

Review Article

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Delirium in general practice

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Delirium is a complex neuropsychiatric syndrome characterized by disturbances in consciousness, orientation, memory, thought, perception, and behaviour due to one or more structural and/or physiological abnormalities directly or indirectly affecting the brain. It is quite prevalent in medical and surgical settings and is associated with high rates of death and healthcare costs. We review its prevalence, clinical features, risk factors, pathogenesis, assessment instruments, differential diagnosis, management, prognosis and prevention. Special emphasis is given on the Indian research, which is quite meagre.

Key words Delirium - disorientation - memory impairment - mood changes - prevalence

Introduction

The word delirium is derived from the Latin words *de* (from, away) and *lira* (track, furrow), suggesting that the state was a change from normal consciousness and behaviour. The term was first used in the modern day context in 1st AD by Celsus, physicians earlier to him had recognized it as *phrenitis* or *lethergus*. Phrenitis referred to a transient mental condition associated with physical illnesses and characterized by restlessness, insomnia, and disturbance of mood and perception¹. Lethergus referred to a related clinical condition with features of somnolence, inertia, and reduced response to stimuli².

Currently delirium is understood as a complex neuropsychiatric syndrome that is characterized by disturbances in consciousness, orientation, memory, thought, perception, and behaviour due to one or more structural and/or physiological abnormalities

directly or indirectly affecting the brain. Typically it is a potentially reversible brain dysfunction with acute onset and fluctuating course. The altered mental state in delirium is considered to be on the continuum between coma and stupor at one extreme and normal wakefulness and alertness at the other³.

Delirium has a high mortality rate ranging from 6 - 18 per cent (twice that of matched controls) and is not only an important risk marker for dementia, but also for death⁴. In fact, delirium is a medical emergency and should be managed and treated on the same lines. It is independently associated with significant increases in the length of hospital stay, requirement for institutional care, functional decline, rate of death and healthcare costs^{3,5}, all of which become very important in a resource-scarce country like India. Hence, it is important for all clinicians (physicians and psychiatrists alike) to be aware of this entity and have basic knowledge to manage it.

For this review we searched the literature on the electronic databases (PUBMED, Google, Google scholar, Search Medica *etc.*). Cross-searches of key references (both electronic and hand-search) often yielded other relevant material. The primary search term used was “delirium”; in addition it was combined with the following terms: prevalence, differential diagnosis, clinical features, risk factors, pathogenesis, rating scales, instruments, treatment, typical antipsychotic, atypical antipsychotic, behavioural management, environmental manipulation, non-pharmacological treatment, prevention and prognosis. All suitable publications were extracted for the last 10 years. No systematic analysis of the literature was carried out, but based on our research and clinical experience key recent articles were included.

Prevalence

Delirium is a common problem across different treatment settings, yet little information is available about the rate of delirium in general population. In a cross-sectional study of a community sample using DSM-III criteria, Folstein *et al*⁶ reported a prevalence rate of 0.4 per cent in subjects aged >55 yr. In a review of mostly prospective studies in hospitalized patients, Fann⁷ reported the incidence to range 3-42 per cent and prevalence to range 5-44 per cent. In another more recent review of 42 studies, Siddiqi *et al*⁵ reported a prevalence of 10-31 per cent when the patients were assessed within 24 h of admission and the incidence of new cases during hospital stay to be 3-29 per cent; overall the rate of occurrence of delirium per admission was 11-42 per cent. The rates among these studies vary according to the population assessed, study setting and identification method used. However, generally the delirium is more frequent with older age, pre-existing cognitive impairment, certain medical or surgical problems (renal impairment, fracture neck of femur, *etc.*), and admission to the intensive care unit (ICU). Thus, the rates of delirium increase with the increase in the mean age of the general population.

Nosology

Varieties of synonyms persist in clinical practice and are used by physicians from different disciplines. This is also reflected in the literature where terminology tends to emphasize the aetiology or setting in which delirium is encountered. Examples include acute confusional state, ICU psychosis, hepatic encephalopathy, metabolic encephalopathy, toxic psychosis, acute brain failure. However, certain terms (acute brain failure, acute

organic brain syndrome) more accurately highlight the global nature and acute onset of cerebral cortical deficits in patients with delirium, though these lack specificity from other cognitive mental disorders⁸.

In the first-ever official classification manual of the American Psychiatric Association (DSM-I)⁹, acute and chronic brain syndromes were the diagnoses equivalent to the current concept of delirium. Mostly, these syndromes (delirium) were classified as acute and reversible conditions characterized by impairment of orientation, memory, intellectual functions, judgement, and lability and shallow affect. Hallucinations and delusions were considered secondary to the disturbance of sensorium. The DSM-II¹⁰ contained the same five basic symptoms as DSM-I, but it described two organic brain syndromes, psychotic and non psychotic type, each with an acute or chronic onset. However, it was the DSM-III¹¹ which published the diagnostic criteria for delirium and distinguished it from dementia and other organic mental disorders, each identified by its own explicit criteria. It laid emphasis on ‘clouding of consciousness with reduced capacity to shift, focus and sustain attention’. Other major criteria were disorientation and memory impairment; temporal course, perceptual disturbances, speech incoherence, sleep-wake disturbance, and altered psychomotor activity. Delusions, typically poorly systematized and persecutory, and disorders of thought process were not part of the criteria. The DSM-III-R¹² changed the emphasis from ‘clouding of consciousness’ to ‘reduced attentiveness’ and ‘disorganized thinking’, each a major criterion. Features of temporal course were maintained, and various cognitive, perceptual, sleep, psychomotor behaviour and level of consciousness items were clumped together under one criterion and the term ‘clouding of consciousness’ was dropped. The DSM-IV¹³ maintained the emphasis on ‘disturbance in consciousness and inattention’ as one of the major criteria and described five types of delirium, depending on the aetiology.

The World Health Organization’s ICD-10¹⁴ criteria for delirium are, to a large extent, similar to that of the DSM-IV. However, ICD-10 diverges from DSM-IV in that disturbance in cognition is manifested by both ‘impairment of immediate recall and recent memory’ and ‘disorientation to time, place and person.’ The ICD-10 also provides additional criteria for ‘disturbance in sleep wake cycle’, ‘psychomotor disturbances’, and ‘emotional disturbances’. In addition, ICD-10 described the total duration of delirium to be less than

6 months, and hence does not allow inclusion of cases with chronic delirium. Despite these differences, a study has shown 100 per cent concordance between DSM-III-R and ICD-10¹⁵. However, some researchers consider DSM-IV to be more sensitive compared to ICD-10 for the diagnosis of delirium¹⁶.

Clinical features

Delirium is characterized by a cluster of symptoms not all of which are seen in all the patients. However,

the symptoms in adults across the age range are comparable. Even though various studies report different frequencies of occurrence of individual symptoms, certain symptoms occurring more frequently than others (attention deficits, sleep-awake cycle disturbance, motor activity changes) are described as the 'core' symptoms of delirium whereas other features are more variable in presentation (psychosis, mood changes, *etc.*)¹⁷. Table I lists the various clinical features encountered in delirium, and also the

Table I. Clinical features of delirium

Clinical features	Historical/objective evidence
Fluctuating level of consciousness	Falling asleep during interview Conflicting reports about awake mental state of the patient provided by various caregivers
Inattention	Forgets instructions Distraction to seemingly irrelevant stimuli Repeatedly asks the same question(s) Gives different replies to same question
Disorientation	Not able to say properly about the time of the day, day of the week, month of the year, where they are, misidentifying persons around them Talking as if at home Talking about dead relatives, or relatives who are not present around the patient at that time
Memory impairment (especially recent events)	Forgetting about meals, medicines, visitors, <i>etc</i> Forgetting about things recently discussed/mentioned
Speech & Language disturbance	Incoherent or rambling or irrelevant speech Pressure of speech Naming things incorrectly Inability to understand what is being said
Sleep disturbance	Not able to sleep at night Interrupted sleep Day time sleepiness; all observed/reported by others Reversal of sleep-wake cycle (sleeping in day and awake during night)
Perceptual disturbances	Visual hallucinations (seeing things which others do/can not) Tactile hallucinations (report crawling sensation over the body as if some insects are present OR can be seen as if trying to remove insects over their body) Auditory hallucinations (hearing things which others do/can not) Misinterpretation (loud noise of machines may be interpreted as gunshot, alarm of a machine may be interpreted as police siren) Illusions (interpret folds of bed sheets/blankets as animate objects; can be seen trying to clean the bed sheet/blanket in order to remove them)
Thought process abnormalities	Inability to think clearly and coherently Delusions (say people are trying to harm them; say the neighbouring patient, a caregiver, member from treating team is going to harm them or their relatives; suspect wife's moral character, <i>etc.</i>)
Agitation	Try to get out of bed repeatedly Wander around in the ward/house Try to pull out the tubes/drains/catheters repeatedly Frequent postural changes while in bed
Apathy and withdrawal	Minimal activity in bed Minimal/reduced verbal output
Emotional (affective) disturbances	May demonstrate fluctuations in emotional state varying from anxiety, sadness, fearfulness to euphoria

commonly corresponding indicators (as per the history and clinical examination)^{3,8,18,19}.

Additionally, according to the activity and psychomotor behaviour, three subtypes have been described - hyperactive, hypoactive and mixed. However, there is paucity of information about the longitudinal course/stability over time of these motor subtypes of delirium^{17,20}.

Risk factors/aetiology for delirium

An understanding of risk factors is important from the perspective of management and prevention²¹. The aetiology of delirium is multi-factorial. Researchers^{22,23} have divided the risk factors for delirium into predisposing and precipitating factors. Predisposing factors are conceptualized as those that are present in the individual at the time of admission and reflect the underlying vulnerability to delirium. Precipitating factors are those noxious insults or hospital-related factors that contribute to the development of delirium. Studies have shown that the predisposing risk factors tend to have a relatively greater contribution to the development of delirium than for the precipitating factors²⁴. Though these risk factors have been discussed in detail by others^{24,25}, the salient factors are outlined here (Table II).

Table II. Risk factors for delirium

Risk factors
<i>Predisposing factors :</i>
Cognitive decline/dementia ^{22,23,27-38}
Visual impairment ²²
Poorer functional ability ^{27,37,39,40}
Older age ^{27,28,31,33,36-38,41}
Male gender ^{27,31,36-38}
Severity of illness ^{22,27,28,34,37,40}
Co-morbid illnesses ^{28,35}
Alcohol abuse ³⁵
Use of medications (prescribed or non-prescribed) ^{29,37}
<i>Precipitating factors :</i>
Malnutrition ²³
Any iatrogenic event during hospitalization ²³
Physical restraints or bladder catheter ²³
More than three newly prescribed medications ²³
High number of procedures during early hospitalization (X-rays, blood tests <i>etc.</i>) ³³
Intensive care treatment ³³
Prolonged waiting time before surgery ^{37,41}
Type and duration of operation ^{31,37,42}
Type of anaesthetic ^{31,37,42}
Intra-operative blood loss ^{31,37,42}
Post operative pain and problems in pain management ^{43,44}
Infection ³⁶
Use of drugs with a high anticholinergic activity, opiates, benzodiazepines and corticosteroids ^{30,33,37}

There are certain risk factors that have been considered as 'robust risk factors': increased age, pre-existing cognitive impairment, severe co-existing illnesses, and exposure to medication^{8,26}.

Pathogenesis

There is no clear aetiopathogenesis model for delirium. However, two hypotheses have been proposed: neurotransmitter hypothesis and inflammatory hypothesis⁴⁵. According to the neurotransmitter hypothesis, various aetiological factors cause decreased oxidative metabolism and abnormalities of various neurotransmitter systems in the brain leading to cerebral dysfunction. Reduced cholinergic function, excess release of dopamine, norepinephrine, and glutamate, and both decreased and increased serotonergic and gamma-aminobutyric acid activity may underlie the different symptoms and clinical presentations of delirium⁴⁵. Based on the cholinergic dysfunction, a surrogate marker dubbed 'serum anticholinergic activity' (SAA) has been developed as a biologic indicator to detect anticholinergic activity. Some studies have shown a relationship between SAA levels and development of delirium⁴⁶⁻⁴⁹. According to the inflammatory hypothesis, wide range of physically stressful events lead to increased secretion of cytokines at the level of cerebrum which plays an important role in the occurrence of delirium. It is also suggested that since cytokines can influence the activity of various neurotransmitter systems, the two hypothesis/mechanisms may interact⁴⁵.

Instruments for assessment of delirium

The variety of instruments designed to evaluate delirium focus on evaluation of either only the cognitive functions or the whole range of symptoms including cognitive functions. The instruments used for assessment of cognitive functions only include Mini Mental State Examination (MMSE)⁵⁰ and Cognitive Test for Delirium (CTD)⁵¹. It is important to note that MMSE and CTD, being the instruments for assessment of cognitive functions only, are insufficient to distinguish delirium from dementia, and require the use of ICD-10 or DSM-IV-TR criteria for confirmation of the diagnosis^{51,52}. Further, MMSE can only be used in co-operative patients. Compared to MMSE, CTD is useful in evaluation of a range of neuropsychological functions (orientation, comprehension, attention, vigilance and memory) and can also be used in the patients who are immobile or intubated, or lack verbal

ability⁵¹. An abbreviated form of CTD, with just 2 (visual retention span and recognition of memory for pictures) of the 9 items of the original CTD has also been shown to have good reliability and discriminant validity⁵³. There are numerous instruments which are used for screening, diagnosis, and diagnosis-cum-severity grading (Table III). To name a few: NEECHAM Confusion Scale⁵⁴, Confusion Assessment Method (CAM)⁵⁵, Confusion Assessment Method for Intensive Care Unit assessment tool (CAM-ICU)^{56,57}, Delirium Rating Scale–Revised version (DRS-R-98)⁵⁸, Memorial Delirium Assessment Scale (MDAS)⁵⁹.

For clinical management in general and research in particular, it is important to apply a combination of instruments in order to confirm the diagnosis of delirium, assess its clinical severity and to get a more

comprehensive idea about the level of cognitive impairment and full range of symptomatology.

Differential diagnosis

The common differential diagnoses of delirium are dementia, depression and psychosis/schizophrenia^{18,19} (Table IV). In contrast to delirium, dementia is characterized by insidious onset, and gradually progressive course with no diurnal variation. However, dementia itself being a risk factor for development of delirium, many times presents with superimposed delirium. Hence, proper elicitation of the onset and course is often helpful in distinguishing the two. In difficult to distinguish cases one must remember that when delirium is present, its symptoms tend to dominate the clinical picture with greater disturbance in terms of inattention, disorganized thinking and

Table III. Instruments for assessment of delirium

Instrument	Type of instrument	Remarks
Mini mental status examination (MMSE) ⁵⁰	Assessment of cognitive function	Identifies cognitive disturbances; does not distinguish between delirium and dementia; diagnosis of delirium needs to be confirmed by ICD-10 or DSM-IV criteria
Cognitive test for delirium (CTD) ^{51,52}	Assessment of cognitive function	Evaluates neuropsychological functions (orientation, attention, comprehension, vigilance & memory); can be used in patients who are immobile or intubated, or lack verbal abilities
NEECHAM confusion scale ⁵⁴	Screening instrument	Can be used by nurses and non-psychiatrists
Nursing delirium screening scale (Nu-DESC) ⁶⁰	Screening instrument	Observational 5-item instrument, can be completed in 1 min
Delirium observation scale (DOS) ⁶¹	Screening instrument	Brief instrument, can be used by nurses in geriatric patients
Delirium symptom interview (DSI) ⁶²	Lay person interview	Useful in unco-operative patients; can be used by a lay person; does not have a good symptom coverage
Confusion assessment method (CAM) ⁵⁵	Screening instrument	Enables non-psychiatric clinicians for quick detection of delirium in high-risk settings. Can be administered in less than 5 min. Has been used as a diagnostic instrument also
Confusion assessment method for intensive care unit assessment tool (CAM-ICU) ^{56,57}	Diagnostic instrument; specifically for ICU patients	Designed specifically for use in non-verbal (<i>i.e.</i> , mechanically ventilated) patients; Can be administered if the patient is arousable to voice without the need for physical stimulation; Takes 1-2 min to administer; Covers delirium symptomatology comprehensively
Delirium rating scale – revised version (DRS-R-98) ⁵⁸	Diagnostic instrument based on DSM-IV criteria	Useful in unco-operative patients; has good symptom coverage; can be used by any trained clinician; provides severity scores also
Delirium assessment scale (DAS) ⁶³	Instrument to grade severity of symptoms	An operationalization of DSM-III-R criteria
Delirium index ^{64,65}	Instrument to grade severity of symptoms	Does not require any information from family members, nursing staff, or the patient's medical chart; Can be used by non-psychiatrist clinician
Delirium-O-meter ⁶⁶	Instrument to grade severity of symptoms	Can be used by nurses with limited geriatric training
Memorial delirium assessment scale (MDAS) ⁵⁹	Instrument to grade severity of symptoms	A cut-off score of 13 indicative of delirium

Table IV. Differential diagnosis of delirium

Features	Delirium	Dementia	Depression	Schizophrenia
Onset	Acute	Insidious	Variable	Variable
Consciousness	Shows marked fluctuations	Clear till late stages	Generally no impairment	Generally no impairment
Orientation	Disoriented	Disoriented (in later stages)	Usually oriented	Usually oriented
Attention	Impaired	Impairment seen in late stages	Poor attention	Poor attention
Memory	Poor short term memory	Poor short and long term memory	Usually intact	Usually intact
Diurnal fluctuation in clinical picture	Fluctuations are common throughout the 24 h period	Worsening, if occurs, may be more common in the evening	If present, usually morning worsening of symptoms	Usually not seen
Psychotic symptoms	Often present, but are fleeting and simple in content	Less common	Less common	Present, persistent and complex in content
Hallucinations	Often visual and tactile, but auditory may be present	Usually absent	If present, often-auditory hallucinations	Most commonly have auditory hallucinations
Mood	Fluctuations - varying from anxiety, sadness, fearfulness to euphoria	Can be flat, apathetic, unreactive	Persistent sadness	Apathy/flatness of affect
Course	Fluctuating	Stable or progressive and irreversible	Usually not fluctuating	Progressive

disorientation^{17,67}. Depression is characterized by more sustained low mood compared to lability of mood which is often seen in patients with delirium, and if present, the diurnal variation in symptoms is more in the form of early morning worsening in depression. Schizophrenia is characterized by more complex and persistent psychotic symptoms and predominant auditory hallucinations, in contrast to delirium in which visual hallucinations are more common^{18,19}.

Management of delirium

Subjects suffering from delirium have both qualitative and quantitative alterations in consciousness, with diminished grasp of the immediate environment⁶⁸. Adequate management of delirium involves identification of the aetiological agents/factors, treatment/correction of the aetiological factor, non-pharmacological management focusing on providing optimal environment for recovery, and pharmacological management.

Non-pharmacological treatment

It involves providing a simple unambiguous environment that restores a sense of control and promotes self-efficacy. The important components include providing care in a calm and reassuring manner, simple clear and firm communication, reality

orientation, a visible clock and the presence of a relative in the environment (Table V). Listening to light music can prevent understimulation while also buffering against noise extremes⁶⁹.

Pharmacological treatment

Pharmacological management of delirium is currently based on empirical knowledge rather than well-designed efficacy studies⁶⁸ and largely consists of use of antipsychotic medication⁷⁰. In recent years, cholinesterase medications have also been evaluated in delirium⁷¹⁻⁷⁵. Use of benzodiazepines has been recommended only if the delirium is attributable to sedative or alcohol withdrawal, otherwise these often worsen the cognitive impairment and lead to excessive sedation⁷⁰.

Despite increasing use of atypical antipsychotic medications in the recent times, haloperidol continues to be the most commonly used antipsychotic; in spite of a lack of good quality scientific data to support its efficacy⁷⁶. The advantages of haloperidol include a few active metabolites, small likelihood of sedation and hypotension, administration by oral, intramuscular and intravenous routes, and fewer extrapyramidal symptoms (EPS) with intravenous administration. It is usually initiated in the dose

Table V. General principles of non-pharmacological treatment of delirium

- (1) Ensure safety of the patient
- (2) Communication with the patient should be slow, simple, clear and firm with frequent reminders
- (3) Repeatedly orient the patient - use calendars, alarm clocks, night lights; frequently tell the patient as to where he/she is, who are the people around him/her
- (4) Familiarize the patient with the environment using photographs of family members, and other familiar objects from patient's home
- (5) Provide adequate level of stimulation and lighting
- (6) Reduce sensory deprivation – if patient was using glasses or hearing aids in the past, these should be restored
- (7) Tailor provision of hospital care in a manner that patient gets, as much as possible, uninterrupted sleep

range of 1–2 mg 2–4 hourly (0.25–0.50 mg 4 hourly for elderly), with titration to higher doses, as needed. One disadvantage of haloperidol is the need for electrocardiogram monitoring due to the increased incidence of cardiac conduction defects such as prolongation of the QT interval and arrhythmias, which can further lead to torsades de pointes and ventricular fibrillation⁷⁰.

For the atypical antipsychotics, some data have emerged favouring the use of risperidone⁷⁷⁻⁸¹, olanzapine⁸²⁻⁸⁶ and quetiapine⁸⁷⁻⁹¹ for managing delirium; however, quality data in the form of randomized controlled trials are very limited. Nevertheless, these atypicals seem to be as effective as haloperidol but have lower incidence of side effects⁶⁸. Their mean doses required for treatment of delirium are lower compared to the conventional antipsychotic dosages. Hence these should be started in low doses and then titrated upwards as needed. Regarding the duration of treatment the consensus seems to be that taper off should be attempted after 1 wk symptoms-free period⁹².

Benzodiazepines are considered as first-line treatment for delirium related to substance use or seizures (however, even in such cases delirium is often multi-aetiological and a concomitant antipsychotic may be required). Lorazepam is preferred because of its short-acting nature, absence of major active metabolites and relatively predictable bioavailability when given intramuscularly. Lower doses are required in elderly patients, those with respiratory or hepatic compromise, or receiving drugs that undergo extensive hepatic oxidative metabolism⁶⁸. However, it is important to remember that lorazepam can worsen mental state

and dose more than 2 mg/day (or lorazepam dose equivalents for other benzodiazepines) has been linked to a significantly elevated risk of delirium in patients with cancer⁹³.

Prevention of delirium

Most cases of delirium may be prevented by properly managing the risk factors⁶⁸. Common preventive elements include elimination of unnecessary medications, careful attention to hydration and nutrition, pain management using adequate and appropriate measures (for example, opiates used in excessive doses can worsen cognitive impairment and the delirium), correction of sensory deficits, sleep enhancement, early mobilisation and cognitive stimulation⁶⁸. Additionally, preoperative patient education and/or preparation can help in reducing the rate of delirium symptomatology⁸.

A randomized controlled trial has shown the role the preoperative consultation in non-delirious patients, followed by daily visits for the duration of the hospitalization and targeted recommendations based on a structured protocol⁹⁴. There is some evidence to suggest the role of improving postoperative sleep–wake cycle disorders with a combination of benzodiazepines and an opioid could prevent delirium⁹⁵. However, this study was conducted in a surgical subset population, and the results are unlikely to be widely applicable. Furthermore, the intentional administration of benzodiazepines and opiates (both drugs known to cause delirium in susceptible patients) poses the potential serious risk of worsening cognition in patients who are at risk for delirium. There is inconclusive evidence to suggest the role of pharmacological agents in prevention of delirium^{96,97}. While Kalisvaart *et al*⁹⁶ demonstrated the role of prophylactic haloperidol in the prevention of delirium, Sampson *et al*⁹⁷ did not find significant reduction in the incidence of postoperative delirium with donepezil after elective total hip replacement.

Prognosis

In most cases delirium is seen as a condition reversible in 10–12 days⁷⁰. However, variability exists and in some cases symptoms persist beyond 2 months⁹⁸; in some studies as many as one-third patients remained symptomatic at 6 months⁹⁹. Further, delirium has been shown to be associated with enduring cognitive deficits even after symptomatic recovery¹⁰⁰⁻¹⁰³ and with increased risk of death^{100,104,105}.

Indian research

There is scarcity of research on delirium from India. Older studies included delirium under the heading of organic psychosis and showed it to be the most common diagnostic entity seen by the consultation-liaison psychiatric services¹⁰⁶⁻¹¹. Other studies have also reported it to be the most common diagnosis in medically ill- inpatients¹¹².

Prevalence: In a more recent study Grover *et al*¹¹³ reviewed psychiatric referrals received from different wards of a multispecialty hospital over a 6 yr period and reported 1050 out of the 3092 cases as having delirium; each year delirium constituted the single largest diagnostic category accounting for 30.77-38.95 per cent for all ages and 48.72 per cent for those aged >60 yr. Of the four other studies that have focused on delirium, one reported incidence in post-cataractomy patients, two reported the prevalence in older population. Chaudhury *et al*¹¹⁴ reported an incidence of 4.3 per cent in a 1 yr prospective study of post-cataractomy patients. Khurana *et al*¹¹⁵ reported delirium in 27 per cent medical ward inpatients aged >65 yr, including 19 who were delirious at first assessment within 24 h of admission and 8 who developed delirium >24 h after admission. Sood *et al*¹¹⁶ reported delirium in 3 per cent of 528 inpatients aged >65 yr.

Aetiology: There are a few case reports suggesting development of delirium due to naltrexone¹¹⁷, clozapine¹¹⁸, diazepam¹¹⁹, hypopituitarism¹²⁰, porphyria¹²¹.

Phenomenology: In a recent study Grover *et al*¹²⁴ studied the phenomenology of delirium in children and adolescents. They found that all subjects had sleep-wake cycle disturbance and impaired orientation. Delusions and hallucinations were reported by only a few patients¹²⁴.

Treatment: Gupta *et al*¹²² have reported an open label study involving 7 inpatients from north India in which risperidone was effective and well tolerated, and a case report on effective use of olanzapine for treating delirium in a case with parkinsonism¹²³.

Conclusions

Delirium is a common clinical condition in severely compromised medico-surgical subjects. It complicates/prolongs medical condition/hospitalization, increases cost of care, and may lead to chronic disability and even death. As it is a largely preventable and potentially treatable condition, clinicians at all levels (and across

all professions) need to be aware of its existence and management.

The management is both medical and environmental; primary focus being on non pharmacological techniques. The medical management focuses on identifying and treating the aetiological predisposing and risk factors and providing the symptomatic pharmacological treatment with low dose antipsychotics and, in case of alcohol and sedative withdrawal delirium, benzodiazepines. The non pharmacological management focuses on robust nursing care to provide a safe, secure, familiar, just-adequately stimulating and re-orienting environment. While in majority of the cases the outcome can be heartening, despite adequate treatment a reasonable proportion of cases are left with variable and lasting residual cognitive deficits or a dementing profile. The present review was an attempt to demonstrate the lack of systemic research in this very important area that is relevant to nearly all specialties, and thereby to hopefully motivate the researchers to work in this area and generate relevant and clinically useful data for the Indian setting.

Conflict of interest: None.

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