

# ARCHIVES *of NIMH*

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*Patterns of health care utilization among substance abusers living in Dhaka city*

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*Bangla adaptation of HITS (Hurt-Insult-Threaten-Scream): a unisex domestic violence screening tool*

## **Case Report**

*Hematohidrosis: a mysterious and rare disorder*



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## Telepsychiatry

Md. Azizul Islam

### Abstract

Telepsychiatry is an innovative practice in healthcare that applies telemedicine in the field of psychiatry and its importance and popularity is increasing day by day in Bangladesh. With the progress of telepsychiatry, issues like privacy, confidentiality, ethical and legal implications, emergency care provision should be addressed and attention should be given to make it a comprehensive way of delivering mental health care services.

**Declaration of interest:** None

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Telepsychiatry is an innovative practice in healthcare that applies telemedicine in the field of psychiatry.<sup>1</sup> Telepsychiatry is also called telemental health or e-mental health. Simply speaking, it is the use of ICT to provide psychiatric service across long distance. Using the information about communication technologies, mental health professionals can render their expert service to the far reach area.

Bangladesh is a densely populated country and has been struggling with a large number of people with mental disorder. In the latest national mental health survey, about 16.8% people of the country has been found to be suffering from mental disorders<sup>2</sup> but the number of mental healthcare providers are very low. Moreover, the treatment gap is about 94% in mental health services.<sup>2</sup> Here lies the greatest promise of telepsychiatry, which allows a doctor to work with his client in assessing the case, making a diagnosis and prescribing medicine for management. Individual and group psychotherapy can also be provided by these means. Telemental health has also been used for the purpose of education, training, storage, accessibility to medical data and research. Common modes of communication in telepsychiatry are the use of telephone, cell phone, text messaging, email, instant messaging, online chat forum for professional advice via website, blogs, etc. Video conferencing is the most important modality of telepsychiatry as it provides live, two-way interactive, full color, simultaneous video, audio and data communication.

Telepsychiatry is in the infancy stage in Bangladesh and it exists more as an offshoot of telemedicine rather than an independent service but, its importance and popularity are visible now-a-days. During this Covid-19 pandemic, the telepsychiatry service has gained momentum and importance among general people. By mid-2020, telemedicine service in Bangladesh has become a reliable way of communication between client and doctor, not only in psychiatry but also in all branches of medical

profession. Psychiatrists, psychologists and even counselors provided extensive telemental health services to their clients even at free of cost during the COVID pandemic.

Psychiatry is a discipline which relies on human interaction and observation of human behavior. This sets psychiatry to be different from other disciplines of medical science. There has been concern that telepsychiatry may hinder many of the conventional doctor-patient relationship. So, the main challenges of telepsychiatry are client satisfaction and outcome, mental health service providers' satisfaction, availability of quality internet service and cost effectiveness of the service. A systemic review concluded that telepsychiatry had no significant difference in patient satisfaction with video conferencing as a modality of delivering of mental health service in comparison to face to face healthcare service.<sup>3</sup> However, satisfaction from the professionals' side is low with video conferencing.<sup>4</sup>

Despite controversies and challenges, telepsychiatry has huge scope and probability in this country. An individual from a remote village area can minimize his transport costs, the turmoil of bearing the expenses in the city, searching for a psychiatrist, wasting energy and time. Social stigma can be overthrown to some extent using the telepsychiatry. If the telepsychiatry service can be provided at the primary healthcare level, the mental health services will be able to reach distant and remote areas and treatment gap can be minimized. With the progress of telepsychiatry, issues like privacy, confidentiality, ethical and legal implications, emergency psychiatric service should be addressed. Attention should also be given to other issues to make telepsychiatry a comprehensive way of delivering mental health care services.

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## An overview of insomnia and its treatment

Md Faruk Hossain

### Abstract

**Background:** Insomnia is a condition of unsatisfactory quality and/or quantity of sleep, with difficulty falling asleep, remaining asleep, or waking early and being unable to return to sleep. Transient insomnia occurs at times of stress but frequently accompanies various medical and psychiatric conditions and is often associated with substance misuse. Insomnia affects one-third of adults occasionally, and 9 to 12 per cent on a chronic basis.

**Objectives:** To develop a better understanding of insomnia as a whole with its different sub types and various treatment modalities for effective management of cases with insomnia.

**Methods:** A search was carried out on the web including Google Scholar, Medline, HINARI and several other web portals for English-language articles containing the following keywords- sleep, insomnia, epidemiology of insomnia, etiology of insomnia, pathology of insomnia, presentation of insomnia and treatment of insomnia. Relevant chapters in some authoritative textbooks were also consulted.

**Results:** Insomnia is more common in women, the elderly, shift workers and in patients with medical and psychiatric conditions. For diagnosis of insomnia disorder, DSM-5 requires insomnia to be present for at least three nights per week for 3 months and to cause clinically significant distress or functional impairment. The insomnia should not be adequately explained by another sleep or mental disorder, and not be attributable to the effects of a substance or medical condition. Both pharmacological and non-pharmacological approaches can be used to treat insomnia. Among pharmacological agents, short and intermediate acting benzodiazepines and benzodiazepine receptor agonists are the mainstay. Non-pharmacological interventions include a range of cognitive and behavioral techniques, including sleep hygiene. Hypnotic drugs were widely prescribed in the past, but non-pharmacological approaches are now recommended as the first-line treatment.

**Conclusions:** Sleep disturbance is ubiquitous among general people and insomnia is the most common type of sleep disorder. An individual at any age can develop insomnia as a primary sleep disorder, as part of another mental disorder or as a complication of a medical illness. The presentation differs among patients and so does the choice of appropriate treatment modality. Nevertheless, most patients significantly benefit from therapeutic interventions.

**Declaration of interest:** None

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**Keywords:** Insomnia; presentation of insomnia; treatment of insomnia; review

### Introduction

Insomnia is a condition characterized by dissatisfaction with sleep quantity or quality associated with persistent difficulties with initiating or maintaining sleep, or inability to return to sleep after early morning awakening, that occurs despite adequate opportunity for sleep and results in some forms of functional impairment. Although non-restorative sleep is often included as a symptom of insomnia, it has different epidemiological and

functional correlates than other insomnia symptoms, including higher prevalence in young adults and a greater degree of daytime impairments such as sleepiness and fatigue.<sup>1</sup> Because different people need different amounts of sleep, insomnia is defined by the quality of sleep and how we feel after sleeping. Even if we are spending eight hours a night in bed, if we feel drowsy and fatigued during the day, we may be experiencing insomnia.<sup>2</sup> Transient insomnia occurs at times of stress or as 'jet

lag'. Short-term insomnia is often associated with personal problems for example, illness, bereavement, relationship difficulties or stress at work. Sleep-onset insomnia can be a relatively common complaint among adolescents. Insomnia in clinical practice is usually secondary to other disorders, notably painful physical conditions, depressive disorders and anxiety disorders; it also occurs with excessive use of alcohol or caffeine, and in dementia. It can also be provoked by prescribed drugs. To understand sleep and its disorders, it helps to begin with the sleep's three basic characteristics: (1) Sleep is a process required for proper brain function. Failure to sleep impairs thought processes, mood regulation and a host of normal physiological functions. (2) Sleep is not a single process; there are several distinct types of sleep. These different types of sleep differ both qualitatively and quantitatively. Each type of sleep has unique characteristics, functional importance and regulatory mechanisms. Selectively depriving one particular type of sleep produces compensatory rebound when an individual is allowed to sleep ad lib. (3) Sleep is not a passive process; sleep can be associated with a high degree of brain activation and metabolism. Several physiological mechanisms regulate sleep and when these systems go awry, sleep disorders occur.<sup>3</sup>

#### **The functions of sleep and impact of sleep deprivation**

Debate continues about the various theories concerning the functions of sleep, each of which has emphasized physical and psychological restoration and recovery, energy conservation, memory consolidation, discharge of emotions, brain growth and various other biological functions including somatic growth and repair and maintenance of immune systems.<sup>4</sup> The adverse effects of chronic sleep loss (considered to be common in modern society) on mood, behavior and cognitive function can be substantial, with various consequences for personal, social, occupational, educational and family functioning. Large sample meta-analyses have shown that patients with insomnia have mild or moderate dysfunction in attention, episodic memory, working memory and executive function compared with healthy controls.<sup>5</sup>

#### **Epidemiology**

Population-based estimates indicate that about one-third of adults report insomnia symptoms, 10-15% experience associated daytime impairments and 6-10% have symptoms that meet criteria for insomnia disorder. Insomnia disorder is the most prevalent of all sleep disorders in primary care settings, approximately 10-20% of individuals complain of significant insomnia symptoms.<sup>6</sup> Although insomnia may be categorized as either a symptom or an independent disorder, it is most frequently considered a co-morbid condition in relation with another medical condition or mental disorder.<sup>7</sup> For instance, 40-50% of individuals with insomnia also present with a co-morbid mental disorder. Risk factors include depression, female sex, older age, lower socioeconomic status, concurrent medical and mental disorders, marital status (greater risk in divorced/ separated vs. married or never married individuals) and race (greater risk in

African American vs. white race).<sup>8</sup> Prevalence among older adults has been estimated at up to 25%.<sup>9</sup> Insomnia follows a chronic course in 40-70% of individuals over 1-20 years.<sup>10,11</sup> Sleep maintenance symptoms are most prevalent among individuals with insomnia (approximately 50-70%), followed by difficulty initiating sleep (35-60%) and non-restorative sleep (20-25%).<sup>12</sup>

#### **Etiology of insomnia**

Many patients report having been marginal light sleepers before developing insomnia.<sup>13</sup> Sleep disturbance often arises during life change or stress and that may represent a normal transient disruption of sleep. However, secondary factors, such as anxiety over sleep and faulty sleep-wake conditioning, may exacerbate and maintain the insomnia as a chronic problem when sleep itself becomes a focus for concern. People with insomnia may be hyper aroused relative to normal sleepers, for example, having higher levels of cortisol and ACTH and also find it difficult to down-regulate their arousal at bedtime.<sup>14,15,16</sup> Insomnia in clinical practice is usually secondary to other disorders, notably painful physical conditions, depressive disorders, anxiety disorders and dementia. It also occurs with misuse of alcohol, caffeine and other drugs or prescribed medications. In about 15% of cases of insomnia, no cause is found.<sup>17</sup>

#### **Pathophysiology of insomnia**

Although insomnia is considered a sleep disorder, its pathophysiology suggests hyper arousal during sleep and wakefulness.<sup>18</sup> Insomnia results due to an imbalance between sleep inducing neurotransmitters gamma-aminobutyric acid (GABA) and adenosine, and the arousal neurotransmitters (noradrenaline, serotonin, acetylcholine, orexin and dopamine).<sup>19</sup> In local sleep theory proposed by Krueger et al.<sup>20</sup> sleep is defined as a fundamental emergent property of highly interconnected neurons or cortical columns. Local sleep propensity and slow wave amplitude are posited to be dependent on accumulation of sleep-regulatory substances (tumor necrosis factor- $\alpha$  and IL-1 $\beta$ )<sup>21,22</sup> resulting from prior neuronal use. Synchronous firing within cortical columns is postulated to propagate slow wave activity in adjacent regions through humoral and electric interactions, leading eventually to a global sleep state in the entire organism.

#### **Clinical features**

The clinical presentation is commonly of a frustrated patient, trapped in a vicious circle of anxiety and poor sleep, who reports having 'tried everything'.<sup>23,14</sup> Typical reports relate to light sleep and sleep felt to be unrestorative. There can be cognitive effects, such as fatigue, sleepiness, inattention and some impairments in performance or emotional effects, such as irritability and anxiety.<sup>14</sup>

Common symptoms are: Difficulty falling asleep, waking up during the night, waking up too early, general tiredness, daytime tiredness or sleepiness, not feeling well-rested, problems with



concentration or memory, difficulty focusing on tasks, irritability, depression or anxiety, increased errors or accidents, ongoing worries about sleep.

**Insomnia subtypes**

Neither DSM-5 nor ICSD-3 formalizes diagnostic criteria for clinical and pathophysiological insomnia sub types. Nonetheless, ICSD-3 describes the following sub types briefly. Understanding the sub types is essential for creating an effective treatment plan.

**Psychophysiological insomnia:** Psychophysiological insomnia (PPI) involves conditioned arousal associated with the thought of sleeping. Objects related to sleep (e.g., the bed, the bedroom) likewise have become conditioned stimuli that evoke insomnia. Daytime adaptation is usually good, however, there can be extreme tiredness. Other features characteristic of PPI include: (1) excessive worry about not being able to sleep (2) trying too hard to sleep (3) rumination—inability to clear one’s mind while trying to sleep (4) increased muscle tension when getting into bed (5) other somatic manifestations of anxiety (6) ability to fall asleep when not trying to (e.g., when watching television) (7) sleeping better away from own bedroom (including the sleep laboratory).

**Idiopathic insomnia:** Idiopathic insomnia characterizes patients with a lifelong inability to obtain adequate sleep. The insomnia predates any psychiatric condition and other etiologies must be ruled out or treated, including psychophysiological insomnia, environmental sleep disturbances, and practices constituting poor sleep hygiene. It is assumed that there is a defect in the sleep-wake system.

**Paradoxical insomnia:** Paradoxical insomnia, at its core, involves a dissociation between sleep and its usual attendant unconsciousness. In Paradoxical insomnia, an individual thinks he or she is awake and having insomnia, even though brain electrophysiological activity pattern is consistent with the correlates of normal sleep.

**Inadequate sleep hygiene:** Inadequate sleep hygiene refers to insomnia produced by behaviors that are not conducive to good sleep, that is when performance of daily living activities that are inconsistent with the maintenance of good quality sleep. For example, consuming caffeine or nicotine at night or engaging in excessive emotional or physical stimulation within a few hours of bedtime, taking daytime naps and maintaining a large variation of the daily sleep-wake schedule.

**Behavioral insomnia of childhood:** Behavioral insomnia of childhood, or childhood insomnia, results from the child’s dependency on specific stimulation, objects or setting for initiating sleep or returning to sleep. Without presence of the teddy-bear or parent, sleep onset is significantly delayed. The child refuses or delays going to bed by strategies like getting up to use the bathroom, requests for another drink, wanting another bedtime story, or complaints of hunger, fear of the dark, monsters under the bed, or some other factitious creation.

**Insomnia co-morbid with mental disorder:** Insomnia co-morbid with mental disorder is very common. Thirty-five percent of patients seen in sleep disorder centers with insomnia as their

chief complaint, had a mental disorder and half of these patients had a mood disorder. Ninety percent of patients with major depressive disorder (MDD) have insomnia. Insomnia is a risk factor for depression on 3-year follow-up (odds ratio 3.95), for suicide in patients with MDD and 1 month after a trauma, is predictive of PTSD within 1 year.

**Insomnia co-morbid with medical condition:** Insomnia accompanies many medical and neurological conditions. All medical conditions producing pain can (and usually do) disturb sleep while poor sleep lowers pain threshold. In other medical conditions, the sleep disturbance appears to be secondary. For example, sleep-related gastro-esophageal reflux disease (GERD) and chronic obstructive lung disease can interfere with sleep onset and sleep maintenance. Neurodegenerative diseases are frequent associates of various sleep disorders, including insomnia.

**Insomnia due to drug or substance:** Many prescription drugs, even when taken properly, can disturb sleep. These include antidepressants (i.e., fluoxetine), antihypertensives, corticosteroids, hypolipidemic medications, antiparkinsonian drugs, decongestants (i.e., pseudoephedrine), anorectics, stimulants and antiepileptic medications. Some sedatives and alcohol promote sleep onset initially but later cause fragmented sleep and rebound insomnia. Caffeine and theobromine present in coffee, chocolate and illicit substances, particularly stimulants (such as cocaine and amphetamines) interfere with sleep onset, sleep maintenance and decrease total sleep time.

**Short sleepers:** People who fall under this category require less than 5 hours of sleep per 24-hour period in order to maintain normal daytime functioning and mood. The patient may be distressed about not sleeping. However, if the short sleep duration does not provoke adverse daytime consequences, functional impairment or is associated with co-morbid conditions, criteria for insomnia disorder are not met.

**Assessment of insomnia**

Key elements of the assessment include the patient’s sleep characteristics, daytime behaviors, medical-psychiatric history, symptoms of other sleep disorders, and medications.<sup>24</sup> The “3-P” model, comprising the predisposing, precipitating and perpetuating factors, is a useful heuristic framework for assessment.<sup>25</sup> Clinicians can also use several tools to help assess insomnia. Most important are prospective sleep-wake diaries, which evaluate the timing and variability of sleep and may identify targets for behavioral interventions.<sup>26</sup>

**Table 1: Assessment of insomnia**

<p><b>Evaluation of insomnia sleep history</b></p> <p>The evaluation of insomnia rests on a careful clinical history. Sleep and wakefulness affect each other in complex ways. Key elements of the sleep history include:</p> <ul style="list-style-type: none"> <li>• Temporal aspects of sleep: Times at which patient goes to bed, attempts to sleep, wakes up, gets out of bed</li> <li>• Quantitative aspects of sleep: Sleep latency (time it takes to fall asleep), number and duration of awakenings, wakefulness after sleep onset, total sleep time</li> </ul>
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- Qualitative aspects of sleep: Subjective sleep quality, satisfaction
  - Behavioral and environmental factors: Non-sleep activities in bed (phone, computer, TV), environment (temperature, light, sound), bed partners and pets, perceived causes of awakening
  - Symptoms of other sleep disorders
  - Daytime causes and consequences of disturbed sleep
- Medical and psychiatric history**
- Medical disorders
  - Psychiatric disorders
  - Medications
- Other tools and tests**
- Sleep-wake diary
  - Video recording
  - Wrist actigraphy
  - Polysomnography (sleep study)
  - Cerebrospinal fluid orexin (hypocretin) levels
- Sleep-related scales**
- Insomnia Severity Index
  - Pittsburgh Sleep Quality Index

**Diagnosis**

According to DSM-5, for the diagnosis of insomnia disorder one or more of the following symptoms must be present: (a) difficulty initiating sleep, (b) difficulty maintaining sleep, or (c) early-morning awakening with inability to resume sleep. In case of children, insomnia can manifest as resistance to the caregiver designation of bed time and/or difficulty sleeping without caregiver intervention. The symptoms should cause clinically significant distress or impairment of social, occupational, educational, academic, behavioral or other important areas of functioning. Sleep difficulty should occur three times per week (or more) and present for 3 months or longer. The insomnia must not be better explained by another sleep, mental or medical disorder, must not be attributable to a medication or substance use and must persist when adequate opportunity for sleep occurs.

**Differential diagnosis**

The differential diagnosis of insomnia includes other sleep and medical disorders. Up to 50% of adults with obstructive sleep apnea (OSA) also complain of insomnia. Circadian rhythm sleep disorders, such as delayed sleep phase disorder and shift work disorder, abnormal sleep timing, restless leg syndrome often result in difficulty falling asleep. A separate insomnia diagnosis is not needed for all patients with medical, psychiatric or other sleep disorders, who have insomnia symptoms and should be made only if the symptoms are severe or constitute an independent focus of clinical attention.

**Treatment of insomnia**

The goals of insomnia treatment are to improve quantitative and qualitative aspects of sleep, to reduce the distress and anxiety

associated with poor sleep and to improve daytime function.<sup>24</sup> Treatment of insomnia include two broad approaches: pharmacological and non-pharmacological. Hypnotic drugs were widely prescribed in the past, but non-pharmacological approaches are now recommended as first-line treatment. Treatment options are briefly described below.

**Pharmacological treatment**

Traditionally, insomnia has been treated pharmacologically. Benzodiazepines replaced barbiturates during the 1960s and were the most commonly prescribed sedative hypnotic medications for treating insomnia as they were safer in overdose and less addictive. However, from the mid-1970s, problems of tolerance and dependence became apparent. Longer-acting hypnotics were prone to carry-over effects of morning lethargy and shorter-acting drugs to 'rebound insomnia'.<sup>27</sup> Although BDZs when used for short periods/intermittently can maintain effectiveness, these are not the treatment of choice in chronic insomnia.<sup>28</sup> Besides they are not suitable for older adults and patients with respiratory difficulties. Eventually BZRAs, often called Z drugs (such as zolpidem, zaleplon, zopiclone and eszopiclone), have replaced BDZs as the standard for hypnotics because of their minimal residual effects and low potential for tolerance and dependence. Subsequent development of doxepin (a low-dose tricyclic), ramelteon (a melatonin receptor agonist) and suvorexant (an orexin antagonist) have expanded the range of approved agents for treating insomnia. However, unapproved use of sedating antidepressants (e.g., trazodone) and antipsychotics (e.g., quetiapine) are common. Non-prescribed sleep aids include sedating antihistamines, L-tryptophan and melatonin. Most hypnotic medications are approved for short-term (2-4 weeks) use, but zolpidem, eszopiclone and ramelteon are exceptions. When properly used, hypnotics can provide immediate and adequate relief from sleeplessness. Insomnia however, usually returns upon discontinuation of dosing.

**Table 2: Benzodiazepine receptor agonist (BzRA) drugs**

Class/drug	T <sub>Max</sub> (hour)	Elimination half-life (hour)	Usual hypnotic dose (mg)	Approved for insomnia
<b>Benzodiazepines</b>				
Triazolam	1-2	1-2	0.125- 0.25	Yes
Temazepam	1-2	1-2	15-30	Yes
Estazolam	1.5-2	1.5-2	1-2	Yes
Quazepam	2-3	2-3	7.5-15	Yes
Flurazepam	1.5-4.5	1.5-4.5	15-30	Yes
Alprazolam	0.6-1.4	0.6-1.4	-	No
Lorazepam	0.7-1	0.7-1	1-4	No
Clonazepam	1-2.5	1-2.5	0.5-3	No
<b>Benzodiazepine receptor agonists</b>				
Zaleplon	0.5-2	0.8-1.3	5-20	Yes
Eszopiclone	0.5-2	5-8	1-3	Yes
Zolpidem	0.5-1.5	1.4-4.5	5-10	Yes

Sources: FDA-approved prescribing information and sources <sup>29,30</sup>

**Table 3: Other drugs commonly used as hypnotics**

Class/drug	T <sub>Max</sub> (hour)	Half-life (hour)	Usual hypnotic dose (mg)
<b>Antidepressants</b>			
Doxepin	1.5-4	10-30	3-6
Amitriptyline	2-5	5-45	10-100
Trazodone	1-2	7-15	25-150
Mirtazapine	1-3	20-40	7.5-30
<b>Antipsychotics</b>			
Olanzapine	4-6	20-54	2.5-20
Quetiapine	1-2	6	25-50
<b>Melatonin agonists</b>			
Melatonin	0.3-1	0.6-1	0.5-3
Ramelteon	0.5-1.5	1-2.6	8
<b>Antihistamines</b>			
Diphenhydramine	1-4	4-8	25-50
Doxylamine	2-3	10	25
<b>Anticonvulsants</b>			
Gabapentin	1.6-3	5-9	100-900
Pregabalin	1.5	6.3	50-300

Sources: FDA-approved prescribing information and sources <sup>31,32</sup>

**Non-pharmacological treatment**

**Cognitive-behavioral therapy for insomnia (CBTi):** This treatment modality combines behavioral and cognitive techniques to overcome dysfunctional sleep behaviors and misperceptions, distorted, disruptive thoughts about sleep. A treatment plan is designed using cognitive and behavioral techniques deemed relevant and appropriate for the patient. Five meta-analyses and numerous systematic reviews have demonstrated that CBT is associated with large effect size changes (measured in standardized z-scores) in the primary symptom measures of sleep latency (difficulty getting to sleep) and wake time after sleep-onset (difficulty remaining asleep).<sup>33,34</sup> Recent controlled studies have shown that CBT may be effective in general practice settings with nurses delivering the intervention according to a standard protocol.<sup>35,36</sup> Studies have repeatedly shown that short-term benefits of CBTi are similar to that of medications while CBTi provides sustained benefits, even 36 months after treatment, and does not cause rebound insomnia on stopping.

**Sleep education and universal sleep hygiene:** The simple provision of information ameliorates the sense of being out of control. Inaccurate attributions are challenged and misunderstandings corrected by understanding what sleep is, how common insomnia can be, how sleep changes with age, good practices, and some facts about insomnia. The focus of universal sleep hygiene is on modifiable environmental and lifestyle components that may interfere with sleep as well as behaviors that may improve sleep.

**Table 4: Sleep hygiene**

Do	Don't
Maintain regular hours of bedtime and arising. If you are hungry, have a little snack before bedtime.	Take naps. Watch the clock so you know how bad your insomnia actually is. Exercise right before going to bed to

Do	Don't
Maintain a regular exercise schedule.	Watch television in bed. Eat a heavy meal before bedtime.
Give yourself approximately an hour to wind down before going to bed.	Drink tea or coffee in the afternoon and evening.
If you are preoccupied or worried about something at bedtime, write it down and deal with it in the morning.	Smoke a cigarette if you cannot sleep. Use alcohol to help in going to sleep.
Keep the bedroom cool.	Read in bed when you cannot sleep.
Keep the bedroom dark.	Eat in bed. Exercise in bed.
Keep the bedroom quiet.	Use computer or cellphone in bed.

**Stimulus control therapy:** Stimulus control therapy is a deconditioning paradigm developed by Richard Bootzin and colleagues at the University of Arizona. By attempting to undo conditioning that undermines sleep, stimulus control therapy helps reduce both primary and reactive factors involved in insomnia. The rules attempt to enhance stimulus cues for sleeping and diminish associations with sleeplessness.

**Sleep restriction therapy:** Sleep restriction therapy is a strategy designed to increase sleep efficiency by decreasing the amount of time spent awake while lying in bed. Developed by Arthur Spielman, this therapy specifically targets those patients who lay awake in bed unable to sleep. Restricting time in bed can help consolidate sleep. When sleep efficiency reaches 85% (averaged over five nights), time in bed is increased by 15 minutes.

**Relaxation therapy and biofeedback:** Self-hypnosis, progressive relaxation, guided imagery, deep breathing exercises, biofeedback, meditation, autogenic training are all effective if they produce relaxation. The goal is to find the optimal technique for each patient. Biofeedback provides stimulus cues for physiological markers of relaxation and can increase self-awareness. Relaxation techniques readily lend themselves to being combined with sleep hygiene and stimulus control therapies.

**Cognitive control:** This technique aims to deal with thought material in advance of bedtime and to reduce intrusive bedtime thinking. The person with insomnia is asked to set aside 15 to 20 min in the early evening to rehearse the day and to plan ahead for tomorrow, thus putting the day to rest. It is a technique for dealing with unfinished business and may be most effective for rehearsal, planning and self-evaluative thoughts which are important to the individual and which, if not dealt with, may intrude during the sleep-onset period. Cognitive restructuring: Cognitive restructuring challenges faulty beliefs which maintain wakefulness and the helplessness which many people with insomnia report. It appears to work through appraisal by testing the validity of assumptions against evidence and real-life experience. If maladaptive cognitions, for example 'I am going to be incapable at work tomorrow' are not challenged, they will create high levels of preoccupation and anxiety and sleep is unlikely to occur.

**Thought suppression:** Thought-stopping and articulatory suppression attempt to interrupt the flow of thoughts. No

attempt is made to deal with thought material per se, but rather to attenuate thinking. With articulatory suppression, the patient is instructed to repeat, sub vocally, the word 'the' every 3s. The type of material most likely to respond is repetitive but non-affect-laden thoughts, not powerful enough to demand attention.

**Paradoxical intention:** This is a cognitive technique with conflicting evidence regarding its efficacy. The theory is that performance anxiety interferes with sleep onset. So, when the patient tries to stay awake for as long as possible, rather tries to fall asleep, performance anxiety will be reduced and sleep latency will improve.

#### Advice about management

Non-pharmacological treatment using CBT procedures should be preferred over pharmacological treatment, in cases of severe persistent insomnia. Hypnotic agents should be recommended mainly for short-term or occasional use. The practitioner should be aware of residual effects and potential problems of withdrawal and dependency.

#### Course and prognosis

There has been little research on the natural course of insomnia. However, untreated psychophysiological insomnia can last for decades, and may gradually worsen over time. Indeed, there is a developmental trend for sleep pattern to deteriorate, with increasing age. On the other hand, delayed sleep-phase syndrome and insufficient sleep hygiene can be associated with lifestyle problems and may ameliorate as these are resolved.

#### Conclusions

Insomnia is an almost invariable feature and complication of psychiatric disorders from childhood to old age, with the risk of further reducing the individual's capacity to cope with their difficulties. Persistent and severe insomnia represents a considerable public health concern. There is insufficient knowledge of the natural course of transient sleep disorders. Although the association of life events and stressors with the onset of insomnia is well-established, systematic research is required to establish the 'setting conditions' for the secondary maintenance of insomnia beyond an initial normative reaction to events. Nevertheless, the patients should be advised against their tendency to maximize opportunity to sleep when insomnia symptoms develop in order to facilitate the return of normal sleep pattern.

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## Physical comorbidity in children with neurodevelopmental disorders

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### Abstract

**Background:** Frequent comorbidity among patients with neurodevelopmental disorders impair management process. Premature mortality and disability could be reduced if there were a greater focus on comorbidity. Holistic and cost-effective services to the persons with neurodevelopmental disorders is of utmost importance.

**Objectives:** The objective of the study was to find out the prevalence and types of comorbidity among individuals diagnosed with neurodevelopmental disorders.

**Methods:** A hospital based cross-sectional study was conducted among 346 children between 10 to 18 years with neurodevelopmental disorders (NDDs) in the Child Guidance Clinic of National Institute of Mental Health, Dhaka during the period of September 2017 to June 2018. Diagnosis of neurodevelopmental disorders were done by the research psychiatrists following DSM-5 criteria. Physical comorbidities were diagnosed from history, physical examination, relevant investigations and consultation with the consultant of the respective discipline. A research psychiatrist, a statistician, medicine specialists and other specialists as required, were recruited accordingly. Coordination meetings with involvement of all were held before data collection. MS Excel 2003 and SPSS version 18 were used for data analysis.

**Results:** Overall 346 children were approached for interview and among them 311 respondents completed full data collection procedure. Among the respondents, 61.7% were boys and 38.3% girls. Intellectual disability was the most common type of NDDs followed by ADHD and ASD. Among children with neurodevelopmental disorders (NDDs), 32.2% had physical comorbidity. Epilepsy (14.2%) was the most common comorbid physical disorder, followed by diabetes mellitus (2.6%) and cerebral palsy. Other physical comorbidity among patients with NDDs were infectious and parasitic diseases, diseases of the thyroid gland, hypertension, obesity, diseases of the respiratory tract, diseases of the urinary tract, diseases of the skin, diseases of ear, nose and throat.

**Conclusions:** Treatment of coexisting physical illnesses is required for proper management of patients with neurodevelopmental disorders. Approach of integrative medicine involving pediatrics and related disciplines needs to be taken for managing such children.

**Declaration of interest:** Financing authority- Non-Communicable Disease Control (NCD) wing of Directorate General of Health Services, Ministry of Health & Family Welfare, Government of People's Republic of Bangladesh; study was conducted by National Institute of Mental Health, Dhaka, Bangladesh.

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**Keywords:** Physical comorbidity; neurodevelopmental disorders

### Introduction

When two disorders or illnesses occur in the same person, simultaneously or sequentially, they are described as comorbid. Comorbidity also implies interactions between the illnesses that affect the course and prognosis of both. People with severe mental illness (SMI) have excess mortality, being two or three times higher than that in the general population.<sup>1,2</sup> This mortality gap, which translates to a 13-30 year of shortened life expectancy in SMI patients<sup>1,2</sup> has widened in recent decades, even in countries where the quality of the health care system is general-

ly acknowledged to be good.<sup>3,4</sup> This excess mortality is likely to be related to comorbid physical illness.

Neurodevelopmental disorders (NDDs) are severe form of mental disorders in children. Individuals with NDDs are also prone to many different physical health problems. While these physical diseases are prevalent in general child population, their impact on individuals with NDDs is likely to be greater. Children with NDDs are usually chronically ill and coexisting physical disorders are also usually chronic in nature. Chronic nature of more than one disorder existing in children, make them more

resistant to treatment. They inadequately respond to treatment and are often referred to as high-cost-utilizers, inadequate responders and treatment refractory. Children with NDDs are usually neglected by the society most of the time and this is likely to be more when he or she is burdened with additional comorbid physical disorders. Therefore, this growing problem of medical comorbidity in people with NDDs need an urgent attention in Bangladesh. Bangladesh is an emerging country in all socioeconomic contexts. Health should not stay backward in this glorious journey. To develop effective and sustainable health care delivery model, child mental and physical illnesses must be focused together with utmost priority. Any management option is incomplete without addressing the comorbidity. Premature mortality and disability could be reduced if there was a greater focus on comorbidity. Till time, little attention has been given to the issue of comorbidity among patients with NDDs. To achieve sustainable development goals (SDGs) aimed by the government, good health and well-being of children should be ensured. So, to provide effective, holistic and cost-effective services to the persons with NDDs it is necessary to determine the prevalence and types of physical comorbidity in them. To the best of knowledge, this is the first study of its kind in Bangladesh to assess the comorbid physical illness among children with NDDs.

**Methods**

National Institute of Mental Health (NIMH), Dhaka carried out the hospital-based survey in collaboration with Non-Communicable Disease Control (NCDC) wing of Directorate General of Health Services (DGHS) under Ministry of Health & Family Welfare (MOH&FW) of the Government of the People’s Republic of Bangladesh. This cross-sectional study was conducted in the Child Guidance Clinic (CGC) of NIMH, Dhaka from September 2017 to June 2018. During the study period, children between 10 to 18 years of age attending CGC of NIMH, Dhaka were included in the study. Overall, 346 children with NDDs were approached conveniently during the study period to find out physical comorbidity among them. NDDs were diagnosed by research psychiatrists following DSM-5 criteria of diagnoses<sup>5</sup> under the supervision of a child psychiatrist. Guardians of the children refusing to participate were excluded from the study. Brief sociodemographic and clinical information were collected using a pretested questionnaire developed for the purpose. The questionnaire was developed following information from other related studies, literature review, library works and experience of the authors. BMI chart, height and weight machine, BP measurement instrument and other supporting instruments were made available.

**Recruitment, coordination meetings and piloting**

Research psychiatrists, pediatricians, medicine specialists and other specialists as required were recruited after interviewing them. A statistician was also recruited for the study. Two coordination meetings were organized at NIMH involving all research personnel. Before starting data collection, piloting of the study was done in CGC of NIMH. Samples for piloting were out of the

original study samples. After recommended modification, master protocol was developed.

**Data collection techniques and procedure in the field**

During the study period, children with NDDs were selected conveniently and recruited. In the first stage, diagnosis of NDDs were done following DSM-5 criteria<sup>5</sup> of diagnosis by research psychiatrists in consultation with a child psychiatrist. Before confirmation of diagnosis, informed written consent of the guardians of the selected children were taken. Then the research psychiatrists collected brief sociodemographic and clinical information of the diagnosed cases. In the second stage, thorough physical examination of the patients was done by the research psychiatrists to look for possible comorbid physical illnesses. Routine physical investigations (CBC, RBS, Urine RE, S. Bilirubin, S. Creatinine and ECG) were done for all patients. Special investigations were conducted for diagnoses of comorbid disorders. Finally, cases were referred to respective medical consultants for confirmation of diagnoses of physical illnesses as required. Investigators supervised the activities during data collection.

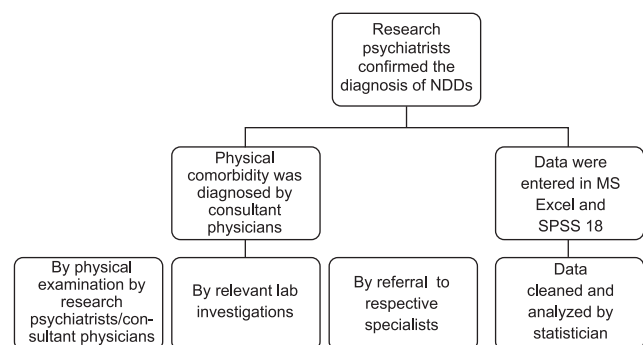
**Data processing and statistical analysis**

Data were checked for consistencies as well as for completeness. Data collected from each respondent was checked to ensure the completeness of its contents. Data were entered and encoded into the data entry program MS Excel 2003. Then data were transferred to SPSS version 18 for analysis. Categorical data were expressed as frequencies and percentages and appropriate statistical tests were done. Statistical analysis was done by the statistician employed for the purpose. Computer, secretarial and administrative facilities were available at NIMH.

**Ethical consideration**

Ethical clearance was taken from Bangladesh Medical Research Council (BMRC). Permission also was taken from the authority of NIMH, Dhaka. Research objectives and procedure of the study were explained to every study individual if possible and their guardians before start of the interview. Informed written consent from guardians were obtained before interview. Bengali version of consent form was read out and then signed by their parents or guardians of the children. Interviews were conducted at times and locations suitable to the study individuals and privacy was maintained during assessment.

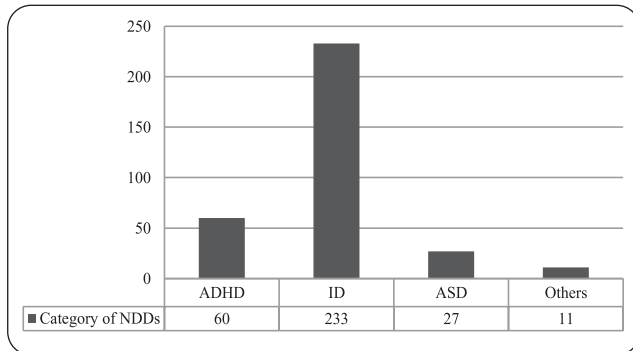
**Figure 1: Stepwise approach to respondents**



**Results**

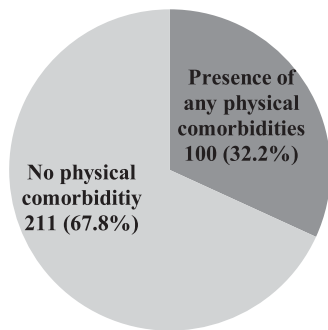
Overall, 346 children were approached for interview and among them 311 respondents completed full data collection procedure. Non-response was mainly due to refusal of the guardians of the children to give interview and dropping out sometimes. Among 311 respondents with NDDs, 192 (61.7%) were boys and 119 (38.3%) girls. Intellectual disability (n=233) was the commonest type of NDDs followed by ADHD (n=60) and ASD (n=27) (Figure 2).

**Figure 2: Types of Neurodevelopmental disorders (N=311)**



\* Multiple responses are there as two or more NDDs existed in the same respondent.

**Figure 3: Physical comorbidity among patients with neurodevelopmental disorders (N=311)**



Presence of physical comorbidity varied depending on sex of the respondents. Physical comorbidity was more among girls (35.3%) than it was in boys (30.2%) (Table 1).

**Table 1: Distribution of children with physical comorbidity depending on sex (n=100)**

Characteristic	Total physical comorbidities in both sexes N (%)	Boy n (%)	Girl n (%)
Age in year 10- 18	100(32.2)	58(30.2)	42(35.3)

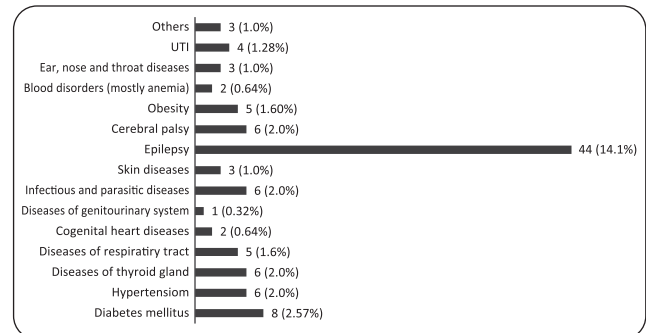
Overall, 26.6% children with NDDs had one comorbid disorder, 4.8% had two comorbid disorders and 0.6% had three or more comorbid disorders (Table 2).

**Table 2: Number of comorbidities among children with NDDs (N=311)**

Characteristic	No comorbidity		Single comorbidity		Two comorbidities		Three or more comorbidities	
	N	%	N	%	N	%	N	%
Age in year 10- 18	211	68	83	26.6	15	4.8	2	0.6

Epilepsy (14.2%) was the commonest physical comorbidity, followed by diabetes mellitus (2.6%) and cerebral palsy (2.0%). Infectious and parasitic diseases, diseases of the thyroid gland and hypertension, each was equal in proportion (2.0%). Obesity and diseases of the respiratory tract, each was 1.6%. Urinary tract infection was present in 1.4% of the cases. Diseases of the skin and diseases of ear, nose and throat were equal and each was 1.0% (Figure 3).

**Figure 3: Types of physical comorbidity among children with NDDs (N=311)**



\* Multiple responses as one respondent sometimes had more than one comorbidity

**Discussion**

Mind and body are inseparable and both are important components of health. This bidirectional relationship leads to a great deal of overlap between physical and mental disorders.<sup>6</sup> Psychiatrists tend to diagnose only mental illness and give very little attention to comorbid physical illnesses in children with mental illness. It was observed that physical examination was performed in 13% of psychiatric inpatients and 8% of outpatients.<sup>7</sup> Existence of comorbid physical illnesses among psychiatric patients is not uncommon. As such, the main goal of this study was to have a better understanding of the prevalence of medical comorbidity among children with NDDs.

Ultimately, data from 311 cases of NDDs were analyzed. Intellectual disability (n=233) was the most common type of NDDs in this survey followed by ADHD (n=60) and ASD (n=27). Boys with NDDs were more (n=192) than girls (n=119). National Mental Health Survey of Bangladesh, 2018-2019 also revealed higher rate of NDDs among boys (6.4%) than girls (3.9%).<sup>8</sup> Gender difference in this study may be explained by the dominance of boys in getting mental health services on priority especially in hospital set up in Bangladesh. Girls may have been ignored of the services that is usually provided to boys. Total 32.2% of individuals with NDDs had physical comorbidities. Numerous studies worldwide have reported disproportionate medical comorbidity and premature death among people with serious mental illness.<sup>9</sup> The lifetime prevalence of any physical disorder among patients with severe mental illness has been reported to be 46.4%, while the life time prevalence of 2 and 3 physical disorders were found to be 27.7% and 17.3%, respectively.<sup>10</sup> In a study in India, it was reported that 31% of the patients in outpatient department of psychiatric hospitals were having coexisting physical illnesses and the main system involved was cardiovascular (33.3%) in which hypertension was



the most common diagnosis followed by endocrine (27%), where diabetes mellitus and hypothyroidism were the most common diagnoses.<sup>11</sup> A survey on physical comorbidity in persons with severe mental illness in Bangladesh conducted in 2018, found 42% of the patients were suffering from physical comorbidities.<sup>12</sup> Physical comorbidity among children with NDDs were not much studied. Existence of one comorbidity among children with NDDs was found 26.6% in this survey and two comorbidities in 4.8% and three or more comorbidity in 0.6% cases. Epilepsy, cerebral palsy, obesity, diabetes mellitus and thyroid disorders were the main physical comorbidities in children with NDDs. This study demonstrated epilepsy (14.2%) as the commonest comorbid disorder among patients with NDDs which may be explained by the commonality of causes between NDDs and epilepsy. Intellectual disability was the most common type of NDDs in this study and intellectual disability is also etiologically associated with epilepsy. Prevalence of epilepsy (2.2%) and prevalence of intellectual disability (3.8%) were also found relatively high in Bangladesh.<sup>13</sup> Poor perinatal care is likely to be the main reason of coexistence of cerebral palsy and epilepsy with intellectual disability in the country. Neonatal hypothyroidism is an important cause of intellectual disability and prevalence of hypothyroidism was found 2% in this study. Juvenile onset diabetes mellitus (DM) and diabetes caused by use of atypical antipsychotic drugs may explain the cause of increased diabetes among the same patients.

Increased risk of DM in patients with NDDs may be explained by multiple factors including genetics, life style and treatment factors. Atypical antipsychotics, diet and physical inactivity are among the important issues related to DM in these patients. For several decades, respiratory tract diseases such as pneumonia and tuberculosis accounted for majority of deaths in people with SMI who lived in institutions.<sup>14</sup> Respiratory diseases are still more prevalent among people with SMI.<sup>15</sup> About 1.6% of the respondents in this survey had diseases of the respiratory system. Coexistence of respiratory tract, urinary tract and parasitic infections found associated in this survey may be due to poor self care of the patients with NDDs.

Heart diseases and hypertension may be causally related to NDDs. Hypertension is a form of major cardiovascular diseases (CVD) and it was found among 2.0% of children in the current study. The etiology of the excess CVD may be multifactorial and it may include genetic, lifestyle and treatment factors.<sup>16</sup> This group of patients are likely to be obese also and the prevalence of obesity among patients with NDDs was 1.6% in this survey. Obesity is a part of chronic metabolic syndrome which also include hypertension and rate of metabolic syndrome in patients with NDDs are likely to be high.

Studies found strong relationship between comorbidity and higher rates of suicide,<sup>17,18</sup> suicidal ideations,<sup>19</sup> greater symptom severity,<sup>20,21</sup> poorer quality of life and social support.<sup>19</sup> Patients diagnosed with multiple disorders also tend to have a poorer prognosis, are less responsive to intervention, and generally exert a greater demand in the health care sector.<sup>17,18,21</sup> Several studies have attributed medical comorbidities among psychiatric patients for being responsible for the premature death observed in this population.<sup>22,23</sup> Gaps in information on this issue

of physical comorbidity among children with NDDs still exist around the globe particularly in Bangladesh.

Overlap of medical conditions with psychiatric conditions is a significant challenge for health care professionals and create additional costs in the health care system. A person diagnosed with both diabetes and NDDs will have to be treated for both conditions. If someone live with multiple conditions or disorders, it is important that the doctor is aware of all medications and their interactions. An approach of integrative medical practice may be considered for this group of patients. This approach depends on developing an expertise in evaluation of patients that include a psychological formulation as well as a physical one and a treatment plan that address both sets of problems in an integrated way. Integrative medicine is a model of medical care in which all elements of health care are provided to the patient in a coordinated way that is based on a comprehensive evaluation, a shared diagnostic formulation and a team-based treatment plan which is flexible and communicable to all the caregivers.<sup>24</sup> The most important element of integrative medical practice is professionals communicating and collaborating about mutual patients.<sup>24</sup>

### Implications of the study

It is important that a child psychiatrist or psychiatrist should not miss the coexisting physical illness in the patient that may present with NDDs. In the same way, pediatrician or physician needs to be cautious that some physical illness may in fact be the reflection of an underlying mental illness. The occurrence of mental and physical comorbidity in children has public health significance especially in Bangladesh. The national health strategy focuses on child mental health also and intends to develop programs to improve the delivery of mental health services that revolve around community-based care in Bangladesh. Exploring the prevalence of medical comorbidities in people with NDDs and how these are being addressed are necessary to build strategies within the primary health care system to close the care gaps. Result of the survey is intended to be a guide for all health care professionals to working with the group of children suffering from NDDs. Integrated treatment plans that focus on all the treatment needs of the child may be developed based on the survey result.

### Recommendations

1. Child psychiatrists or psychiatrists should not miss the physical comorbidity in the patients that may present with a NDD and pediatricians or physicians dealing with physical illness should also be vigilant that physical problems may be a reflection of mental illness or there may be coexistent mental illnesses like NDDs.
2. Perinatal care of mother and neonatal care of baby are essential to reduce intellectual disability and some of NDDs.
3. Appropriate management of comorbidity at the individual and public health level will require a significant reorientation of medical students, medical professionals and reorganization of health services.
4. Health services will have to be adjusted to the fact that most of the people who come to seek help are likely to suffer from more than one illness.

5. Researchers will have to give more attention to the commonalities in the pathogenesis of NDDs and physical disorders and to the development and assessment of strategies for the treatment of co morbid conditions.
6. A psychiatric hospital needs to have other departments especially pediatrics, medicine and its allied subjects with laboratory facilities.

### Conclusions

Many physical disorders have been identified among patients with NDDs. Side effects of psychotropic medications, perinatal care of mothers, neonatal care of babies and access to appropriate health care remain addressable for patients with NDDs. Efforts are required to convince decision makers, educators, clinicians, and community workers that comorbidity is one of the most urgent challenges to the quality of health care in the twenty first century that must be recognized and dealt with without delay.

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# Psychiatric comorbidity in patients with obsessive-compulsive disorder

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## Abstract

**Background:** Obsessive-compulsive disorder (OCD) is a debilitating heterogeneous psychiatric disorder which is often comorbid with other psychiatric disorders.

**Objectives:** To identify the psychiatric comorbidities in patients with OCD.

**Methods:** This cross-sectional study was based on a survey conducted on 105 DSM-5 diagnosed OCD patients. The patients were older than 18 years and enrolled from the Inpatient and Outpatient Psychiatry Departments of NIMH and BSMMU, Dhaka in between December 2018 to December 2019. Psychiatric comorbidities and OCD severity were measured by the SCID-I CV and DUOCS (Dhaka University Obsessive Compulsive Scale). Data analysis was done by SPSS 25.

**Results:** The study observed that 92.4% of the respondents had comorbid psychiatric disorders, with the mean DUOCS score of 42.3. A larger proportion of OCD patients had comorbidity like panic disorder, generalized anxiety disorder and hypoactive sexual desire disorder, with the figures of around 40% for each. This study also found that around one-third of OCD patients had comorbidities like social phobia, secondary insomnia, dysthymic disorder, undifferentiated somatoform disorder, agoraphobia and major depressive disorder. Less than 20% of the OCD patients had comorbid conditions such as hypochondriasis, tic disorder, body dysmorphic disorder, hypomania, bipolar II disorder, non-alcohol substance use disorder, dhat syndrome, acrophobia, etc.

**Conclusions:** This study provides essential information about the proportion of psychiatric comorbidities in patients with OCD. It is recommended that psychiatric comorbidities should be taken into consideration while planning for OCD management.

**Declaration of interest:** None

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**Keywords:** OCD; psychiatric comorbidity; SCID-I CV; DUOCS

## Introduction

Obsessive-compulsive disorder (OCD) is a chronic heterogeneous psychiatric disorder with various severe symptoms.<sup>1</sup> It is characterized by obsessive thoughts (intrusive, anxiety provoking) and compulsive acts (repetitive behaviors).<sup>2</sup> The neurological abnormalities lies in the cortical (prefrontal)–striatal–thalamic circuitry.<sup>3</sup> In 2018, WHO declared it as one of the most disabling psychiatric disorders. A survey conducted in United States found that lifetime prevalence of OCD was 2.3%.<sup>4</sup> The National Mental Health Survey of Bangladesh conducted in 2018-19 found that the prevalence of OCD in Bangladeshi adult population is 0.7%.

Some community based<sup>4,5,6,7</sup> and clinical studies<sup>8,9,10,11</sup> found that OCD is frequently comorbid with other psychiatric disorders. The longer duration of illness leads to more obses-

sive-compulsive symptom (OCS) severity.<sup>7</sup> A study suggests that comorbidity of mood and anxiety disorders are often associated with the increase in illness severity.<sup>12</sup> More severe OCD cases in the community cause severe impairment in work, home, social functioning<sup>4</sup> as well as in the quality of life.<sup>13</sup>

In a study on US adults with OCD, Ruscio et al. found that OCD was associated with following disorders: anxiety (75.8%), mood (63.3%), impulse control (55.9%) and substance use (38.6%).<sup>4</sup> In Bangladesh, Algin et al. found that OCD had 16.2% comorbid psychiatric disorders, in which more males had anxiety disorders and more females had depressive disorders.<sup>14</sup> In another study, Uddin MZ found that depression and anxiety were comorbid in 63.5% and 33%<sup>15</sup> OCD cases, respectively. Several anxiety, depression and OCD related conditions remain significantly more common in OCD cases than in control

relatives, suggesting an etiological link.<sup>16</sup> Presence of a comorbid condition with OCD influences treatment decisions<sup>17</sup> and may shed light on the pathogenesis of OCD.<sup>18</sup> This study was in line with few studies<sup>14,15</sup> that investigated the psychiatric comorbidities among adult OCD patients in Bangladesh. However, this study was different from those studies in the sense that the researcher further explored the pattern and proportion of psychiatric comorbidities among patients with OCD in Bangladesh as well as the association between severity of OCD and psychiatric comorbidities.

### Methods

A cross-sectional study was conducted in both the Outpatient and Inpatient Departments of National Institute of Mental Health (NIMH) and Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka in between December 2018 to December 2019. A total of 105 OCD patients aged 18 years and above who fulfilled the inclusion and exclusion criteria were conveniently selected for the study. OCD patients were diagnosed using DSM-5 criteria. After selection, a clear explanation was given to the respondents about the study procedures and an informed written consent was taken. A pretested sociodemographic questionnaire was used for identifying sociodemographic information, Structured Clinical Interview for DSM-IV Axis I Disorders clinician version (SCID-I) for identifying comorbid psychiatric disorders and Dhaka University Obsessive Compulsive Scale (DUOCS) was used to see the association between OCD severity and comorbid psychiatric disorders, which is a validated scale in context of Bangladesh for measuring OCD severity. Data were collected by face-to-face interview using paper and pencil as instruments and checked and rechecked for omissions, inconsistencies, etc. Data were analyzed with Statistical Package for Social Sciences (SPSS) Windows version 25. Association of severity of OCD with comorbid psychiatric disorders were analyzed according to Pearson's chi-square test. All ethical issues were carefully addressed and approval was taken from the Ethical Review Board of NIMH.

### Results

Out of 105 respondents, the mean±SD age was 27.8±7.7 years. Most of the respondents (58.1%) were in 18-27 year age group and a higher number of respondents were male (61%) (Table 1).

**Table 1: Types of CT scan and sociodemographic characteristics of the patients (N=475)**

Characteristic	Frequency (percentage) Or mean(±SD)
<b>Age (year)</b>	27.8(±7.7)
18-27	61 (58.1)
28-37	32 (30.5)
38-47	10 (9.6)
48-57	2 (2.0)
<b>Sex</b>	
Male	64 (61.0)
Female	41 (39.0)
<b>Religion</b>	
Muslim	98 (93.3)

Characteristic	Frequency (percentage) Or mean(±SD)
Christian	1 (1.0)
Hindu	6 (5.7)
<b>Education</b>	
Primary	6 (5.7)
Secondary	36 (34.3)
Higher secondary	21 (20.0)
Honors	28 (26.7)
Masters	11 (10.5)
Others	3 (2.9)
<b>Occupation</b>	
Unemployed	14 (13.3)
Business	9 (8.6)
Job	15 (14.3)
Housewife	28 (26.7)
Day laborer	5 (4.8)
Student	31 (29.5)
Others	3 (2.9)
<b>Family type</b>	
Nuclear family	49 (46.7)
Combined family	31 (29.5)
Bachelor	25 (23.8)
<b>Family members</b>	4 (±3)
1(bachelor)	25 (23.8)
2-5	58 (55.1)
6-10	18 (17.2)
≥11	4 (3.9)
<b>Monthly expenditure (BDT)</b>	20614.29 (±15939.38)
0-20,000	68 (65.1)
20,001-40,000	29 (27.7)
40,001-60,000	5 (4.8)
60,001-80,000	2 (1.9)
80,001-100,000	1 (1.0)
<b>Marital status</b>	
Married	43 (41.0)
Unmarried	56 (53.3)
Separated	3 (2.9)
Divorced	3 (2.9)
<b>Residence</b>	
Urban	81 (77.1)
Rural	24 (22.9)

Among the patients, 93.3% were Muslim and many of them completed secondary level education (34.3%). Majority of them were students (29.5%), followed by housewives (26.7%) and 46.7% of the patients came from nuclear families. In respect to the patients' number of family members, the mean±SD of family members was 4±3; and the monthly expense of 65.1% patients were within the range of 0-20000 BDT. Majority of the respondents were unmarried (53.3%) and came from urban background (77.1%) (Table 1).

**Table 2: Types and proportion of psychiatric comorbidities in OCD patients (N=105)**

Diagnosis	Frequency (percentage)
Number of OCD patients with comorbid psychiatric disorders	97 (92.4)
Panic disorder	44 (41.9)
Generalized anxiety disorder	42 (40.0)
Hypoactive sexual desire disorder	42 (40.0)
Social phobia	39 (37.1)
Secondary insomnia	39 (37.1)
Dysthymic disorder	35 (33.3)
Undifferentiated somatoform disorder	31 (29.5)
Agoraphobia	30 (28.6)
Major depressive disorder	26 (24.8)
Hypochondriasis	19 (18.1)
Tic disorder	17 (16.2)
Body dysmorphic disorder	6 (5.7)
Hypomania	3 (2.9)
Bipolar II disorder	2 (1.9)
Non-alcohol substance use disorder	2 (1.9)
Dhat syndrome	2 (1.9)
Acrophobia	2 (1.9)
Delusional disorder	1 (1.0)
Bipolar I disorder	1 (1.0)
Specific phobia	1 (1.0)
Claustrophobia	1 (1.0)

In this study, 92.4% of OCD patients had comorbid psychiatric disorders. The most common comorbid conditions were panic disorder (41.9%), GAD (40%), hypoactive sexual desire disorder (40%), social phobia (37.1%), secondary insomnia (37.1%), dysthymic disorder (33%), undifferentiated somatoform disorder (29.5%), agoraphobia (28.6%), major depressive disorder (24.8%), hypochondriasis (18.1%) and tic disorder (16.2%) (Table 2).

**Table 3: Distribution of the OCD patients according to the duration of illness (N=103)**

Duration (year)	Frequency (percentage)
0-6	59 (57.4)
7-12	27 (26.3)
13-18	9 (8.7)
19-24	5 (4.8)
25-30	3 (2.9)

Note: Two missing samples

The mean±SD of the duration of OCD was 7±6 years, with a minimum duration of 1 month and maximum duration of 27 years. More than 50% of the 103 patients reported that the duration of their illness was less than 6 years (Table 3).

**Table 4: Distribution of OCD patients according to illness severity (N=105)**

Severity	Frequency (percentage)
Mild (17-23)	8 (7.7)
Moderate (24-40)	35 (33.5)

Severity	Frequency (percentage)
Severe (41-49)	17 (16.4)
Profound (50-80)	38 (36.9)

Note: Seven (6.7%) patients had less than cut-off score of <17

Among the 103 patients, continuous course of illness was observed in 62.9% patients, fluctuating in 32.4% and episodic in 2.9% of the patients. The mean of total DUOCS score was 42.3 and minimum and maximum scores were 5 and 78, respectively. Among the 98 respondents, majority of the patients (36.9%) had profound illness severity followed by moderate severity in 35% of the patients. There were 7 (6.7%) patients whose OCD severity score was less than cut-off score of 17 (Table 4).

**Table 5: Chi-square test between OCD severity and panic disorder (N=105)**

Severity (by DUOCS score)	Panic Disorder		Total	Chi-squared	p-value
	No	Yes			
Below cutoff	6 (9.8%)	1 (2.3%)	7	9.972	0.041
Mild	8 (13.1%)	0 (0.0%)	8		
Moderate	19 (31.2%)	16 (36.4%)	35		
Severe	10 (16.4%)	7 (15.9%)	17		
Profound	18 (29.5%)	20 (45.5%)	38		
Total	61 (100%)	44 (100%)	105		

In this study, association of OCD severity with various psychiatric comorbidities were assessed by chi-square tests. We found that apart from panic disorder (p=.041) (Table 5), other disorders like dysthymic disorder (p=.107), agoraphobia (p=.115), social phobia (p=.085), GAD (p=.122), hypoactive sexual desire disorder (p=.113), secondary insomnia (p=.098) and undifferentiated somatoform disorder (p=.578) had no statistically significant association with severity of OCD.

**Discussion**

In the present study the age range was between 18-55 years. More than half (58.1%) of the OCD patients were within 18-27 year age group. Another study<sup>14</sup> showed that most (45.5%) of the OCD respondents were within 21-30 years age group that is akin to the recent study finding. In a Brazilian study,<sup>19</sup> the age range of respondents were between 9-82 years. Age range in the present study is different because the above mentioned study included patients under 18 years. In the present study, the mean±SD age of the OCD respondents was 27.8±7.7 years. Algin et al. found the mean±SD age was 26.6±9.9 years.<sup>14</sup> In Torresan et al. the mean±SD age was 34.8±12.9 years.<sup>19</sup> The finding of the present study were near similar to these study findings.

In this study, 61% and 39% of the OCD patients were males and females, respectively. So, the male-female ratio was about 1.6:1, which is similar to the finding of Algin et al. where the male-female ratio was about 1.4:1.<sup>14</sup> In a Brazilian study, 56.8% and 43.2% respondents were females and males, respectively<sup>19</sup> which was different from this study. The reason maybe that females are less aware, more stigmatized about psychiatric illnesses and more dependent on males in Bangladesh than the females of the above mentioned country. Among the OCD patients,

93.3% were Muslims as Bangladesh is a Muslim predominant country, where around 90% people are Muslims. In a cross-sectional study of India, almost 90% of respondents were Hindus followed by 7% Muslims and 3% belonged to other religions.<sup>20</sup> In this study, a high proportion of the OCD patients had completed secondary level of education (34.3%). According to Algin et al., more than half (60%) of the OCD respondents were educated above secondary level.<sup>14</sup> In another study, Verma et al. found that maximum number of respondents were educated above secondary level (72%).<sup>20</sup> These findings are proximate to the present study findings, which may explain why OCD respondents are more concerned about their symptoms.

Among the OCD patients in this study, most of them were employed (56.4%); Torresan et al. found that more than half (53.7%) of the respondents worked outside of home.<sup>19</sup> The present study findings correspond with the above-mentioned international study. These findings indicate that those who are employed, suffer more from this disorder as well as are seeking treatment.

Most of the OCD patients (46.7%) came from nuclear family in the present study which was not identified in other studies. In this study, more than half of the respondents were unmarried (53.3%). Algin et al. found more than half (about 59.3%) of the OCD patients were unmarried<sup>14</sup> which is in the vicinity of the present study finding. In another study, Verma et al. found that more than half (55%) of the respondents were married.<sup>20</sup> In the present study, a substantial proportion of patients were bachelors and students which reflect earlier age of onset pattern in OCD.

A large portion of OCD patients came from urban (77.1%) background in this study. Algin et al. found 70.5% OCD patients came from urban background.<sup>14</sup> Verma et al. found three-fourth (75%) patients were from urban background.<sup>20</sup> These findings indicate that urban people are more concerned about their mental health and also psychiatric disorders are stigmatized in rural areas.

This study identified that 92.4% OCD patients had comorbid DSM-IV axis-I psychiatric disorders. In a study in Bangladesh, the researchers identified 16.3% psychiatric comorbidities among OCD patients.<sup>14</sup> The result was different from this study due to variation of sample size and as they considered more than one comorbidity in each respondent. In a large multi-centred Brazilian study, it was found that 92.1% OCD cases were comorbid with lifetime psychiatric disorders.<sup>21</sup>

In this study, more than one-third of the OCD patients had comorbid panic disorder (41.9%), followed by generalized anxiety disorder (40%), hypoactive sexual desire disorder (40%), social phobia (37.1%), secondary insomnia (37.1%) and dysthymic disorder (33.3%). Torres et al. found that OCD had similar percentage of comorbidities such as social phobia (34.6%), GAD (34.3%), but fewer cases of dysthymic disorder (11.9%) and panic disorder (20.2%)<sup>21</sup> which were different from the present study findings. As people are more focus oriented towards physical symptoms rather than psychological symptoms, somatic or bodily presentation of psychiatric disorders are more common in our subcontinent and it might be a probable

cause of highest percentage of panic disorder in this study.

Again, in this study, less than one-third of the patients had comorbid undifferentiated somatoform disorder (29.5%), agoraphobia (28.6%), major depressive disorder (24.8%), hypochondriasis (18.1%) and tic disorder (16.2%). In view of above comorbidities, Torres et al. found hypochondriasis (3.4%), tic disorder (28.4%) and agoraphobia (20.2%)<sup>21</sup> which are near to the present study findings but comorbid MDD (56.4%)<sup>21</sup> showed a discrepancy. As in this study, more than half (56.8%) of the respondents were females. As females are more vulnerable to depression, it might be the probable cause of higher percentage of depression in them.

This study identified a substantial portion (40%) of hypoactive sexual desire disorder as a comorbidity in OCD patients which was also identified in a cross-sectional study<sup>22</sup> in Bangladesh where 16% OCD patients reported decreased sexual desire. This finding is different from the present study because they considered more than one case in each patient. OCD patients are preoccupied with intrusive thoughts and/or compulsive acts, maintains rigid structured life and orderliness which are more time consuming, so there is less chance of sexual fantasy, which is essential for sexual desire and drive; also due to shame, patients feel difficulty in openly discussing this issue. Another important point could be lack of proper sex education in our context.

More than 60% of the patients had continuous course of OCD. In an Austrian study, it was found that more than 60% patients with OCD had a fluctuating (waxing and waning)<sup>23</sup> course which varied from present study. In this study, a large proportion of chronic, treatment resistant and severe OCD patients were included who were referred by psychiatrists, other expert clinicians and general physicians which might be the probable cause of this discrepancy.

In this study, more than three-fourth (85.7%) of the patients had moderate to profound level of OCD (total DUOCS score above 23); the total number of OCD patients with psychiatric comorbidities were 92.4%, indicating more illness severity was associated with more psychiatric comorbidities.

Finally, in this study, association of OCD severity with 8 other psychiatric comorbidities like dysthymic disorder, panic disorder, agoraphobia, social phobia, GAD, hypoactive sexual desire disorder, secondary insomnia and undifferentiated somatoform disorder were analyzed by chi-square test, but only panic disorder had statistically significant association with severity of OCD.

Although optimum precautions were taken, we still had some limitations. The sample size was small, samples were collected conveniently from only two hospitals so the study population may not represent the general population and as information were collected based on memory of the respondents, there remained possible chances of recall bias.

## Conclusions

Despite some limitations, this study provided valuable information about psychiatric comorbidities in OCD patients. Among the comorbid psychiatric disorders, panic disorder was found to

have statistically significant association with DUOCS severity. As it was a hospital-based piece meal study, so before drawing any definite conclusion, caution should be taken. The findings of this study can be used in future studies and this study may guide clinicians, patients and policy makers to effectively manage OCD patients with attention given to comorbid anxiety and depressive disorders.

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# Factors associated with sexual side effects of antipsychotics in patients with psychotic disorders

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## Abstract

**Background:** Various studies have revealed that sexual side effects are frequent in psychotic patients treated with antipsychotics. Although sexual side effects have a negative impact on adherence to treatment, information on factors associated with antipsychotic related sexual side effects are limited.

**Objectives:** To evaluate the factors associated with sexual side effects of antipsychotics in psychotic patients.

**Methods:** We employed a single center, cross-sectional, naturalistic study design to collect data from 146 patients with DSM-5 diagnosis of different psychotic disorders. In addition to assessing sexual functioning by Psychotropic-Related Sexual Dysfunction Questionnaire (PRSexDQ-SaSex), we recorded demographic data, medication history and relevant clinical information.

**Results:** Among the patients, 52.1% exhibited sexual dysfunction according to the assessment with PRSexDQ. Sexual dysfunction (SD) was common in both sexes with males exhibiting higher prevalence of SD (58.5%) than females (43.8%). Incidence of SD increased in male patients ( $\chi^2=3.14$ ,  $p=.050$ ), when risperidone and typical antipsychotics were used ( $\chi^2=10.5$ ,  $p=.030$ ), with higher doses ( $t=15.1$ ,  $p=.001$ ), with longer duration of treatment ( $t=8.2$ ,  $p=.001$ ) and period of illness ( $t=14.7$ ,  $p=.001$ ), with increased age of the patients ( $t=39.5$ ,  $p=.001$ ) and when the diagnoses were schizophrenia ( $\chi^2=50.8$ ,  $p=.000$ ). Patients' route of taking medication ( $\chi^2=0.535$ ,  $p=.380$ ) and poly pharmacy of antipsychotics ( $\chi^2=0.955$ ,  $p=.220$ ) appeared to have no significant effect.

**Conclusions:** Sexual side effects were common in patients taking antipsychotics and antipsychotics should be carefully chosen to ensure compliance.

**Declaration of interest:** None

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**Keywords:** Sexual side effects; sexual dysfunction; antipsychotics

## Introduction

Proper sexual functioning is one of the most important components of the quality of life and of maintaining a satisfying intimate relationship. Sexual dysfunction (SD) however is increasingly becoming a medical phenomenon of concern, in particular among patients taking antipsychotic medication.<sup>1</sup> Antipsychotic drugs, by modulating neurotransmitters and hormones, lead to erectile dysfunction and abnormal ejaculation<sup>2,3</sup> as well as impair desire and arousal.<sup>4</sup> Sexual dysfunction has been considered by many patients as a more troublesome side effect compared to others.<sup>5</sup> It is essential to sustain compliance on patients taking antipsychotics as they may discontinue taking a prescribed medication if they discover that they are unable to have a natural sexual life because of it. Identifying the

factors associated with SD in patients receiving antipsychotics can provide important clues for safe prescription and thus, ensure compliance.

Studies using structured interviews or self-report questionnaires tend to report a prevalence of 30-60% for sexual side effects related to treatment with antipsychotics.<sup>6</sup> Both typical and atypical antipsychotics are associated with a substantial impairment of sexual functioning and a review comparing different antipsychotics with regard to sexual dysfunction concluded that risperidone induces sexual dysfunction most frequently, followed by typical antipsychotics (e.g. haloperidol), olanzapine and quetiapine.<sup>5</sup> The majority of the studies focused on the impact of different dosages on SD rates, found significant dose-dependent SD rates at least for risperidone.<sup>7,8</sup> Only a few

patients spontaneously complain about the sexual problem when they mention side effects of antipsychotic drugs. Doctors are also reluctant to discuss it when not complained and patients suffer in silence and ultimately discontinue the drug. This study tried to estimate the magnitude of the problem of sexual dysfunction among patients taking antipsychotic medication which, if known, would become easier to recommend and justify appropriate measures to be taken to minimize the problem. Study findings may also help to guide prescription of antipsychotic medication in the at-risk population and improve treatment adherence.

### Methods

This cross-sectional study was carried out in the Inpatient and Outpatient Departments of National Institute of Mental Health (NIMH), Dhaka in between January 2019 to September 2019. A total of 146 sexually active patients in the age range of 21 years and above, with a DSM-5 diagnosis of either schizophrenia, schizophreniform disorder, schizoaffective disorder, mood disorder with psychotic features or other psychotic disorders were conveniently recruited for the study. Patients receiving antidepressants, mood stabilizers, drugs that might interfere with sexual functioning like alpha blockers, beta blockers or who had medical conditions like hypertension, diabetes, etc. that might affect sexual performance were excluded from the study. Data were collected by face-to-face conversation using paper and pencil instrument and from those forms were entered into SPSS software.

A semi-structured questionnaire was used to collect sociodemographic data like age, sex, marital status, etc. and relevant clinical information like diagnosis, duration of treatment, name of the prescribed antipsychotic(s), route of drug administration, dose of the drug, etc. Bangla adapted version of Pyschotropic-Related Sexual Dysfunction Questionnaire (PRSexDQ) was used to evaluate sexual dysfunction. The PRSexDQ consists of seven items evaluating the occurrence of sexual dysfunction along with subjective report on decrease of libido, delay of orgasm or ejaculation, lack of orgasm or ejaculation, erectile dysfunction or decrease in vaginal lubrication and the level of patient's tolerance to dysfunction. Sexual dysfunction was defined as having a score equal to or greater than 1 in any of the five items of the PRSexDQ that evaluated the various dimensions of sexual function. Ethical approval was provided by the Institutional Review Board of NIMH. Following data collection, data analyses were completed on the full sample using SPSS 24.0.

### Results

The characteristics of the participants are shown in Table 1. Mean age $\pm$ SD of the patients was 32.6 $\pm$ 9.9 years. They were receiving eight different types of antipsychotics and of the 146 patients, 116 (79.5%) were taking a single antipsychotic and 30 (20.5%) were taking two antipsychotics at the same time.

**Table 1: Characteristics of the patients who were enrolled in the study (N=146)**

Characteristic	Frequency (n)	Percentage (%)
<b>Age group (year)</b>		
21-28	66	45.2
29-39	44	30.1
40-50	28	19.2
$\geq$ 51	08	5.5
<b>Gender</b>		
Male	82	56.2
Female	64	43.8
<b>DSM-5 diagnosis</b>		
Schizophrenia	96	65.8
Schizophreniform	30	20.5
Schizoaffective	2	1.4
Mood disorder with psychotic features	16	11
Other psychotic disorders*	2	1.4

\* Other psychotic disorders included brief psychotic disorder and delusional disorder

Among the patients, 52.1% exhibited SD when measured by PRSexDQ, among who males reported a higher proportion of SD (58.5%) than females (43.8%). Among the patients with SD, 63.2% had shown problems in all three domains of sexual performance, 23.7% in desire and arousal, 5.3% in desire and orgasm, 5.3% in arousal and orgasm and 2.6% solely in desire domain. Desire was universally affected and only 5.3% had sole disturbance in arousal and orgasm without affecting the desire. Among patients taking different antipsychotics, it was observed that 60.7% patients receiving risperidone complained of sexual dysfunction followed by 55.1% patients receiving haloperidol and 47% receiving trifluoperazine. Atypical antipsychotic olanzapine appeared relatively safer with dysfunction as 32.2% of the patients receiving olanzapine complained of sexual dysfunction. Use of risperidone, haloperidol and trifluoperazine significantly increased the probability of SD ( $\chi^2=10.5$ ,  $p=.030$ ) whereas olanzapine had significantly lower probability of causing SD as found in chi-square tests. Schizophrenia patients had increased probability of SD ( $\chi^2=50.8$ ,  $p=.000$ ) compared to schizophreniform, mood disorder with psychotic features or other psychotic patients. Male patients showed a higher probability ( $\chi^2=3.14$ ,  $p=.050$ ) of having SD. Probability of causing SD did not differ by the route of drug administration ( $\chi^2=0.535$ ,  $p=.380$ ) and on mono or polytherapy ( $\chi^2=0.955$ ,  $p=.220$ ). Results of chi-square tests are summarized in Table 2.

**Table 2: Sexual dysfunction by DSM-5 diagnosis, type of antipsychotic, drug combination, route of administration and gender (N=146)**

DSM-5 diagnosis	Sexual Dysfunction		Chi-squared	P
	Present (n/%)	Absent (n/%)		
<b>Diagnosis</b>				
Schizophrenia	70 (92.1)	26 (37.1)	50.8	.000
Schizophreniform	6 (7.9)	24 (34.2)		
Schizoaffective	-	2 (2.8)		

DSM-5 diagnosis	Sexual Dysfunction		Chi-squared	P
	Present (n/%)	Absent (n/%)		
Mood disorder with psychotic features	-	16 (22.8)		
Other psychotic disorders	-	2 (2.8)		
<b>Name of the drug</b>			10.5	.030
Haloperidol	16 (21)	13 (18.6)		
Trifluoperazine	8 (10.5)	9 (12.8)		
Risperidone	34 (44.7)	22 (31.4)		
Olanzapine	10 (13.1)	21 (30)		
Quetiapine	1 (1.3)	1 (1.4)		
Clozapine	1 (1.3)	1 (1.4)		
Fluphenazine	4 (5.2)	2 (2.8)		
Chlorpromazine	2 (2.6)	1 (1.4)		
<b>Therapy</b>			.955	.220
Monotherapy	58 (76.3)	58 (82.9)		
Polytherapy	18 (23.7)	12 (17.1)		
<b>Route</b>			.535	.380
Oral	72 (94.7)	68 (97.1)		
Parenteral	4 (5.3)	2 (2.9)		
<b>Gender</b>			3.14	.050
Male	48 (63.2)	34 (48.6)		
Female	28 (36.8)	36 (51.4)		

Haloperidol equivalent doses of different antipsychotic drugs<sup>9,10</sup> were calculated and independent sample t-test were performed between patients with SD and without SD groups. T-test results showed that dose of the antipsychotic, duration of illness, duration of current treatment and age of the patient differ across both groups and increase in dose, duration of psychotic illness, duration of current treatment and age of the patient significantly increased the risk of having SD (Table 3). Patients with SD, were receiving a haloperidol equivalent mean±SD dose of 9.7±7.7mg.

**Table 3: Independent sample t-test for dose of drug, duration of illness, duration of current treatment, age between SD and non-SD groups (N=146)**

	t	df	P
Haloperidol Equivalent dose (mg)	15.152	145	.001
Duration of illness (year)	14.706	145	.001
Duration of current treatment (year)	8.212	145	.001
Age of the patient (year)	39.54	145	.001

**Discussion**

Nazareth reported that prevalence of SD in the general population is 31%.<sup>8</sup> In comparison to the general population, this study found patients on antipsychotic medications had a higher prevalence of SD (52.1% vs. 31%). Male patients complaining about SD had higher prevalence than females. Apart from higher prevalence in males, previous studies also found equal or lower prevalence in males.<sup>11,12</sup> The reason behind comparatively

low female SD could be cultural values like conservative attitude, lack of sex education and reluctance to divulge to male researchers.

Among the patients, 94.7% reported that the desire part of their sexual performance was affected after antipsychotic therapy. This finding suggests the role of dopamine blockade in motivational function along with other neurohormonal mechanisms that precipitate dysfunction of desire, arousal and orgasm in patients. Pertaining to phase-specific SD, decreased libido has often been associated with the inhibition of motivation and reward and hyperprolactinemia, both of which could be linked to the dopamine receptor antagonism.<sup>3</sup> Impaired arousal and orgasm have been linked to hyperprolactinemia, sedation and reduced peripheral vasodilatation, which in turn, seem to be associated with dopamine D2 receptor antagonism, histamine receptor antagonism, cholinergic and alpha-adrenergic antagonism.<sup>13</sup>

Overall study finding suggests risperidone, followed by first-generation antipsychotics and finally other second-generation antipsychotics was the lineup for increased to decreased tendency of causing SD. Bearing this in mind, it is not surprising that SD rates are usually higher in patients treated with drugs associated with a strong D2 receptor antagonism and with a higher likelihood of inducing hyperprolactinemia such as in haloperidol, trifluoperazine and risperidone compared with other drugs such as olanzapine, aripiprazole, quetiapine and ziprasidone. In addition, the notion that drugs such as ziprasidone, olanzapine and quetiapine, which act as antagonists of the 5HT2c receptors, are less likely to induce SD.<sup>14</sup>

Frequency of SD increased as the dose of the antipsychotic drugs, duration of illness, duration of current treatment and age of the patients increased. Bobes et al. reported that the adverse effects of antipsychotics mainly occur in the long-term treatment and suggested that if the symptoms are not fully controlled in short time, the psychotic disease itself could cause sexual dysfunction, particularly decreased libido.<sup>15</sup> Mosaku et al. explained in his study that the duration of medication use is also significantly associated with orgasmic functions, sexual desires and overall sexual satisfaction.<sup>16</sup> Bitter et al. found that the rate of sexual dysfunction is highest between 3 to 6 months of treatment duration with antipsychotic medication and demonstrated that haloperidol is attributed to higher rates of sexual dysfunction in patients in acute phases and for long term treatment, a high rate of sexual dysfunction is detected in those patients taking risperidone.<sup>17</sup>

When considering effect of mono and dual therapy of antipsychotics in causing SD, it was found that use of multiple antipsychotic drugs did not significantly increase the risk of SD. This finding was contrary to the common sense assumption that multiple drugs would further increase SD. The reason behind this finding could be that using two drugs at lower doses decreased drug specific side effects, thus also SD. Another explanation could be that commonly a first and a second-generation combination were in use; adding a second-generation antipsychotic decreased risk of SD. Gallego found that switching to or adding a second generation antipsychotic to other

antipsychotics were associated with a marked improvement in overall sexual functioning, a decrease in erectile and ejaculatory difficulties in men and a reduction in menstrual dysfunction in women.<sup>18</sup> It was found that long-acting depot preparations had similar sexual side effect profile as oral antipsychotics. However, number of patients receiving long-acting injections were small, so this finding needs further evaluation.

### Conclusions

The cross-sectional design of the study limits the strength of the causal relationship. Also, the long treatment duration with the antipsychotics might be associated with a survival bias, i.e. patients who exhibited more severe forms of sexual dysfunction were more prone to discontinue their treatment and therefore were not captured in the study. Despite these limitations, this study helped to conclude that sexual side effects were common in patients taking antipsychotics, especially first generation antipsychotics. So antipsychotics should be carefully chosen to ensure compliance. Larger studies are required for in-depth analysis of the sexual side effects of antipsychotic medication.

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# Sociodemographic characteristics and referral pattern of the patients who have undergone CT scan at National Institute of Mental Health & Hospital, Dhaka

Farjana Akhter, Farjana Rahman, Mahbuba Ahmed, Borhan Uddin, Nasrin Akhter, Mohammad Tariqul Alam

## Abstract

**Background:** Sociodemographic status and utilization of diagnostic healthcare facilities are important parameters to consider to ensure equitable distribution of healthcare services.

**Objectives:** To assess the sociodemographic characteristics and referral pattern of the patients who have undergone CT scan at National Institute of Mental Health & Hospital (NIMH), Dhaka.

**Methods:** This observational study was carried out during the period of March 2019 to September 2019 and 475 clients were consecutively enrolled. Sociodemographic and relevant data were collected by a semi-structured questionnaire.

**Results:** Mean age of the participants was  $40.3 \pm 16$  years; 42.5% of them were female and 57.5% male. For majority of them requests were for the brain CT scan (47.6%) followed by CT KUB (23.8%), whole abdomen (19%) and CT urogram (9.5%). Among the referred patients, 50.1% were referred from NIMH, 42.5% were referred from NIKDU, 4.8% were directly referred from physicians and 2.5% were referred from BSMMU. Patients came from urban locality were 47.5% whereas 52.4% patients were from rural areas. Majority of the patients were married (77.4%). More than half of the patients (60%) were not involved with any sort of income generation.

**Conclusions:** This study depicts some of the important sociodemographic contents of the patients undergoing CT scan along with the referral pattern, which requires further research and monitoring to obtain better understanding about the current utilization pattern of CT scanning.

**Declaration of interest:** None

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**Keywords:** CT scan; referral pattern

## Introduction

In today's world imaging technology is one of the most important diagnostic approaches involved in the process of treatment and following up the prognosis. The modern imaging technologies are constantly supplanting the older ones. One of the most utilized modern imaging techniques is computed tomography scan (CT scan). CT scan is a radiation based noninvasive diagnostic imaging technique, that uses computer processed combinations of ionizing radiation of X-rays, directed from multiple angles to produce a cross-sectional images of the body, allowing for to perceive the tissue and organs of the body based on their ability to absorb the X-ray beam.<sup>1,3</sup> Since the beginning of its medical utilization from the early 1970, it has remained a popular method of choice in the diagnostic field because of its enhanced aptitude of distinguishing tissues and organs.<sup>4</sup> CT

scan has been used to differentiate abnormal body mass and pathological alterations, also, it is widely used for the screening of various diseases.<sup>5</sup>

While modern diagnostic technologies have made it faster and easier to depict the underlying pathological etiology thus improved the quality of healthcare obtainability, alongside it has also increased the healthcare expenditure and posed as a challenge for developing countries like ours where resources are limited.<sup>2,6,7</sup> Sociodemographic disparities in obtaining health care provision is well recognized across all over the world and apparent among all groups.<sup>4,8</sup> Moreover, people with low socio-economic background have shown more episodes of hospital consultation and diagnostic and medical procedures utilization.<sup>4,9</sup> Extensive evaluation of the distribution and utilization of these high-tech and expensive diagnostic procedures

like CT scan, is required to ensure adequate dissemination of healthcare resource allocation, which have not been sufficiently studied in our country. Therefore, the present study has aimed to evaluate the sociodemographic characteristics and referral pattern of the patients who have undergone CT scan at a tertiary level hospital in Dhaka city where patients come from all over Bangladesh and to provide insight about the current situation which will guide to carry out further future assessment on this area to find out the scopes of improvement and intervention.

**Methods**

It was a descriptive type of observational study conducted in the Department of Radiology and Imaging of National Institute of Mental Health & Hospital (NIMH) during the period of March 2019 to September 2019. During this period, all the radiology request forms, referred to the respective department were checked and 475 consecutive forms requesting for CT scan had been evaluated for the study purpose.

Data regarding sociodemographic background including, age, sex, occupational status, marital status and residency had been recorded. The referring sources were divided into 4 groups, National Institute of Mental Health & Hospital (NIMH), National Institute of Kidney Diseases & Urology (NIKDU), Bangabandhu Sheikh Mujib Medical University (BSMMU) and individual physicians. The requested CT scans were divided into 4 groups, CT scan of brain, CT scan of whole abdomen (CT-W/A), CT scan of kidneys and bladder (CT-KUB) and CT urogram. All statistical analyses were carried out using the SPSS (Statistical Package for the Social Sciences) version 25 software. Data are presented as frequency and percentages for categorical data and mean and standard deviation for continuous data.

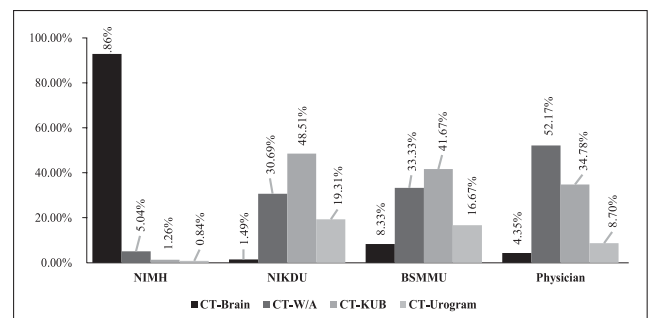
**Results**

Among the 475 participants of the study, CT scan of the brain was requested by 226 (47.5%) patients, CT scan of the whole abdomen by 90 (18.9%) patients, CT-KUB by 114 (24%) patients and CT urogram by 45 (9.4%) patients. Patients who were from the NIMH was highest in fraction (50.1%), followed by NIKDU (42.5%), then directly referred from physicians (4.8%) and BSMMU (2.5%). The mean age of the study participants was 40.3 ±16 years and the age range were between 15 to 77 years. The age distribution of the patients showed that, 95 (20%) patients were aged 25 years or below, 131 (27.5%) patients were aged between 26 to 35 years, 95 (20%) patients aged between 36 to 45 years, 71 (15%) patients were aged between 46 to 55 years and 83 (17.5%) patients were aged 56 years or above. Among them 274 (57.6%) participants were male and 201 (42.3%) participants were female. Residence wise 226 (47.5%) patients came from urban areas whereas 249 (52.42%) patients from rural areas. Majority of the patients were married (77.4%). More than half of the patients (60%) were not involved in any sort of income generation activity, among them 29.8% patients were housewives, 12.6% patients were students and 17.4% were unemployed (Table 1).

**Table 1: Types of CT scan and sociodemographic characteristics of the patients (N=475)**

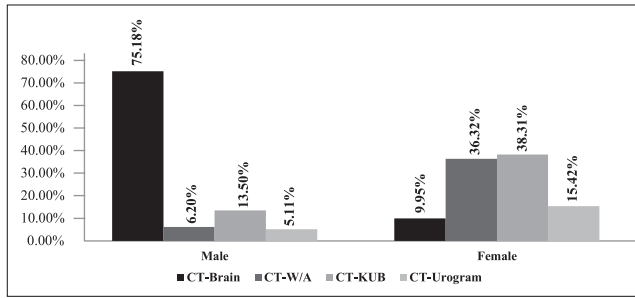
Characteristic		Frequency (n)	Percentage (%)
Type of CT scan	Brain	226	47.5
	W/A	90	18.9
	KUB	114	24
	Urogram	45	9.4
Referred from	NIMH	238	50.1
	NIKDU	202	42.5
	BSMMU	12	2.5
	Physician	23	4.8
Age (year)	≤25	95	20
	26-35	131	27.5
	36-45	95	20
	46-55	71	15
	≥56	83	17.5
Gender distribution	Male	274	57.6
	Female	201	42.3
Residency	Urban	226	47.5
	Rural	249	52.4
Occupational status	Service holder	36	7.5
	Business	59	12.4
	Labor job	83	17.4
	Garments worker	12	2.5
	Housewife	142	29.8
	Unemployed	83	17.4
	Student	60	12.6
Marital status	Unmarried	107	22.5
	Married	368	77.4

**Figure 1: Types of CT scans requested according to their source of referral (N=475)**



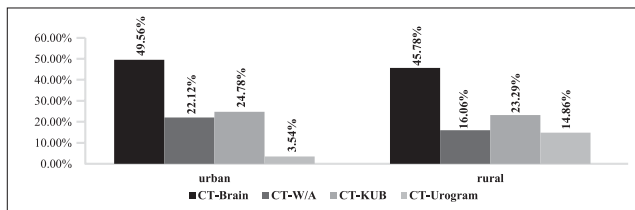
Distribution of requests for CT scans showed that, 92.8% of the scans from NIMH were for brain CT scans. Patients who were referred from NIKDU and BSMMU, requested for CT-KUB in highest proportion (48.5% and 41.6% respectively). Patients directly referred from physicians had requested for CT of whole abdomen in highest proportion (52.1%) (Figure 1). The male patients requested the highest number for brain CT scans (75.1%) and the female patients mostly requested CT-KUB (38.3%) (Figure 2).

**Figure 2: Gender wise requests for CT scans (N=475)**



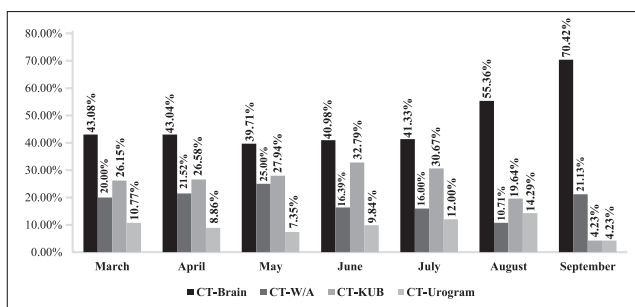
The distribution of the request for CT scans was similar between patients from urban and rural areas. While brain CT scan was the highest in proportion (urban-49.5%, rural-45.7%), CT urogram was the least requested CT scan among them (urban-3.5%, rural- 14.8%) (Figure 3).

**Figure 3: Types of CT scan according to the residence status of the patients (N=475)**



It was observed that, the monthly proportion of types of CT scan was almost similar in each month with the mean of 67.8±11.2 CT scans per month, the highest number of scans were done in the month of April (16.6%) during this study period (Figure 4). The distribution of the request for CT scans was also similar between patients who were married versus who were unmarried. While brain CT scan was the highest in proportion (married-70%, unmarried- 41%), CT urogram was the least requested CT scan among them (married- 5.6%, unmarried- 10.6%).

**Figure 4: Monthly pattern of CT scan requests (N=475)**



**Discussion**

The NIMH is a tertiary level psychiatric specialized hospital, equipped with all available facilities in its inpatient and outpatient departments and has standard diagnostic protocols. The standard maintenance system along with reasonable diagnostic and treatment costs, attracts lots of patients from all over the country to take services from here. CT scan is one of the most utilized diagnostic procedures here, thus reasonably can portray the national and community level utilization of this

diagnostic tool which is important to demonstrate the utilization pattern of this procedure. Sociodemographic background is an important determinant of availing healthcare provision, thus requires routine monitoring of the utilization pattern of the diagnostic facilities.

During the study period, a total 475 referrals were made by various institutions including the NIMH itself. Among them brain CT scan was highest in proportion (47.5%) and the scans requested from NIMH were half of the overall requests; 92.8% scan requests from NIMH were for brain CT scans. Thus, in this study the proportion of brain CT scan was the highest. Studies on impact of sociodemographic variability on CT scan in developed country showed that, head and neck CT scans are the most commonly done scans which corresponds with our study findings.<sup>4</sup>

The mean age of the patients was 40.3±16 years and most of the patients (27.5%) were from the age group of 26 to 35 years. In this study, patients who came from rural areas were more (52.4%) than the patients from urban areas (47.5%) and distribution of the requests for CT scans was similar between patients of urban and rural areas. Similar to our findings, a study in Northern England suggests that, young patients from more disadvantaged areas tend to undergo more CT scans.<sup>4</sup> The current study observed that female patients used the diagnostic CT scan 15.3% less often than male patients. While brain CT scans were highest in proportion (75.1%) among male patients, CT-KUB regions were highest (38.3%) among females. Gender inequality in healthcare utilization is observed all over the world and to some extent it explained our study findings.<sup>10,11</sup> Majority of the patients were married during the time of the study (77.4%), however both married and unmarried groups of patients had requested similar types of CT scans. One finding of this study was that, more than half of the patients (60%) were not involved in any sorts of income generation activities which tells that the burden of healthcare expenditure was on the family members. With the mean of 67.8±11.2 CT scans per month, the highest number of scans were done in the month of April (16.63%) during this study.

**Conclusions**

With the advancement of CT scanning technology, accurate diagnosis and monitoring of prognosis is now serving as an essential and occasionally lifesaving diagnostic tool. New clinical implications of CT scan are being identified, which is also expanding the healthcare expenditure. Extensive studies are required to ensure healthcare facilities for patients from all sociodemographic levels. This study observes some of the contents of sociodemographic profile of patients who underwent CT scan in one of the tertiary level public hospital in Dhaka city and concludes that further detailed data and large-scale study will aid in the evaluation of utilization and referral pattern of the utilization of CT scanning.

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# Patterns of health care utilization among substance abusers living in Dhaka city

Atiqul Haq Mazumder, Sadya Tarannum, Md. Abdullah Al Mamun, A. D. M. Rifat Chowdhury, Farjana Akhter, Surajit Kumar Talukder

## Abstract

**Background:** Substance abuse is becoming a grievous problem among young generation and it takes time and substantial amount of money for treatment of drug addiction.

**Objectives:** To explore the patterns of service use among substance abusers living in Dhaka city.

**Methods:** The study population included 36 parents and 48 recovering addicts selected from Dhaka city using a random table. Data were collected through face-to-face interview using a semi-structured questionnaire.

**Results:** Half of the recovering users were on their thirties or forties. Two-third of the addicts used methamphetamine. Most of them had been addicted for 6 to 20 years. Cost of counseling was within 20000 BDT for half of them and from 20001 to 40000 BDT for one-third of them. Cost for treatment was within 20001 to 40000 BDT for half of them and within 20000 BDT for one-fourth of them. It took 2 to 5 years for complete recovery for more than half of the recovery addicts.

**Conclusions:** Substance abusers invest considerable time and money for counseling purpose.

**Declaration of interest:** The work was supported by the Access to Information (a2i) innovation fund of the government of Bangladesh for the project Ashokti Mukti. The Principal author was supported by the Marie Skłodowska-Curie Action co-funding of regional, national, and international programs.

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**Keywords:** Time, cost and visits; substance abuse; health care utilization

## Introduction

In recent years, substance use has significantly increased in the whole world, especially in the South Asian countries like Bangladesh. The National Institute of Mental Health (NIMH) have recently revealed that in Bangladesh, there are more than 7 million people who have some sorts of substance related disorders.<sup>1</sup>

As substance use is a curable chronic relapsing brain disorder,<sup>2</sup> it is not possible to solve the problem solely by creating awareness<sup>3</sup> or by taking steps for the people who are already dependent. When a person is dependent on substance, in most cases it is not possible for his family to continue the process of treatment as it is a lengthy and expensive process. Also, the caregivers or family members of the dependent person cannot directly detect whether their nearest person is addicted or not. To address these problems, we tried to explore the patterns of health care utilization by focusing on the time, cost and number of visits of the patients regarding the treatment procedure.

## Methods

It was a cross-sectional study and 50 recovering substance

users and their parents were approached for the study. They were living in Dhaka city of Bangladesh. All recovering substance users received traditional health services during their recovery processes. They were traced and contacted over telephone using the patient register of a psychiatric facility in Dhaka and were invited to participate in an interview. The agreed respondents were visited by the data collectors at their own places for interview. Data were collected through a semi-structured questionnaire with face-to-face interview by honors final year students of the Department of Statistics of Dhaka University, Bangladesh and the team was headed by a statistician from Bangladesh Bureau of Statistics (BBS). They were trained in a workshop by the chief investigator prior to data collection. There was no intervention by the investigators during data collection procedure. The questionnaire was in English but translated and elaborated in Bengali during the interview process by the interviewers. Following data collection, information has been classified on the basis of their characteristics and the entire data have been analyzed through SPSS 18. Twelve parents and 2 recovery addicts had missing information on education and 2 parents withdrew themselves from the study.

Final data analysis was done on 48 recovering substance users and 36 parents.

**Table 1: Sociodemographic characteristics of participants**

	Parents (n=36)	Recovering users (n=48)
<b>Age (year)</b>		
≤20	3	4
21 – 30	17	23
31 – 40	17	44
>40	63	29
<b>Education</b>		
No institutional education	3	2
Primary	11	4
Secondary	8	13
SSC/equivalent	19	6
HSC/equivalent	42	35
Honours/equivalent	9	27
Masters/equivalent	8	10
Diploma	-	3
<b>Occupation</b>		
Lawyer	3	-
Agriculture	8	-
Service holder	14	34
Housewife	36	-
Businessman	36	49
Student	3	11
Unemployed	-	6

**Results**

Two-third of the parents were aged more than 40 years and about half of the recovering substance users aged between 31 to 40 years. Two-fifth of the parents and one-third of the recovering users had HSC or equivalent education. Among parents, one-third were housewife, one-third businessman and among recovering users, half were businessman and one-third service holder. According to the parents, most common (60%) reason for substance use was friendship with other substance users; two-third of the cases were detected at home and four-fifth of the addicted persons were taken for counseling.

**Table 2: Drug addiction related information (n=48)**

Substance abuse related information	Percentage of the recovering substance users (%)
<b>Types of drugs respondents were addicted to*</b>	
Methamphetamine	71
Marijuana	54
Codeine	38
Heroin	27
Injections	6
Sleeping pills	4
Synthetic drugs	4
Others	4

Substance abuse related information	Percentage of the recovering substance users (%)
<b>Duration of drug addiction (year)</b>	
≤5	21
6-10	31
11-20	33
>20	15
<b>Reasons behind drug addiction*</b>	
Got habituated	60
Out of curiosity	45
Provocation of friends/ relatives	20
Depression	15
<b>Encouraged by friends/acquaintances/ relatives/ others for having drugs</b>	
Yes	62
No	38
<b>Having awareness about the side effects of drugs</b>	
Yes	42
No	58
<b>Side effects of drugs faced by respondents*</b>	
Weakness	67
Loss of appetite	49
Pain	49
Sleeplessness	46
Dizziness	33
Vomiting	15
Others	5
<b>Means of forsaking drugs</b>	
Going to rehabilitation centers	58
Direct counseling from doctors	38
Both	4

\* The sum would not necessarily be 100% because of multiple responses

Two-third of the recovery addicts used to take amphetamine, half of them marijuana and, every third of them codeine and heroin. One-third of them had been addicted for 11 to 20 years and one third for 6 to 10 years. Two-fifth of the addicts continued drugs because of habituation. Two-fifth of them were encouraged by others for having drugs. Two-fifth of the recovery addicts were aware of the side effects of drugs and mostly faced side effect was weakness followed by loss of appetite, pain and sleep disturbances. Three-fifth of them went to rehabilitation centers and two fifth went to doctors for counseling (Table 2). For instructional information, about one-third of the parents had to cover less than 5 km and one-third more than 40 km. For counseling, one-third had to cover more than 40 km. It took 1 to 5 hours to go for instructional information by half of them and the same time to go for counseling by two-third of them. Cost for getting instructional information was within 1000 BDT for two-third of them and within 20000 BDT for two-fifth of them. Cost for counseling was within 20000 BDT for two-fifth of them and more than 50000 BDT for two-fifth of them. Three-fifth of them visited once instructional information and two third visited 4 or more times for counseling. One-third of the recovery addicts had counseling for 1 to 2 hours and one-fourth of them for 2 to 3 hours. Cost of counseling was within 20000 BDT for half of them and from 20001 to 40000 BDT for one-third of them. Half of

them required 3 to 5 visits and one-third required 6 to 10 visits for counseling. Duration of treatment in rehabilitation center was within 5 years for most (85%) of them and cost for treatment was within 20001 to 40000 BDT for half of them and within 20000 BDT for one-fourth of them. It took 2 to 5 years for complete recovery for more than half of the recovery addicts (Table 3).

**Table 3: Time, cost and number of visits related information of recovering users**

Treatment related information	Percentage of recovering substance users (%)
<b>Duration of counseling (hour)</b>	
≤ 1	13
1–2	30
2–3	26
3–4	17
>4	14
<b>Cost of counseling (BDT)</b>	
<20,000	50
20,001–40,000	36
>40,000	14
<b>Number of visits required for counseling</b>	
1-2	8
3-5	54
6-10	27
>10	11
<b>Duration of taking treatment in rehabilitation centers (year)</b>	
≤ 5	86
5-10	7
>10	7
<b>Cost of taking treatment in rehabilitation centers (BDT)</b>	
<20,000	26
20,001–40,000	46
40,001–80,000	20
>80,000	8
<b>Time taken for complete recovery (year)</b>	
≤2	12
2-5	53
5	14
≤5	21

To recover from drug addiction both the parents and recovery addicts have suggested that there is need to ensure the restraint from drug supply, increase publicity of the harmfulness of drugs, engage youths in social works and sports, increase familial responsibilities, take government initiatives, take institutional initiatives, admit in rehabilitation center, counseling addicted person and so on. There is also need for development an online based platform where people can easily find or get information about the negative sides of the drug, get information of medical services to get rid of drugs, get information about the rehabilitation center and about counseling. If the addicted person or their parents need to check rehabilitation center or counseling or any other drug addicted medical treatment, they can easily find them and take initiative to get rid of drug addiction.

### Conclusions

Many people in Bangladesh cannot afford the cost of taking treatment of drug addiction and it takes extra time for multiple visits for the recovery process. It is possible through a mobile and web-based application to successfully detect and manage drug addiction saving the time, cost as well as the number of visits of the parents along with their nearest addicted persons. During COVID-19 pandemic situation this would motivate people to take measures against drug addiction.

### Acknowledgements

The authors are grateful to the participants and the staffs conducting interviews. They are also grateful to Access to Information (a2i) Programme to approve Ashokti Mukti project and ensure their every type of logistic and technical cooperation to conduct the baseline survey. We are also thankful to UNDP and USAID for their continuous support to complete this study in Dhaka district. ysthymic disorder (33.3%).

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# Estimates of the extent of depression among doctors: associated factors and in-depth analysis

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## Abstract

**Background:** Depression is a common mental illness worldwide. More than 264 million people are facing its devastating consequences. It is more common among doctors than the general population. Physicians are vulnerable to depression, because of their exposure to high levels of occupational stress and work load, which plays a devastating consequence over the quality of health care systems, making more medical errors and decline their professional performance. The majority of the physicians are unaware of their mental sickness and reluctant to seek mental health treatment due to fear of social stigma and failure to find reliable and trustful health care provider. As a result, the incidence of suicidal tendency has increased among physicians. Therefore, the psychological well-being of physicians is mandatory for the general population.

**Objectives:** To estimate the extent of depression among doctors who responded to an online based survey and to correlate it with their demographic characteristics.

**Methods:** A cross-sectional study in the form of online based survey was conducted among doctors who were working in different hospitals (both government and private) in Bangladesh, from June 2019 to December 2019. A preformed questionnaire was sent to the doctors through internet with Standardized PHQ-9 inventory. Demographic characteristics of the participants were recorded as independent variables; depression scores being outcome variables. Data analysis was done via SPSS-23.

**Results:** During the study period 502 doctors agreed to participate and filled up the online form. Minimal depression was present in 3.1%, mild in 5.5%, moderate in 32.5%, moderately severe in 27.2% and severe depression in 31.8% of the respondent doctors. Around 39 (8.6%) had none or only mild depression. Association between sex and PHQ-9 depression stages was significant ( $\chi^2=21.30, p<0.001$ ). Males were less likely to be depressed than females. Association with place of job, physical assault and PHQ-9 depression stages were significant but association between age categories and depression stages determined by PHQ-9 scoring was not significant. Similarly, marital status, having children and distance of work place, living with family did not show significant association with depression.

**Conclusions:** The prevalence of depression is high among the doctors of Bangladesh. They must be promptly screened and managed at all medical institutions.

**Declaration of interest:** None

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**Keywords:** Health care professional; physician; developing countries; psychological stress

## Introduction

Depression is a common mental illness worldwide. More than 264 million people are facing its devastating consequences.<sup>1</sup> Globally, the burden of depression is increasing, it will be the second leading contributor to the global burden of disease by 2030.<sup>2</sup> Estimated global prevalence of depression varies from 3.2% to 4.7%.<sup>3,4</sup> Depression is more common in doctors<sup>5,6</sup> than the general population worldwide. Recent meta-analyses of

global studies estimated an overall prevalence of depression to be 29% in registrars and up to 60% in practicing doctors.<sup>7</sup> These figures differ widely between countries and specialties because of the use of different tools for diagnosing depression. For instance, a Cape Town study using a self-administered Beck's Depression Inventory revealed depression in 30% of public primary health care doctors,<sup>8</sup> while an Australian study<sup>4</sup> found that 18% of medical students and 21% of doctors had previously

been diagnosed with depression.<sup>7</sup> In USA, prevalence of depression or depressive symptoms (15–43.2%) is significantly higher in medical students and registrars/residents than in the general population.<sup>9</sup> Another study documented a high prevalence of anxiety and depression among family practitioners in Karachi.<sup>2</sup> Using Aga Khan University Anxiety and Depression Scale (AKUADS), it was found that 155 (39%) family practitioners had anxiety and depression.<sup>10</sup> The prevalence of depression among physicians is significantly higher in Indian resident doctors, average prevalence of depression being 27.71%.<sup>11</sup> Physicians are vulnerable to depression, because of their exposure to high levels of occupational stress and work load, which plays a devastating consequence over the quality of health care systems and make more medical errors and decline the professional performance.<sup>6</sup> Therefore, psychological well-being of physicians is mandatory for general population and researchers are interested to find out the prevalence of depression and factors influencing depression in physicians. The majority of the physicians are unaware of their mental sickness and reluctant to seek mental health treatment due to fear of social stigma and failed to find reliable and trustful health care provider. As a result the incidence of suicidal tendency has increased day by day among physicians.<sup>6</sup> Prevalence of depressive disorders in Bangladeshi adult population is 6.7 (5.8-7.6%).<sup>12</sup> But only few data is available to see the prevalence of depression in working doctors. One study was conducted at the Department of Psychiatry of Bangabandhu Sheikh Mujib Medical University, Bangladesh, found 11.5% of the residents had depressive disorders, 11% had anxiety disorders and 10.5% had stress disorders.<sup>13</sup> Another study showed mild to moderate depression in 40.8% of undergraduate medical students.<sup>14</sup> This study was anticipated to reveal yielding results in estimating the extent of depression among doctors serving in hospitals in Bangladesh, with considerable analysis of the contributory factors.

### Methods

A cross-sectional, non-interventional study was conducted from June 2019 to December 2019 among 502 doctors. The sample size was calculated using Cochran's formula and the current prevalence of depression among adults in Bangladesh was used. To estimate the extent of depression, PHQ-9 was used. The Patient Health Questionnaire (PHQ) is a self-report version of the Primary Care Evaluation of Mental Disorders (PRIME-MD) diagnostic tool for common mental disorders. The PHQ-9 is a brief, 9-item scale that includes only the depression-related items from the PHQ. The preformed questionnaire was provided to the doctors who were active in social media and working all over the country. Participation in the study was completely voluntary. Househ M found that 90% of the doctors use some forms of social media.<sup>15</sup> All doctors who replied were included in the study. Those who did not return their answer through internet after more than 7 days of distribution were excluded from the study. A semi-structured pro-forma containing sociodemographic data including the basic information such as age, sex, marital status, postgraduate branch, accommodation,

working environment, history of threat and physical assault were included. Ethical approval was taken from Dhaka Medical College. Participants were informed that they could pull out the study at any time if they wanted. Statistical analysis was performed using SPSS. Chi-square test was applied to examine the association of depression, with demographic characteristics as well as postgraduate training-related factors and personal factors.  $P < 0.05$  was considered to be statistically significant.

### Results:

Prevalence of depression according to grading showed minimal depression in 3.1%, mild in 5.5%, moderate in 32.5%, moderately severe in 27.2% and severe depression in 31.8% respondents. Among the doctors, 414 (91.4%) were suffering from at least moderate level of depression, and 144 (31.8%) were suffering from severe depression. Only 49 (9.8%) had no depression.

**Table 1: PHQ-9 depression score among the participants (N=502)**

PHQ-9 depression score	Frequency (n)	Percentage (%)
Minimal	14	3.1
Mild	25	5.5
Moderate	147	32.5
Moderately severe	123	27.2
Severe	144	31.8
Moderate depression	414	91.4
No depression	49	9.8

Most of 502 respondents were in 25-34 years age group (92.1%), followed by 35-44 years age group being the second largest one. Association between age categories and depression stages determined by PHQ-9 scoring was not significant ( $\chi^2=5.65$ ,  $p=0.685$ ). Similarly, marital status ( $\chi^2=6.58$ ,  $p=0.582$ ), having children ( $\chi^2=1.22$ ,  $p=0.875$ ), distance from work place ( $\chi^2=9.05$ ,  $p=0.06$ ) and living with family ( $\chi^2=6.53$ ,  $p=0.162$ ) did not show any significant association with depression. Out of 451 respondents, 53.2% respondents were females and 46.8% (211) were males. Males were 0.655 times less likely to be moderately depressed than females (OR = 0.65, CI = 0.33-1.27).

**Table 2: Association between demographic characteristics and depression scores of the participants (N=502)**

	Total N (%)	Minimal n (%)	Mild n (%)	Moderate n (%)	Moderately severe n (%)	Severe n (%)	P
<b>Age (year)</b>							
25-34	423 (93.4)	14 (3.1)	25 (5.5)	137 (30.2)	113 (24.9)	134 (29.6)	0.685
35-44	29 (6.4)	-	-	10 (2.2)	9 (2)	10 (2.2)	
45-54	1 (0.2)	-	-	-	1 (0.2)	-	
<b>Sex</b>							
Male	211 (46.8)	6 (1.3)	16 (3.5)	88 (19.5)	45 (10)	56 (12.4)	0.001
Female	240 (53.2)	8 (1.8)	9 (2)	59 (13.1)	77 (17.1)	87 (19.3)	
<b>Marital status</b>							
Divorced	5 (1.1)	-	-	-	3 (0.7)	2 (0.4)	0.582
Married	265 (58.8)	11 (2.4)	15 (3.3)	88 (19.5)	69 (15.3)	82 (18.2)	
Unmarried	181 (40.1)	3 (0.7)	10 (2.2)	59 (13.1)	50 (11.1)	59 (13.1)	
<b>Having children</b>							
	117 (26.1)	4 (0.9)	4 (0.9)	33 (7.3)	38 (8.5)	38 (8.5)	0.875
<b>Live near work</b>							
	257 (57.2)	8 (1.8)	20 (4.5)	91 (20.3)	65 (14.5)	73 (16.3)	0.060

Overall, out of 468 respondents, almost three-fourth (76.9%) were in government service (including government residents) followed by nearly one-fifth (16.7%) in private service. There was no significant association of job status with depression, ( $\chi^2=16.39$ ,  $p=0.174$ ) (Table 3).

**Table 3: Association between job status and depression severity of the respondents (N=468)**

Type of employer	Total N (%)	Minimal n (%)	Mild n (%)	Moderate n (%)	Moderately severe n (%)	Severe n (%)	P
Government	327 (76.9)	12 (2.8)	21 (4.9)	117 (27.5)	81 (19.1)	96 (22.6)	0.174
Intern doctor	19 (4.5)	-	-	3 (0.7)	7 (1.6)	9 (2.1)	
Private hospital	71 (16.7)	2 (0.5)	2 (0.5)	19 (4.5)	23 (5.4)	25 (5.9)	

Out of total 451 respondents, 56.8% respondents mentioned that they were at least sometimes afraid while doing their job, followed by 20.4% respondents who reported being afraid often. While 48 10.6% respondents were always afraid, and 12.2% respondents were never afraid ( $\chi^2=48.05$ ,  $p<0.001$ ). Risk estimates could not be determined. Out of total 446 respondents, 37.7% respondents had been threatened during duty at least for once. The association was significant ( $\chi^2=12.45$ ,  $p=0.014$ ), (OR=1.36, CI=0.62-2.84). Out of 447 respondents, 72 (16.1%) had been assaulted during duty and the association with depression was significant ( $\chi^2=16.41$ ,  $p=0.003$ ) (Table 4).

**Table 4: Association between job experience and depression severity of the respondents (n=446)**

	Total N (%)	Minimal n (%)	Mild n (%)	Moderate n (%)	Moderately severe n (%)	Severe n (%)	P
<b>Afraid while in duty</b>							
Always	48 (10.6)	1 (0.2)	-	10 (2.2)	12 (2.7)	25 (5.5)	0.000
Never	55 (12.2)	4 (0.9)	9 (2)	21 (4.7)	15 (3.3)	6 (1.3)	
Often	92 (20.4)	2 (0.4)	4 (0.9)	23 (5.1)	20 (4.4)	43 (9.5)	
Sometime	256 (56.8)	7 (1.6)	12 (2.7)	93 (20.6)	76 (16.9)	68 (15.1)	
<b>Ever threatened during duty</b>	168 (37.7)	6 (1.3)	6 (1.3)	52 (11.7)	36 (8.1)	68 (15.2)	0.014
<b>Ever insulted during duty</b>	305 (68.1)	7 (1.6)	14 (3.1)	86 (19.2)	79 (17.6)	119 (26.6)	0.000
<b>Ever assaulted during duty</b>	72 (16.1)	-	1 (0.2)	20 (4.5)	15 (3.4)	36 (8.1)	0.003
<b>Criticized unduly during duty</b>	331 (74.4)	8 (1.8)	14 (3.1)	99 (22.2)	88 (19.8)	122 (27.4)	0.000

Out of 447 respondents, majority of the respondents (89.3%) thought clinical line was more stressful than others. Most of the respondents (59.1%) also thought condition of the living quarters could be better. Among 448 respondents, 54.5% thought that post-graduation hampered personal life and the association was significant, ( $\chi^2= 11.88$ ,  $p=0.018$ ) (Table 5).

**Table 5: Opinion of the respondents about their residence, working environment and personal life (N=447)**

	Total N (%)	Minimal n (%)	Mild n (%)	Moderate n (%)	Moderately severe n (%)	Severe n (%)	P
<b>Residence environment</b>							
Filthy	157 (34.9)	8 (1.8)	5 (1.1)	44 (9.8)	39 (8.7)	61 (13.6)	0.081
Could be better	266 (59.1)	5 (1.1)	19 (4.2)	95 (21.1)	77 (17.1)	70 (15.6)	
Acceptable	27 (6.0)	1 (0.2)	1 (0.2)	8 (1.8)	7 (1.6)	10 (2.2)	
<b>Working environment</b>							
Not ideal	307 (68.5)	8 (1.8)	19 (4.2)	100 (22.3)	88 (19.6)	92 (20.5)	0.000
Ideal	35 (7.8)	3 (0.7)	2 (0.4)	14 (3.1)	9 (2.0)	7 (1.6)	
<b>Personal life affected by profession</b>							
Maybe	124 (27.7)	2 (0.4)	8 (1.8)	43 (9.6)	32 (7.2)	39 (8.7)	0.000
No	75 (16.8)	2 (0.4)	14 (3.1)	33 (7.4)	15 (3.4)	11 (2.5)	
Yes	248 (55.5)	10 (2.2)	3 (0.7)	68 (15.2)	75 (16.8)	92 (20.6)	
<b>Profession causing depression</b>	253 (56.3)	5 (1.1)	5 (1.1)	70 (15.6)	71 (15.8)	102 (22.7)	0.000
<b>Thinks post-graduation hampers personal life</b>	242 (54.5)	6 (1.4)	8 (1.8)	72 (16.2)	66 (14.9)	90 (20.3)	0.018

**Discussion**

In our study, we found that young doctors are severely depressed than any age group. In this age group most of the doctors are struggling to build up their carrier and various factors like job insecurities, urge for post graduations, family disharmony all can contribute to high incidence of depression. In china, one study showed 28.1% had depressive disorder among the 2641 physicians working in public hospitals in Shenzhen in southern China.<sup>16</sup> In India, 22.5% in medical students suffered from depression.<sup>17</sup> Interestingly our findings are higher than prevalence of depression among the general students. In one study conducted in a public university in Bangladesh, showed the prevalence of moderate to extremely severe levels of depression were 52.2%, which is lower than our findings (91.5%).<sup>18</sup> Another study conducted among the general population in Bangladeshi urban people, showed 36.6% of the adolescents reported depressive symptoms, with a greater prevalence among females (42.9%) than males (25.7%).<sup>19</sup> Depression is more common in chronic disease. The chronicity of the disease and economical burdens make people depressed. But our doctors are even more depressed than the diseased populations. An urban hospital-based study reported that, 47% patients with stroke and 54% of cancer patients had depression.<sup>20</sup> Another hospital-based study found that 56.6% of cancer patients suffered from major depressive disorders.<sup>21</sup>

In our study, 53.2 respondents were female in comparison to 46.8% being male. Clearly female respondents were larger in number than the males. Association between sex and PHQ9 depression stages, was significant.<sup>22</sup> Family conditions, marital status, living with family, number of children all have a great impact on human mind. All of the demographic factors failed to show any positive association with depression.

Job security is a predictor for well-being and depression. Job status, salary, working environment, distance from home and working security make job secured. Various studies showed a direct relationship between job insecurity and mental health impairment. A recent study showed men in low job security group showed significantly higher hazard ratios (HRs) for depression (HR 1.27, 95% CI 1.01–1.60).<sup>23</sup> Employees at risk of losing their jobs showed higher levels of perceived depression.<sup>24,25</sup> Job loss and unemployment can trigger the chain of adversity: financial and relational strain, loss of personal control and these can lead to depression and even suicide.<sup>26,27</sup> Type of posting can interfere the various factors of healthy living. Family life, career, children's education and social life are very much dependent on a suitable posting. A private doctor can change job placement easily but it is more difficult for government doctors in Bangladesh. An unfavorable posting can hamper the quality of life of a doctor. In Bangladesh, psychological and physical harassment are commonly reported in the periphery as well as urban hospitals. These unwanted situations create an unsecured work environment and have a negative impact on family and social interactions.

There are established correlations between a high level of occupational stress and a wide range of mental health problems.<sup>28</sup> Recently, several longitudinal studies reported an important role of psychological work stress in developing clinically diagnosed mood disorders. An epidemiological study revealed that work stress can be an independent risk factor for the development of major depressive disorder.<sup>29</sup> The social environment at workplace can predict the prevalence and severity of depression in most occupational groups. But there is lack of social respect towards doctors' community. Violence, threatening, bullying and sexual harassment are not uncommon here. Negative attitudes by public and social media persist here. All of these factors have a negative impact on mental health of health workers. The level of social support can modulate the effect of work stress on depression.<sup>30</sup> Experiencing work-related threats and violence are strong risk factors for both males and females.<sup>30</sup> Working environment is not good enough in Bangladesh due to mismanagement and bureaucratic problems. An unhealthy working environment and lack of professional security have great impact on mental health and ultimately make doctors depressed. Doctors who are afraid of their job environment are more severely depressed than others. Respondents who had been threatened during duty at least for once and assaulted were more depressed. Doctors molested by public is very much common in Bangladesh. Most of the doctors are afraid of their personal security. Various factors related to job security make doctors more depressed.

## Conclusions

To our knowledge, this was the first study to determine depression specifically among the doctors of Bangladesh, as a group. However, the data were collected over internet, with the help of google forms and only the participants who had access to internet and adequate expertise to participate were enrolled. The sensitivity and specificity of PHQ-9 in ONLINE survey are not known. The sampling method was convenient sampling, so bias might be present in various forms, as randomization could not be done. As the study was self-funded by the authors, and obvious unavoidable monetary constraints were present, any proprietary scoring systems could not be employed to screen the participants for depression. The sample size was small compared to the calculated size, which does not allow generalization of the findings. A large number of doctors did not agree to participate in the study even though they were informed about the study procedure, objectives, anonymity of data, and their right to withdraw from the study at any time. Despite these limitations, this study revealed that prevalence of at least moderate level of depression is much high (91.6%) among Bangladeshi doctors. Mainly job-related bad experiences such as, threats, assaults, intimidation, undue interference in executing duties by non-medical entity, undue criticism are mostly associated with development of depression. Among the doctors, 73.3% want to move abroad and leave this country, 53.6% contemplated career switching and 89.3% thought that clinical line is more stressful than any other occupation. A larger-scale study should be undertaken to validate the findings of the present study.

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# Bangla adaptation of HITS (Hurt-Insult-Threaten-Scream): a unisex domestic violence screening tool

Shoebur Reza Choudhury, Fahmida Ferdous, Nayan Ranjan Sarker

## Abstract

**Background:** Domestic violence represents a worldwide public health issue that can result in short and long-term physical and mental health problems. HITS (Hurt-Insult-Threaten-Scream) was designed as a short instrument to determine domestic violence.

**Objectives:** The objective of the study was to adapt the Bangla version of the HITS Scale.

**Methods:** Cultural and linguistic adaptation in Bangla was done by translation, back translation, expert committee review, pretesting and revision of the scale. Then the reliability of the Bangla version of the HITS Scale was determined by employing both the parallel form and test-retest reliability techniques along with measuring Cronbach's alpha for internal consistency. In the parallel form reliability correlation between Bangla and English version was tested by applying the scale on 30 healthy medical professionals. The test-retest reliability of Bangla version of the HITS Scale was tested at two-week time interval. Later the Bangla version of the HITS Scale was applied to 24 participants with self-reported domestic violence and compared with the results of 30 nonclinical healthy medical professional participants.

**Results:** Cronbach's alpha value found was 0.75 which indicates an acceptable level of reliability. For the parallel form reliability, i.e., correlation between Bangla and English version, the Pearson correlation coefficient found was 0.647. In the test-retest reliability score two weeks apart, in the same healthy medical professionals, correlation coefficient was 0.797. The mean HITS scores for healthy medical professionals, (n=30) and the self-identified victims of domestic abuse (n=24) were 7.30 and 14.17, respectively. The difference in these means was found to be statistically significant ( $t=14.4$ ,  $p=.000$ ).

**Conclusions:** Bangla version of the HITS Scale can be a reliable tool to study domestic violence in both male and female subjects and was able to successfully differentiate between clinical and non-clinical populations.

**Declaration of interest:** None

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**Keywords:** Domestic violence; HITS; Bangla HITS.

## Introduction

Domestic violence refers to violence, abuse and intimidation between people who are or have been in an intimate relationship.<sup>1</sup> The perpetrator uses violence to control and dominate the other person. This causes fear, physical harm and psychological harm.<sup>1</sup> It is a chronic and potentially life-threatening condition increasingly cited as a risk factor for adverse physical and mental health outcomes that is both preventable and treatable. In a multi-country study sponsored by the World Health Organization on women health and domestic violence against women, it was found that the lifetime prevalence of domestic violence is estimated to be between 15% and 71% among women,<sup>2</sup> whereas in Bangladesh 53% of married women in Dhaka and 62% in Matlab had experienced domestic violence.<sup>3</sup> In Bangladesh,

another study showed 28.5% of the female garments workers were suffering from domestic violence.<sup>4</sup> While most of these cases were of male partners abusing intimate female partners, more recent research suggests that violence against males is also experienced in bisexual as well as in homosexual relationships.<sup>5</sup>

Domestic violence represents a worldwide public health issue that can result in short and long-term physical and mental health problems. Apart from an increased risk of injury and death, persons who experience domestic violence have an increased probability of developing both short-term and long-term morbidity and adopting negative health behaviour.<sup>6</sup> It has been associated with an increase of psychoactive substance use, anxiety, depression, suicidal tendency and symptoms of post-traumatic

stress disorder (PTSD).<sup>7</sup>

Although domestic violence is an important worldwide problem, it is often not easily recognized by physicians.<sup>8</sup> There are many well-established tools to measure domestic or partner violence but they are usually quite lengthy tools not suitable for rapid screening in clinical settings. HITS (Hurt-Insult-Threaten-Scream) was designed as a short instrument for domestic violence screening that could be easily remembered and administered by family physicians.<sup>8</sup> It is now globally used including China, Saudi Arabia, the Middle East, Africa, Europe, and South and North America. It has also been translated into multiple languages including Mandarin Chinese and Arabic.<sup>8</sup> Another wonder of HITS Scale is that it is also validated in male populations.<sup>9</sup>

HITS consists of the following four screening questions: "Over the last 12 months, how often did your partner: physically hurt you, insult you or talk down to you, threaten you with physical harm, and scream or curse at you?" Patients responded to each of these items with a 5-point frequency format: never, rarely, sometimes, fairly often and frequently. Score values ranged from a minimum of 4 to a maximum of 209 with the cut-off score of 10.5.8 A quite handful of study on domestic violence is reported in Bangladesh but so far in researcher's knowledge, all the studies above were done only on women population. But studies abroad showed males are also suffering a lot from domestic violence.<sup>9</sup> As HITS is also validated for the male population, the properly adapted HITS in Bangla can be a powerful tool to study the issue of domestic violence in both genders.

### Methods

For adaptation of Bangla version of the HITS (Hurt-Insult-Threaten-Scream) Scale, the WHO guideline for the process of translation and adaptation of instruments was followed.<sup>10</sup> The items were translated in Bangla and were judged independently by four judges, who are expert in the field of Psychiatry and Psychology. Each item was then modified and selected on the basis of their agreement. Then the Bangla version was given to two experts in English for back translation without giving the original English scale. Then both the back translation and the original scale were given to an expert to confirm whether the translated version has the conceptual and cultural equivalence. Then a pilot study was done and the final version of the HITS Scale was prepared and tested on the clinically self-identified victims of abuse and non-clinical healthy medical professional participants.

The reliability of the Bangla version of the HITS Scale was determined by employing both the parallel form (translation reliability) and test-retest reliability techniques. The parallel form reliability, i.e., correlation of Bangla and English version was tested by administering the scales on 30 healthy medical professionals, who were fluent both in Bangla and English. This was measured by Pearson's correlation coefficient. The test-retest reliability of Bangla version of the HITS Scale was tested by again applying on them with the time interval of two weeks and measured by Pearson's correlation coefficient. Later we admin

istered the Bangla version of the HITS Scale to 24 clinical participants with self-reports of domestic violence and then compared the result with 30 non-clinical healthy medical professional participants. In this phase, data for male and female were also analyzed separately and student's t test was used for analysis.

### Results:

The age of the participants ranged from 30 to 56, with a mean of 44.77 (SD =7.42). In the later phase of the study 6 (20%) persons with self-reported domestic violence declined to participate. Hence, the data from 24 (80%) subjects were available for comparison. The age of the victims of domestic violence ranged from 21 to 47, with a mean of 34.96 (SD=7.93).

**Table 3: Association between job status and depression severity of the respondents (N=468)**

HITS Bangla score	Correlation coefficient with HITS English score	P
Baseline	.647	.000
	Correlation coefficient with HITS Bangla score	
After 2 weeks	.797	.000

\*\*Correlation is significant at the 0.01 level (2 tailed)

Cronbach's alpha value found was 0.75 which indicates an acceptable level of reliability. In the parallel form reliability i.e., correlation Bangla and English version by using 30 subjects, the Pearson correlation coefficient was 0.647 for the two measures (p=.000) which is a moderate positive correlation (Table 1). In the test-retest reliability for the two measures of HITS score two weeks apart in the same healthy medical professionals, correlation coefficient was 0.797 for the two measures (p=.000) which indicates that scores had strong positive correlation (Table 1). The mean HITS scores for healthy medical professionals (n=30) and the self-identified victims of abuse (n=24) were 7.30 and 14.17, respectively. The difference in these means was found to be statistically significant (t=14.4; p=.000).

In the gender base analysis, the mean HITS scores for healthy male medical professionals (n=17), and the self-identified male victims of abuse (n=8) were 7.41 and 13.63, respectively. The difference in these means was also found to be statistically significant (t=8.97; p=.000). The mean HITS scores for healthy female medical professionals, (n=13) and the self-identified female victims of abuse (n=16) were 7.15 and 14.44, respectively. The difference in these means was found to be statistically significant (t=10.47; p=.000).

In the separate gender base analysis, the mean HITS scores for healthy male medical professionals (n=17) and healthy female medical professionals (n=13) were 7.41 and 7.15, respectively. The difference in these means was not found to be statistically significant (t=0.41; p=.682). In the other gender base analysis, the mean HITS scores for the self-identified male victims of abuse (n=8) and self-identified female victims of abuse (n=16) were 13.63 and 14.44, respectively. The difference in these means were not found to be statistically significant (t=1.02; p=.317).

## Discussion

Cronbach's alpha is a statistic commonly quoted by authors to demonstrate the internal consistency of scale items and Cronbach's alpha value found was 0.75 which indicates an acceptable level of reliability. Parallel form reliability ( $r=.647$ ) and test-retest reliability ( $r=.797$ ) values suggest moderate and strong correlation respectively.

In this study the mean HITS scores for the self-identified victims of abuse ( $n=24$ ) were 14.17, which is similar to the study of Sherin KM et al.<sup>8</sup> where the mean HITS scores for abuse victims were 15.15. In the current study the mean HITS scores for the self-identified male victims of abuse ( $n=8$ ) were 13.63. Similar findings were reported by Shakil A et al.<sup>9</sup> where the mean HITS scores for the self-identified victims of abuse ( $n=17$ ) was 14.71. So, the results of this study suggest that the HITS, without any alteration of its content, can be used in Bengali speaking patients regardless of the partner's gender and can successfully differentiate between non clinical and clinical population.

## Conclusions

Our study was limited by willingness of the subjects to participate in the study, with a resultant decrease in total number of subjects. Despite the low number of subjects in this study, we were able to replicate the results of the research conducted with male and female subjects. So, Bangla version of the HITS Scale can be an effective tool to study domestic violence in both male and female subjects.

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## Hematohidrosis: a mysterious and rare disorder

Anika Ferdous, Fajul Islam, Taiyeb Ibna Zahangir

### Abstract

Hematohidrosis is a mysterious and rare disorder characterized by one or more attacks of spontaneous, bloody sweating from intact surfaces of skin and/or mucous membranes. The exact explanation of this condition is not so clear, but activation of the sympathetic nervous system has been suggested. This is a case report of a 13-year-old girl with recurrent bleeding from right nostril, right ear and right eye for 1.5 months. She was depressed and had an anxious trait before these episodes. She was referred to National Institute of Mental Health as a suspected case of factitious disorder. She was worried about the significance of her symptoms, thinking she might have developed some serious illness. There was complete remission of bleeding with pharmacotherapy and psychotherapy.

**Declaration of interest:** None

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**Keywords:** Hematohidrosis; etiology of hematohidrosis; factitious disorder

### Introduction

Hematohidrosis or hematidrosis is the name given to the clinical phenomenon in which an individual sweats blood. Upon exposure to extreme anxiety, multiple blood vessels that form capillaries around the sweat glands undergo constriction and then dilatation to the point of rupture. Capillaries are tiny blood vessels located throughout tissue. They carry essential nutrients to different parts of the body. Capillaries are also located around the sweat glands. In cases of severe fear or stress, these tiny blood vessels can burst and cause blood to exit the body through the sweat glands. Then the blood goes into the sweat glands, which push it along with sweat to the surface, presenting as droplets of blood mixed with sweat. Blood usually oozes from the forehead, nails, umbilicus, and other skin surfaces. In addition, oozing from mucocutaneous surfaces causing nose bleeds, blood stained tears and vicarious menstruation are common. The episodes may be preceded by intense headache, abdominal pain and are usually self-limiting. In some conditions, the secreted fluid is more dilute and appears to be blood-tinged, while others may have darker bright red secretions resembling blood. While the extent of blood loss generally is minimal, hematidrosis also results in the skin becoming extremely tender and fragile. Hematidrosis generally happens when a person feels intense fear or stress. Someone facing death may have this kind of fear or stress.

### Case Report

A 13-year-old madrasa going girl was brought to the Depart-

ment of Child and Adolescent Psychiatry of National Institute of Mental Health (NIMH), Dhaka with the complaints of recurrent bleeding from right nostril, right ear and right eye for 1.5 months. Few days before the initial episode, she experienced a hypnagogic hallucination in the form of a voice telling her days are over and she is going to die. This was followed by a few days of recurring nightmare with similar theme. Initially the bleeding was from nose, for which they consulted an ENT specialist, who examined her but could not find any definite abnormality. The bleeding did not happen for a few days, so she and her family members were relieved. Then she developed bleeding from her right eye, which happened 3 times on the same day. After 2 days gap, she developed bleeding from her right ear as well. Each of these episodes lasted for 3-5 minutes and around 5 ml of blood was lost during each of them. She developed a recurring headache at the same time since these episodes started but that did not occur exclusively during those episodes. The headache was dull aching, lasting for days, located on her forehead. She had no known history of abnormal bleeding disorders, ear infection, nasal blockade, physical trauma, fever, oral ulceration, photosensitivity, joint pain, alopecia, yellowish coloration of eyes or skin, itching, haematemesis, melaena or haemoptysis. She had no known history of taking any anticoagulant or antiplatelet drugs or food colorant. Family history of consanguineous marriage between her parents was present but no known history of bleeding disorder in her family was found. After she developed bleeding from her ear, they consulted with a medicine specialist, who referred her to a haematologist. But

after detailed history taking, physical examination and laboratory evaluation, no cause of abnormal bleeding could be detected. Then the patient was referred to National Institute of Mental Health, Dhaka as a suspected case of factitious disorder. Her laboratory investigations revealed that Hb:10.6 g/dl, total count of WBC: 5000/cmm and platelet count was normal. Bleeding time, clotting time, prothrombin time, activated partial thromboplastin time, International Normalized Ratio (INR), renal and liver function test, alpha-fetoprotein level, platelet function test, factor xiii level were within normal limit. Serum ANA, anti-dsDNA, serum c-ANCA and p-ANCA test results were also negative. Chest X-ray P/A view, X-ray PNS at OM view, CT scan of head, functional endoscopy of nose and paranasal sinuses, neck angiography, HRCT of temporal bone audiogram and tympanogram did not reveal any bleeding lesions at ear, nose, eye that could explain the symptoms.



**Figure 1**

Recurrent bleeding from right eye



**Figure 2**

Recurrent bleeding from right ear

After her admission in NIMH, she continued to experience bleeding episodes, now involving left ear as well. On observation, each episode started with oozing of blood and persisted for 2-3 minutes which was painless, subsided spontaneously without leaving any bleeding point, scar or injury mark. The episodes were precipitated by a sensation of palpitation and apprehension. During bleeding episodes, blood was collected in a test tube using a cotton swab and microscopic examination of the specimen revealed the same component as normal human blood which also came positive after benzidine test. Special stains to detect hemosiderin (Prussian blue) was positive. Psychiatric evaluation revealed that she was well alert and fully conscious. Speech was low in volume and her mood was depressed, no abnormalities of thought or perception were detected. Her intelligence was within normal limit. There was no recent or past history of physical or sexual abuse. Her premorbid personality was introvert, shy and had an anxious trait. She was worried about the significance of her symptoms, thinking she might have developed some serious illness.

Depression Anxiety Stress Scale-21 (DASS-21) revealed she was severely stressed and depressed and moderately anxious. She was given propranolol (10 mg) two times daily, sertraline

(50 mg) in the morning and was advised psychotherapy which included counseling, relaxation technique and cognitive behavioral therapy (CBT). At the time the case report was being written, she was still admitted and observed for improvement.

## Discussion

Hematohidrosis, also known as hematidrosis, hemidrosis or hematofoolliculohidrosis is an enigmatic disorder characterized by recurrent episodes of self-limiting bleeding from intact skin. It can occur at any part of the body and at several points simultaneously. Despite being extremely rare and lacking clear scientific explanation to support its existence, hematidrosis is real and has been reported for many centuries throughout the world. Diagnosis of hematidrosis can only be made if the following criteria are met: i) recurrent, spontaneous, painless and self-limited oozing of bloody discharge is witnessed and confirmed by health professionals, ii) the usual blood components are found on biochemistry studies of the discharge and iii) the site of bleeding is intact with no abrasion, telangiectasia or purpura and after wiping the area, there is no evidence of oozing. All of these criteria must be met in order to rule out organic bleeding disorders, self-inflicted bleeding, factitious disorder by proxy, chromhidrosis.<sup>1,2,3</sup> The etiology and pathogenesis of hematohidrosis remain unclear. Although experts consider extreme physical or emotional stress is the main cause of hematohidrosis, it may happen without any preceding stressful situation. In our case, intense fear was a trigger for most of the episodes.

Various causative factors, like it being component of systemic disease, vicarious menstruation, excessive exertion, psychogenic, psychogenic purpura and unknown causes have been suggested.<sup>1</sup> Epileptic seizure and platelet factor 3 dysfunction are also attributed to hematidrosis.<sup>4,5</sup> In our case, there was no evidence of self-induced injury and diagnosis was established with a demonstration of blood corpuscles in the secretion along with negative tests for bleeding diathesis. Vicarious menstruation (i.e., cyclical bleeding in extra-genital organs during a normal menstrual cycle) was ruled out in our patient since there was no relation with menstrual period. There are a number of theories regarding the explanation of hematohidrosis.

The most commonly proffered explanation relates to intensified sympathetic activation due to extreme physical or mental stress. "The fight or flight response" invoked by sympathetic activation leads to constriction of capillary vessels feeding the sweat glands. When the anxiety subsides, the blood vessels dilate to the point of rupture, leading to the passage of blood through the ducts of the nearby sweat glands and presenting as droplets of blood mixed with sweat on the intact skin surface or mucosa in almost any part of the body. Such manifestations may occur at several points simultaneously.<sup>2,6,7</sup> Dermal vasculitis is also concluded as a pathological basis for hematohidrosis. Stromal weakness due to defects in the dermis is another theory to explain the occurrence of hematohidrosis. According to this theory, the communication between these defects and vascular spaces in the dermis may lead to the establishment of dilated

blood centers. Whenever the positive pressure inside vascular spaces exceeds a certain level, blood will exude via follicular canals or directly into the skin surface. Subsequently, they will collapse and leave no scar. This phenomenon, which acts like a balloon, will wax and wane; thus, explaining why the bleeding are intermittent and self-limiting. The bleeding is intermittent because the vascular spaces will disappear after exuding their content but then reoccurred after the blood flow is reestablished. An immediate biopsy is important for definite diagnosis.

Biopsy during symptom free period does not reveal any blood-filled vascular spaces, intradermal bleeding or abnormality in hair follicles and sebaceous or sweat glands. The term "hematofolliculohidrosis" is proposed as it appears along with sweat like fluid and the blood pushes via the follicular canals.<sup>2,8</sup> Currently there is no convincing specific therapy available for this rare condition though there are reports of good response to various drugs such as anxiolytics, especially in cases triggered by extreme stress. There are some reports of successful use of propranolol.<sup>9</sup> Atropine sulfate transdermal patches have also been used successfully.<sup>3</sup> In addition, in a case with simultaneous epileptic seizure and hematohidrosis, the symptoms of both were successfully resolved following the administration of anti-epileptic drug, oxcarbamazepine.<sup>5</sup> Hematohidrosis rarely cause serious side effects, though some people experience dehydration and anxiety. Doctors may give additional medication to treat these symptoms. Psychological counseling can also help if a person with hematohidrosis has depression and anxiety. In case of our patient, beta-blocker, sertraline, supportive psychotherapy, relaxation therapy diminished the frequency of episodes.

### Conclusions

In conclusion, though rare, hematohidrosis should be considered as a miscellaneous differential diagnosis of these types of bleeding episodes in a patient with normal physical & laboratory investigations. Patient should not be accused of factitious disorder which can have a tragic consequence for a family that is seeking help for their child who suffer from this very rare disorder. Further studies are needed to find out the etiology and risk factors of such condition for proper clinical management.

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1. The word count should not exceed 1,500 words and may include 1 figure or table and up to 5 essential references.
2. Editorials require an unstructured summary paragraph not exceeding 50 words.
3. A brief biographical detail (up to 25 words) for each author must be submitted with the manuscript.

### Other Considerations:

#### General outline for article presentation and format

1. Use double spacing
2. Font size should be 12 in Arial or Times New Roman
3. Margins should be customized as 5 cm from above and 2.5 cm from rest of the sides.
4. Title page should contain all the desired information
5. Do not underline, italicize, place quotation marks or use all capital letters in your title.
6. References according to the journal's instructions – abide by the rules of Vancouver system.

### How to write references for your reference list: Vancouver Style

#### A. Journal article: print

- Author
- Title of journal article
- Title of journal in abbreviated form (this should be in italic)
- Year of publication
- Volume number
- (Issue number)
- Page numbers of the article

#### Examples:

1. Chhibber PK, Majumdar SK. Foreign ownership and profitability: Property rights, control, and the performance of firms in Indian industry. *J Law Econ* 1999; 42(1): 209–38.

If the work you need to reference has more than six authors, you should list the first six authors, followed by 'et al.'

2. Petrie KJ, Muller JT, Schirmbeck F, Donkin L, Broadbent E, Ellis CJ, et al. Effect of providing information about normal test results on patients' reassurance: randomized controlled trial. *BMJ* 2007; 334(7589): 352–54. Available at: doi:10.1136/bmj.39093.464190.55.

#### B. Journal article: online/electronic

Most online articles will have a DOI (Digital Object Identifier) and you should use this in your reference, if the article has a DOI you will not usually be required to add a date of access. If the article only has a URL then do include a date of access.

- Author
- Title of journal article
- Title of journal in abbreviated form (this should be in italic)
- Year of publication

- Volume number
- (Issue number)
- Page numbers of the article
- Available from: URL (Include [Date of access]) or DOI (if available)

## Examples:

1. Errami M, Garner H. A tale of two citations. *Nature* 2008; 451(7177): 397–9. Available at: <http://www.nature.com/nature/journal/v451/n7177/full/451397a.html> [Accessed 20th January 2015].

2. Wang F, Maidment G, Missenden J, Tozer R. The novel use of phase change materials in refrigeration plant. Part 1: Experimental investigation. *App Therm Eng* 2007; 27(17–18): 2893–901. Available at: doi:10.1016/j.applthermaleng.2005.06.011.

**C. Book: print**

- Author/ Editor (if it is an editor always put (ed.) after the name)
- Title (this should be in italics)
- Series title and number (if part of a series)
- (if not the first edition)
- Place of publication (if there is more than one place listed, use the first named)
- Publisher
- Year of publication

## Example:

Simons NE, Menzies B, Matthews M. *A Short Course in Soil and Rock Slope Engineering*. London: Thomas Telford Publishing; 2001.

**D. Standard body**

- Name of Standard Body/Institution
- Standard number
- Title (this should be in italics)
- Place of publication
- Publisher
- Year of publication

## Example:

British Standards Institution. BS EN 1993-1-2:2005. Eurocode 3. *Design of steel structures*. General rules. Structural fire design. London: BSI; 2005.

**E. Web page/website**

- Author/Editor (use the corporate author if no individual author or editor is named)
- Title (this should be in italics)
- Available from: URL
- [Date of access]

## Example:

European Space Agency. *Rosetta: rendezvous with a comet*. Available at: <http://rosetta.esa.int> [Accessed 15th June 2015]

## **Title page**

The title page should have the following information:

1. Article title.
2. Author(s) full names.
3. The name of the department(s) and institution(s) to which the work should be attributed.
4. Disclaimers, if any.
5. Contact information for corresponding author: The name, telephone number, and e-mail address of the author responsible for correspondence about the manuscript.
6. Source(s) of support in the form of grants, equipment, drugs, or all of these.
7. The number of tables and figures.

## **Statistics**

Attention should be paid to providing a clear description of study designs and objectives, and evidence that the statistical procedures used were both appropriate for the hypotheses tested and correctly interpreted. The statistical analyses should be planned before data are collected and full explanations given for any post hoc analyses carried out. The value of test statistics used (e.g. *t*, *F*-ratio) should be given as well as their significance levels so that their derivation can be understood. Standard deviations and errors should not be reported as  $\pm$  but should be specified and referred to in parentheses.

The number of decimal places to which numbers are given should reflect the accuracy of the determination and estimates of error should be given for statistics. Use of effect sizes with confidence intervals is encouraged but not mandatory. Authors are encouraged to include estimates of statistical power where appropriate. To report a difference as being statistically significant is generally insufficient, and comment should be made about the magnitude and direction of change.

## **Abbreviations and Symbols**

1. Use only standard abbreviations; use of nonstandard abbreviations can be confusing to readers.
2. Avoid abbreviations in the title of the manuscript.
3. The spelled-out abbreviation followed by the abbreviation in parenthesis should be used on first mention unless the abbreviation is a standard unit of measurement.

## **Review Process**

All papers published in this journal are peer reviewed. All submissions are initially assessed for suitability by the Associate Editor(s). After the initial assessment, submissions are single-blind peer-reviewed by two independent, anonymous expert reviewers and the assigned Handling Editor. The Handling Editor will recommend a decision to the Editor-in-Chief who is responsible for making the final decision.

The editor(s) will decide whether the submission is suitable to be sent out for review. This review process can take up to 1–2 months. If you have concerns about the timetable, we encourage you to discuss these with the journal's editor(s). The editor(s) will make a decision regarding your paper based on the reviewer reports. It is common for an article not to be accepted in first draft and you may be asked to revise and resubmit.

Once accepted, your manuscript will be prepared for publication. At this stage you will usually be asked to sign a form to define copyright terms. Submission of a manuscript for publication implies the transfer of the copyright from the author to the publisher upon acceptance. Accepted manuscripts become the permanent property of this journal and may not be reproduced by any means in whole or in part without the written consent of the publisher.



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