital stay (n=110)

Hospital stay (days)	Group A (n=50)	Group B (n=60)	P value
	Mean±SD	Mean±SD	
Duration of hospital stay	13.08±2.72	9.02±1.97	<0.004^{ns}

Table-VI: Comparison of Outcome variables in between two groups (n=110)

Outcome variables	Group A (n=50)		Group B (n=60)		P value
	N	%	N	%	
ICU support					
Yes	29	58.0	22	36.66	0.003^{s}
No	21	42.0	38	63.33	
Inotropes					
Yes	29	58.0	22	36.66	0.003^{s}
No	21	42.0	38	63.33	
Death					
Yes	03	2.27	03	9.09	0.065^{ns}
No	47	97.73	57	90.91	

Table-VII: Multivariate Logistic regression analysis on risk factors associated with mortality in patients with of COVID-19 (n=110)

Independent risk factors	Odd Ratio	P value	95% C.I. for EXP(B)	
			Lower	Upper
HTN	2.004	0.136	0.707	2.763
DM	2.501	0.771	0.153	10.94
CAD	1.156	0.103	0.159	3.456
ARDS	3.56	0.04	2.12	5.087
AKI	2.107	0.25	0.454	6.358
ICU support	0.012	0.524	1.345	6.567
Serum creatinine	0.193	0.016	1.945	3.567
CRP	0.06	2.02	0.581	5.064
Cardiac Injury	7.56	0.003	0.869	8.967
D dimer	5.02	0.05	0.745	6.98
Hospital stay	0.87	0.65	0.874	2.167

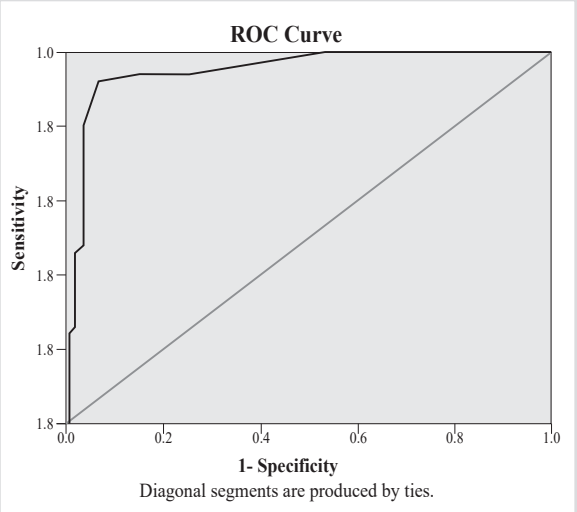

Figure-2: Receiveroperator curve (ROC) analysis found significant cut off value for troponin –I level (3 ng/ml) with 90.5% sensitivity and 80% specificity (AUC= 0.954, p value <0.01).

Discussion:

The present cross- sectional study which was carried out in the department of cardiology of DMCH;demonstrates statistically significant associationbetween cardiac injury and In-Hospital mortality in patients with COVID-19. Cardiac injury, was a common complication (15%) associated with unexpected high risk of mortality during hospitalization.

Our study showed that cardiac injury is associated with 15% patients. Whereas another study done by Wang D et al showed 7.2% of patients developed acute cardiac injury among 138 patients hospitalized with COVID-19. It also showed that patients who received care in Intensive care unit (ICU) were more likely to have cardiac injury (22.2%) than non ICU patients[29]. Our study also shows that patients with cardiac injury increased risk of mortality compared with non-cardiac injury and independently associated with increased risk of mortality in patient with COVID-19. Compared with patient without cardiac injury, presented with more severe illness manifested by abnormal laboratory findings such as raised CRP, creatinine level, greater proportion required invasive or noninvasive ventilation.

Study conducted by Yu CM, et al on 121 SARS patients showed hypertension occurred in 61 patients (50%) in the hospital. Of these patients, 71.9% developed persistant tachycardia though the persistant tachycardia did not showed increased risk of mortality[30]. Whereas our study showed 22% patients have arrhythmia however these cardiac injury

involved mortality. Our study also showed COVID-19 induced cardiac injury is associated with major adverse cardiac outcome.

In another study conducted by Siripanthong B et al, showed Myocarditis is associated with COVID-19 patients. It was observed that myocarditis was approximately around 7% patients of cardiac injury but the exact pathophysiology was unknown and clinical presentation was raised cardiac biomarkers, impaired cardiac function[31].Our study showed clinical evidence of myocarditis in 3 patient clinically but diagnosis was obscured due to lack of endomyocardial biopsy.

Li B et al, done a total of six studies with 1527 patients were included in this analysis. The proportions of hypertension, cerebrovascular disease and diabetes in patients with COVID-19 were 17.1%, 16.4% and 9.7%, respectively. The incidences of hypertension, cerebrovascular diseases and diabetes were about two, three and two folds respectively, higher in ICU/severe cases than in their non-ICU/severe counterparts. At least 8.0% patients with COVID-19 suffered the acute cardiac injury. The incidence of acute cardiac injury was about 13 folds higher in ICU/severe patients compared with the non-ICU/severe patients[5]. Whereas our study showed hypertension (62% vs 38%), diabetes (68%vs48%), coronary artery disease (66 vs 38%) between cardiac injury vs noncardiac injury. It was observed in this study that Patients with previous cardiovascular metabolic diseases may face a greater risk of developing into the severe condition and the comorbidities can also greatly affect the prognosis of the COVID-19. On the other hand, COVID-19 can, in turn, aggravate the damage to the heart.[32]

It was evidenced COVID-19 mediated cardiac injury is due to several mechanism, direct myocardial cell injury, ACE2 mediated injury, interstitial mononuclear inflammatory infiltrate[33]. Our present study lacks evidence from Magnetic Resonance Imaging (MRI) to determine the features of myocardial injury. So further demonstration is required. In terms of laboratory findings, patients with cardiac injury compared with patients without cardiac injury showed higher CRP, Leucocyte count, CKMB, serum creatinine though no change in serum electrolyte.

Patients with cardiac injury vs those without cardiac injury had longer duration of hospital stay (avg 13.08 vs 9.02 days). Death rate has shown no difference in between group (3vs 3). Besides patients with cardiac injury need ICU support and Inotropes support that non-cardiac injury (58% vs 38%, 58% vs 38%).

Another published clinical cohort of patients with COVID-19, they observed that acute cardiac injury, shock, and arrhythmias were present in 7.2%, 8.7%, and 16.7% of patients, respectively, with higher prevalence amongst patients requiring intensive care. In this report, myocardial injury biomarkers levels were significantly higher in patients requiring ICU admission than in those not treated in the ICU (median creatine kinase-MB level 18 U/l vs 14 U/l; P< .001; and cardiac troponin I [cTnI] level11.0 pg/mL vs 5.1 pg/mL; P= .004), suggesting that patients with severe symptoms often have complications involving acute myocardial injury[34]. Overall, arrhythmia rate was also more frequent in ICU patients (44.4% vs 6.9%; P<.001). Similar found our study which supports the current study.

A study from Shi et al evaluated a single-center cohort of416 patients hospitalized due to COVID-19. He observed that cardiac lesion, defined by cTnI >99th percentile of on admission, was present in 19.7%, with median value of 0.19 (0.08-1.12)μg/L in this group. Compared with those without cardiac injury, patients with cardiac injury required more noninvasive ventilation (46.3% vs 3.9%; P<.001) and invasive mechanical ventilation (22.0% vs 4.2%; P<.001), and also had a higher mortality (51.2% vs 4.5%; P<.001). This also supports the current data.

Acute myocarditis, as well as VAs might represent the first clinical manifestation of SARS-CoV-2 infection. In the epicenter of the current Italian epidemic, SCD likely occurred in many non-hospitalized patients with mild symptoms who were found dead at home while in quarantine. Myocardial biomarkers should be evaluated in all patients with COVID-19 for risk stratification and prompt intervention. Even after hospital discharge, we should consider that myocardial injury might result in atrial or ventricular fibrosis, the substrate for subsequent cardiac arrhythmias. The extent of myocardial scar, as assessed with cardiac magnetic resonance, might be a powerful tool to better stratify the arrhythmic risk in patients recovered from COVID-19 who had evidence of myocardial injury at the time of infection.

Conclusions:

Cardiac injury is common condition among patients hospitalized with COVID-19, and it is associated with in-Hospital mortality. Although exact mechanism of cardiac injury needs to be further explored.

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Original Article

Prevalence of Thyroid Disorders in Type 2 Diabetes Mellitus in a Tertiary Medical College Hospital

***Sadi MA[1], Rahaman F[2], Islam MS[3], Brishti BB[4], Ruma SS[5]**

Abstract:

Background*: This study examined the frequency of thyroid dysfunction in patients diagnosed with type 2 diabetes mellitus (T2DM) at a hospital affiliated with a tertiary medical college. The results provide insight into the simultaneous occurrence of both disorders and emphasize the significance of thyroid screening in individuals with diabetes.*

Objective*: The purpose of this study was to evaluate how common thyroid dysfunction is in patients with type 2 diabetes mellitus (T2DM) who receive treatment at a tertiary medical college hospital. We examined the frequency of thyroid dysfunction in this group and explored the potential influence of age, gender, and disease duration on its prevalence.*

Materials & Methods: *The study was conducted by retrospectively analyzing the medical records of individuals diagnosed with T2DM and admitted to the medicine department of a Monno medical college hospital. The study was conducted from January 2022 to January 2023. The sample size consists of 250 observations. We are utilizing a purposive sampling method in our study.*

Results*: According to the study, the age groups 40-49 and 20-29 had the highest number of cases, accounting for 24% and 20.8% respectively. The majority of cases (69.2%) were females. The typical duration of the Diabetes was 6.6 years, with an average HbA1c level of 9.4%. Approximately 66.4% of the patients were obese, with a BMI ranging from 25 to 34.9. 51.6% of cases reported a familial predisposition to diabetes. Approximately 18% of the patients exhibited thyroid dysfunction, with subclinical hypothyroidism being the prevailing form at 10%.*

Conclusion: *This study highlights the significance of screening for thyroid disorders in patients diagnosed with T2DM. Identifying and addressing these concurrent conditions promptly can greatly enhance patient outcomes and overall well-being.*

Keywords: Type 2 diabetes mellitus (T2DM), BMI, Obesity, Subclinical hypothyroidism, HbA1c

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Introduction:

Thyroid disorders and Type 2 Diabetes Mellitus (T2DM) are commonly observed endocrine disorders on a global scale, each presenting distinct complications and health implications. Nevertheless, recent studies have brought forth valuable insights into the fascinating connection between these two conditions, indicating a reciprocal relationship that deserves further investigation.

The correlation between diabetes and thyroid dysfunction was initially documented in 1979.Thyroid dysfunction refers to diseases of the thyroid gland that can result in either hyperthyroidism or hypothyroidism. These conditions are characterized by abnormal levels of thyroid-stimulating hormone (TSH).[1]

The prevalence of diabetes is expected to increase from 171 million in 2000 to 366 million in 2030.[2]

Thyroid dysfunction (TD) encompasses a range of illnesses that impact the thyroid gland, resulting in either hypothyroidism or hyperthyroidism, which in turn leads to changes in the levels of thyroid-stimulating hormone (TSH) in the body.[3]

It can manifest as an enlargement of the thyroid gland (either diffuse or nodular), hypothyroidism, hyperthyroidism, or thyrotoxicosis, or it may not show any symptoms (known as the subclinical condition).[4]

Thyroid hormones stimulate an elevation in the amount of glucose-6-phosphate and glucose transporter 2 (GLUT 2) in hepatocytes, resulting in an increase in hepatic glucose production and disrupted glucose metabolism. This leads to excessive production of lactate, which enters Cori's cycle and further enhances hepatic gluconeogenesis.[5,6]

Thyroid dysfunction (TD) encompasses a range of illnesses that impact the thyroid gland. These disorders can manifest as either hypothyroidism or hyperthyroidism, leading to variations in the levels of thyroid-stimulating hormone (TSH) in the body. The condition can manifest as either diffuse or nodular thyroid enlargement, hypothyroidism, hyperthyroidism, or thyrotoxicosis, or it may not show any symptoms (known as the subclinical state).[7]

Thyrotropin levels are lowered in hypothyroidism patients on metformin.[8] Patients with prediabetes and type 2 diabetes mellitus (TDM) exhibited a markedly increased thyroid volume and a higher frequency of incident goiter and nodules, according to eight prospective and retrospective studies.[9]

The prevalence of thyroid disorders is even higher in specialized populations such as individuals with diabetes, ranging from 10 to 24%.[10-11]

Materials & Methods:

The study was conducted retrospectively by analyzing the medical records of individuals diagnosed with T2DM and admitted to the medicine department of Monno medical college hospital. The study took place between January 2022 and January 2023. The sample size is 250. A purposive□ sampling method□ is being used in our study.

Data analysis:

The checklist is composed of four separate components. The initial section comprised demographic information, including age, gender, and occupation.

In the second section, we present the Mean duration of DM, mean HbA1c, and the Body Mass Index (BMI) of our instances.

In our study cases, the third portion examines the presence of a positive family history. In the fourth section of the discussion, various types of thyroid diseases are examined. The data was entered into SPSS 23. The significance criterion was set at a level of 0.05.

Results:

Table-I presents the enrolled basic socio-demographic data. In the study, there were 65 cases (24%) between the ages of 40-49, 52 cases (20.8%) between the ages of 20-29, 42 cases (16.8%) between the ages of 60-69, 33 cases (13.2%) between the ages of 50-59, 28 cases (11.2%) between the ages of 10-19, 19 cases (7.6%) between the ages of 30-39, and 11 cases (4.4%) between the ages of 70-79.

In our study, 173 cases were female, accounting for 69.2% of the total. The remaining 77 cases, representing 30.8%, were male.

A total of 117 cases were businessmen, accounting for 46.8% of the cases. Students made up 8.4% with a total of 21 cases, while service holders accounted for 10% with 25 cases. The remaining 87 individuals were engaged in various other occupations, making up 34.8% of the cases.

Table-I: Baseline profiles of our study cases (n=250)

Baseline characteristics	Frequency	Percentage
Age (Years)		
10-19	28	11.2
20-29	52	20.8
30-39	19	7.6
40-49	65	26
50-59	33	13.2
60-69	42	16.8
70-79	11	4.4
Sex		
Male	77	30.8
Female	173	69.2
Occupation		
Student	21	8.4
Businessmen	117	46.8
Service holders	25	10
Others	87	34.8

The mean duration of DM is documented in Table-II. The mean duration was 6.6 years, with a standard deviation of 1.55. The average HbA1c level was 9.4%, with a standard deviation of 0.49.

Table-II: Mean duration of DM and mean HbA1c of our study cases (n=250)

Variable	Mean	SD
Mean duration of DM	6.6	1.55
Mean HbA1c (%)	9.4	0.49

The BMI of our study cases is reported in Table-III. The majority of patients had a BMI of 30-34.9 (34%). A significant portion had a BMI of 25-29.9 (32.4%), while a smaller percentage fell within the range of 18.5-24.9 (22%). Only a minority had a BMI of less than 18.5 (11.6%).

Table-III: BMI of our study cases (n=250)

BMI	Frequency	Percentage
18.5 (Underweight)	29	11.6
18.5-24.9 (Normal)	55	22
25-29.9 (Overweight)	81	32.4
30-34.9 (Obese)	85	34

In Figure-1, A majority of the 129 cases (51.6%) had a positive family history of DM, while the remaining 121 cases (48.4%) did not.

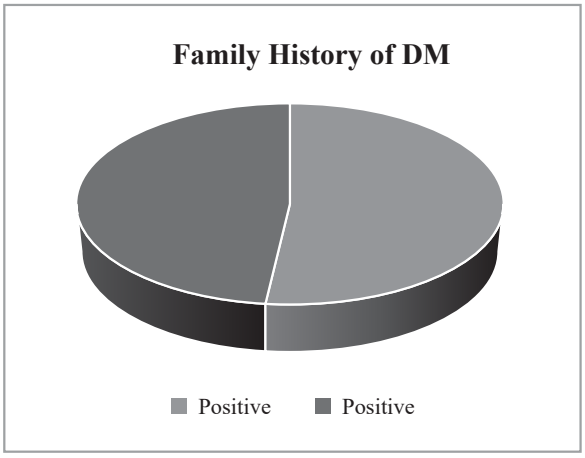

Figure-1: Family history of Diabetes Mellitus (n=250)

Table-IV included various forms of thyroid problems, with a total of 45 patients exhibiting thyroid dysfunction, accounting for 18% of the sample. The majority of patients (25 out of 100, or 10%) had subclinical hypothyroidism, followed by hypothyroidism (4.4%), hyperthyroidism (2.4%), and subclinical hyperthyroidism (1.2%).

Table-IV: Presence of different types of thyroid disorders (n=250)

Type of Thyroid Dysfunction	Frequency	Percentage
Hypothyroidism	11	4.4
Subclinical Hypothyroidism	25	10
Hyperthyroidism	6	2.4
Subclinical Hyperthyroidism	3	1.2
Total	45	18%

Discussion:

The distribution of cases by age group is as follows: 65 cases (24%) were between the ages of 40-49, 52 cases (20.8%) were between the ages of 20-29, 42 cases (16.8%) were between the ages of 60-69, 33 cases (13.2%) were between the ages of 50-59, 28 cases (11.2%) were between the ages of 10-19, 19 cases (7.6%) were between the ages of 30-39, and 11 cases (4.4%) were between the ages of 70-79.

Out of the total number of cases in our study, 173 were female, representing 69.2% of the total. Out of the remaining 77 cases, which accounted for 30.8% of the total, all were male.

According to a different study, the incidence of thyroid dysfunction in T2DM patients was considerably greater in women than in men, which consistent with the findings of our study.[15]

Out of the total number of instances, 117 were businessmen, making up 46.8% of the cases. The student population constituted 8.4% of the total, with a count of 21 cases, while individuals employed in service occupations represented 10% of the total, with 25 instances. Out of the total number of instances, 87 persons were involved in different occupations, accounting for 34.8% of the cases.

The mean duration was 6.6 years, with a standard deviation of 1.55. The mean HbA1c level was 9.4%, with a standard deviation of 0.49 which is consistent with another study.[16]

In our study 34% of the patients had a BMI ranging from 30 to 34.9. 32.4% of the population had a BMI between 25 and 29.9 which is consistent with another study in Nigeria. whereas 22% fell within the range of 18.5 to 24.9. Just 11.6% of the population had a BMI below 18.5, indicating a small proportion.[17]

Out of the total 129 cases, the majority (51.6%) had a positive family history of DM, whereas the remaining 121 cases (48.4%) did not.

We incorporated different types of thyroid disorders,

with a collective of 45 patients displaying thyroid dysfunction, or 18% of the sample. Out of 100 patients, the highest number (25) had subclinical hypothyroidism, which accounts for 10% of the total. Hypothyroidism was found in 4.4% of the patients, while hyperthyroidism was present in 2.4% of them. Subclinical hyperthyroidism was observed in 1.2% of the patients.

According to some other studies, subclinical hypothyroidism was the most prevalent type of thyroid malfunction, which is consistent with the findings of our study.[18-20]

Conclusion:

The study revealed a substantial prevalence of diabetes among young and middle-aged persons, predominantly among females. The typical patient exhibited an increased HbA1c level and a significant duration of the illness. A significant percentage of the patients were classified as overweight or obese, and over 50% had a familial predisposition to diabetes. Moreover, a significant proportion of individuals displayed thyroid abnormalities, specifically subclinical hypothyroidism.

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Original Article

Prevalence and Risk Factors of Postpartum Anxiety and Depression in Bangladesh: A Single-Center Study

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Abstract:

Background: *Postpartum mental health issues, such as postpartum depression (PPD), are significant global public health concerns. Bangladesh, as a developing nation, faces unique challenges in addressing these issues. There is limited research on the occurrence and contributing factors of postpartum depression in Bangladesh, specifically in hospitals. This study examines the prevalence of postpartum mental health issues and the risk factors associated with them among women who give birth at a tertiary medical college hospital in Bangladesh. Understanding these factors is crucial for developing effective interventions aimed at improving maternal mental health outcomes in the country.*

Objective: *The objective of this study is to examine the prevalence of postpartum mental health issues following childbirth, as well as the factors that contribute to an increased possibility of experiencing such problems.*

Materials & Methods: *This cross-sectional study recruited women admitted to the obstetrics ward of a tertiary medical college hospital over two years (Jan 2022 - Jan 2024). Out of 450 patients, 150 (33.33%) met the criteria for postpartum depression and received psychiatry consultations.*

Results: *This study examined the risk factors associated with postpartum depression in women hospitalized to an obstetrics unit in Bangladesh. Approximately one-third (33.33%) of women sought a psychiatry consultation, with younger women, homemakers, individuals with higher BMI, and those with a history of depression or marital issues being more susceptible. The study additionally revealed that a majority of women (67%) had many children and experienced a lack of adequate assistance from their husbands (57.33%).Anxiety levels observed in our study were as follows: Minimum 28.67%, Mild 40.00%, Moderate 18.67%, Severe 12.67%. Depression levels: Mild 40.67%, Moderate 36.00%, Moderately Severe 17.33%, Severe 6.00%*

Conclusion: *This study reveals notable rates of postpartum depression and anxiety. Homemakers who are younger, have a high BMI, a history of depression, or are facing marital issues are more susceptible to certain risks. The study emphasizes the importance of mental health screenings, support services, and targeted interventions to tackle these issues.*

Keywords: *PPD (postpartum depression), BMI, EPDS score, Nuclear family*

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Introduction:

Postpartum depression (PPD) is a significant psychiatric disorder that impacts a substantial proportion of recently become moms. Typically, it manifests within the initial weeks after giving birth. Although childbirth is often depicted as a blissful and satisfying event, the actuality for numerous ladies can be significantly divergent.

Postpartum depression is a significant factor in the illness and death of mothers and is linked to harmful long-term effects on the development and behavior of infants.[1-3] Furthermore, maternal deaths resulting from suicide within the first year following childbirth are significantly influenced by compromised maternal mental health, making it a significant public health issue.[3-6]

The prevalence of this condition varies in different research, based on factors such as the population being

studied and the manner and timing of examination after childbirth. Typically, it falls within the range of 10% to 20%.[7]

Postpartum depression can manifest in different levels of severity and durations. It is characterized by a range of symptoms such as persistent sadness, loss of interest in activities once enjoyed, fatigue, disruptions in sleep patterns, changes in appetite, challenges in bonding with the baby, intense irritability, difficulty concentrating, feelings of worthlessness and guilt, withdrawal from social interactions, and, in severe cases, intrusive thoughts of self-harm or harm to the baby.

In recent years, there has been an increasing body of studies on the risk factors associated with postpartum depression (PPD). The cause of PPD is not well understood, but its development is strongly associated with biological factors.[8]

Postpartum depression can affect any woman, but there are specific characteristics that increase the likelihood. These factors encompass a prior record of mental health disorders, variations in hormone levels, distressing life occurrences, and insufficient assistance from social networks. Strained interpersonal connections, unintended pregnancies, delivery problems, insufficient sleep, and diminished self-confidence might also be contributing factors. In addition, the risk can be further heightened by substance usage and difficulty with breastfeeding.

The pathophysiology of postpartum depression (PPD) is influenced by various factors, including genetic predisposition, hormone imbalances, and psychosocial issues .[9] The rapid fall in gonadal steroid levels to a hypogonadal state after delivery, along with elevated levels of nocturnal plasma melatonin and decreased levels of serotonin and leptin, are biological factors strongly associated with the development of this mood disturbance.[10-12]Multiple risk factors for postpartum depression have been identified. The most significant risk factors for postpartum depression are a previous diagnosis of depressive or bipolar disorder, a family history of bipolar disorder, and experiencing mood episodes during the peripartum period.[13]

Postpartum depression (PPD) negatively impacts both mothers and their spouses, as well as the interaction between the mother and child.[14]

Ali et al. discovered a substantial correlation between delayed mental development in children and PPD. The study revealed that children with PPD were six times more likely to be at risk for emotional development issues.[15]

The standard approach to addressing postpartum depression typically includes a combination of therapeutic interventions and pharmaceutical treatment. Various therapeutic approaches, such as cognitive-behavioral therapy (CBT), interpersonal therapy (IPT), and support groups, can assist women in acquiring effective coping mechanisms, enhancing interpersonal communication, and establishing connections with individuals facing comparable difficulties. Antidepressant medication may be prescribed in certain situations to restore brain chemistry and relieve symptoms.

This study aimed to examine two fundamental components of postpartum mental health in Bangladesh:

1) To determine the prevalence of postpartum depression (PPD) among women in Bangladesh, specifically within the initial year following childbirth.
2) To identify the factors that contribute to an increased chance of a woman suffering postpartum depression (PPD) after giving birth.

Materials & Methods:

This cross-sectional study carried out in an obstetrics ward at a tertiary medical college hospital. The study spanned a duration of two years, commencing in January 2022 and concluding in January 2024. During the study period, 450 patients were admitted to the obstetrics ward. Out of the total number of patients, 150 individuals (33.33%) fulfilled the requirements for PPD and were provided with a psychiatry consultation.

Sampling Technique was purposive sampling. The total sample size was 150. Inclusion Criteria: Women gave childbirth within the last 1 year. Exclusion Criteria: omen suffering from serious liver or renal disorders are not eligible.

Data Collection and Analysis:

Baseline information on age, occupation, body mass index (BMI), family type, parity (number of previous pregnancies), and history of pregnancy complications was collected.

The Edinburgh Postnatal Depression Scale (EPDS) was used to assess symptoms of PPD. The EPDS is a self-administered questionnaire with ten questions, each having four possible answers scored on a scale of 0 to 3. Scores range from 0 to 30, with higher scores indicating more severe symptoms of depression. A score of 13 or higher is generally considered indicative of possible PPD.[16]

The 'PHQ-9 patient depression Questionnaire' is employed to categorize depression in our patients, whereas the "GAD-7 Generalized Anxiety Disorder 7-Item Scale" is employed to categorize anxiety.

Results:

In Table-I, 57.33% of cases under 30 years had an EPDS score exceeding 13. For cases aged over 30 years, this percentage was 42.67%.

Among the cases, 117 (78%) housewives had an EPDS score exceeding 13, while among the occupied cases, 33 (22%) had an EPDS score exceeding 13.

Of the cases with a BMI between 25 and 29.9, 42.67% had an EPDS score exceeding 13. For cases with a BMI over 30 had an EPDS score exceeding 13, this percentage was 25.33%. For cases with a BMI between 18 and 24.9 had an EPDS score exceeding 13, the percentage was 22%, and for cases with a BMI under 18, only 10% had an EPDS score exceeding 13.

Table-I: Baseline characteristics according to EPDS Score (>13) (n=150)

Baseline profiles	Frequency	Percentage
Age		
<30	86	57.33
>30	64	42.67
Occupation		
Housewives	117	78
Occupied	33	22
BMI		
≤18	15	10
18-24.9	33	22
25-29.9	64	42.67
≥30	38	25.33

Figure-1 displays the many categories of families that have been registered. Our study found that 58% of the cases had a nuclear family, whereas the remaining 42% had an extended family.

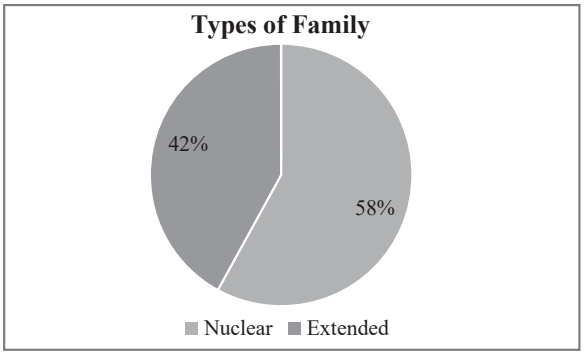

Figure-1: Types of family having moderate to high EPDS score (>13)

Figure-2 shows that 64% of the cases involved multiparous women, whereas only 36% involved primi women.

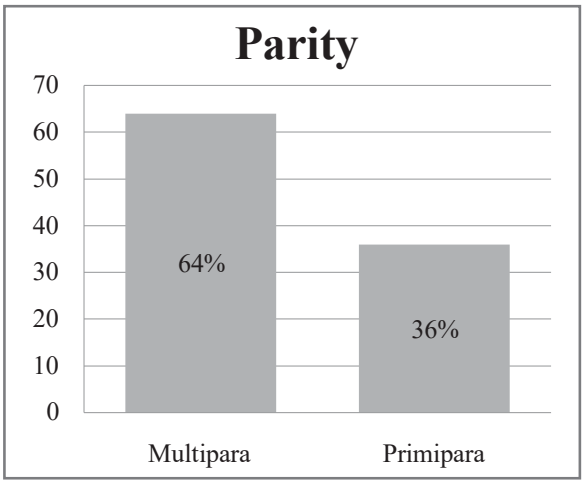

Figure-2: Parity of our study cases (n=150)

Table-II provides a summary of prevalent risk fac tors. Our study found that 57.33% of cases exhibited multiple issues during pregnancy, while 42.67% of cases were free from any pregnancy-related complications.

Out of the total 150 cases, 98 cases (65.33%) had a documented history of past depression and psychiatric disease, while the other 52 cases (34.67%) did not have any such history.

52% of instances exhibited a poor relationship with their spouse, while the remaining 48% did not have any significant problems with their husband.

Female kids were born in 59.33% of cases, while male babies were born in 40.67% of cases.

57.33% of the participants reported insufficient assistance from their husbands, while the remaining 42.67% reported sufficient support.

Table-II: Common risk factors in our study cases (n=150)

Common risk factors	Frequency	Percentage
Pregnancy complication		
Positive	86	57.33
Negative	64	42.67
Previous depression		
Present	98	65.33
Absent	52	34.67
Marital relationship		
Good	72	48
Not good	78	52
Baby gender		
Male	61	40.67
Female	89	59.33
Husband support		
Present	64	42.67
Absent	86	57.33

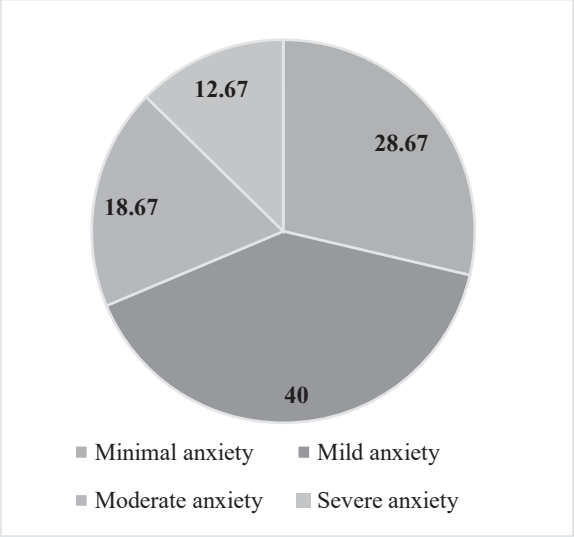

Figure-3: Anxiety in our study cases (n=150)

Figure-3 displays the distribution of anxiety levels among the cases as follows: 43 cases (28.67%) had minimal anxiety, 60 cases (40%) had mild anxiety, 28 cases (18.67%) had moderate anxiety, and 19 cases (12.67%) had severe anxiety.

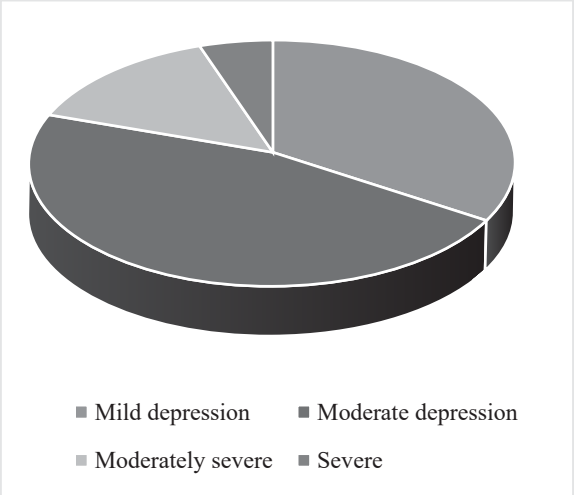

Figure-4: Anxiety in our study cases (n=150)

Figure-4 shows that, 61(40.67%) had mild depression, 54 (36%) had moderate depression, 26(17.33%) had moderately severe depression, and only 9(6%) had severe depression.

Discussion:

During the specified study period, a grand total of 450 patients were admitted to the obstetrics unit. Among the entire patient population, 150 individuals (33.33%) necessitated a psychiatry consultation, which is consistent with the results of a separate investigation.[17]

A total of 57.33% of cases below the age of 30 had an EPDS score that exceeded 13. The percentage for cases aged above 30 years was 42.67%. Out of the cases, 117 (78%) of the housewives had an EPDS score higher than 13, while among the cases that were occupied, 33 (22%) had an EPDS score higher than 13. In a separate study, the percentage of age and occupation was similar to our study.[18]

Out of the cases with a body mass index (BMI) ranging from 25 to 29.9, 42.67% had an Edinburgh Postnatal Depression Scale (EPDS) score higher than 13. The percentage of cases with a BMI over 30 that had an EPDS score exceeding 13 was 25.33%. The prevalence of EPDS scores over 13 was 22% among cases with a BMI between 18 and 24.9, while among cases with a BMI under 18, only 10% had EPDS scores exceeding 13.

The study presents a comprehensive overview of the different types of families that have been documented. Our research revealed that 58% of the cases consisted of a nuclear family, while the remaining 42% were comprised of an extended family.

Our analysis reveals that 64% of the cases included women who had given birth multiple times, whereas just 36% comprised women who were giving birth for the first time. Our study found that postpartum depression was more common in women who had given birth multiple times, which aligns with the findings of another study.[19]

Our analysis provides a succinct summary of the prevailing risk variables. Our research findings indicate that a significant majority, precisely 57.33%, of the cases examined encountered several complications during their pregnancy. In contrast, 42.67% of cases experienced no pregnancy-related problems.

Among the 150 cases examined, it was found that 98 cases (65.33%) had a recorded history of previous depression and psychiatric illness, while the remaining 52 cases (34.67%) did not have any documented history of such conditions. Approximately 52% of cases displayed a suboptimal marital relationship, while the remaining 48% experienced no noteworthy issues with their spouse.

A history of depression and a poor relationship with partner were linked to postpartum depression in a different study, which is consistent with our findings.[20]

In the majority of cases, female children were born, accounting for 59.33% of births, while male babies accounted for 40.67% of births. Another study has demonstrated that the birth of female newborns is associated with a higher incidence of postpartum depression, which is consistent with our results.[21]

Insufficient assistance from husbands was reported by 57.33% of the participants, with the remaining 42.67% reporting sufficient support, which is consistent with another study in Bangladesh.[22]

Our study found that 43 cases (28.67%) exhibited minimum anxiety, 60 cases (40%) displayed mild anxiety, 28 cases (18.67%) demonstrated moderate anxiety, and 19 cases (12.67%) experienced severe anxiety.

Within the study, 61 individuals (40.67%) exhibited mild depression, 54 cases (36%) displayed moderate depression, 26 cases (17.33%) shown moderately severe depression, and a mere 9 cases (6%) experienced severe depression.

Conclusion:

A significant number of women in our study sought psychiatry consultation, highlighting the high demand for mental health support among postpartum mothers. Certain factors such as being younger, being a homemaker, having a higher BMI, a history of depression, and experiencing marital issues have been identified as significant risk factors for postpartum depression (PPD). This emphasizes the need for targeted interventions to support these vulnerable groups. Our findings showed a wide range of anxiety levels, with a significant number of people experiencing varying degrees of anxiety. Depression levels also varied, with a significant number falling into the mild to moderately severe categories. In conclusion, our study highlights the immediate necessity for thorough mental health screening and support services for postpartum women in Bangladesh. Efficient interventions that target risk factors and strengthen social support networks could greatly reduce the impact of postpartum mental health disorders in this group.

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