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A STUDY TO ASSESS THE OCCURRENCE AND ASSOCIATED RISK FACTORS OF DELIRIUM AMONG OLDER PATIENTS ADMITTED IN SELECTED HOSPITALS OF KHEDA, DISTRICT

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ABSTRACT

Aim: A study to assess the occurrence and associated risk factors of delirium among older patients.

Method: A descriptive study carried out among 170 older patients, who were over 60 years and admitted at least 24 hours. The samples were selected through purposive sampling technique and inclusion; exclusion criteria. The level of disorientation was measured using Confusion Assessment Method (CAM).

Results: Out of 170 participants, 5.3% had confirmed delirium, 13.5% had possible delirium, and 81.2% showed no signs of delirium. The majority of patients were aged 60–69 years, with nearly equal gender distribution. Most participants were illiterate, had a monthly income below ₹10,000, and belonged to nuclear families. The most common symptom observed was inattention, followed by acute onset and fluctuation, disorganized thinking, and altered consciousness. The overall risk of delirium was moderate, with a mean risk score of 3.72. A significant association was found between age and both prevalence and risk of delirium.

Conclusion: Early identification and monitoring of elderly patients can enhance patient outcomes in hospital settings.

Keywords: Occurrence, Association, Risk factors, Delirium, Older Patients, Hospital

INTRODUCTION

Ageing is an unavoidable process that brings with it major changes in the body, mind, and society. People's social interactions, cognitive abilities, and physical health all frequently deteriorate as they get older. Individuals are more prone to have multiple conditions at the same time as they get older. Advanced age is often marked by the emergence of various complicated health disorders, known as geriatric syndromes. These issues typically arise from a combination of various underlying causes and include weakness, urinary retention, collapses, and delirium, and pressure ulcers [1].

The World Health Organisation (WHO) estimates that 14% of persons 60 and older suffer from a mental illness. In this age range, anxiety and depression are the most prevalent mental health issues. The quality of life and general well-being of older persons can be greatly impacted by mental health disorders that are frequently underdiagnosed and undertreated [2].

Delirium is a mental illness that causes confusion, disorientation, and difficulty thinking and remembering things. Most of the time, it begins abruptly. Frequently, it is transient and curable [3]. According to the Diagnostic and Statistical Manual of Mental Disorders, disturbances in attention and awareness during a brief period of time, alterations from baseline attention

and awareness, and a tendency to vary over time are all characteristics of delirium [4].

It is a prevalent and dangerous illness that affects a significant number of elderly patients admitted to the critical care unit [5]. It is a neuropsychiatric condition that impairs patient quality of life, prolongs hospital stays, and raises health care expenses. It also causes severe suffering to patients and caregivers [6]. The intensity of the condition varies from moderate to severe, and the length might also change [7].

Delirium is very common among older persons [8]. It is characterized by acute and fluctuating changes in awareness, arousal, and cognitive deficits due to physical illness or medications [9].

An acute medical emergency with psychiatric symptoms, delirium is more common in intensive care units (ICUs) and palliative care settings than in other treatment settings. Delirium prevalence varies by environment, with rates as high as 80% among patients referred to palliative care and intensive care units (ICUs). Delirium is linked to serious negative outcomes for patients and their families, including higher mortality, longer ICU and inpatient stays, more expensive treatment, long-term cognitive impairments, an increased risk of dementia, and high levels of distress for both patients and carers [10].

The prevalence of delirium among hospitalized patients varies globally, but

recent research offers some perspective. A 2023 international point prevalence study spanning 44 countries found that around 18% of patients exhibited signs of delirium at during morning time, with a slightly lower rate of 17.7% recorded at evening time. These findings suggest that nearly one in five patients in medical facilities experience delirium [11].

Delirium impacts about one in four hospitalized elderly patients, though its occurrence can differ significantly based on the medical environment and the specific patient group [12]. In medical patients aged 65 and older, the prevalence of delirium falls between 20% and 29% [13]. In intensive care units (ICUs), delirium occurs at an estimated rate of 22.11%. Among its subtypes, the hypoactive form is the most prevalent, making up 44.9% of cases [6].

Even while delirium is quite common, it is frequently not properly identified and managed, which increases the risk of institutionalisation, prolongs hospital stays, and impairs functioning [14]. It is important to comprehend the occurrence of delirium and the risk factors that are linked to it for a number of reasons. First of all, delirium can be detected and treated early to greatly enhance patient outcomes and lower medical expenses [15].

According to a recent Indian study, the prevalence of delirium among people referred to intensive care units was 22.11%

[6]. According to a recent comprehensive evaluation of 42 research, delirium can occur in as many as 31.8% of critically ill individuals [16].

Patient assessment for delirium is still not common practice in all countries. A study conducted by M van den Boogaard *et al* (2012) also revealed that the prevalence of delirium in ICU was 25.5% (out of 1613 patients, 411 developed delirium) [17].

A study that was published in BMC Geriatrics found that between 20% and 29% of elderly medical patients 65 years of age and older have delirium. The study emphasises that delirium is a frequent issue among patients in the intensive care unit (ICU), postoperative, geriatric, and palliative care settings. It is linked to negative health outcomes, such as longer hospital stays and increased incidence of falls and the usage of physical restraints [13].

Delirium is frequently overlooked and insufficiently recorded in healthcare settings, leading to important consequences for patient management and healthcare planning. Identifying and addressing it early is essential for enhancing patient outcomes [11].

A prospective observational study was conducted to assess delirium's prevalence, subtypes, risk factors and consequences. Results showed a 22.11% delirium incidence, with the most prevalent subtype is hypoactive (44.9%). Identified risk factors included

advanced age, metabolic imbalances, and certain medications. Delirium was linked to increased ICU complications and mortality (21.3% vs. 5%).^[6]

A cross-sectional study was conducted to identify the prevalence of contributing factors among delirium patients in a tertiary care hospital. The results of the investigation showed that most of delirium patients were male, older, suffering from cerebrovascular disease, and experiencing dementia [18].

METHODS AND MATERIAL

Study Design: Descriptive design

Study Site: Selected hospital of Kheda, district [Sai shraddha hospital and Dr. N.D Desai Faculty of Medical Science and Research, Nadiad].

Sample Size: 170

$$\begin{aligned}
 N &= (z_2)^2 P (1-P) / d^2 \\
 n &= (1.96)^2 0.1269 * (1 - 0.1269) / (0.05)^2 \\
 &= (3.8416) 0.1269 * (0.8731) / 0.0025 \\
 &= 0.48749904 * (0.8731) / 0.0025 \\
 &= 0.4256 / 0.0025 \\
 &= 170.25 [8]
 \end{aligned}$$

: 170 sample

Inclusion and Exclusion Criteria:

The elderly male and female patient 60 years and above, admitted in hospital for at least 24 hours were taken as samples. Those who are unconscious or not able to communicate or who didn't consent were excluded.

Study Tool:

The data collection tool was divided into 3 sections:

Section I: (Socio-Demographic Variable)

The study gathered data related to socio demographic data like age in year, gender, monthly income, education level, marital status, type of family, number of hospitalized days of the older patients.

Section II: (Standardized Tool For Delirium Assessment)

The Confusion Assessment Method (CAM) tool was employed in this study to assess the presence of delirium among elderly patients. The CAM is a standardized evidence-based instrument used for quick and reliable detection of delirium in scientific and clinical contexts Because of its great sensitivity (94–100%), specificity (90–95%), and ease of administration by healthcare professionals.

The CAM tool evaluates four key features:

Feature 1: Acute Onset and Fluctuating Course

Identifies whether there has been an abrupt change in mental status and whether symptoms fluctuate during the day.

Feature 2: Inattention

Evaluates a person's capacity to sustain concentration and appropriately redirect attention when needed.

Feature 3: Disorganized Thinking

Evaluates the presence of illogical or incoherent thought processes, like talking incoherently or rambling.

Feature 4: Altered Level of Consciousness

Observes whether the patient's alertness is normal, hyperalert, lethargic, stuporous, or comatose.

Both Features 1 and 2 as well as either Feature 3 or Feature 4 must be present for CAM to diagnose delirium.

The CAM is particularly valuable in detecting delirium in older adults, especially in hospitalized settings, (typically under 5 minutes) where early recognition and management can significantly improve patient outcomes. The instrument is easy to use, requires minimal training, and can be effectively applied by nurses and clinicians in daily practice [19].

Section III: (Self Structured Questionnaire)

The Self-Structured Questionnaire to Identify Risk Factors of Delirium was a brief, 11-item tool developed by the researcher to assess various risk factors associated with the occurrence of delirium in elderly patients. It evaluated a range of factors, including recent memory loss or confusion, hearing and vision impairments, sleep disturbances, alcohol and drug use, chronic illnesses such as hypertension or diabetes, recent infections, polypharmacy, psychological stress or trauma, and symptoms of anxiety, sadness, or depression. These questionnaire are crucial for identifying individuals at higher risk for developing delirium and for implementing timely interventions to mitigate its onset and severity.

Research Ethics:

The institutional ethical committee provided its approval to carry out the study. Permission

was obtained from the Principal, Manikaka Topawala Institute of Nursing, CHARUSAT, Changa. Written permission was also taken from Dr. N.D Desai Faculty of Medical Science and Research, Nadiad.

Preparation and Investigation Phase:

The time frame for gathering data was from March to April 2025.

The researcher selected a setting based on her convenience and used a purposive sampling method to choose the study participants.

The researcher clearly communicated the purpose of collecting data and the potential benefits of the study to the participants. Confidentiality was maintained, and informed consent was obtained prior to data collection. The Confusion Assessment Method (CAM) was specifically developed to detect delirium, particularly among elderly patients, in clinical settings and self-structure questionnaire was also employed to identify potential risk factors contributing to the occurrence of delirium among older patients.

Statistical Analysis:

Frequency and percentage were employed to describe the distribution of sociodemographic characteristics such as age, gender, income, education level, type of family, marital status, and hospitalization duration among the elderly participants. Descriptive statistics was used to summarize numerical data, including the computation of measures like mean, minimum, maximum, and standard deviation for the risk factor

scores related to delirium. Fisher's exact test and Chi-Square test were applied to examine the association between the occurrence of delirium and selected sociodemographic variables.

RESULTS

The majority of the patients were between 60 to 69 years (64.7%), followed by those aged 70 to 79 years (27.1%). A small number were in the 80–84 years range (7.6%), and only one patient was aged 85 years and above.

In terms of gender, the distribution was almost equal, with males making up 50.6% and females 49.4% of the total participants.

A large number of elderly were illiterate (43.5%), while 23.5% had completed primary education, 27.1% had secondary

education, and only 5.9% were graduates or above.

Regarding monthly income, most of the participants (84.1%) had an income of less than ₹10,000, while 12.4% earned between ₹10,000–₹20,000, and a few (3.5%) earned ₹20,000–₹30,000.

In terms of marital status, the majority were married (84.1%), 15.3% were widowed, and only one person was unmarried.

About the type of family, most of the elderly stayed in nuclear families (77.6%), 20.6% were from joint families, and a very small portion (1.8%) were living alone.

Duration of hospitalization for the older adults; 9.4% stayed for one day, 30% for 2–3 days, 32.4% for 4–7 days, and 28.2% for more than a week. (Table 1).

Table 1: Frequency and percentage distribution according to demographic variables of older patients admitted in selected hospital of Kheda, District (N=170)

Sr. No	Demographic variable	Frequency	Percentage
1.	Age		
	60 – 69 years	110	64.7%
	70 – 79 years	46	27.1%
	80 – 84 years	13	7.6%
	85 years and above	01	0.6%
2.	Gender		
	Female	84	49.4%
	Male	86	50.6%
3.	Education level		
	Illiterate	74	43.5%
	Primary education	40	23.5%
	Secondary education	46	27.1%
	Graduate & above	10	5.9%
4.	Monthly Income		
	<10000	143	84.1%
	10000 to 20000	21	12.4%
	20000 to 30000	6	3.5%
5.	Marital status		
	Unmarried	1	0.6%
	Married	143	84.1%
	Widow/Widower	26	15.3%
6.	Type of family		
	Living alone	3	1.8%
	Nuclear family	132	77.6%
	Joint family	35	20.6%
7.	Number of hospitalized days		
	01 day	16	9.4%
	2-3 days	51	30.0%
	4-7 days	55	32.4%
	>07 Days	48	28.2%

Table 2: Frequency and Percentage Distribution of Occurrence of Delirium Among Older Patients Admitted in Selected Hospital of Kheda District (N=170)

Occurrence of delirium	Frequency	Percentage
No delirium	138	81.2%
Delirium	9	5.3%
Possible delirium	23	13.5%
Total	170	100%

Table 3: Frequency and percentage distribution the risk factors associated with delirium among older patient admitted in selected hospital of Kheda district (N=170)

Q. No.	Question statement risk factors associated	Yes (Frequency & %)	No (Frequency & %)
1	Have you experienced any episode of recent memory loss or confusion	25(15%)	145 (85%)
2	Do you have any hearing impairment?	41(24%)	129(76%)
3	Do you have any vision impairments?	91(54%)	79(46%)
4	Have you had any difficulty sleeping since being admitted to the hospital?	67(39%)	103 (61%)
5	Are you an alcoholic?	24(14%)	146(86%)
6	Have you used any recreational drugs in the past year?	0(0%)	169 (99%)
7	Do you have any chronic illness like hypertension, diabetes?	62 (36%)	108 (64%)
8	Have you had any recent infection like urinary tract infection, pneumonia?	40(24%)	130(76%)
9	Are you currently taking two or more than five medications?	168(99%)	2(1%)
10	Have you experienced any significant stress or trauma recently?	15(9%)	155(91%)
11	Do you feel anxious, sad or depressed?	98(58%)	71(42%)

Table 4: Association between the prevalence of delirium and sociodemographic variable of the older patient (N=170)

Demographic variables	Category	%	Delirium status			χ^2 Fishers exact	df	Sig. value
			No	May be	Present			
Age in year	60-69	64.7	101	2	7	55.49	6	0.000 S
	70-79	27.1	34	6	6			
	80-84	7.6	3	1	9			
	85 & above	0.6	0	0	1			
Gender	Male	50.6	73	6	7	4.963	2	0.084 NS
	Female	49.4	65	3	16			
Education level	Illiterate	43.5	56	6	12	6.449	6	0.375 NS
	Primary education	23.5	32	1	7			
	Secondary education	27.1	42	1	3			
	Graduate & above	5.9	8	1	1			
Monthly income	<10000	84.1	115	9	19	3.262	4	0.515 NS
	10000 to 20000	12.4	17	0	4			
	20000 to 30000	3.5	6	0	0			
Marital status	Unmarried	0.6	1	0	0	6.445	4	0.168 NS
	Married	84.1	118	5	20			
	Widow/ widower	15.3	19	4	3			
Type of family	Living alone	1.8	3	0	0	2.588	4	0.629 NS
	Nuclear	77.6	108	8	16			
	Joint	20.6	27	1	7			
Number of hospitalized days	01 day	9.4	14	1	1	2.690	6	0.847 NS
	2-3 Days	30.0	42	2	7			
	4-7 Days	32.4	46	2	7			
	>07 Days	28.2	36	4	8			

Table 5: Association of delirium related risk factor and sociodemographic variable of the older patient (N=170)

Demographic variables	Category	%	Delirium risk factors			χ^2 Fishers exact	df	Sig. value
			Low	Moderate	High			
Age in year	60-69	64.7	63	47	0	23.56	6	0.001 S
	70-79	27.1	21	25	0			
	80-84	7.6	1	11	1			
	85 & above	0.6	0	1	0			
Gender	Male	50.6	45	40	1	1.461	2	0.482 NS
	Female	49.4	40	44	0			
Education level	Illiterate	43.5	33	41	0	8.877	6	0.181 NS
	Primary education	23.5	26	13	1			
	Secondary education	27.1	22	24	0			
	Graduate & above	5.9	4	6	0			
Monthly income	<10000	84.1	69	73	1	3.027	4	0.553 NS
	10000 to 20000	12.4	11	10	0			
	20000 to 30000	3.5	5	1	0			
Marital status	Unmarried	0.6	0	1	0	3.919	4	0.417 NS
	Married	84.1	68	74	1			
	Widow/ widower	15.3	17	9	0			
Type of family	Living alone	1.8	1	2	0	4.942	4	0.293 NS
	Nuclear	77.6	69	63	0			
	Joint	20.6	15	19	1			
Number of hospitalized days	01 day	9.4	9	7	0	6.147	6	0.407 NS
	2-3 Days	30.0	31	20	0			
	4-7 Days	32.4	24	30	1			
	>07 Days	28.2	21	27	80			

Table 2 presents the data regarding the prevalence of delirium among elderly individuals admitted in a selected hospital of Kheda district. Out of the total 170 elderly patients, 81.2% (138 patients) showed no signs of delirium, while 5.3% (9 patients) affirmed the symptoms of delirium. Additionally, 13.5% (23 patients) were identified as having possible delirium, which indicates they were at risk or showed early symptoms.

Table 3 represents the risk factors associated with the occurrence of delirium. The most commonly reported risk factor was taking two or more medications, with

99% (168 patients) saying yes. Feeling anxious, sad, or depressed was noted by 58% (98 patients), followed by vision impairments (54%), and difficulty sleeping (39%). Other common risk factors included chronic illnesses like hypertension or diabetes (36%), and recent infections (24%). Less frequently reported were alcoholism (14%), recent memory loss or confusion (15%), and significant stress or trauma (9%). None of the elderly reported used of recreational drugs (0%), and only 24% had hearing impairment.

These findings indicate that polypharmacy (taking multiple medications), emotional

issues, and sensory impairments were major contributing factors in terms of delirium risk.

Table 4 presents the association between the prevalence of delirium and selected sociodemographic variables among older patients admitted in a hospital in Kheda district. The findings revealed a statistically significant association between age and delirium status ($p = 0.000$), suggesting that the risk of delirium tends to increase with advancing age, especially among those aged 80 and above. However, no significant association was observed between delirium and other factors including gender, educational status, monthly income, marital status, family type, and duration of hospitalization as their p -values were above 0.05. This suggest that while factors like age may play a crucial role in delirium occurrence, other demographic factors did not show a meaningful impact in this study.

Table 5 shows the association between risk factors for delirium and selected sociodemographic variables of older patients admitted in a hospital in Kheda district. The analysis highlighted a statistically significant relationship between age and delirium risk factors ($p = 0.001$), meaning that older age groups—especially those aged 80 years and above—were more likely to fall into the moderate or high-risk categories. However, no significant associations were found

between delirium risk and other variables such as gender, education, income level, marital status, type of family, and number of days hospitalized, as the p -values for these were above 0.05. This indicates that age plays a key role in delirium risk among elderly patients, while the other sociodemographic factors did not show a notable influence in this study.

DISCUSSION

The purpose of the present study was to evaluate the occurrence of delirium among older patients admitted to selected hospitals in the Kheda district. Findings revealed that out of 170 participants, 5.3% were diagnosed with confirmed delirium, while 13.5% exhibited possible signs of the condition. This indicates that approximately 18.8% of the elderly patients experienced some form of delirium during their hospital stay. A majority (81.2%) showed no signs of delirium.

A study by Kumar *et al.* (2021) in a tertiary hospital in North India found the prevalence of delirium to be around 9%, aligning with the findings of the current study [20].

A study conducted in a tertiary care hospital, which found a 6.9% prevalence of delirium in elderly individuals in hospitals. That study reported 4.6% prevalence in general medical wards and 8.9% in surgical wards. The slight variation could be attributed to differences in patient profiles,

type of illness, and the nature of hospital settings [21].

The present study revealed that the most common symptoms of delirium included inattention (52%), acute onset with fluctuation (20%), disorganized thinking (16%), and altered level of consciousness (15%). Logistic regression analysis highlighted recent memory loss, hearing impairment, and presence of chronic illness as statistically significant predictors of delirium.

These findings are supported by the research, identified cognitive impairment and sensory deficits, especially vision and hearing problems, as strong predisposing factors for delirium in elderly hospitalized patients [22].

Similarly, another study carried out in a geriatric ward also reported chronic illnesses and baseline cognitive decline as the most relevant risk factors [23].

In a similar study found that patients with underlying medical illnesses, cognitive impairment, and sensory abnormalities were more likely to have delirium. This demonstrates that delirium risk is greatly increased by neurological and physiological vulnerabilities, especially those that impact perception and cognition [24].

The present research examined the relationship of sociodemographic variables and the risk factors to development of

delirium. The findings revealed age was the only demographic factor significantly associated with both delirium prevalence and risk ($p < 0.001$); No significant associations were found with factors like gender, educational background, income, marital status, family setup, or duration of hospitalization.

The study by Michaud *et al.* also identified advanced age as the most consistent predictor among demographic variables. Their findings revealed that older age, particularly above 70 years, significantly increased the risk of delirium due to age-related physiological and neurological vulnerabilities. Other factors like gender or education level did not show a strong correlation, which is consistent with the current study's results. These parallels suggest that while sociodemographic characteristics can offer some insights, clinical and cognitive factors are more reliable indicators of delirium risk in older hospitalized patients [22].

These findings align with those of McCusker *et al.* (2001), who emphasized age as the most consistent sociodemographic variable associated with delirium, while other variables often did not show strong correlation [25].

Similarly, a study carried out in Tamil Nadu by Ramaswamy *et al.* (2019) also found that advancing age significantly raised the

possibility of delirium, especially in patients above 70 years [26].

CONCLUSION

The aim of the present research was to investigate the crucial need for early detection and treatment of delirium in older persons, particularly in healthcare settings. The study revealed a notable proportion of elderly patients experiencing confirmed or possible delirium, with risk factors such as memory loss, hearing impairment, chronic illness, and polypharmacy playing a significant role. These findings point toward the importance of incorporating mental health education and cognitive screening into routine health care.

The study highlights the urgent need to strengthen nursing education in the area of geriatric cognitive health, particularly focusing about the detection and treatment of delirium in older adults. The findings reveal a concerning frequency of delirium among hospitalized elderly patients and underline the impact of multiple risk factors, such as pre-existing illnesses, medications, sensory impairments, and environmental stressors.

Communication skills should be emphasized to ensure effective interaction with elderly patients and their caregivers, helping to reduce fear and misinformation. Moreover, the curriculum must foster interdisciplinary collaboration and cultural competence to ensure nurses are prepared

to provide holistic, patient-centered care [27].

Educating older adults and their families about the nature of delirium, its risk factors, and the importance of early treatment is crucial for better outcomes [28].

Providing accessible information about hospital and community support services, addressing barriers like limited financial means or lack of transportation, and ensuring culturally respectful care are essential components. Working collaboratively with other healthcare professionals including physicians, psychologists, and social workers can help deliver a multidisciplinary approach to managing delirium [29].

Research should also focus on developing innovative, evidence-based strategies to prevent delirium and evaluate their influence on the safety of patients, recovery time, and quality of care.

In addition, studies should examine how various social, cultural, and environmental factors influence the identifying and treating delirium among older adults. Understanding how patients and families perceive delirium can help in designing personalized care approaches. Research should also evaluate how changes in healthcare policies affect delirium care services, including accessibility, affordability, and quality.

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