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09433053389
Email : drrbcal@gmail.com

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## CONTENTS

# Neuropsychiatric Aspects of Head Injury - An Overview

**Dr. Soumitra Ghosh[1], Dr. Sandipan Nayek[2]**

[1]Associate Professor, Assam Medical College, Dibrugarh
[2]Post Graduate Trainee, Assam Medical College, Dibrugarh

## INTRODUCTION

Traumatic brain injury (TBI) refers to any external mechanical force acting on the brain which may cause temporary or permanent dysfunction. The prevalence of TBI is increasing day by day and giving rise to many post TBI neuropsychiatric sequelae.

## EPIDEMIOLOGY AND ETIOLOGY

About 200 per 100 000 population per year suffer a head injury[1]. In the majority of these the head injury is classified as mild[2], yet perhaps as many as 100 per 100 000 per year go on to suffer significant disability at 1 year[3]. Increased rates of TBI in developing parts of the world are due to high two wheeler usage and poor road safety conditions. The peak incidence is between the ages of 15 and 24 and older than the age of 64 years. Males are affected twice as often as females. Motor vehicle accidents (MVAs) account for the most frequent civilian cause of TBI followed by fall.

## COMPARATIVE NOSOLOGY

### IN ICD-10

**F06 :** Other mental disorders due to brain damage and dysfunction and to physical disease

**F07 :** Personality and behavioural disorder due to brain disease, damage and dysfunction

### IN DSM 5

Major Neurocognitive Disorder due to Traumatic brain injury

294.10 : without behavioral disturbance

294.11 : with behavioral disturbance

331.83 : Mild Neurocognitive Disorder due to Traumatic brain injury

## TYPES OF HEAD INJURY

**(A) Depending on the integrity of meningeal covering -**

- Closed head injury - Motor vehicle accident, Falls, Assault, Sport related.
- Penetrating injury - Missile wound, Blast injury.

**(B) Depending on the Pathological consequence of head injury :**

- Primary brain damage
- Secondary brain damage

**(C) Neuropathological classification of head injury -**

- Focal lesion
- Diffuse lesions

## PATHOPHYSIOLOGY OF HEAD INJURY

- **Loss of Consciousness and Coma** - The trauma results in massive and rapid release of potassium into the extracellular space[4]. This is associated with excessive glutamate release.
- **Diffuse Axonal Injury** - Resulting in axonal swelling, lobulation, and ultimately transection with formation of the classic retraction ball.

- **Cerebral Oedema** - Diffuse cerebral swelling is more common in children[5]. The raised intracranial pressure results in herniation of brain tissue through the tentorium and under the falx cerebri.
- **Cerebral Anoxia** - Derives from cerebral oedema, hypotension, blood loss, disturbances in regulation of the cerebral circulation, and ventilatory insufficiency in the acute stages.
- **Neuronal Death** - Necrotic cell death occurs due to the toxic effects of excitatory neurotransmitters, particularly glutamate[6], mitochondrial dysfunction[7], calcium activation of proteases and phospholipases, formation of toxic free radicals and low intracellular magnesium and immunological processes[8], including activation of interleukins[9]. Apoptosis occurs due to alterations of the balance within the cell of pro- and anti-apoptotic pathways. Pro-apoptotic proteins are Bax and caspase, and the anti-apoptotic protein is Bcl.
- **Effects on Cerebral Metabolism** - Normal or low flow rates in the first 24 hours, succeeded by relative hyperaemia ('luxury' perfusion) that may persist for many days. Increased cerebral glucose uptake is found in the first 3–4 days after severe brain injury. Global reductions in blood flow after head injury are associated with worse outcome[11].
- **Aβ Peptide Deposition** - Accumulation of Aβ peptides, which are produced by cleavage of βAPP, aggregate to form **β-amyloid** protein.
- **Neurobiological changes after TBI**

## NEUROTRANSMITTER AND ENDOCRINE CHANGES

1. **Abnormality in Glutamate Pathway** - Glutamate concentration is increased in CSF several days after TBI.
2. **Abnormality in Cholinergic Pathway** - Cholinergic neuronal activity is increased immediately after TBI, but later the activity is decreased.
3. **Abnormality in Biogenic Amine Pathway** - There is increased serotonergic and noradrenergic metabolites level in CSF.

**Clinical Features** - Clinical Features of Neuropsychiatric aspects of TBI can be divided into-

1) Acute effects of head injury
2) Chronic Sequelae

**Acute Effects of Head Injury** - 1) Impairment / Loss of Consciousness 2) Post Traumatic Delirium / Confusional state 3) Post traumatic agitation 4) Post Traumatic Amnesia (PTA).

**Chronic Sequelae of Head Injury –** Depends on multiple factors like mental constitution and premorbid personality, age at the time of injury, circumstances of the injury, compensation, litigation, secondary gain and attribution bias, development of epilepsy, amount of brain damage incurred, alcohol and drug abuse, location of brain damage incurred.

## POST-HEAD INJURY NEUROPSYCHIATRIC MANIFESTATIONS INCLUDE

1) **Cognitive Impairment** - Post TBI cognitive impairment is pronounced in cases with PTA> 24 hrs. Dysexecutive syndrome may occur which may be tested by 'frontal lobe function' like The Behavioural Assessment of Dysexecutive Syndrome (BADS), Wisconsin Card Sorting Test (WCST), Trails B test, Verbal fluency test, Stroop test. .
2) **Personality Changes** - Frontal lobe syndrome is the classic example characterized by irritability, apathy, euphoria, disinhibition, inappropriate jocularity and altered sexual behavior. The case report of Phineas Gage as described by his doctor, John Harlow, is a prototype of post TBI personality change[13]. Based on the exact location in frontal lobe, various syndromes are described including DLPFC Syndrome aka Dysexecutive syndrome, OFC Syndrome

aka Psuedopsychopathic, VMPFC Syndrome aka Psudeodepressive syndrome. Kretschmer described the injury to the basal parts of the brain as 'basal syndrome' which results from lesions of the midbrain, hypothalamus and orbitofrontal cortex.

3) **Aggression** - The predictors of aggression in TBI includes - alcohol, younger age at injury, being depressed, frontal injury, a pre-injury history of antisocial behaviour. The term organic aggression syndrome and 'episodic dyscontrol syndrome' has also been used. Characteristic features of organic aggression syndrome[14] : Reactive : triggered by modest or trivial stimuli, Non-reflective : usually does not involve premeditation or planning, Non-purposeful : aggression serves no obvious long-term aims or goals, Explosive, Periodic : long periods of relative calm, Ego-dystonic : afterwards patients show remorse and are upset; behaviour is out of character; do not blame others or justify behaviour .

4) **Psychosis** - Characterized by paranoid delusion and auditory hallucinations. Factors distinguishing TBI psychosis from schizophrenia are the absence of Schneiderian first rank symptoms such as thought insertion and thought withdrawal, a later age of onset, less premorbid psychiatric disturbance, briefer duration, less common family history, better response to neuroleptics, less need for maintenance medication, and a better prognosis.

5) **Affective/Mood Disorders** - Includes Depression and Mania. Major depression seen shortly after head injury was due to lesion location, whereas later-onset depression was more closely tied to psychosocial factors[15]. Kreutzer et al.[16] found that the most frequent symptoms of depression were fatigue (46%), frustration (41%) and poor concentration (38%).

6) **Anxiety Disorders** - It includes Generalised Anxiety Disorder (GAD), Phobic disorders, Post-traumatic stress disorder (PTSD), Obsessive–compulsive disorder (OCD), conversion disorder.

7) **Post Concussion Syndrome** - A clinical syndrome characterised by immediate and transient impairment of neural function, such as alteration of consciousness, disturbances of vision, equilibrium due to mechanical forces.

8) **Post TBI Headache** - Severe post TBI headache should raise suspicion of chronic SDH and requires full and careful neurological examination, supplemented by CT or MRI.

9) **Punch-drunk Syndrome/Dementia Pugilistica** - Multiple traumatic brain injury associated with boxing characterised by documented progressive dementia due to diffuse injury to the cortex, basal ganglia. Pathologically, dementia pugilistica shares many characteristics with Alzheimer's disease (i.e., neurofibrillary tangles, diffuse amyloid plaques, and/or tau immunoreactivity).

10) **TBI as a risk factor for Epilepsy** - Post TBI epilepsy develops in around 5% of closed injuries and around 30% in penetrating injuries. Cortical scarring due to contusions are highly epileptogenic.

11) **TBI as a risk factor for Dementia** - Multiple mild TBIs are a definite risk factor for Dementia.

12) **Suicide** - Death by suicide occurs in about 1% of patients over the first 15 years after injury[17]. In the case of suicides, lesions were commonly found in the frontal and temporal lobes of the brain. Risk factors for suicide attempts include a post-injury history of psychiatric/emotional disturbance or substance abuse and clinically significant levels of suicide ideation[18].

## INVESTIGATIONS FOR TBI

1. **Neuroimaging** - Computed Tomography (CT), magnetic resonance imaging (MRI), Functional MRI (fMRI), Positron Emission Tomography (PET) (which shows level of cerebral metabolic activity), Single photon emission computerized

tomography (SPECT) which shows level of cerebral perfusion, magnetic resonance spectroscopy (MRS) which shows areas of cerebral neuronal loss and diffusion tensor imaging and fiber tractography (DTI/FT) which shows cerebral white matter tracts.

2. **Electrophysiological** : Electroencephalography (EEG) is used to assess for post traumatic epilepsy or encephalopathy. Quantitative EEG (QEEG) is sometimes used for slow wave abnormality following TBI & post traumatic temporal lobe epilepsy. Evoked response potentials (ERPs) and Video EEG monitoring or 24hrs ambulatory EEG is also useful. Polysomnography is helpful to assess atypical sleep disturbances following TBI like atypical night terror, sleep apnoea, nocturnal myoclonus.
3. **Neuropsychological Testing** : done to assess cognitive functioning, language testing, tests of motivation and malingering, tests for premorbid functioning.
4. **Blood Biochemistry**
   - ➤ **Serum Electrolytes –** Na+, K+, $Mg_2$+, Cl-
   - ➤ **Neuronal Protein –** include both neuronal (e.g., neuron-specific enolase, creatine kinase-BB, cleaved Tau protein) and glial (e.g., myelin basic protein, S-100B) proteins. Most sensitive serum marker is S-100B.
   - ➤ **Neuro Endocrine Assessment –** for pituitary hormone deficiencies, Diabetes insipidus, syndrome of growth hormone deficiency (GHD), partial central hypothyroidism, low cortisol levels and decreased gonadotropin secretion.

## CLINICAL INDICATORS OF HEAD INJURY SEVERITY

**Major Indicators** - Depth of unconsciousness as assessed by GCS , Duration of loss of consciousness/ coma, Evidence of behavioural/cognitive change in the immediate period suggestive of delirium, Neurological symptoms and signs, Evidence of skull fracture and/or other abnormalities on neuroimaging, Blood in the CSF, Duration of PTA.

**Less useful indicators** - Duration of retrograde amnesia, Abnormalities on EEG, Markers of cell damage (e.g. S-100B), Evidence of injury to head, e.g. lacerations, bruising, bleeding from ears, fracture of maxilla/zygoma.

## SEVERITY RATINGS FOR TBI

**Prognosis and Outcome** - The long-term outcome of TBI patients is primarily related to severity of brain injury, type and location of intracranial lesion, patients' age, efficacy of acute medical and surgical treatment, socioeconomic status, educational level, previous psychiatric disorders (e.g., history of alcohol and/or drug abuse, personality disorders), premorbid social functioning levels, the quality and extent of rehabilitation services and the availability of social and vocational support.

**Glasgow Outcome Scale (GOS)** - The Glasgow Outcome Scale (GOS) has been widely used as a measure of the long-term outcome of TBI patients. It consists of five levels of outcome: (1) death, (2) persistent vegetative state, (3) severe disability (conscious but dependent in activities of daily living, (4) moderate disability (disabled but living independently), and (5) good recovery (mild neuropsychiatric effects but able to resume an otherwise normal life).

**Management 1) Pharmacotherapy**

**2) Rehabilitation and psychological therapies**

**Pharmacotherapy** - Drugs should be chosen with less potential for lowering seizure threshold, less extrapyramidal and anticholinergic side effects and less potential for drug interactions .

**Cognitive Impairment** - Psychostimulants and other dopaminergically active agents (e.g., methylphenidate, dextroamphetamine,

amantadine, pergolide, and bromocriptine) may modestly improve arousal and speed of information processing, reduce distractibility, and improve some aspects of executive function. Cholinesterase inhibitors such as donepezil, mostly at 10 mg/day has also positive effect on cognitive functioning, motivation, and general well being. Rivastigmine has also been found to be effective[19].

**Aggression, Agitation and Impulsion** - Antipsychotic and Anticonvulsants like Valproate, gabapentin, carbamazepine are useful. Sexually disinhibited behaviour may respond to antipsychotic medication. Sometimes an anti-androgen is needed[20].

**Mania and Psychosis** - Of the mood stabilisers, the anticonvulsant valproate is likely to be the first option when treating mania. Some patients will require an antipsychotic, in which case it is probably best to choose an atypical antipsychotic which should be started with low doses. Risperidone is effective, but olanzapine, quetiapine and aripiprazole are reasonable alternatives. Clozapine is used in patients who have failed to respond to other antispychotics and whose behaviour remains very difficult to manage[21].

**Depression and Anxiety Disorders** - The selective serotonin reuptake inhibitors (SSRIs) are the first choice. Moclobemide and Trazodone are other alternatives. Electroconvulsive therapy is not contraindicated when other measures have failed[22].

**Post-traumatic headache** - Valproate, Propranolol and/or Amitriptyline and Sumatriptan are useful. Non-addictive analgesics and Ergotamine preparations may be tried in vascular headache[23] Antidepressants can sometimes produce results.

**Management of Insomnia** - For nocturnal insomnia, good sleep hygiene measures need to be taken. Treatment with hypnotics like benzodiazepine should be given cautiously. The non-benzodiazepine hypnotics like zopiclone, zolpidem are probably a better starting point. Sedative antidepressants may be considered, particularly trazodone. Melatonin and low dose amitriptyline (25 mg) can be used in patients with chronic insomnia after head injury[24] For severe daytime sleepiness modafinil seems safe and may be appropriate.

**Head injury in Children** - ADHD symptoms in children with head injury improved with methylphenidate treatment. Amantadine may improve behaviour and executive function[25]

## REHABILITATION AND PSYCHOLOGICAL THERAPIES :

**Early Rehabilitation for Severe Injury** - Physical activity should be encouraged and the value of early mobilisation has come to be generally recognised. Graduated exercises and games help to restore the patient's physical self-confidence.

**Rehabilitation for Neurological Sequelae** - The main areas that require evaluation are locomotion, upper extremity function and impairment of communication. Hemiparesis, paraparesis or ataxia of gait requires physiotherapy. Occupational therapy has a special place in restoring useful function to the upper limbs. Speech therapy has role in helping the resolution of dysphasia or dysarthria.

**Rehabilitation for Cognitive Impairment** - The programme must be graded, with goals at any stage that are realisable, rational and acceptable to the patient[26]. Self-esteem is to be boostered.

**Components of Rehabilitation Programmes** - These include assessment, formulation of plan, implementation of plan, review and modification of plan and discharge arrangement.

**Core rehabilitation Team –** It should include neurologists, psychiatrists, rehabilitation physicians, clinical psychologists, physiotherapists, occupational therapists, speech therapists and psychiatric social workers.

**Conclusion** - Traumatic brain injury can cause not only focal deficits of motor activity or language, but also a variety of potentially disabling psychiatric symptoms and syndromes. These include mood and anxiety disorders; personality disturbances;

aggression; and psychosis. Treatment is complicated by cognitive deficits, lack of motivation, and lack of awareness of deficits. Pharmacological treatment may include a wide range of medications, such as antidepressants, antipsychotics, mood stabilizers, and stimulants. Family and individual counselling is particularly important in helping the patient and the family reconcile themselves to the reality of the behavioural changes in the patient post TBI.

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# The Right of Persons with Disability (RPWD) Bill 2016: Proactive Approach Needed to Empower Persons with Disability due to Mental Health Problems

**Om Prakash Singh[1], Ranjan Bhattacharyya[2]**

1. Professor & Head of the Department, Deptt of Psychiatry, NRS Medical College & Hospital
2. Assistant Professor & Head of the Department, Deptt of Psychiatry
Murshidabad Medical College & Hospital

## INTRODUCTION

In "Rights of Persons With Disabilities (RPWD) Bill, Disability has been defined based on an evolving and dynamic concept and the types of disabilities have been increased from existing 7 to 21 and the Central Government will have the power to add more types of disabilities.[1] The Speech and Language Disability and Specific Learning Disability have been added for the first time. Acid Attack Victims have been included. Dwarfism and muscular dystrophy have been indicated as separate class of specified disability. The New categories of disabilities also included three blood disorders, Thalassemia, Hemophilia and Sickle Cell disease.[2] The Bill also provides for penalties for offences committed against persons with disabilities. Designated Special Courts have been proposed to handle cases concerning violation of rights of PWDs. Every child with benchmark disability between the age group of 6 and 18 years shall have the right to free education. The Rights of Persons with Disabilities Bill (RPWD 2016) – passed recently in both the Rajya Sabha and Lok Sabha – is a significant milestone. The 1995 Disability Law proved to be inadequate soon after it was passed. In fact, the Government started the process of amending the same soon after passing it. While this process dragged on for years, India ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD)in 2007 and this law is in condorcance with it[3,4,5,6]

## "RIGHTS OF PERSONS WITH DISABILITIES (RPWD) BILL

Persons with Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 is the principal Act for the empowerment of Persons with disabilities. India signed the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) and subsequently ratified the same on 1st October, 2007. The Convention came into effect on 3rd May 2008. Being a signatory to the Convention, India has an international obligation to comply with the provisions of the Convention. Keeping in view the fact that the existing Act of 1995 is not fully in conformity with the UNCRPD, a need was felt to have a rights-based legislation with a strong institutional mechanism.[7,8,9]

The Bill had been mooted by the Ministry of Social Justice and Empowerment after extensive consultation with various stakeholders, State Governments/UTs and concerned Central Ministries and Departments and was introduced in the Rajya Sabha on 7.2.2014, which was referred to the Parliamentary Standing Committee. RPWD Bill is definitely going to bring major positive changes in the lives of millions of disabled people in our country.

The Standing Committee submitted its recommendations on 7.5.2015. The Recommendations of the Standing Committee were also

shared with the States/UTs as well as all concerned Central Ministries/Departments. Based on these consultations, amendments to the Bill have been proposed which would widen the scope of new Law and also provide a framework to enable the Persons with Disabilities to enjoy their enjoyment rights equally with others.[12,13]

The Union Cabinet in its meeting held on 30.11.2016 approved the proposal of the Department of Empowerment of Persons with Disabilities to incorporate these amendments in the Rights of Persons with Disabilities Bill, 2014 during the ongoing winter Session of Parliament. The new Bill with amendments proposes to repeal the existing Persons with Disabilities (Equal opportunities, Protection of Rights and Full Participation) Act, 1995. The Lok Sabha cleared the bill within two hours despite having previous long run demonetization debate.[14,15,16]

The salient features of the proposed Bill with amendments are as follows.[17,18,19,20]

i. Responsibility has been cast upon the appropriate governments to take effective measures to ensure that the persons with disabilities enjoy their rights equally with others.

ii. Disability has been defined based on an evolving and dynamic concept.

iii. The types of disabilities have been increased from existing 7 to 21 and the Central Government will have the power to add more types of disabilities (Table 1).

iv. Speech and Language Disability and Specific Learning Disability have been added for the first time. Acid Attack Victims have been included. Dwarfism, muscular dystrophy have been indicated as separate class of specified disability. The New categories of disabilities also included three blood disorders, Thalassemia, Hemophilia and Sickle Cell disease.

v. Additional benefits have been provided for persons with benchmark disabilities and those with high support needs.

vi. Every child with benchmark disability between the age group of 6 and 18 years shall have the right to free education.

vii. For strengthening the Prime Minister's Accessible India Campaign, stress has been given to ensure accessibility in public buildings (both Government and private) in a prescribed time-frame.

viii. It has been proposed to increase reservation from 3% to 4% in Government jobs for certain persons or class of persons with benchmark disability.

ix. The Bill provides for grant of guardianship by District Court under which there will be joint decision – making between the guardian and the persons with disabilities.

x. Broad based Central & State Advisory Boards on Disability have been proposed to be set up as policy making bodies.

xi. Strengthening of the Office of Chief Commissioner of Persons with Disabilities and State Commissioners of Disabilities has been proposed, which will act as regulatory bodies and Grievance Redressal agencies and also monitor implementation of the Act. These Offices will be assisted by an Advisory Committee comprising of experts in various disabilities.

xii. Creation of National and State Fund has been proposed to provide financial support to the persons with disabilities.

xiii. The Bill provides for penalties for offences committed against persons with disabilities.

xiv. Designated special Courts have been proposed to handle cases concerning violation of rights of PwDs.

**Table - 1**

Type of disabilities incorporated in RPWD Bill.

| No. | Details |
|---|---|
| 1. | Blindness |
| 2. | Low-vision |
| 3. | Leprosy Cured persons |
| 4. | Hearing Impairment (deaf and hard of hearing) |
| 5. | Locomotor Disability |
| 6. | Dwarfism |
| 7. | Intellectual Disability |
| 8. | Mental Illness |
| 9. | Autism Spectrum Disorder |
| 10. | Cerebral Palsy |
| 11. | Muscular Dystrophy |
| 12. | Chronic Neurological conditions |
| 13. | Specific Learning Disabilities |
| 14. | Multiple Sclerosis |
| 15. | Speech and Language disability |
| 16. | Thalassemia |
| 17. | Hemophilia |
| 18. | Sickle Cell disease |
| 19. | Multiple Disabilities including deaf / blindness |
| 20. | Acid Attack victim |
| 21. | Parkinson's disease |

A scheme of 'universal identity card for the disabled' is on the anvil and an agency has already been finalised for the purpose. The proposed card would also be linked to the Aadhar card to help the disabled all over the country. It provides for imprisonment of at least six months and up to two years, along with a fine ranging between Rs 10,000 and Rs 5 lakh for discriminating against differently-abled persons. Out of 82 recommendations made by the Parliamentary Standing Committee, 59 were accepted by the Government.[21,22]

In the bill, disability has been defined based on an evolving and dynamic concept and the types of disabilities have been increased from existing seven to 21. The Centre will have the power to add more types of disabilities to it.

It also strengthens the office of chief commissioner and state commissioners for Persons with Disabilities which will act as regulatory bodies.

The Indian Penal Code on violence against women already includes disability-specific clauses. But, for the very first time in India, we have gender-specific clauses as part of disability legislation. One needs to highlight here that the provisions for women are not restricted to one particular chapter, but are integrated in many important chapters like Health, Social Security, and others. This Bill says that "appropriate Governments shall, within the limit of their economic capacity and development, formulate necessary schemes and programmes to safeguard and promote the rights of persons with disabilities for adequate standard of living, to enable them to live independently or in the community." This is a marked improvement as the old law only talked about affirmative actions like reservation in jobs and employment.[23,24]

There are worries about the words "within the limit of its economic capacity", and activists are already working to see that the rules under this new law are framed in such a manner that the stipulation that "the quantum of assistance to the persons with disabilities under such schemes and programmes shall be at least 25 % higher than the similar schemes applicable to others" is applied to all poverty alleviation schemes as mentioned in this law henceforth.Unfortunately, some in the disability sector don't see this law as a reason for celebration. There are some who feel that the law should have been closer to the UNCRPD's spirit. There are even certain conflicting clauses in this law. For example, it says, "The appropriate Government shall ensure that the persons with disabilities enjoy legal capacity on an equal basis with others in all aspects of life

and have the right to equal recognition everywhere as any other person before the law," and yet it also talks about the provision of guardianship for certain kinds of disabled people, baffling lots of activists. However, perhaps it is important to read this law in conjunction with another law – namely the National Trust Act – under which guardianship has been mandated till date.[25,26,27]

In our country, the disabled have to procure a certificate to get any kind of entitlement from the state. The process to procure certification is extremely difficult and time-consuming. Moreover, authorities do not accept the certificate from one state in another. For example, the blind cricket team from West Bengal realised they would not get concessional bus fares in Karnataka. However, this law is bringing in much-needed change. The RPWD Bill provides that henceforth such certificates "will be valid across the country". The old disability law never realised its full potential because of the lack of penalty provisions, among other things. Though the provisions could have more teeth, their inclusion is definite progress from the existing law. The legal procedure of our country is expensive, and poor people have little access to courts.[28,29]

This law mandates accessibility for even private establishments, and gives a specific timeframe to implement the changes. From transportation to internet access to electronic goods, the law makes accessibility mandatory across the board.

**Role of Psychiatrists** - There has been a marked delay in providing disability benefit to Persons with Mental Illness even after notification of disability benefits. It was mainly due to the absence of any structured assessment tool. Notification of IDEAS filled this gap. However there was reluctance and lack of awareness leading to delay of years in providing certificates leading to denial of benefits. RPWD 2016 now incorporates Autism Spectrum Disorder (sl no 9), Specific Learning Disabilities (SL 13), Speech and Language disabilities (SL 15), in addition to Intellectual Disabilities (SL no 7) and Mental Illness (SL no 8). We should actively engage with the Government to notify assessment norms. In the meantime, since there are assessment tools available for assessment of these disorders we should facilitate the certification process so that the benefit reaches to the target population without delay.

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ORIGINAL ARTICLE

# A Study on Job related Stress among School Teachers in Different Schools of West Bengal, India

**Sumanta Dawn[1], Payel Talukdar[1], Subir Bhattacharjee[2], Om Prakash Singh[1]**

[1]Department of Psychiatry, N. R S. Medical College, Kolkata
[2]Department of Psychiatry IPGME& R, Kolkata

## ABSTRACT

**Context** : School teachers are exposed to high level of stress. Socio-demographic variables, salary, working environment, work pressure play a significant role in causing stress across teachers of different culture. Indian study is lacking in establishing relation between different variables and level of stress. **Aims** : To measure the magnitude of stress among school teachers, relation between different socio demographic variables of teachers and stress and to find out if there is any difference in stress of teachers in urban, suburban and rural schools. **Settings and Design** : Institution based, single-centre, cross-sectional study. **Materials and Method** : 338 school teachers were interviewed across schools from rural, urban and semi urban area of West Bengal. Related data were collected on socio-demographic sheet and stress score was collected on Work Stress Scale (WTS). Data were analyzed by standard statistical methods. **Results** : Female sex, age - 50-60 years, urban, private School, headmaster & assistant headmaster, higher paid teachers were found to suffer from high level of stress. **Conclusions** : Teaching is a stressful job and level of stress varies across different population.

**Declaration of interest –** None.

**Key Words** : School teacher, stress, Work Teacher Scale

## INTRODUCTION

Stress is defined as "An excess of demand made upon the adaptive capabilities of the mind and body" and is seen in the form of a physical demand, a mental demand or both. Teaching in school is a highly stressful occupation.[1]

**Corresponding Author :**
Sumanta Dawn
Department of Psychiatry
N. R S. Medical College, Kolkata

The globalization and privatization of the education system in different countries and in India forced the higher education to be more competent so as to produce the stakeholders with better knowledge, accommodativeness, skills and compe-tencies which are essential for survival in the world market. In tune with this, the Indian education system had undergone rapid changes in terms of expansion, privatization, marketization, curricular reforms and pedagogical innovations. With those rising demands of modern educational system, teachers are being more stressed day by day. Different studies are done all over the world in order to measure the stress in teachers notably in USA 1, Australia 2 and

Turkey 3. There are some studies in India also regarding stress in school teachers – one done in south India for teachers of university 4 and the other among school teachers in Rajasthan 5. But none of them used any recognized scale to measure stress. Our study is a significant addition to the teacher stress and burnout literature, especially in India where few relevant studies exist dealing with these problems. In addition, our study is aimed give an account of how the teachers of different age and sex are coping with the increased stress.

## MATERIALS & METHOD

After having clearance from ethical committee, this institution based, single-centre, cross-sectional study was conducted in different high schools, both government and private across rural, suburban and urban areas of West Bengal. All the working teachers those gave valid informed consent for study and meeting inclusion & exclusion criteria were selected for this study. Inclusion criteria, kept for this study, were 1) In service teachers of both sex able to read, write and comprehend in English, 2) Those who have given the informed consent to take part in this study and exclusion criteria were 1) Diagnosed major physical illness, 2) Organic Brain Disease, 3) history of any major psychiatric disorder, 4) Non co-operative teachers. Cluster sampling method was used to select sample population. Taking 36% prevalence of previous study in USA (Health and Safety Executive, 2000), p = 0.36, q = (1-0.36) = 0.64, and taking 95% confidence interval, d=0.05, the calculated sample size of our study was 368. We managed to interview 338 teachers in our study with 110 rural, 121 suburban and 107 urban teachers in our study (n=338). Schools belonging to different localities, both govt. and private were approached in institutional letter head to take part in this study. Data were collected from teachers of schools which were co-operating on weekly basis. Attention was given so that equal participation was there from rural, suburban and urban as well as both govt. and private schools. If a school, being approached, did not allow conducting the study, another school of similar locality and institutional structure (Govt./private) was approached. Data were collected on standard Socio-demographic data-sheet, Occupational data sheet, developed by our psychiatry department, including educational status, designation, experience, remuneration, distance of residence from school and on Work tension scale (WTS) 4, a self-reported questionnaire to assess stress score. Standard statistical methods were used for analysis of data.

## RESULTS

### SOCIO-DEMOGRAPHIC DATA

There were around 42.31% of male teachers and 57.69% of female teachers among the surveyed population with male to female ratio was 1:1.36. This was in accordance with studies aboard as well as in India. Most of the teachers (58.57%) were middle aged (31- 50 age group). 53.84% of female teachers were 40 years or below whereas only 39.16% male teachers were so. Major percentage of teachers was married among surveyed totals. There was a huge difference between married and unmarried percentage (84.32% and 13.61% respectively). A small percentage of teachers were separated or divorced (2.07%). Percentage of teachers coming from nuclear and joint families were having major share. Nuclear families were 48% and joint families were 41% of the totals. Hindu teachers almost outnumbered Muslim and Christian teachers among surveyed total. The percentage of Hindu teachers was 88.16 %, Muslim was 10.66% and Christian was 1.18%. Out of the 338 teachers who participated in the study, 32.54% were from rural schools, 31.66% were from urban schools and 35.80% were from suburban schools. 65.38% teachers were from either government or government sponsored schools and rest 34.62% were from private schools. Distance of the school from the house has been measured on the basis of travel time. Around 45% of teachers traveled more than one hour to reach school which could be associated with their stress level. Most of the teachers of the study population were assistant

teachers (76.92%). Para teachers formed a significant part of the study population (16.28%). Teachers in administration (Principal/Headmaster/Assistant Headmaster/Teacher in charge) formed the rest 6.80%. Most of the teachers were post graduate and female post graduate teachers (79%) were higher than male post graduate teachers (70%). Our study found that young age group teachers were having more educational qualification than aged teachers. Around 72% of surveyed teachers had more than 5 years of teaching experiences. Result could be related with the age pattern of surveyed teachers where middle age group (41-50 years) teachers were high in number. The work pressure could also be measured by the number of subject a teacher has to teach in school. This study found that around 44% surveyed teachers had to teach two subjects and around 33% had to teach more than 3 subjects. Again the stress level might also be associated the subject taught. Teachers had been asked whether they taught their own subject of graduation or post graduation level or any other. The results showed that around 85% of surveyed teachers taught their own subject. Teachers of Govt. schools had a mean income of Rs 3.82 lacks/annum where as teachers of private schools had a mean income of Rs 1.96 lacks/annum. There was no significant difference between income of male and female teachers.

# STRESS ANALYSIS

## LEVEL OF STRESS

The mean job-related stress score of the teachers was 3.12 with a standard deviation of 0.81 (The maximum and minimum value were 5 and 1 respectively). 12.42% teachers (n=42) were severely stressed with a stress score of 4 or more. 37.57% teachers were mildly stressed (n=127) with a stress score between 2 and 3 and 26.33% (n=89) teachers were moderately stressed with a stress score between 3 and 4. (Table-1)

**Table-1 : Showing Level of stress in our study**

| Level of stress | Number | Percentage |
|---|---|---|
| No | 80 | 23.77 |
| Mild | 127 | 37.57 |
| Moderate | 89 | 26.33 |
| Severe | 42 | 12.42 |

**Association between Stress Level and Age – Sex Structure of Surveyed Teachers**

Teaching has been identified as most stressful job throughout the world. Table 2 showed stress level in various sex populations.

**Table-2 : Showing Association between Stress Level and Sex Structure of surveyed Teachers**

| Stress level | Female (%) | Male (%) |
|---|---|---|
| No | 21 | 29 |
| Mild | 32 | 39 |
| Moderate | 31 | 23 |
| Severe | 16 | 9 |

A proportion test was conducted to check the statistical significance with our result. In our study, $z = 3.66$ for $\alpha = 0.05$ and taking it as a two tailed test the critical value for z to be statistically significance was 1.96. Our value (3.66) was therefore statistically significant. So it justified the stress with female sex. It was very clear from our study that aged teachers were the most stressful among all. Age group between 56-60 years had stress value 4.5 or more and age group 51-55 had stress value more than 4. (Table-3)

**Influence of Distance and Location of the School on Stress Level**

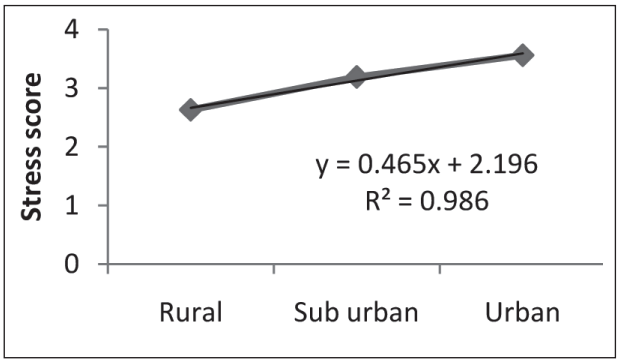
46% of the teachers who traveled more than one hour to reach their school were stressed in comparison to 31% of the teachers who traveled less than one hour. A proportion test was conducted to check the statistical significance with our result. $z = 2.84$ for $\alpha = 0.05$ and taking it as a two tailed test the critical

value for z to be statistically significance was 1.96. Our value (2.84) was therefore statistically significant. (Picture-1)

**Table-3 : Showing Association between Stress Level and Age Structure of surveyed Teachers**

| Age Group (years) | Stress Level |
|---|---|
| 25-30 | 2.78 |
| 31-35 | 2.9 |
| 36-40 | 3 |
| 41-45 | 3.1 |
| 46-50 | 4 |
| 51-55 | 4.2 |
| 56-60 | 4.5 |

**Picture-1** : **Showing Influence of distance and location of the school on stress level**




**Stress level among Government and private schools**

48.72% of the teachers who taught in private school were stressed in comparison to 33.48% of the teachers who taught in government school. A proportion test was conducted to check the statistical significance with our result. z = 2.67 for  = 0.05 and taking it as a two tailed test the critical value for z to be statistically significance was 1.96. Our value (2.67) was therefore statistically significant. So it justified the stress with types of schools.

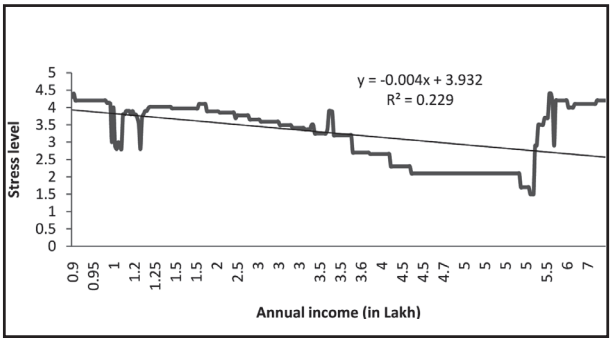
**Relation between designation of teachers and stress**

Our study found that around 69.57% of Head Master or Assistant Headmasters were stressed. Around 58.18% of Para teachers were stressed in comparison to only 31.92% Assistant teachers. A proportion test was conducted to check the statistical significance. z = 3.62 for  = 0.05 and taking it as a two tailed test the critical value for z to be statistically significance was 1.96. Our value (2.67) was therefore statistically significant. So it justified the stress of Para teachers. The result of significance test was calculated 9.05 and critical value of t for the 120 or more sample taking  = 0.01 was 2.576. So teachers in administrative position were more stressed at the confidence interval of 99% or more.

**Relation between income and stress**

Our study found that stress level was high with the highest paid teachers. (Picture-2)

**Picture-2** : Showing Relation between income and stress.




Other controlling factors of socio - demography in this study like religion, educational level, teaching experience are having no significant influence on the stress level.

## DISCUSSION

Teaching has been identified as one of the most stressful professions today. The reasons for that are quite similar to other stressful occupations in

the world. In a survey assessing the stress levels of various jobs by the Health and Safety Executive, teaching came out top. The report, The Scale of Occupational Stress: further analysis of the impact of demographic factors and type of job, published in 2000, found that 41.5% of teachers reported themselves 'highly stressed', while 58.5% came into a 'low stress' category, while 36% of teachers felt the effects of stress all or most of the time. In our study around 39% of surveyed teachers were moderate to severe stressful which was similar to the result of the study by Health and Safety Executive, USA (41.5%) and with previous study.[6]

Cooper and Kelly[7] found as they moved from the further/higher education level to secondary to primary sectors, the levels of job dissatisfaction and mental ill health rose. In addition, it was found that, with the exception of primary schools, female head teachers in secondary and FHE seem to be suffering significantly greater job dissatisfaction than their male counterparts, although this does not translate itself into mental ill health. Male head teachers, on the other hand, seem to suffer more mental ill health than their female counterparts. And finally, the two main sources of occupational stress that appear in many of the multivariate analyses as predictors of job dissatisfaction and mental ill health are 'work overload' and 'handling relationships with staff. In line with other studies 7 our study also found that both male and female teachers are having stressed. Our study found that female teachers were more stressful than male teachers which were similar to findings of Klassen. 8 Our study also proved that teachers with higher workload (Headmaster & Assistant Headmaster) were more stressed.

Millicent H. Abel & Joanne Sewell[9] examined Sources of stress and symptoms of burnout in 51 rural and 46 urban secondary school teachers from 11 school systems in Georgia and North Carolina. Urban school teachers experienced significantly more stress from poor working conditions and poor staff relations than did rural school teachers. Stress from pupil misbehavior and time pressures was significantly greater than stress from poor working conditions and poor staff relations for both rural and urban school teachers. Poor working conditions and time pressures predicted burnout for rural school teachers; pupil misbehavior and poor working conditions predicted burnout for urban school teachers.

Our study found a direct correlation between stress and location of the schools with an 'r' value 0.98. The teachers of urban schools were more stressed than rural and sub urban schools. So it justified the stress with long distance. Income is a major determining factor behind the stress level of a teacher. A negative correlation is found as with the increase in income, stress level is decreasing. But our study found that stress level was high with the highest paid teachers. It can be explained by the fact that teachers in administrative position like Head Master/ Assistant Head Master got high salary but their stress level was also very high. So we can differentiate those teachers who were more stressed by their socio-demographic characters in our study. (Table-4)

**Table-4 : showing socio-demographic characters of teachers for statistically significant stress.**

| |
|---|
| Female sex |
| Age - 50-60 years |
| Urban Teachers |
| Private School |
| Headmaster & Assistant Headmaster |
| Higher paid teachers |

## CONCLUSION

Teaching is quite stressful occupation. Increased age and female sex are non modifiable stress factors where as increased remuneration and decreased time to commute to schools can cause decreased stress which is potentially modifiable. A regular increment in remuneration and relocation according to place of residence can decrease the

stress level. For female teachers, helping hand from their spouses in household chores may just be a big difference. Sharing responsibility of administrative duties between teachers can decrease the stress level of administrators.

## LIMITATION OF THE STUDY

1. The study was a one-time cross-sectional study; presence of any immediate stressor may just alter the study result.
2. Student behavior pattern, work atmosphere, relationship with colleagues and subject of teaching which are considered as important controlling factor in various studies have not included here due to limited time frame of the study.

## FUTURE SCOPE

1. As this study based on the some recognized work scale, it is expected to get a better scenario of stress. It is expected to be a significant addition to stress related literature of teachers.
2. This study used some socio- demographic variable which might be studied in details in the future.
3. Some statistical significance tests are not showing any result due to data redundancy, which may modify with further extensive study with large sample size.

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ORIGINAL ARTICLE

# Burden & Coping in Caregivers of Persons with Dementia

**Dr. Priyajyoti Chakma[1], Dr. H. K. Goswami[2]**

[1]Registrar, Department of Psychiatry, Agartala Govt. Medical College, Agartala, Tripura West, 7990061
[2]Prof. & HOD Department of Psychiatry, Assam Medical College, Dibrugarh, 7860022

## ABSTRACT

**Background :** Dementia is a serious loss of global cognitive ability in a previously unimpaired person, beyond what might be expected from normal aging. Dementia is often associated with physical, mental and financial burden. Care giving is associated with more psychological complaints & coping is most often conceptualized as a response to the demands of specific stressful situations.

**Aim :** To assess the burden in caregiver of persons with dementia and also assess the coping strategies used by the caregivers.

**Settings and Design :** The study was conducted in the Department of Psychiatry, Assam Medical College & Hospital, Dibrugarh. The subjects for the study were recruited from the outpatient & indoor facilities of the department of Psychiatry, Assam Medical College & Hospital, Dibrugarh. After application of the inclusion and exclusion criteria, (n=40) cases of Dementia and theircaregivers (n=40) were included in the study.

**Materials & Methods :** Diagnosis of dementia was done by fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IVTR).The tools used were Burden Assessment Schedule by Thara et al15, Assamese version of ways of Coping Questionnaire by Susan Folkman and Richard S. Lazarus 16-17. Statistical analysis was done by using SPSS-20.

**Results :** The results revealed that level of burden reported by caregivers of dementia patients was high. The most common coping strategies used by caregivers of Dementia patients were confronting coping (72%), distancing(45%), seeking social support(45%) and self-controlling (45%).

Conclusion:The various findings in our study evidence that dementia can have serious consequences on families particularly the primary caregivers. Results highlight the importance of improving the mixed coping skills in burdened caregivers.

**Keywords** : Dementia, caregivers, Burden, Coping strategies

## INTRODUCTION

Dementia (derived from Latin word, dementatus, meaning out of one's' mind) is a serious loss of global cognitive ability in a previously unimpaired person, beyond what might be expected from normal aging. Although dementia is far more common in the geriatric population (about 5% of those over 65 are said to be involved)[1], it can occur before the age of 65, in which case it is termed "early onset dementia"[2]. Dementia is not a single disease, but a non-specific syndrome affecting many cognitive areas - memory, attention, language, and problem solving. Normally, symptoms must be present for at least six months to support a diagnosis[3]. Dementia is the development of multiple cognitive deficits manifested by both

**Correspondence :**
Dr. Priyajyoti Chakma, Registrar, Department of Psychiatry, AGMC & GBP Hospital, Agartala 799006, Tripura, India
Phone : 8131043421, Email : pjchakma84@gmail.com

memory impairment & impairment of at least one other cognitive domain including language, praxis, gnosis, & executive functioning[1]

The single strongest risk factor for dementia is increasing age.[4] Prevalence doubles about every 5 years from about 5-8 percent at age 65 to 70 to 15 to 20 percent at the age 75 to 80 and up to 40 to 50 percent over age 85. In 2005, it was estimated that 24.3 million people worldwide were affected with dementia.[5] In 2013, worldwide dementia is estimated to account for 4.1% of all DALYs & 11.3% of years lived with disability & 0.9% of years of life lost.6 In India 1.8 million people have dementia.[5] Across India, more than 42000 older people studied in eight centers suggest that Ballabgarh and Vellore have the lowest prevalence rates while Trivandrum and Thiropour have the highest rates. Among all North Eastern states, Assam has the highest number of cases with dementia.[7-12]

Dementia is often associated with physical, mental and financial burden and evidence suggests that elderly people with dementia in developing countries do not often utilize health care services, and when they do, the health care system is often ill prepared to provide quality services for dementia.[13] The stress and burden experienced by many caregivers to the elderly has recently been the focus of considerable research.[14] Caring for persons affected with dementia is associated with substantial psychological strain as evidenced by high level of stress in caregivers. Care giving is associated with more psychological complaints & coping is most often conceptualized as a response to the demands of specific stressful situations. From the above discussion it is clear that caregiver burden is quite common in patients with dementia. There is dearth of study on this subject of burden & coping in caregivers of patients with dementia from North-Eastern part of the country as yet. Hence, the present study is a sincere effort in this direction.

## MATERIAL & METHODS

The study was done in Assam medical college hospital which is a tertiary care center situated in Dibrugarh. The study subjects were 40 consecutively selected diagnosed cases of Dementia and their caregivers (n=40) from the outpatient & indoor facilities of the department of psychiatry, the period of the study was one year (June 2012-May 2013).Sociodemographic information was gathered as per prepared standard questionnaire. Ethical approval & consent of the patients were obtained in the initial portion of the study. Caregiver burden was evaluated by Burden Assessment Schedule (Thara et al), & Coping strategies were evaluated by Assamese version of ways of Coping Questionnaire (Susan Folkman and Richard S. Lazarus). The aim of the study was to assess the burden in caregiver of persons with dementia& its socio demographic variation and also assess the coping strategies used by the caregivers.

**Inclusion Criteria** : a) Those caregivers giving consent to participate in the study b) Duration of illness of at least 1 year c) Caregivers who were 21 or above 21 years of age, living with & looking after the patient for at least one year prior to the interview d) Patients of both sexes e) Caregivers of both sexes f) Patients fulfilling the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV-TR) criteria for dementia g) All the subtypes of dementia.

**Exclusion Criteria** : a) Patients with previous history of functional psychiatric disorder before the onset of dementia b) Mental Retardation c) Mental and behavioral disorders due to substance use d) Caregiver with chronic debilitating physical illness & a history of past/current psychiatric consultation.

Tools which were used in the study are : a) informed consent form, b) proforma for socio demographic data c) Burden Assessment Schedule (Thara et al) d)Ways of coping questionnaire (Susan Folkman and Richard S. Lazarus).

Burden assessment schedule (BAS, Thara et al, 1998)

BAS, developed by Thara et al. at the schizophrenia research foundation (SCARF) is based on the principle of ethnographic exploration at Chennai, with support from the W.H.O. South East Asian Regional Office. The BAS reflects the caregivers' perceptions & provides valuable & culturally relevant insights to Burden. This is a semi quantitative 40 item scale measuring 9 different areas of objective & subjective caregiver burden. Each item is rated on a 3 point scale ("not at all", "to some extent" or "very much" with a total score ranging from 40 to 120 with higher score indicating greater burden). In BAS the minimum score is 40 & max score 120. Therefore for the requirement of the present study, the cut off has been taken as 80 & those caregivers who scored less than 80 were considered as experiencing lower burden & those who scored more than 80 were considered as having higher burden to maintain homogeneity within the group.[15]

## WAYS OF COPING QUESTIONNAIRE (WOCQ)

WOCQ (ways of coping questionnaire) was translated to local language (Assamese) WOCQ scales reliability Alpha values for 8 subscales of WOCQ came 0.87, 0.76, 0.91, 0.88, 0.95, 0.89, 0.77, and 0.97 respectively which suggests the statistical reliability of the scale. Ways of coping questionnaire is primarily a research instrument in studies for assessment of coping process. It was developed by Susan Folkman and Richard S. Lazarusin 1980. The questionnaire is designed to identify the thoughts and action an individual has used to cope with a specific stressful encounter. The questionnaire measures total of 8 type of coping strategies namely Confronting coping, distancing, self-controlling, seeking social support, accepting responsibility, escape avoidance, planful problem solving and positive reappraisal. There are total 66 questions in the full questionnaire. There are two methods of scoring the ways of coping questionnaire, raw and relative. The decision as to which set of score to use depends on the information desired. Raw score describe coping effort for each of the eight types of coping, whereas relative score describe the proportion of effort represented by each type of coping. In both methods of coping, individuals respond to each item on a 4-pointLikertscale where "1-indicates "used somewhat", 2- indicates "used quite a bit and 3- indicates "used a great deal". In the raw scoring the raw scores are the sum of the subjects responses to the items that comprises a given type of coping used in a particular encounter.[16-17]

## RESULTS

**Table 1 : Sociodemographic profile of the dementia cases**

| Demographic Details | No. of Dementia Cases | Percentage |
|---|---|---|
| **Age (in years)** | | |
| 30-39 | 1 | 2.5 |
| 40-49 | 6 | 15 |
| 50-59 | 6 | 15 |
| 60-69 | 14 | 35 |
| 70-79 | 10 | 25 |
| ≥80 | 3 | 7.5 |
| **Gender** | | |
| Male | 25 | 62.5 |
| Female | 15 | 37.5 |
| **Marital Status** | | |
| Married | 20 | 50 |
| Unmarried | 1 | 2.5 |
| Widow | 5 | 12.5 |
| Widower | 14 | 35 |
| **Educational Status** | | |
| Illiterate | 13 | 32.5 |
| Primary school | 11 | 27.5 |
| Middle school | 3 | 7.5 |
| High school | 9 | 22.5 |
| Intermediate | 1 | 2.5 |
| Graduate or Postgraduate | 3 | 7.5 |
| **Duration of Illness** | | |
| 1-4 years | 27 | 67.5 |

| Demographic Details | No. of dementia cases | Percentage |
|---|---|---|
| 5-8 years | 13 | 32.5 |
| **Religion** | | |
| Hindu | 38 | 95 |
| Muslim | 2 | 5 |
| **Locality** | | |
| Rural | 36 | 90 |
| Urban | 3 | 7.5 |
| Semi-urban | 1 | 2.5 |

As per table 1, 35% belonged to the age group 60-69 years, 25% were from 70-79 years age group,15% were from 40-49 years age group,15% were from 50-69 age groups, 7.5% were ≥ 80 years of age & only 2.5% were from 30-39 years age group. Maximum no of the patients were male (62.5%) & only 37.5% were female. Most of the patients were married (50%), followed by widower (35%), widow (12.5%) and only 2.5% of the cases were unmarried.

As per findings most of the patients were illiterate (32.5%), 27.5% were educated up to primary school, 22.5% up to high school, 7.5% up to middle school & graduate level and only 2.5% studied up to intermediate level. Majority of the participants' duration of illness was between 1 to 4 years (67.5%), rest had duration of illness between 5-8 years (32.5%). Most of the cases belonged to Hindu family (95%) and only 5% belonged to Muslim family. It is observed that in this study 90 % of the patients were from rural background, 7.5% from urban background & only 2.5% from semi-urban background.

**Table 2 : Socio Demographic Profile of the Caregivers**

| Age of the Caregivers (Years) | Number of Care Givers | Percentage |
|---|---|---|
| 21-30 | 9 | 22.5 |
| 31-40 | 12 | 30 |
| 41-50 | 7 | 15 |
| 51-60 | 6 | 17.5 |
| 61-70 | 5 | 12.5 |
| 71-80 | 1 | 2.5 |
| Gender | | |
| Male | 26 | 65 |
| Female | 14 | 35 |
| Marital status | | |
| Single | 2 | 5 |
| Married | 38 | 95 |
| **Educational Status** | | |
| Illiterate | 17 | 42.5 |
| Primary school | 12 | 30 |
| Middle school | 4 | 10 |
| High school | 4 | 10 |
| Intermediate | 1 | 2.5 |
| Graduate or Postgraduate | 2 | 5 |
| **Duration of Care** | | |
| 1-4 years | 27 | 67.5 |
| 5-8 years | 13 | 32.5 |
| Religion | | |
| Hindu | 38 | 95 |
| Muslim | 2 | 5 |
| Locality | | |
| Rural | 36 | 90 |
| Urban | 3 | 7.5 |
| Semi-urban | 1 | 2.5 |
| Urban | 3 | 7.5 |
| Semi-urban | 1 | 2.5 |
| **Relation to Patient** | | |
| Wife | 12 | 30 |
| Son | 16 | 40 |
| Daughter | 2 | 5 |
| Husband | 9 | 2.5 |
| Father | 1 | 2.5 |
| **Type of Family** | | |
| Nuclear | 10 | 25 |
| Joint | 25 | 62.5 |
| Extended | 5 | 12.5 |

As per table no 2, majority of the caregivers belonged to the age group 31-40 years. The mean age of the caregivers was 43.825 years. Hindu caregivers (95%) comprised the bulk of the study group. Majority of the caregivers (90%) were from rural background, followed by (7.5%) from urban and (2.5%) from semi-urban region.Majority of caregivers (67.5%) had duration of care of 1-4 years while 32.5% caregivers' duration of care was of 5-8 years. 42.5% of the caregivers were illiterate. 95% of the caregivers were married while only 5% were single. Majority (40%) of the caregivers were related as sons to the patients. Most of the caregivers (65%) were male while 35% of the caregivers were female. Most of the caregiverswere from joint family (62.5%), followed by 25% from nuclear family &only 12.5% from extended family.

Overall 50% (n=20) of the sample experienced severe burden followed by 30% (n-=12) moderate burden, 15% (n=6) mild burden and only 5% (n=2) experienced no burden.

When distribution of caregivers by age with burden was explored, it was found that there was a significant difference in burden among the various caregivers by age with highest burden found in the age group of 61-70 years (mean 99.4). However, there was a no significant difference in burden among the various caregivers by religion. There was a significant difference in burden among the various caregivers by duration of care giving with highest burden found in 5-8 years of duration of care (mean 96.61).

There was a significant difference in burden among the caregiver by various educational level with highest burden found in illiterate (mean=95.53) and lowest among graduate caregivers (mean=63.50). There was a significant difference in burden among the various caregivers by locality with highest burden found in rural group (mean 87.19). There was a significant difference in burden among the various caregivers by type of family with highest burden found in nuclear family (Mean 90.92). There was no significant difference in burden among the various caregivers by marital status. There was no significant difference in burden among the various caregivers by sex. It was found that there was no significant difference in burden among the various caregivers by relation to patient.

**Table No. 3 : Distribution of care givers with respect to predominant coping behavior**

| Coping behavior | No of caregivers | Percentage |
|---|---|---|
| Confronting coping | 29 | 72.5 |
| Distancing | 24 | 60 |
| Self-controlling | 18 | 45 |
| Seeking social support | 18 | 45 |
| Accepting responsibility | 19 | 42.5 |
| Escape avoidance | 12 | 30 |
| Planful problem solving | 11 | 27.5 |
| Positive reappraisal | 14 | 35 |

All the caregivers in the study group used more than one style of coping behavior. As shown in table 3, most commonly used coping behaviors were "confronting coping" (72.5%) followed by "distancing" (60%) , "Seeking social support" (45%), "self-controlling" (45 %),"accepting responsibility" (42.5%), "positive reappraisal"(35%) and "escape avoidance"(30%). "Planful problem solving" (27.5%) was the least commonly used coping behavior.

Significant positive correlation (*p value <0.01) was observed between caregiver burden & coping behaviors like "Confronting coping" & "Escape avoidance". Statistical analysis revealed significant negative correlation (*p value <0.01) observed between caregiver burden & coping behaviors like" seeking social support", "accepting responsibility" and "planful problem solving".

## CONCLUSION

The various findings in our study have added to the growing evidence that Dementia can have serious consequences on families particularly the primary caregivers. This study demonstrates some of the important socio-demographic variables which have got influence on caregiver burden and therefore caregivers developed ways to alleviate burden, or more efficiently stated, cope. Results highlight the importance of improving the mixed coping skills in burdened caregivers. Therefore, the present study has given some insight in understanding the stress and burden among the caregivers of dementia patients.

## LIMITATIONS

The study sample was relatively small. The study being hospital basedmay not reflect the true picture of the caregivers in the general population.Some of thecaregiver factors e g. Personality of the caregiver, cultural background, and psychological profile were not assessed and may have influenced the caregiver responses.Severity of the Dementia was not assessed and may have influenced the caregiver responses.

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# Prevalence of Common Mental Disorders at a General Health Clinic in a Corporate Hospital

**Dr. Sanjoy Sen[1], Dr. Bhaskar Mukherjee[2]**

[1]Consultant Psychiatrist, Hexham Community Mental Health Hexham General Hospital Hexham, NE 46 1QS UK
[2]RMO Malda Medical College

## INTRODUCTION

Western studies show there is a high proportion of somatization of psychiatric disorders among presenters in medical outpatients. Many of these patients go through unnecessary investigations and remain undiagnosed for a significant length of time. These not only add to the suffering of the patients, but also lead to wastage of important resources and manpower. Similar studies have not been replicated in Indian corporate hospital set up using validated questionnaires. In fact, there is dearth of well organized integrated mental health units in corporate hospital setting in India.

Our whole idea was to explore the prevalence of psychiatric illnesses presenting in the general health clinics, both somatoform disorders, and other psychiatric illnesses comorbid with physical illness.

For any given population, a significant proportion will suffer from some kind of psychological illness and disability. The prevalence of common mental disorder in general population was assessed by one household survey based study in London.The results are depicted with a pie chart (Fig.1).

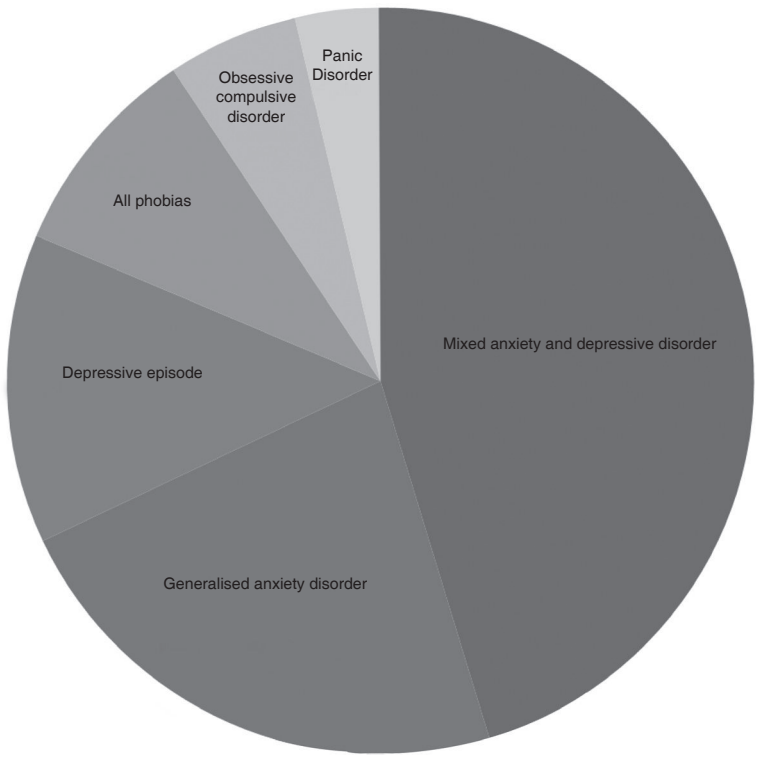


Fig. : Disposition according to prevalence of different types of Common Mental Disorders in a House-hold survey[1].

The existence of co-morbid psychotic illnesses associated with major physical disease forms are given in a table (Table 1).

## Table 1. : CMDs associated with Medical Conditions

| System | Disease | Associated Common Mental Disorder | Ref |
|---|---|---|---|
| Cardiovascular | Arrhythmias | Psychosocial stress, Depression | [2] |
| | Myocardial Infarction | Stress, Depression (31%) & Major Depressive Disorder, Type-A personality, Type-D personality | [3-6] [7-9] |
| | Essential Hypertension | Stress | [10] |
| Respiratory System | Asthma | Major Depressive Disorder, Panic Attacks, General Anxiety | [11] |
| | COPD | Depression (20-60%), Delirium, panic attacks (38%), phobia | [12] |
| | Pulmonary Embolism | Sudden anxiety, panic attacks | |
| | Sleep Apnea | Sleep disturbances, day-time somnolence, Depression, Irritability, Personality changes. | |
| Gastrointestinal Disorder | Esophageal Dysmotility | Axis-1 psychiatric illness, like Major Depressive Disorder (52%), Generalized Anxiety (36%), Somatization Disorder (20%) and Substance related Disorder (20%). | [13] |
| | Irritable Bowel Syndrome | Panic (26%), generalized anxiety (26%), social phobia (26%), major depressive disorder (23%) | [14] |
| | Inflammatory Bowel Disorder | Depression, Stress | [15] |
| | GERD and Ulcer | Anxiety Disorder | [16] |
| Metabolic Disorder | Obesity | Eating Disorder, Depression | |
| | Wilson's Disease | Irritability, Aggression, Disinhibition, Recklessness, Depression | [17] |
| | Hepatic encephalopathy | Substance abuse | [18] |
| Endocrinal Disorder | Diabetes Mellitus | Anxiety (45%), Depression (33%), | [19] |
| | Hyperthyroidism | Anxiety, Depression | [20] |
| | Hypothyroidism | Depression | [21] |
| | Hyperparathyroidism | Lethargy, Drowsiness, impaired concentration, confusion, psychosis | [22] |
| | Hypoparathyroidism | Delirium, Neuropsychiatric symptoms | |
| | Cushing Syndrome | MDD (50%), Alcoholism, Anorexia nervosa, Panic disorder, psycho-active substance withdrawal symptoms | [23] |
| | Addison's Disease | MDD, Personality disorder, dementia, somatoform disorder. | |

| System | Disease | Associated Common Mental Disorder | Ref |
|---|---|---|---|
| Autoimmune Disorder | SLE | Psychosis, delirium, seizures, cognitive impairment, Depression, memory disorder, learning difficulty | [24-26] |
| Renal Disorder | ARF | Delirium, Somnolence, Asterixis, neuromuscular irritability | |
| | CRF with ESRD | Irritability, lethargy, insomnia, anorexia, seizures, restless legs syndrome, dementia, depression | [27] |
| | Hemodialysis | Personality disorders, mood disorders, phobia, panic disorders, substance related disorders, adjustment disorders, cognitive disorders | |
| Hematological Disorder | Anemia | Dementia, depression | [28] |
| | Leukemia | Anxiety, Depression | [29] |
| | Hemorrhagic Disorders | Anxiety, Depression, stress | [30] |
| Infections | STDs | Anxiety, Depression, Personality change, PTSD | [31] |
| | Chronic Diseases | Anxiety, depression | [32] |
| | Encephalitis | psychosis | [33] |
| Surgery | | Delirium, Cognitive dysfunction, Depression | [34] |
| Cancer therapy | | Depression | [35] |
| Obstetric and Gynaecological disorders | Infertility | Depression | [36] |
| | Hysterectomy | Depression | [37] |
| Neurological disorders | Stroke | Anxiety, depression, panic | [38,39] |
| | Parkinson's disease | Anxiety | [40] |
| | Multiple Sclerosis | Depressive disorder | [41] |
| | Brain tumour | Mixed anxiety depression | [42] |

Using confirmatory factor-analysis (CFA) to analyse the BHPS data Y.B. Cheung compared various models found that the 3-factor model proposed by Graetz gave the best fit. The factors are anxiety and depression (4 items), social dysfunction (6 items), and loss of confidence (2 items)[43].

A prospective cohort study involving a sample of 800 adults using GHQ-12 concluded that negative illness attitude the presence of physical and psychiatric disorders, health anxiety, changes in psychological distress, reported physical symptoms and demographic factors the such as age and sex were independently associated with frequent consultations at general practitioners clinics over 5 years period[44].

Another prospective study of 330 first-time mothers using GHQ-12 accurately picked up the number of cases with post – partum depression[45]. In another study GHQ-12 was found to be reliable and valid even when administered over phone in a dermatology clinic[46].

## AIMS & OBJECTIVES

As mentioned above, there is ample data on psychiatric illness presenting at the general practitioners' (GP) clinics, medical clinics, and elsewhere. GP and medical clinics data are fair indices of prevalence of common mental disorders (CMD) in community samples. Moreover, many studies were done by household surveys[47] especially in western world[48].

However, there is scarcity of similar data particularly in corporate hospital setting, more so in India. This may be explained by the fact that most corporate hospitals function as tertiary centers and there data may not reflect the true prevalence of CMD in the population. Also, in Indian economic set-up, corporate hospitals only cater for a selective group of patients i.e. higher social classes, in which the prevalence of CMD might not reflect the scenario of the community as a whole[49].

However, very much alike all other countries, there will always be a 'hidden population" who will present at general medicine clinics with vague symptoms like tiredness, fatigue, headaches, body aches, weakness, lack of sleep and appetite etc. A significant proportion will actually be suffering from CMDs. Our main objective was to find and gauge this "hidden population" in which an additional psychiatric service will lead to a comprehensive management of their illness with a much reduced overall cost.

We aimed to use a validated questionnaire which will detect CMDs in patients attending the general health clinic. GHQ 12 is a well-established self-rated screening instrument designed to detect possible psychiatric morbidity in the general population. Each item in the GHQ 12 consists of a question asking whether the respondent has recently experienced a particular symptom or feeling (e.g. happiness, anxiety, sleep disturbance ) on a scale ranging from 'less than usual' to 'much more than usual'.

We aimed to collect the first fifty completed questionnaires and analyze the data to evaluate prevalence of CMDs in our target population. We also aimed to compare our data with previous studies in different settings.

# METHODOLOGY

We first arranged a training session for everyone working at the general health clinic with the researchers. The main project worker (NB) then intimated them about our project.

The study had received approval from the hospital ethics committee. The data were collected only after receiving informed consent from the patients and in such a way that the confidentiality of patients would be maintained. Researchers remained blind about which patient had submitted which particular questionnaire. Total fifty consecutive responses were collected.

# RESULTS :

Out of the 50 attenders who participated in the study, one failed to answer all the questions. We therefore excluded the questionnaire from the study. We were left with 49 appropriately answered questionnaires to whom we were completely blind. The minimum score was 4 and maximum being 30 (vide table 1).We stratified the scores as follows 0-12, 13-15, 16-20 & >20. 28 participants scored between 0-12, 8 between 13-15, 11 between 16-20 and 2 scored >20 (vide table 2). Further findings are shown in table 3.

**Table 2**

| Scores | No of participants |
|---|---|
| 0-12 | 28 |
| 13-15 | 8 |
| 16-20 | 11 |
| >20 | 12 |

**Table 3 : A Comparison between AMRI, Scottish House Condition Survey (SHCS) and mental health survey 2004, England.**

| | AMRI | SHCS 2002 [62] | Mental Health 2004 [63] |
|---|---|---|---|
| Base : All respondents who answered the GHQ12 | 49 | 16537 | 1300 |
| | % | % | % |
| 1. Been able to concentrate on what you're doing? | | | |
| Better than usual | 4.1 | 4 | 7 |
| Same as usual | 57.1 | 81 | 76 |
| Less than usual | 30.6 | 13 | 16 |
| Much less than usual | 8.2 | 3 | 2 |
| **2. Lost much sleep over worry?** | | | |
| Not at all | 38.8 | 33 | 29 |
| No more than usual | 32.6 | 50 | 50 |
| Rather more than usual | 24.5 | 13 | 16 |
| Much more than usual | 4.1 | 4 | 4 |
| **3. Felt that you are playing a useful part in things?** | | | |
| More so than usual | 4.1 | 8 | 12 |
| Same as usual | 75.5 | 79 | 75 |
| Less so than usual | 16.3 | 10 | 10 |
| Much less than usual | 4.1 | 3 | 3 |
| **4. Felt capable of making of decisions about things?** | | | |
| More so than usual | 12.2 | 7 | 11 |
| Same as usual | 73.5 | 84 | 80 |
| Less than usual | 14.3 | 7 | 8 |
| Much less than usual | 0 | 1 | 1 |
| **5. Felt constantly under strain?** | | | |
| Not at all | 20.4 | 24 | 22 |
| No more than usual | 28.6 | 55 | 52 |
| Rather more than usual | 42.8 | 17 | 20 |
| Much more than usual | 8.2 | 5 | 5 |
| **6. Felt you couldn't overcome difficulties?** | | | |
| Not at all | 38.8 | 36 | 35 |
| No more than usual | 32.6 | 53 | 51 |
| Rather more than usual | 24.5 | 9 | 11 |
| Much more than usual | 4.1 | 2 | 2 |
| **7. Been able to enjoy your normal day to day activities?** | | | |
| More so than usual | 10.2 | 5 | 8 |
| Same as usual | 65.3 | 75 | 74 |

**Table 3** continued….

| | AMRI | SHCS 2002[ 62] | Mental Health 2004 [63] |
|---|---|---|---|
| Less so than usual | 16.3 | 15 | 14 |
| Much less than usual | 8.2 | 4 | 4 |
| **8. Been able to face up to your problems?** | | | |
| More so than usual | 10.2 | 5 | 9 |
| Same as usual | 77.6 | 85 | 81 |
| Less than usual | 10.2 | 8 | 8 |
| Much less than usual | 2 | 2 | 2 |
| **9. Been feeling unhappy or depressed?** | | | |
| Not at all | 36.7 | 40 | 42 |
| No more than usual | 32.7 | 43 | 38 |
| Rather more than usual | 24.5 | 13 | 16 |
| Much more than usual | 6.1 | 4 | 4 |
| **10. Been losing confidence in yourself?** | | | |
| Not at all | 53.1 | 47 | 49 |
| No more than usual | 26.5 | 40 | 36 |
| Rather more than usual | 16.3 | 10 | 12 |
| Much more than usual | 4.1 | 3 | 3 |
| **11. Been thinking of yourself as a worthless person?** | | | |
| Not at all | 75.5 | 64 | 67 |
| No more than usual | 14.3 | 28 | 25 |
| Rather more than usual | 8.2 | 5 | 7 |
| Much more than usual | 2 | 2 | 1 |
| **12. Been feeling reasonably happy, all things considered?** | | | |
| More so than usual | 20.4 | 10 | 14 |
| Same as usual | 69.4 | 79 | 75 |
| Less so than usual | 6.1 | 8 | 10 |
| Much less than usual | 4.1 | 3 | 2 |

## DISCUSSION

Our main objective was to assess prevalence of common mental disorders (CMD). To detect the psychotic illness we need a well-tested questionnaire. The 12 - item GHQ has been widely used in many countries for detecting psychological morbidity. Some major national studies such as the British Household Panel Survey (BHPS) also employ this instrument[50].

While the longer versions of the GHQ are normally considered multidimensional, the GHQ – 12 is often regarded as measuring only a single dimension of psychological health[51].

Corti analyzed the GHQ-12 data in the BHPS and maintained that the high Cronbach's alpha value indicated the unidimensionality of this instrument. However, several authors suggested that the GHQ-

12 contained two or three meaningful factors. Using principal component analysis Politi identified two factors, general dysphoria & social dysfunction[52]. Graetz (1991) proposed three different three-factor models[53].

Stratification of available data is always statistically useful and helps to understand the epidemiology better. Likewise, if we left a box with options male or female, and asked the respondents to tick appropriately, we would be able to stratify our data according to sex.

Moreover, if we left another box for the respondent to write their age, further stratification according to age groups would be possible. This would have helped us to better understand the epidemiology and would allow us to compare our data with similar previous studies.

However, we had a few serious issues to consider : By no means were we prepared to compromise with the confidentiality and confounders and biases.

The original GHQ 12 in its present form doesn't have options of age or sex. It is validated or reliable only in its present form and any alterations may interfere with its validity.

The most important of all was, the GHQ 12 is a screening tool and not a diagnostics one. It is not operational and doesn't aid to arrive at a diagnosis of any mental illness parse.

So even if we stratified our data further, we wouldn't really add anything to our current epidemiological knowledge. Hence, we decided to stick to our original objective of evaluation of prevalence of all psychological illness in our given sample.

The GHQ manual says: in a Likert scale ranging like "not at all / no more than usual/ rather more than usual / much more than usual', the scrolling should be 0, 1, 2, & 3 respectively[54]. Accordingly, every questionnaire can yield a minimum score of zero to a maximum of 36 (12 questions). The GHQ manual advises that scores between 11 and 12 are typical, scores above 15 will mean psychological distress and scores above 20 will mean severe psychological problems[54].

According to these guidelines, we had 4.1% respondents scoring over 20 and 11 respondents scoring between 16 and 20 (22.4% of the final sample size). So, 4.1% of sample had severe problems and another 22.4% were in some kind of psychological distress.

This will mean 73.5% were psychologically stable. This is strikingly similar figure with many other previous studies either as door-to-door survey or GP clinic based survey.

However, the GHQ manual doesn't clarify what they mean by score of 11-12 being 'typical'. Is it the mean, median or mode? Understandably, this score cannot be median. Our study showed scores ranging from 4 to 30 with a median of 17. The mode was 9 (score by 8 participants). We calculated the mean score of 49 participants to be 12.2. It seems the term "typical", as used by the GHQ manual is fairly close to the mean score of our study.

Weich et.al.2003, following a cross sectional survey of several electoral wards in England, Wales & Scotland commented "little evidence was found of statically significant variance in the prevalence of common mental disorders (CMD) between wards, which ranged from 18.8% to 29.5%....."[55].

It is interesting to note that our figure of CMD's at the General Health Clinic of 22.4% falls well within this range despite being done in a completely different setting and being a hospital based rather than community study. Our figures were comparable to two other similar studies done previously viz. SHCS and Mental Health Survey, England, 2004. We have also given an elaborate breakdown of individual questions and their responses.

## LIMITATIONS

The major limitation of our study is its small sample size, especially in comparison to the previous studies on the same area. In the analysis of data a more sophisticated model could have been used to show further relations of psychiatric comorbidities with various other socio demographic and clinical parameters. The subjects were included in the study without any clear inclusion or exclusion data. And finally we had used a self-rated questionnaire which was not translated to a language that is spoken by the subjects. This will raise doubt about the validity of the instrument in this particular study.

## CONCLUSION

Psychiatric comorbidities in general medical patients are as common in our hospital as it is in various other parts of the world. So an integrated competent mental health team in this sort of hospitals would definitely be quite useful in the holistic management of all these patients. However in view of some limitations of the current study our findings should be cautiously generalized.

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CASE REPORT

# Levetiracetum Induced Angioedema without Prior Reaction to Phenytoin

**Dr. Priyajyoti Chakma[1], Dr. Bappaditya Roy[2], Dr. Punyadhar Das[3]**

[1]Registrar, Department of Psychiatry, Agartala Govt. Medical College, Agartala, Tripura West, 799006, India
[2]Post graduate trainee, Department of Psychiatry, Agartala Govt. Medical College, Agartala Tripura West, 799006, India
[3]Prof. & HOD, Department of Psychiatry, Agartala Govt. Medical College, Agartala Tripura West, 799006, India

## ABSTRACT

Allergic reactions to antiepileptic drugs in the form of skin rash are not uncommon but angioedema, an acute life threatening reaction is rare. Levetiracetum has been considered relatively safe compared with other anti epileptic drugs with regard to skin reactions. Though very uncommon but angioedema, a life threatening reaction has been reported with carbamazepine and oxcarbamazepine. We report a case of an 18-year-old woman with generalized tonic clonic seizure who developed angioedema following levetiracetam monotherapy. She was previously on phenytoin and seizure attack remained unchanged, levetiracetam was slowly substituted for phenytoin. After the first dose of levetiracetam she developed a generalized maculopapular skin rash with associated swelling of the face, lips and tongue. The patient had no previous history of skin rashes with any drugs. Levetiracetam was stopped and she improved after treatment with, antihistamines and corticosteroids.

**Key words** : Levetiracetum, cutaneous angioedema, skin rash, seizure

## INTRODUCTION

Hypersensitivity to anti epileptic drugs is unpredictable and not dose related. Amongst different hypersensitivity reaction reported most common type is mild skin rash.[1] Most serious reaction occurs as toxic epidermal necrolysis, Steven Johnson syndrome or drug reaction with eosinophilia and systemic symptoms. Another uncommon acute life threatening allergic reaction is angioedema. Angioedema is an uncommon acute life threatening allergic reaction to Levetriacetum. Type IV hypersensitivity reaction is considered to be T cell mediated in which antigen binds covalently to a MHC complex on the antigen presenting cells(APC)and subsequently triggering a delayed hypersensitivity reaction. Another mechanism may involve antigen/T cell/MHC interaction through non-covalent binding.1 Recent studies have shown that most anti epileptic drugs (phenytoin, carbamazepine, valproic acid and lamotrigine) related hypersensitivity reactions are secondary to MHC (Major Histocompatibility Complex) dependent clonal T cell proliferation.[2,9] Type I, II, III reactions are B cell mediated and Type IV involves

**Correspondence** :
Dr Priyajyoti Chakma, Registrar, Department of Psychiatry, AGMC & GBP Hospital, Agartala 799006, Tripura, India
Phone : 8131043421
Email : pjchakma84@gmail.com

deposition of immune complexes on different tissues causing vasculitis and tissue damage.[2]

We report a case of women who developed angioedema related to levetiracetum monotherapy first dose.

## CASE

18 years old right handed, Hindu, married, literate, woman of middle socio-economic status from rural part of Tripura, who reported in Psychiatric Outpatient Department (OPD) of Agartala Govt. Medical College & GBP Hospital, Tripura,India who had a generalized tonic clonic seizure which started at the age of 17 years. She then continued to have seizures twice per month. Seizure episode started during sleep with sudden onset of tonic clonic contraction of the both upper and lower limbs with clinching of teeth. Seizure episodes lasted for 5 to 7 minutes followed by loss of consciousness. After gaining consciousness she was amnestic about seizure episode. She was admitted in female psychiatry ward. There was no history of febrile seizure, CNS infection or head trauma. Her neurological examination was unremarkable. Her mental status examination showed depressed affect apart from that no abnormality detected. EEG tracing was done and abnormal electrical activity was found. MRI revealed normal study. She was initially treated with Phenytoin 300 mg and she was maintained on it for one year without any skin rashes or any side effects. Since her seizure activity again started while on medications, Levetiracetam was slowly substituted for phenytoin. Her total body weight was 50 kg. She was placed on levetiracetum 500 mg daily as monotherapy. She was on no other medications and had been off phenytoin for one week. Only after the first dose of Levetriacetum she developed generalized wheal, flare with popular eruption of face and skin with erythema and swelling of face, ear lobules and also both upper limbs. Dermatological consultation was done and diagnosis of urticarial angioedema was made. Her blood pressure and oxygen saturation remained normal. CBC including eosinophils immunology remained normal. Levetiracetam was discontinued and she was treated with methyl-prednisolone and antihistaminic. Swelling of her lips and tongue resolved within 48 hours and skin rashes disappeared within 5 days. Tablet Clobazam 5 mg thrice daily dose was started, which she tolerated well with no major side effects and remained seizure free.

## DISCUSSION

3-15% incidence of skin rashes develops as adverse reaction to anti epileptic drugs.[1,3] Aromatic compounds such as Phenobarbital, Phenytoin and Carbamazepine has higher risk for developing skin reactions. Lamotrigine, a non-aromatic anti epileptic drug is also associated with high frequency of skin rash if it is introduced rapidly.[4] Levetiracetam is a broad spectrum anti epileptic that has been shown to be effective for a variety of seizures in adults and children.[5] Levetiracetam is considered to be effective, well tolerated and safe in patients with epilepsy and other medical conditions that are difficult to manage in view of serious adverse effects occurring with aromatic anticonvulsant group of drugs. A recent case report of dose related drug eruption to Levetiracetam has been described.[8]

The spectrum of allergic reaction varies from simple skin rash to more severe form of Steven Johnson syndrome, toxic epidermal necrolysis or DRESS syndrome.[6]

Angioedema is an allergic reaction similar in appearance to urticaria in which patients develop localized swelling in the dermis and submucosa.[7] It can be life threatening due to airway obstruction from laryngeal oedema. In this case angioedema developed after Levetiracetam 500 mg single dose. Previously (2-3) cases are reported with levetiracetum induced angioedema but with previous history of skin rashes with aromatic antiepileptic drugs (such as phenytoin).

**Conclusion** : Although aromatic antiepileptic drugs are known to cause allergic reactions and newer antiepileptic drugs such as levetiracetam are

considered to be safe, they still should be used with caution and with careful monitoring.

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CASE REPORT

# Successful Use of Graded Exposure Therapy in the Treatment of Social Phobia in a 10 year old Child

**Dr. Satyakam Mohapatra**

Mental Health Institute, Department of Psychiatry, SCB Medical College, Cuttack

## ABSTRACT

Social phobia is one of the most common psychological disorders seen in children and adolescents. The paucity of literature and lack of training in the behavioural treatment of children with social phobia among health care professionals has made their treatment difficult. The purpose of the present case report was to demonstrate the utility of behavioral treatment (graded exposure therapy) for social phobia in children.

## INTRODUCTION

Social phobia is one of the most common psychological disorders seen in children and adolescents. Studies from India show that the prevalence of social phobia in children and adolescents varies between 0.19%- 0.27%[1, 2]. 60% children with social phobias have co morbid internalizing or externalizing disorders[3]. Because of the high comorbidity rates, social phobia places youth at risk for long term problems across domains of education, social relationships, and employment. Unfortunately, paucity of literature exists regarding the treatment of social phobia in young children, despite the knowledge that traditional techniques (i.e., cognitive-behavioral therapy [CBT]) may not be practical. The purpose of this article is to present a case of 10-year-old child where graded exposure therapy was done successfully for treatment of social phobia.

## CASE HISTORY

Master A, 10-year-old child with uneventful birth and developmental history without past and family history of psychiatric illness presented with complaints of difficulty in reading in class in front of all classmates and teachers, difficulty in answering questions in classroom, difficulty interacting with classmates from last 4 years. He also avoided interacting with known and unknown people who came to his home. He had difficulty in answering questions in viva examination and difficulty in performing on stage in school functions. On assessment his IQ was 115[4]. According to DSM –IV TR a diagnosis of social phobia was made. On Social Anxiety Scale for children—revised (SASC-R)[5] the child scored 58. It was planned to treat the child with only non-pharmacological method. The patient was assessed for suitability of cognitive behavioural therapy but he was not able to understand the cognitive concept of CBT. So graded exposure therapy in vivo was started. Hierarchy of phobic cues was made after discussion with child and mother. The first task selected for exposure was the least feared phobic cue in the hierarchy list i.e. reading infront of others. So he was asked to recite a poem from his own book in front of all residents of our department. The child was not able to maintain eye to eye contact with the residents while reciting the poem, he was reciting in a hurry,

looking anxious, and reciting poems without any emotions and feelings. He continued his recitation for 5 minutes in this manner. After 5 minutes he recited in a better way. He was more confident, reciting in a slow speed than before, not looking as anxious as earlier. He continued this for next 10 minutes. He was appreciated and encouraged by all residents present there including his mother. He was given homework to recite poems in front of his class and his mother was told to collect information about his performance from the teacher. In next visit homework assessment showed slight improvement in his performance. The patient was moved up in the hierarchy of phobic cues as soon as anxiety caused by easier ones decreased. The earlier one was repeated later on and incorporated into everyday life through homework assignment. Reinforcement was given to the child constantly in the form of praise and small prizes following completion of the task. Every week two sessions were done. After 8 sessions of therapy Social Anxiety Scale for children—revised (SASC-R) showed a score of 40. There was improvement in interaction with friends and teachers, performance in viva examination improved, the child was able to answer questions in the class. It was planned to do 2-3 more sessions by moving up in the hierarchy of phobic cues and to continue homework assignment with continuous reinforcement to the child.

## DISCUSSION

Fears in children are highly concrete[6], and therefore, the cognitive aspects of CBT (e.g., altering schemas, cognitive distortions) are beyond the developmental capabilities of children. Efficacy of behavioral techniques in treating phobias in children has been well established[7,8]. The purpose of the present case report was to demonstrate the utility of behavioral treatments for social phobia in children. Our case has shown significant improvement with 8 sessions of graded exposure therapy. Exact rules of graded exposure therapy are usually difficult to follow in children with phobia. That also happened in our case. The steps for completion of the fear hierarchy and session structure were not completely standardized. So it is important to individualize the therapy as per the child's need to get the best result. The paucity of literature and lack of training in the behavioural treatment of children with social phobia among health care professionals has made their treatment difficult. More research in the field of behavioural treatment for different psychiatric disorders in children and adolescents is required.

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