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Original Research Article

A Study of Old Age Delirium and Quality of Life of Family Caregivers

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Abstract: ***Objectives*:** To study the aetiology of patients of delirium in old age, to study the severity of delirium in old age and to study the quality of life of family caregivers of delirium patients. ***Design*:** Prospective, observational, and cross sectional. ***Setting*:** Inpatient tertiary care hospital setting. ***Participants*:** Subjects with the diagnosis of Delirium qualifying according to ICD-10 (international classification of disease-10) and confirmed with CAM scale aged >60 years and Patient or patient's family members willing to give consent. ***Measurements*:** Socio-demographic questionnaire, Confusion assessment method, Delirium index, Delirium aetiology check list, ICD -10 DCR, WHO QOL BREF and the Barthel index. ***Results*:** There is no significant association between delirium severity and WHOQoL. There is no significant association between Barthel index and WHOQoL. There is no significant association between WHOQoL and delirium aetiologies. There is no significant association between gender and WHOQoL. There is no significant association between marital status and WHOQoL. There is no significant association between religion and WHOQoL. There is no significant association between WHOQol and education. There is significant association between WHOQoL and occupation. Emloyed subjects have better quality of life than unemployed. There is no significant association between WHO QoL and residence. There is no significant association between WHOQoL and duration of delirium. There is no significant association between WHOQoL and medical comorbidities. There is no significant association between WHOQoL and substance use. There is no significant association between medical comorbidities and delirium aetiology. There is significant association between delirium severity and duration of delirium. As duration of delirium increases severity of delirium increases. There is no significant association between duration of delirium and delirium aetiology. There is no significant association between delirium severity and medical comorbidities. ***Conclusions*:** In this study results showed that there is significant association between delirium is an acute illness with sudden onset with maximum percentage of duration 2-4 weeks, delirium is more in males than females, majority of the care givers are spouses and parents, multiple aetiologies, diminished psychological QoL are associated with increased care giver burden. Family history of delirium is associated with better care giver burden. Employed subjects with delirium have better overall QoL. As duration of delirium increases, delirium severity increases.

Keywords: Delirium, Caregivers, Quality of life.

INTRODUCTION

The word delirium is derived from the Latin articulation deli rare, which connotes "crazy or to rave". It has been written in clinical literature for more than 2000 years, with dependable portrayal. It was Hippocrates, who used the words phrenitis (furor) and lethargus (sluggishness) to portray the hyperactive and hypoactive subtypes of delirium. The term delirium was first used by Celsius in this century A. D. to portray mental issues related with fever or head injury. The terms used as alternative are "exceptional confusional state," "serious psyche condition," "extreme cerebral insufficiency," and "destructive metabolic encephalopathy". Delirium is as of now the supported term, and it has been prescribed that extraordinary confusional state should be the solitary recognized substitute term for this issue. According to the current DSM norms delirium is depicted by the sudden onset of signs that change during the very day with a changed

level of consciousness, overall disturbance of or perceptual agitating behaviours and verification of medical condition or substance use, or various etiologies [1, 2]. It is a general issue in hospitalized old patients Its finding relies upon history, key features on examination, and physical and clinical examination. The aetiology of delirium is ordinarily multifactorial, for the most part from a blend of different factors. Pathophysiological frameworks remain insufficiently low neurotransmitter influence, aggravation, or extreme biological factor responses [3, 4].

Non-pharmacological management have been seen as the essential line of treatment which consolidates, from the start, the evidence of fundamental causes and consistent attention, incorporation of the environment in the treatment of delirium. Delirium is critical in clinical consideration structure, and they are ignored by physicians and specialists [5]. This is sensible if delirium was unavoidable or untreatable, at this point the current identification of the condition is enough ground-breaking for expectation of the condition to be a useful way. Proper treatment is generally basic to reduce suffering and distress. The role of care givers and physicians and nurses are equally important in the management of delirium. Confusion makes specific difficulty in patients and family caregivers. Early treatment of the illness results is major threat these negative outcomes [6]. Family members who are told about delirium could collaborate with clinical specialists in early identification of signs.

REVIEW OF LITERATURE

Delirium is a typical and common condition among the old, especially in hospitalized patients, influencing up to 30% of this patients. Most on-going study report a predominance of 10–31% on outpatient and a rate of 3–29% during hospitalization .This risk increments dramatically in ICU's, with prevalence paces of up to 80% and in palliative units, where it is accounted for to be pretty much as high as 85% .Higher rates are likewise noted in careful settings with a rate answered to go from 10 to 70% after medical procedure ,particularly in patients going through cardiothoracic medical procedure, orthopaedic, vascular medical procedure. Studies among old individuals admitted in emergency have revealed 5–30%. Despite long stay, nursing home occupants address a poor outcome, yet a couple of studies have been completed. In a new report the predominance of delirium has been assessed somewhere in the range of 3.4 and 33.3% [7, 8]. Besides, there is proof from the set of experiences, actual assessment, or lab report is brought about by the direct physiological results of an overall ailment, or substance use/withdrawal, or because of various aetiologies. This definition has the upside of covering an expansive clinical range; however it likewise suggests incredible variety. The regions of neurological capacity distinguished are for sure wide and can scarcely be credited to the action of discrete cerebral constructions. Likewise, questionable is the understanding that the condition is brought about by various etiological elements to effect on a last basic pathway creating clinical outcomes. Abrupt and sudden beginning and fluctuating course are the focal highlights of delirium. In this manner, it is critical to build up the patient's intellectual working and the course of psychological change, Symptom variance is likely. They might be irregular and are regularly around evening time [9, 10].

In delirium, the disturbance of consciousness is one of the earliest manifestations, which often fluctuates, mainly in the evening when environmental stimulation is at its lowest. The level of consciousness may fluctuate between extremes in the same patient, or alternatively may present with more subtle signs, such as mild drowsiness, or an impaired level of attention. In fact, the patient may appear obviously drowsy, lethargic, or even semi-comatose in more advanced cases [11-13]. The opposite extreme, hyper-vigilance, may also occur, especially in cases of alcohol or sedative drug withdrawal (less common in elderly people. Attention is the process that enables one to select relevant stimuli from the environment, to focus and sustain behavioural responses to such stimuli, and to switch mental activity toward new stimuli, reorienting the individual behaviour, according to the relevance of the stimulus [14].

Subsyndromal Delirium

Since the distribution of a sets of analytic factors, for example, ICD 10 and DSM V, there has as of late arose another idea known as subsyndromal delirium. This condition has been characterized as the presence of at least one centre indicative manifestations that don't meet the full models for delirium, and where full delirium doesn't happen [15]. The major side effects were: inattentiveness, decreased degree of awareness, mild bewilderment, and perceptual changes. From a clinical viewpoint, a few creators have recommended an elective term: "second rate confusional state." This accentuates the need to rate the seriousness of confusional states – gentle, moderate, extreme – contrary to the exacting idea of DSM-V. As proposed by Voyer *et al.*, (2009), these standards, when applied in a real sense, produce underestimation of delirium. Subsyndromal delirium happens in 21–76% of hospitalized old individuals. Prevalence of 30-m50 % has been accounted for in serious consideration units (Ouimet *et al.*, 2007) [16, 17].

AIM AND OBJECTIVES OF THE STUDY

Aim

- To study the severity and aetiology of delirium of old age in the in-patients and quality of life of family care givers.

Objectives

- To study the aetiology of patients of delirium in old age.
- To study the severity of delirium in old age.
- To study the quality of life of family caregivers of delirium patients.

MATERIALS & METHODOLOGY

Site of Project

Tertiary care centre, Lucknow.

Type of Study

Prospective.

Period of Project

January 2020 to June 2020.

Sample Size and Population

Based on previous studies sample size is calculated to be 40. $N=t^2 \times p(1-p)/d^2$. Standard Deviation of delirium severity score.

$t^2= (1.96)^2= 3.84$ normal deviate for 95% confidence limit

P=0.66

q= 0.34

= 3.6 [11]

Sample calculated is 14. Sample size to be taken for this study is 40.

Inclusion Criteria

1. Diagnosis of Delirium qualifying according to ICD-10 (international classification of disease-10) and confirmed with CAM scale.
2. Age >60 years.
3. Patient or patient's family members willing to give consent.

Exclusion Criteria

1. Patients/caregivers who are not willing to provide consent.
2. Primary caretaker is not available.

Details of Ethics Approval/Consent

From the institutional ethics committee KGMU/2020 no. 1391/ethics.

Materials/Apparatus/Questionnaires Used to Collect Data

1. Socio-demographic questionnaire.
2. Confusion assessment method.
3. Delirium index.
4. Delirium aetiology check list.
5. ICD -10 DCR.
6. WHOQOL BREF.
7. The barthel index.

- **The Confusion Assessment Method (CAM)** is a standardized evidence-based tool that enables non-psychiatrically trained clinicians to identify and recognize delirium quickly and accurately in both clinical and research settings. The CAM includes four features found to have the greatest ability to distinguish delirium from other types of cognitive impairment. There is also a CAM-ICU version for use with non-verbal.
- **The Delirium Index (DI)** is an instrument for the measurement of severity of symptoms of delirium that is based solely upon observation of the individual patient, without additional information from family members, nursing staff or the patient's medical chart Delirium index. DI is an instrument for assessment of severity of symptoms of delirium. It was adapted from the CAM, with the intention that it could be used in delirium research by a research assistant (non-psychiatrist). It includes 7 of the 10 symptoms domains of CAM. Disorders of attention, thought, consciousness, orientation, memory, perception, and psychomotor activity), each scored on a scale from 0 (absent) to 3 (present and severe) using operational criteria for each score.
- **Delirium aetiology checklist** is a checklist the attribution is made based on all the available clinical information covering 12 etiological categories (drug intoxication, drug withdrawal, metabolic/endocrine disturbance, traumatic brain injury, seizures, intracranial infection, systemic infection, intracranial neoplasm, systemic neoplasm, cerebrovascular, organ insufficiency, other CNS disorder, and other systemic disorder). Presence and suspected role of each cause is rated on a 5-point scale based on degree of attribution to the delirium episode, ranging from "ruled out/not present/not relevant" (score-0) to "definite cause" (score-4).

WHO Quality of Life-BREF (WHOQOL-BREF)

The World Health Organization Quality of Life (WHOQOL) project was initiated in 1991. The aim was to develop an international cross-culturally comparable quality of life assessment instrument. It assesses the individual's perceptions in the context of their culture and value systems, and their personal goals, standards, and concerns. The WHOQOL instruments were developed collaboratively in a few centres worldwide and have been widely field-tested.

The WHOQOL-BREF instrument comprises 26 items, which measure the following broad domains: physical health, psychological health, social relationships, and environment. The WHOQOL-BREF is a shorter version of the original instrument that may be more convenient for use in large research studies or clinical trials.

- **The Barthel Scale/Index (BI)** is an ordinal scale used to measure performance in activities of daily living (ADL). Ten variables describing ADL and mobility are scored, a higher number reflecting greater ability to function independently following hospital discharge. Time taken and physical assistance required to perform each item are used in determining the assigned value of each item. The Barthel includes 10 personal activities: feeding, personal toileting, bathing, dressing, and undressing, getting on and off a toilet, controlling bladder, controlling bowel, moving from wheelchair to bed and returning, walking on level surface (or propelling a wheelchair if unable to walk) and ascending and descending stairs.

Procedure of Collection of Data

First 40 consecutive subjects fulfilling the inclusion criteria will be included in this study. The study included consenting subjects who have received a primary diagnosis of Delirium fulfilling the criteria as per ICD-10-DCR. They were selected based on convenience sampling from the hospitalised patients. After getting informed consent will be administered the above instruments. The socio-demographic characteristics and clinical details of the patient and the caregiver were noted using a questionnaire. Delirium diagnosed using ICD -10 DCR and further confirmed using CAM. Severity of delirium assessed using Delirium index. Delirium aetiology check list applied with the cooperation of family members. Family care givers were assessed for burden severity. Quality of life of family care givers assessed using WHO QOL BREF scale that gives the scores in 4 domains i.e., 1. Physical health, Psychological, Social and Environmental domain. Baseline measurement of performance in activities of daily living (ADL) was assessed using the BARTHEL INDEX. Cohort of subjects 2 groups 40 subjects with delirium and their care givers data collected and analyse with different socio-demographic and clinical profile.

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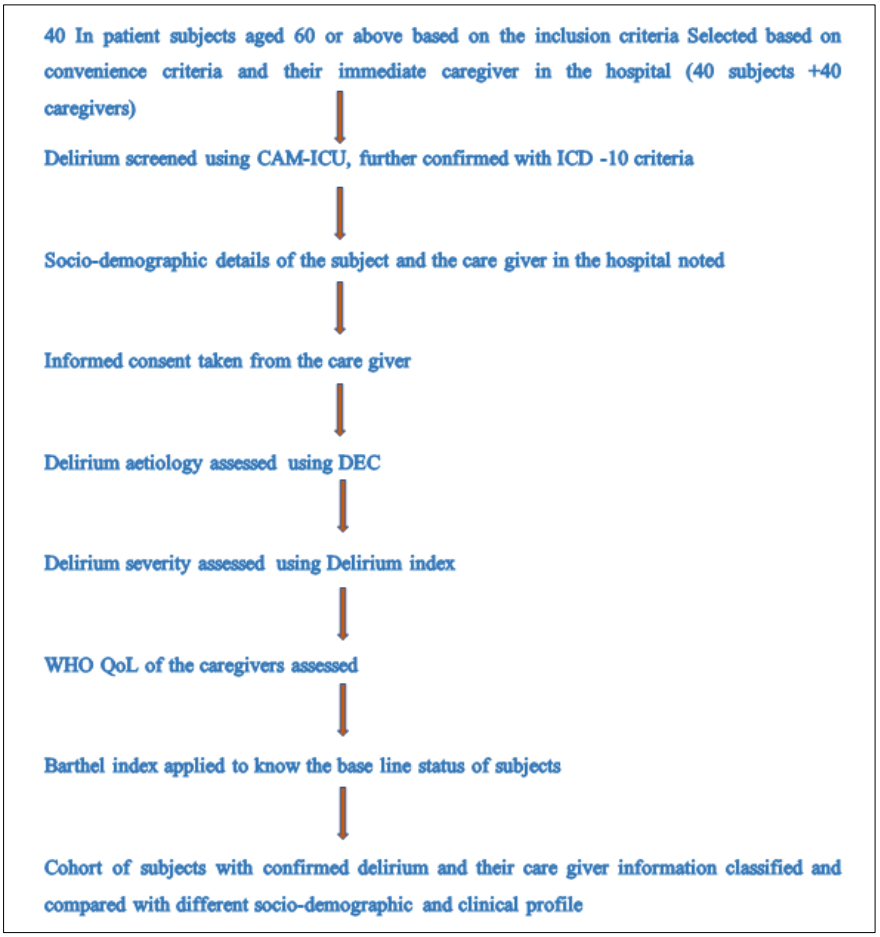

METHOD OF INTERPRETATION/ANALYSIS OF DATA

SPSS for windows version 15 is to be used for all statistical analysis. Descriptive statistical analysis was used in this study to know the distribution of data.

For categorical variables, the differences among the groups were analysed using the Chi Square Test.

RESULTS

Table 1: Delirium index and WHOQoL

DELIRIUM INDEX*WHO QoL		WHOQOL	
		F TEST	P
DELIRIUMINDEX	MILD	25.10	0.44
	MODERATE		
	SEVERE		

There is no significant association between delirium severity and WHOQoL.

Table 2: Barthel index and WHOQoL

BARTHEL INDEX*WHO QoL		WHO QoL	
		F TEST	P
BARTHEL INDEX	MILD	23.08	0.61
	MODERATE		
	SEVERE		

There is no significant association between Barthel index and WHOQoL.

Table 3: WHOQoL and Delirium aetiology checklist

WHO QoL*DEC		WHOQOL	
		F TEST	P
DEC	DRUG WITHDRAWAL	71.37	0.47
	METABOLIC AND ENDOCRINE		
	TBI		
	SEIZURE		
	INFECTION		
	MULTIPLE		

There is no significant association between WHOQoL and delirium aetiologies.

Table 4: Gender and WHOQoL

GENDER*WHO QoL		WHOQOL	
		F TEST	P
GENDER	Male	10.61	0.75
	Female		

There is no significant association between gender and WHOQoL.

Table 5: Marital status and WHOQoL

MARITAL STATUS*WHOQoL		WHOQOL	
		F TEST	P
MARITAL STATUS	Single	24.4	0.47
	Married		
	Widow		

There is no significant association between marital status and WHOQoL.

Table 6: Religion and WHOQoL

RELIGION *WHOQoL		WHOQOL	
		F TEST	P
RELIGION	hindu	19.9	0.3
	muslim		

There is no significant association between religion and WHOQoL.

Table 7: WHOQoL and education

WHOQoL*EDUCATION		WHOQOL	
		F TEST	P
EDUCATION	Illiterate	35.4	0.58
	upto5th		
	upto10th		
	upto12th		

There is no significant association between WHOQol and education.

Table 8: WHOQoL and Occupation

WHOQoL*OCCUPATION		WHOQOL	
		F TEST	P
OCCUPATION	UNEMPLOYED	54.4	0.05
	SEMISKILLED/UNSKILLED		
	SKILLED		
	PROFESSIONAL		
	HOUSEWIFE		

There is significant association between WHOQoL and occupation.Emloyed subjects have better quality of life than unemployed.

Table 9: WHOQoL and residence

WHOQoL *RESIDENCE		WHOQOL	
		F TEST	P
RESIDENCE	urban	11.3	0.67
	rural		

There is no significant association between WHO QoL and residence.

Table 10: WHOQoL and duration of delirium

WHOQoL *DURATION OF DELIRIUM		WHOQOL	
		F TEST	P
DURATION OF DELIRIUM	LESS THAN 1 WEEK	24.2	0.56
	2-4 WEEKS		
	MORE THAN 1 MONTH		

There is no significant association between WHOQoL and duration of delirium.

Table 11: WHOQoL and medical comorbidities

WHOQoL *MEDICAL CO MORBIDITIES		WHOQOL	
		F TEST	P
MEDICAL COMORBIDITIES	DM	51.1	0.82
	SYSTEMIC HYPERTENSION		
	TB		
	OTHERS		
	MULTIPLE		

There is no significant association between WHOQoL and medical comorbidities.

Table 12: WHOQoL and substance use

WHOQoL *SUBSTANCE USE		WHOQOL	
		F TEST	P
SUBSTANCEUSE	NIL	37.4	0.49
	TOBACCO		
	ALCOHOL		
	MULTIPLE		

There is no significant association between WHOQoL and substance use.

Table 13: Medical comorbidities and delirium etiologies

MEDICAL COMORBIDITIES*DELIRIUM ETIOLOGY		DELIRIUM ETIOLOGY CHECKLIST	
		F TEST	P
MEDICAL COMORBIDITIES	DM	18.2	0.55
	SYSTEMIC HYPERTENSION		
	TB		
	OTHERS		
	MULTIPLE		

There is no significant association between medical comorbidities and delirium aetiology.

Table 14: Delirium index and duration of delirium

DELIRIUM INDEX * DURATION OF DELIRIUM		DELIRIUM INDEX	
		F TEST	P
DURATION	LESS THAN 1 WEEK	10.6	0.02
	2-4 WEEKS		
	MORE THAN 1 MONTH		

There is significant association between delirium severity and duration of delirium. As duration of delirium increases severity of delirium increases.

Table 15: Duration of delirium and delirium etiology

DURATION OF DELIRIUM* DEC		DELIRIUM ETIOLOGY CHECKLIST	
		F TEST	P
DURATION OF DELIRIUM	LESS THAN 1 WEEK	11.7	0.19
	2-4 WEEKS		
	MORE THAN 1 MONTH		

There is no significant association between duration of delirium and delirium aetiology.

Table 16: Delirium index and medical comorbidities

		DELIRIUM INDEX	
DELIRIUM INDEX *MEDICAL COMORBIDITIES		F TEST	P
MEDICAL COMORBIDITIES	DM	5.35	0.79
	SYSTEMIC HYPERTENSION		
	TB		
	OTHERS		
	MULTIPLE		
	SYSTEMIC HYPERTENSION		

There is no significant association between delirium severity and medical comorbidities.

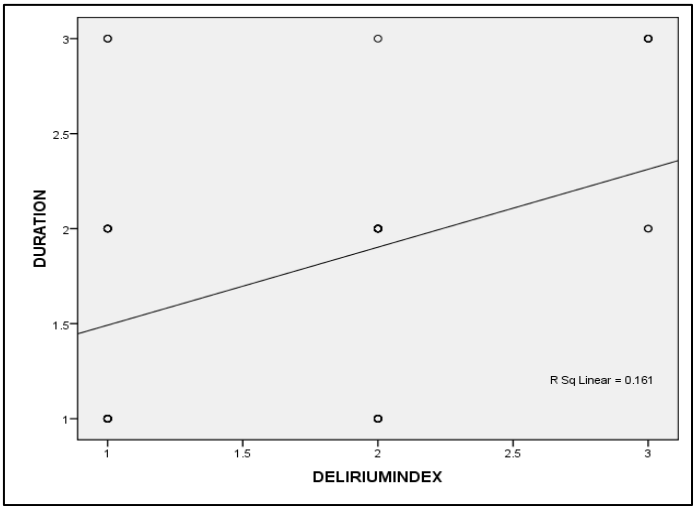

Figure 1: GRAPHICAL REPRESENTATION OF DELIRIUM DURATION AND DELIRIUM INDEX

DISCUSSION

There is some evidence that delirium severity was associated with mortality. Five studies reported a significant association between delirium severity and mortality and six studies reported no significant associations. Results were similar when divided into ICU and non-ICU populations. There was also indefinite evidence for the association of delirium severity with patient distress or quality of life. One univariable study reported no significant association between delirium severity and patient distress. One univariable study measured quality of life; it reported a significant negative association between delirium severity and quality of life. One non-ICU setting reported patient distress and one ICU setting reported quality of life, therefore associations were not determine by setting [18].

In oncology patients, delirium severity was negatively associated with patient delirium recall and was non- significantly associated with delirium-related patient distress P = 0.09) [19-21]. A study reported 105 ICU patients, there was a significant positive correlation between less severe delirium (measured by Neelson and Champagne, NEECHAM, confusion scale) and higher Short Form-20 (SF-20) scores using univariable analyses in physical function (r = 0.35), role function (r = 0.31) and health perception (r = 0.25) at 3 months, and with physical function (r = 0.27), role function (r = 0.34), social function (r = 0.30) and mental health (r = 0.28) at 6 months [22, 23].

Distress associated with delirium, reflected by an increase in DEL-B-C scores, affects caregivers of patients with or without ADRD to the same extent. While caregivers may be familiar with burden when caring for someone with cognitive and functional impairments due to ADRD, this does not mitigate the additional burden associated with delirium. The modest association of burden with cognitive impairment in a study (rho=−.18, p=0.01) suggests that other aspects of delirium (e.g., functional impairments, behavioural disturbances, incontinence, or sleep reversal) may contribute more to caregiver burden. Level of arousal, a strong and specific indicator for delirium, can help differentiate delirium from dementia, although how this feature contributes to burden is unknown [24, 25].

Variables which decide caregiver distress in delirium are probably going to be perplexing and influenced by hidden dementia and are a significant variety for studies. The quick on set, and unfavourable impact on recuperation and restoration of cognition related with delirium may make stressors particular from the more recognizable ADRD trouble model of slower more unsurprising cognitive decline and loss of capacity. Set up approaches of guardian adapting might be lacking or less characterized in a new circumstance leaving the incoherence caregiver feeling loss of control, stun, and pain. To begin with, this is a solitary site study and generalizability should be evaluated in future investigations. Besides, while we had the option to show in this short report quantifiable contrast in results, further work is expected to outline these progressions inside a clinical point of view. Furthermore, inspecting the relationship of possible supporting factors in delirium (e. g behavioural, cognitive, or clinical changes) is significant; anyway this is past the extent of the current study. These are significant extra regions to consider in future examinations. ADRD depended on a formerly distributed, intensive and thorough investigation measure utilizing psychological testing and clinical record audit that had been created following clinical guidelines. Since heterogeneous aetiologies for intellectual decline (e.g., non-determined dementia, Alzheimer's illness, front otemporal dementia, vascular dementia, or MCI), all aetiologies of intellectual debilitation were classified as ADRD and may have under-or over-assessed the genuine rate delirium in our example [26]. This is a significant constraint of our study, which will be basic to address in future exploration. Different reactions in caregiver of people with dementia and delirium like nationality, sex, time allotment providing care, dementia severity, nature of the relationship, and social issues were not considered here yet are need zones for future work. Risks factors for care givers weight can be divided into various factors: patient qualities including age, time since finding, severity of condition, sort of presentations and clinical impairment; caregiver attributes including age, sex, and socio-economic status; the setting of care including care giver relationship to patient, mode of care, level of administrations gave and co- residence.

Past studies have concurred on significant determinants of caregiver trouble for delirium patients, especially loss of capacity, neuropsychiatric side effects of anxiety and depression just as female caregiver sex and living respectively at home. A few studies propose they adjust, and trouble stays stable or diminishes while others show an increment in trouble because of the aggregation of worry about the years [25]. Patient wellbeing results had uncertain proof of relationship with delirium severity. The clinical variables assessed may have adjusted relationship between delirium severity and results because of fluctuating delirium aetiologies and clinical variables like disease severity. To decrease this clinical heterogeneity, there are isolated studies that revealed ICU and non-ICU patients [23-25].

Evaluation of delirium may permit medical care facilities to foresee projected medical care costs inferable more readily from components, for example, ICU admission and discharge area. Even though further studies in ICU and non- ICU settings are required, medical care professionals and caregivers may wish to

archive seriousness in treatment pattern. This features the requirement for future studies in both ICU and non-ICU settings [26-28]. Future studies should utilize approved devices and studies to report connections between severe delirium and results, controlling for possible risk factors, like age, disease seriousness and fatigue. A bigger group of studies is expected to comprehend relationship between severity of delirium and results, which will yield important ends paying little heed to presence of delirium.

On this occasion that relationship with patient and caregiver results are available, further exploration will advise how delirium estimation can be utilized in aide to dichotomous studies to anticipate patient results and educate asset use. For instance, estimation of delirium severity may distinguish patients with a higher risk of creating poor results, like intellectual and memory disturbances [29, 30]. Distinguishing these patients may give better prognostic data and educate choice regarding interventions to alleviate long term consequences related with delirium.

CONCLUSION

In due course, delirium generously builds care giver burden, independent of actual status. Thus, weight ought to be surveyed altogether caregivers of and patients with delirium. In this study results showed that there is significant association between delirium is an acute illness with sudden onset with maximum percentage of duration 2-4 weeks, delirium is more in males than females, majority of the care givers are spouses and parents, multiple aetiologies, diminished psychological QoL are associated with increased care giver burden. Family history of delirium is associated with better care giver burden. Employed subjects with delirium have better overall QoL. As duration of delirium increases, delirium severity increases. Despite the significance of this issue the current assemblage is restricted and variable in setting, strategy, and quality, featuring a requirement for new studies. The current proof shows that delirium severity might be a valuable to existing delirium screening to decide the weight to patients and caregivers, medical services framework assets and carers. Guardian and spouse uphold programs, case the physician, guiding, instruction and long multicomponent projects ought to be investigated as possible ways to deal with decline care giver trouble in existence. Studies are additionally expected to think about the weight of delirium more readily in different races. At last, we trust this work will help for future studies focusing on counteraction and the board delirium trouble in guardians and patients, as a significant need for delirium care.

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