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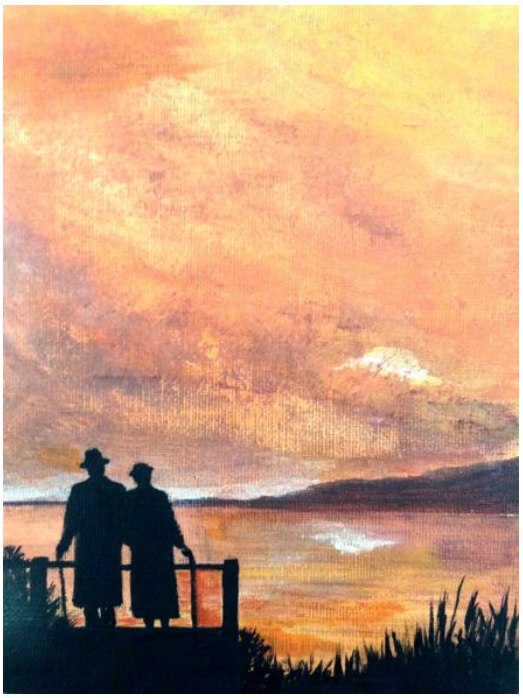

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Editorial

Brahmi *(Bacopa monnieri)*: research on herbal medicines and the UN protocol on biodiversity for profit sharing

Surendra P Singh

Summary

This theme paper aims to highlight potential of Brahmi in treatment of cognitive disorder, likely reasons behind inability to prove its efficacy in systemic manner, approaches that can be adopted to overcome some of barriers in establishing its place in clinical practice, and international convention that are to be complied with to implement profit sharing mechanism for Traditional Knowledge.

Though Brahmi has been used as mental tonic in Indian subcontinent as part of Ayurvedic system of medicine for more than three millennia;[1] only in recent past interests have aroused to use scientific methods to test its efficacy. A recent review reported most consistent large improvement from Brahmi in comparison to ginseng and modafinil.[2] Another meta-analysis based on small studies on heterogeneous group of 437 subjects demonstrated highly significant ($p < 0.001$) large effect size (SMD > 0.75) from Brahmi in a subset (Trail B test and attention span) of cognitive function tests.[3]

Most of the trials on Brahmi are heterogeneous in terms of defining healthy and unhealthy cases from different diagnostic and symptom groups using assessment tools which were not necessarily comparable. Authors from most of these studies suggested necessity for good quality large trials using standardised and comparable tools. This objective for Brahmi and similar other products remains unachieved for various reasons as described below. In addition, any herbal preparation even with proven efficacy now has also to compete with currently available nootropics or anti-dementia drugs in terms of efficacy, cost and marketing approach.

For reasons known, pharmaceutical industries are more likely to be interested in using its derived chemical ingredients rather than promoting natural products for apparent financial and patent reasons. It is unlikely that sponsorship for such trials will come from Non-Governmental Organisations and the developed world because of limited trust and scepticism for such products in general.

When sub-optimally designed trials fail to bring expected results, researchers either lose their faith in usefulness of the product under investigation or shift their focus in conceptualising alternative criteria to define its efficacy.[4] Likely reasons for failures include lack of precise objectives, ambiguities in case definition, sample heterogeneity, inadequate sample size, variation in product standardisation and statistical framework.

Traditional information without scientific proof of evidence are unlikely to be accredited by regulatory authorities and professionals whose evidence-based approach totally discounts the wisdom of past. It should also be known that products with even borderline or small effect-size can be made to reach statistical significance by increasing sample size – a common approach adopted by many pharmaceutical industries. This proof of evidence obviously comes with significant increase in cost of the project. It is uncertain whether or not small publicly funded research units in developing world have resources to match financial clout of big pharmaceuticals assisted by their government supported infrastructure and research and development initiatives.

However, the story may not end there. Any international research dealing with biodiversity products has also to comply with the United Nations Convention on Biological Diversity. As example, my application for FP7 research grant for a trial on Brahmi involving European Community countries and India required legally binding documented evidence from the participating countries and the consortium for compliance with the *Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity.*[5]

In the above example, efforts to find out details of the protocol implementation from intellectual property rights departments of universities and organisations in the UK yielded little or no additional information other than that many of the Western countries and the United States were either not signatories or had not ratified the protocol. Requests for help from the Indian Government (http://ayushportal.nic.in/) also remained unanswered. Eventually a legal representative from India working from a European Office was willing to work in lieu of a large

service fee which was not forthcoming as part of the grant application.

This illustrates necessity of setting up efficient inter-governmental database and coordinating centres that deal with procedural steps in relation to intellectual property right and profit-sharing mechanisms of Traditional Knowledge.

Without fixing this complex jigsaw, traditional medicines have reasons to fail and pharmaceutical industries have reasons to succeed.

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Review

Depression in dementia: an update of neurobiologic risk factors

Sujita Kumar Kar, Amit Singh, Om Prakash

Abstract

Dementia is one of the common mental health morbidities of the elderly population. Depression is commonly associated with dementia which further increases the burden of care, compromises the quality of life and functioning in this vulnerable group. Depression in dementia can be explained through several biopsychosocial mechanisms. There are several neurobiologic risk factors of depression and dementia, while some of them are unique to either of them, many of these factors are common to both, which suggests the possibility of overlap of the mechanisms of genesis of these two disorders. Understanding the common risk factors that attribute to depression and dementia, and addressing the modifiable common risk factors may be an effective preventive strategy for these entities. This review focuses on the risk factors of depression in dementia and their biological correlates.

Key words

dementia, depression, neurobiologic, prevention, risk factors

Introduction

The world's elderly population is about 900 million currently. As per World Alzheimer's Report - 2015, around 46.8 million people worldwide are living with dementia at present, which is expected to reach about 131.5 million by 2050. Progressive decline in cognition is the ultimate fate in dementia which is often associated with other psychiatric manifestations in the form of apathy, aggression, depressive and other neuropsychiatric symptoms (NPS).[1] Several studies have revealed higher frequency of NPS in people with Alzheimer's disease and mild cognitive impairment (MCI) than in the general population.[2,3] The risk of NPS increases with age and is associated with poor social or occupational functioning, decreased quality of life, higher morbidity as well as increased health care utilization.[4-6]

Depression in dementia

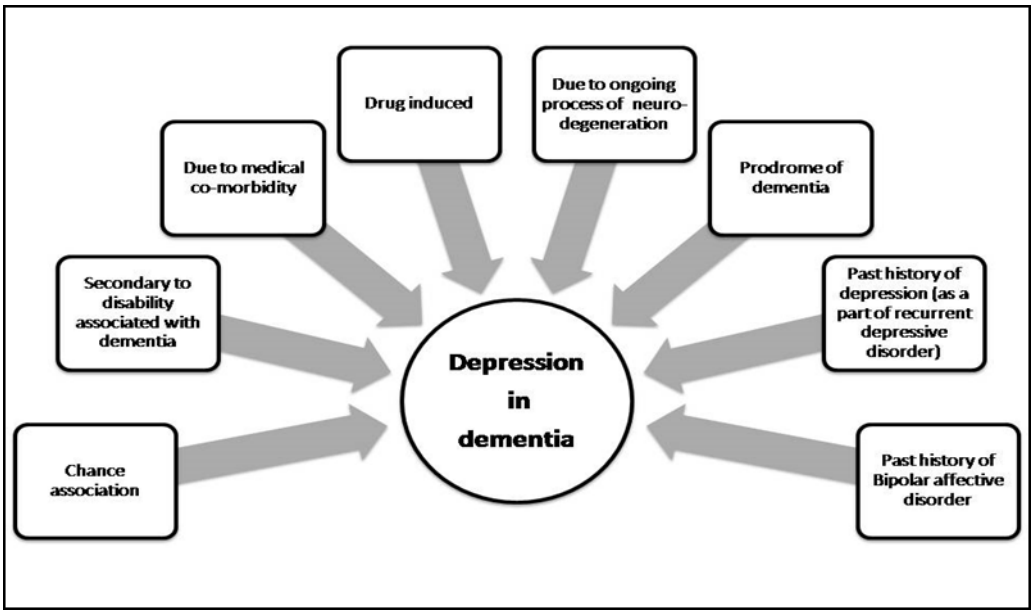
Depression is a common presentation in patients with dementia.[2] It is estimated that one in every five patients suffering from Alzheimer's disease and every second patient with vascular dementia encounter a depressive episode.[7-9] A recent meta-analysis of 23 studies including 49,612 participants, followed-up over five years, suggested the association of late-life depression with increased risk of incident dementia. The result was significant even after being adjusted for confounders, although the pooled risk of dementia was reduced.[10]

Depression in context of dementia has a special significance since it influences the illness characteristics, diagnosis, subsequent treatment given, illness outcome and the overall burden of care. Association of dementia with depression is multifarious. Figure 1 elucidates the possible explanations about the association of depression with dementia.

Akin to individuals, who experience depression without any potential risk factor for it; patients with dementia may develop depression independent of existing risk factors. It can be just a fortuitous association. It can be secondary to underlying medical co-morbidities, side-effect of medications used to treat these co-morbidities or emotional reaction to disability associated with dementia.[11] It has also been proposed that depression in dementia may be the consequence of ongoing neuro-degeneration, possibly due to underlying vascular pathology like stroke (stroke here might be just a co-morbidity with dementia or the cause of dementia, which in turn leading to depression).[12] Depression as a result of ongoing neuro-degeneration can develop anytime during the course of dementia (starting from early dementia to advanced stage of dementia including the prodrome). During prodrome, other than neuro-degeneration, glutamatergic excitotoxic changes and neuro-inflammation may attribute to the depressive symptoms. Patients with past history of depressive episode or bipolar disorder may develop depression due the typical recurring nature of the mood episodes. Differentiating these factors is very important as they carry significant management and prognostic implications.

Diagnosing depression in dementia is a difficult task because the clinical presentations of these two psychiatric disorders colour each other and many symptoms of these two disorders are overlapping.[13] Misdiagnosis of dementia or depression in elderly individuals carries the usual risk of interventions that are not necessary, multiple drug use and polypharmacy. Pharmacodynamics and pharmacokinetics may thus get adversely affected if the

Figure 1: Etiopathogenesis model of depression in dementia



patient is already on medications for other medical conditions or have organ dysfunctions due to medical causes, which are common in elderly population. In early stages of dementia, depressive symptoms are often ignored, believing them as a normal emotional response to cognitive decline.[14] Depression in elderly individuals have more elements of cognitive impairment which may be misidentified as dementia, similarly prodromal phase of dementia frequently presents as depression.[15-17]

Dementia often masks the symptoms of depression. Compromised cognitive functioning in dementia adversely affects individual's ability in expressing the emotional and cognitive elements of depression (sadness, anhedonia, hopelessness, worthlessness and helplessness).[14,18] Agitation is also commonly reported with dementia which can also mask the underlying depression. Pseudodementia of elderly depression is often mistaken as dementia and presence of depression in dementia further worsens the cognitive impairment.[16] Similarly, some of the depressive symptoms (anhedonia, withdrawn behavior, psycho-motor retardation) may mimic withdrawn behavior and apathy seen in "Behavioral and Psychological Symptoms of Dementia" (BPSD).[14,19] Recently, it is believed that apathy and depression are symptoms of two different categories in the background of dementia.[20,21]

Biological factors play a vital role in causation of depression in dementia.[22] Dysfunction in the neuronal network, neurotransmitters, neuro-hormonal levels, neuro-immunological and neurotrophic changes lead to depression in patients of dementia.[22] Depression has a toxic effect on the brain as evidenced by increased cortisol activity leading to acceleration of the process of neuro-degeneration.[23] Studies have revealed that there occurs minimal alteration in the depressive symptoms over the course of dementia, as cognitive impairments in dementia are likely to affect the emotional reactivity which gets disrupted over time.[24,25]

Genetic risk factors like receptor polymorphism may also predispose to depression in dementia. Polymorphism of serotonin receptor (5-HT2A & 5-HT2C) genes increases the risk of depression in dementia of Alzheimer's type.[26] Moreover, changes in the serotonin transporter gene are potent risk factor for depression in Alzheimer's disease, but it is not so in case of vascular dementia.[27]

Figure 2 explains about the overlapping nature of the risk factors of depression in elderly and dementia. There are some risk factors, which are either unique to depression in elderly or dementia and some risk factors, which are common to both these entities. The interplay of all the risk factors, gene, environment and the body is responsible for causation of these disorders. Identifying the common risk factors which make elderly individuals vulnerable to depression as well as dementia will be helpful in planning appropriate intervention which will be effective in preventing or arresting the progress of depression as well as dementia.

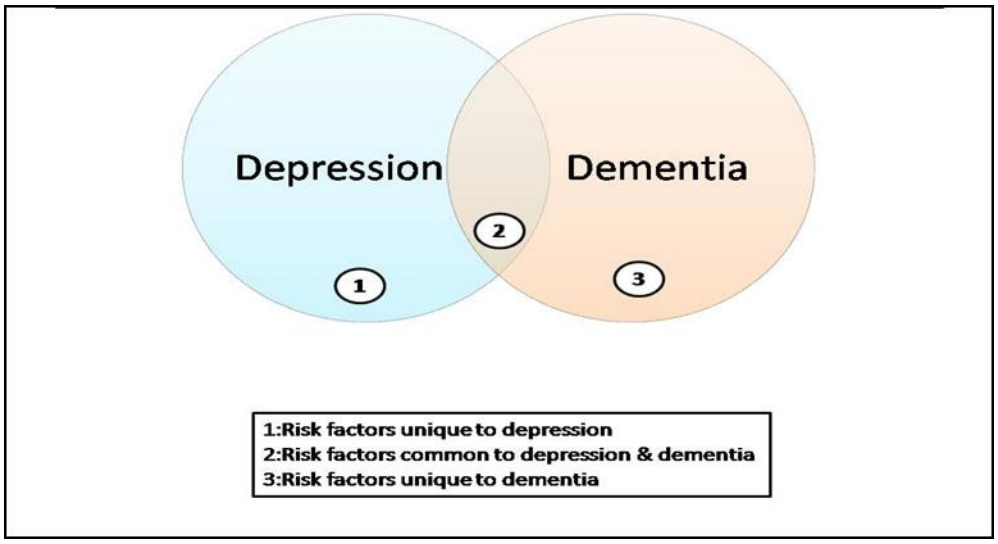
Common risk factors of dementia

Alzheimer's disease is the most common variant of dementia. There are potent, identifiable risk factors of Alzheimer's disease which seems to be more biological and less psychological or social. Identifying the risk factors and appropriate, early intervention helps in delaying the progress of the disease. Age is a universal, non-genetic risk factor of dementia; with increasing age, the risk of dementia increases.[28,29] Female gender carries more risk to develop Alzheimer's disease due to gender specific neuro-hormonal vulnerability.[28]

Physical illness

Physical illnesses that increase the risk of vascular dysfunction are potential risk factors for dementia (both Alzheimer's as well as vascular dementia). Diabetes mellitus, hypertension, coronary artery disease and smoking are detrimental to the integrity of vascular

Figure 2: Risk factors of depression and dementia in elderly



function, increasing the risk of dementia.[28] Diabetes is a risk factor for dementia as it leads to dyslipidemia, increase in pro-inflammatory chemical mediators, decreased insulin sensitivity, alteration in autonomic function, micro-vascular and macro-vascular complications which increases the vulnerability to develop all types of dementia.[30-36] Presence of diabetes and depression together further increases the risk of dementia than either of these factors alone.[37] Oxidative stress and inflammatory process are risk factors for neuro-degeneration. Nonsteroidal anti-inflammatory drugs (NSAIDS) and anti-oxidants are found to have protective effect in dementia.[38] Repeated head trauma leads to pathological changes in brain parenchyma, which in long run may lead to Alzheimer's disease.[28] Alcohol also negatively affects the vascular integrity, hence increases the risk of vascular dementia as has been found in earlier studies; however, recent evidences suggest a protective role of alcohol use in dementia.[28,39,40] Chemicals, aluminum and heavy metals have neurotoxic effect. Aluminum causes abnormal phosphorylation of "tau" protein and increases the risk of Alzheimer's dementia.[28]

Genetic factors

Some genetic disorder like Cerebral Autosomal Dominant Arteriopathy with Subcortical Infarct and Leukoencephalopathy (CADASIL), which has been linked to the gene "Notch3" is associated with risk of developing stroke and vascular dementia.[28] Three important genes – amyloid precursor protein (APP), presenilin – 1 (PS-1), presenilin – 2 (PS-2) were identified on chromosome 21, 14 and 1 respectively which are involved in the causation of dementia.[28] Alpha – 2 macroglobulin, a protease inhibitor, which is associated with chromosome 12, also increases the risk of Alzheimer's disease.[28]

Neurochemistry

Hyperhomocysteinemia, decreased folate and vitamin B12 (cyano-cobalamin) are associated with reduced cognitive function and dementia.[41-43] Hyperhomocysteinemia is associated with both Alzheimer's disease and vascular dementia. This association is mediated by processes of impairment of synthesis of lipid, nucleic acid and neurotransmitters.[41] Metabolic abnormalities like diabetes as mentioned earlier causes cascade of neurochemical derangements which can contribute to dementia.[30-36]

Depressive state

Depression is a potential risk factor for dementia due to reasons like altered serotonin metabolism, increased activity of cortisol, inflammatory changes in the cerebral cortex due to elevated chemical mediators of inflammation.[23,44]

In elderly individuals, persistent depressive symptoms increase the risk of vascular dementia.[45] There are few contradicting findings regarding association of depression as risk factor for dementia between PAQUID (Personnes Agées QUID) and CSHA (Canadian Study of Health and Aging) study. The former establishes an association of depression and dementia in men; on the contrary, the latter fails to establish any relation between depression and dementia on the basis of gender.[46,47]

Studies report that the risk of dementia increases in several ways in the presence of certain depressive episode specifiers like: past history of depression, severity of the episode, late life depression, additional depressive symptoms and number of depressive symptoms.[16,48,49]

Risk factors common to depression and dementia

Out of the earlier discussed risk factors of different subtypes of dementia, many risk factors have also been implicated in causation of depression. Certain risk factors have been identified which may increase the risk of depression particularly in patients with Alzheimer's disease, which include female gender, early onset of dementia, a past history of depression and family history of mood disorder in first degree relatives. The risk factors, common to both dementia and depression are enlisted below.

Gender and family history

Female gender is a non-modifiable risk factor, common for both depression and dementia. Depression is witnessed more frequently in young as well as elderly females. Positive family history also increases the chance of developing illness in the progeny, suggesting that occurrence of disorder is genetically influenced. The estimated heritability for depression ranges from 17 to 75% (mean 37%).[50] Brommelhoff et al., had analyzed risk of developing dementia in twins with history of depression and reported a three time greater risk in partner with a positive history compared to the co-twin. In the study, case-control result for the association was also found to be similar. This indicated that dementia associated with depression is not simply an after-effect of shared genes or shared early environmental influences.[51]

Vascular risk factors

Vascular risk factors are among the modifiable risk factors which include: smoking, hypercholesterolemia, diabetes mellitus, hypertension, cerebrovascular diseases, myocardial infarction etc. Higher rates of dementia have also been noted in both men and women with a history of high blood pressure in midlife. The finding is neutral of existent co-morbidities or other cardiovascular risk factors.[52]

Physical illness

Chronic illnesses such as diabetes mellitus, hypertension, post myocardial infarction, etc. play a role in development and persistence of depressive symptoms.[53] Due to shared pathology, Parkinson's disease, multiple sclerosis, and stroke perhaps have higher depression risk, although family and personal histories of depression are important predisposing factors. Physical illnesses can cause depression directly, or through resultant disabilities such as limitation of person's mobility, requiring another person's support and reduction in activities of life can also trigger depression. Thus various bio-psycho-social factors associated with physical illness may increase the risk of depression and dementia.

Smoking

Earlier smoking was believed to be a protective factor of dementia which was negated by the studies conducted subsequently.[28,45,54] Recent researches however suggest that it doubles the risk of dementia and Alzheimer's disease, more so in apolipoprotein ε4 non-carriers.[55,56] It increases the risk of vasculopathy as well as increases the oxidative stress which attributes to the causation of dementia.[28] Smoking has also been associated with higher risk of depression.[57]

Others

Several drugs have also been found to be associated with higher rates of dementia and depression. Patients on antiepileptic drugs are reported to have a significantly higher possibility of developing dementia, compared to those not taking treatment.[58] Common antiepileptic medications such as - benzodiazepines, phenobarbital, tiagabine and zonisamide have been associated with an increased risk for depression as well.[59]

Other than these common risk factors, there are some unique risk factors of depression which exclusively increases the risk of depression and do not have significant risk association with dementia. To keep the discussion more focussed, these risk factors are not purposefully discussed. Identifying the common risk factors and targeting them in intervention and preventive strategy is of utmost importance.

Newer developments

Recent research findings suggest, degeneration of nor-adrenergic neurons in locus ceruleus of the brain, decreased serotonergic activity in diffuse areas of the cerebral cortex, and change in plasma level of neurotransmitter GABA, which attribute to depressive symptoms in dementia.[60,61] With aging, there occurs increase in telomerase activity and inflammatory changes in the brain parenchyma which in turn leads to causation of dementia as well as depression.[30,62,63]

Dysregulation of Brain Derived Neurotrophic Factor (BDNF) and cytokines (inflammatory mediators) is seen in both Alzheimer's disease and depression in elderly.[64,65] BDNF is an important growth factor responsible for neurogenesis and maintains neuronal plasticity.[16,44] Decreased BDNF level is associated with depression as well as dementia, hence BDNF level may be considered as a sensitive marker of depression and dementia.[16,44]

Glucocorticoid level is believed to be a sensitive pathological marker in both dementia and depression.[32,66] Caraci et al. proposed a strong correlation between depression and Alzheimer's disease.[44] It was found that patients with dementia with comorbid depression have more neurofibrillary tangles and neuritic plaques than those with dementia alone.[44]

Volume of white matter hyper-intensities are considered as imperative marker of underlying cardiovascular disorder and is an important predictor of depression as well as dementia in elderly.[67] Recent evidences also suggest about higher levels of anxiety as risk factor for dementia.[67-69] Some studies revealed that loss of hippocampal volume is directly related to cognitive decline and dementia in elderly patients with depression.[70,71] Hippocampal atrophy seems to be the result of excessive cortisol level due to depression in the elderly or as a consequence of inflammatory changes and reduced level of nerve growth factor.[65,72] Formation of amyloid plaques, neurofibrillary tangles and hippocampal atrophy are specific characteristics of Alzheimer's disease; however these specific pathological changes are more marked in patients with Alzheimer's disease and concomitant depression than Alzheimer's disease alone.[73,74]

Conclusion

Dementia is a devastating illness having a significant impact on overall functioning and quality of life. It requires considerable multilevel care for patients; and it adds to the burden of care of the caregivers and family

members. Depression further worsens the scenario. There are certain common risk factors for depression and dementia; identification and appropriate intervention to modify these risk factors may help in decreasing the vulnerability, minimizing the sufferings and reducing the burden of care.

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Case Report

An elderly gentleman with symptoms of an eating disorder

Ross McDermott, Lakshmi Murali, Lisa Blissitt

Abstract

We describe the case of a 73-year-old gentleman who presented with a three year history of intentional weight loss, distorted body image, excessive exercise and purging behaviour. During this time, he was often tearful and low in mood. Following treatment with antidepressants all his symptoms, including those of an eating disorder, rapidly improved. Our learning points are threefold: that eating disorders should be considered even in elderly, male patients; that there are positive effects in using antidepressants; and that there is a need for more guidance on treating eating disorders in the elderly.

Key words

Eating disorder, elderly, depression, antidepressants

Introduction

Most literature surrounding nutrition in the elderly focuses on anorexia of old age; rightly so as it is a serious problem.[1] However eating disorders such as anorexia nervosa, more commonly found in younger patients, can present in older patients, even in men.[2] Our case concerns an elderly gentleman who presented with symptoms of an eating disorder. As there is a lack of information on eating disorders in older adults, especially in male patients, we felt it would be valuable to share our experience of this case.

Case presentation

Our patient, a 73-year-old gentleman, explained that his problems started three years ago, specifically when he was preparing for his daughter's wedding. He found that the suit he was due to wear was too small for him and so he decided to lose weight. He had retired six years prior to this from his job as a long distance lorry driver. At this time he was obese, weighing 16 stone, with a Body Mass Index of 36.

He began to go to the gym at least three times a week, staying until the staff demanded he leave as it was past closing time. He explained how they would have to switch off the exercise machines to get him to leave. He would also exercise on his own for hours at night using an exercise bike. This continued for 18 months until knee pain restricted his exercise, resulting in a knee replacement operation.

His symptoms became worse after this. He began hiding his food, throwing it away and refusing to eat. He started to use laxatives to further augment his weight loss. During this time he was often tearful and low in mood. These symptoms began following his knee operation; they had not been present before. As a result of his actions he lost a significant amount of weight, around eight stone. This meant he was marginally underweight, with a BMI of 18.

Prior to that, he was well with no previous mental health problems and his only physical health problem was gout. He had been married for 50 years and had two daughters and one son. His wife described him as 'happy go lucky' and 'always laughing and joking' before the onset of his symptoms. He came from a white, working-class background and had no unusual cultural beliefs that we could uncover. He had a good relationship with his family, including his daughter who was getting married. They were supportive throughout his illness, although concerned about his wellbeing.

Differential diagnosis

In this case, the diagnosis could either be a primary eating disorder, most likely anorexia nervosa, or depression with anorexic features. We felt that in view of his depressive symptoms, the latter diagnosis was more appropriate. Given his age, one could also consider anorexia of aging, but these patients tend to be frail and their illness is characterised by a loss of appetite, which was absent in this gentleman. Another differential, given our patient's age and significant weight loss was organic illness, especially malignancy.

Treatment

Prior to his assessment in Old Age Psychiatry, he was started on antidepressants by his general practitioner, specifically citalopram 20mg once per day. No other treatment had been offered or supplied to our patient. He also had some basic blood tests looking for other causes of weight loss before he came under our care.

Outcome

Our patient and his family noticed an improvement within two weeks. His mood improved and he began to eat and drink normally. He came to see us two months after starting antidepressants by which time he had put on a

stone in weight, he had a good appetite and was doing an appropriate amount of exercise, around 30 minutes per day. He was much happier in himself and he no longer thought he was overweight.

Personal Experiences

This gentleman described his experience saying 'it was a dark period in my life.' He felt that if he had not been treated, he would have been dead. Following improvement in his symptoms he was glad he was back to his normal self and described feeling 'on top of the world'.

His wife explained how it had been very worrying for her and elaborated how hard it was to get her husband to go to their doctor and admit his problems. She felt she 'didn't know what to do' at that time but was now delighted that his condition had improved.

Discussion

The ICD-10 criteria for diagnosing anorexia nervosa states that a patient must have weight loss leading to a body weight at least 15% below expected, weight loss induced by avoidance of fattening foods, self-perception of being too fat and in males, a loss of sexual interest.[3] As our patient does not quite fit these criteria, the category of eating disorders not otherwise specified might be more appropriate. This case shows the difficulty of diagnosing eating disorders in those who were overweight before the onset of symptoms.

The National Institute of Clinical Excellence (NICE) guidelines suggest that for eating disorders, psychological therapy should be first line, and advise that pharmacological therapies should be used with caution and only for co-morbid conditions.[4] Our experience in this case differs from this guidance, in that we found pharmacological therapy was an adequate treatment. This may be because the primary diagnosis was depression rather than an eating disorder alone. Our experience is supported in other cases of eating disorders in elderly patients where pharmacological treatments have been beneficial.[2]

Conclusions

We feel there are three key conclusions from this case. The first is the importance of recognising eating disorders in older people and that they can present later on in life. Secondly, that using antidepressants in patients with symptoms of an eating disorder, as in this case, can have positive outcomes. Finally our case shows the need for more guidance on eating disorders in the elderly as most of the current guidelines are focussed on the younger population.

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Short Report

Lack of community care facilities for older people and increased rate of admission and length of stay in hospitals

Nilamadhab Kar

Abstract

There is an increasing demand for hospital beds for older people almost everywhere. At any time, considerable proportion of hospital beds are occupied by elderly and the concern is growing. One of the plausible reasons could be the impact of increasing older population. However, often the increased length of stay and even the hospitalisation are reported as inappropriate and avoidable. These occur for various reasons including lack of facilities for appropriate care in the community, inadequate scope for early identification and management, even social, interpersonal and physician factors. It is important to evaluate these reasons, and explore the scope for effective interventions so that needless and prolonged hospitalisations can be avoided.

Key words

Older persons, admission, inappropriate, discharge, community, resources,

Introduction

At any time, almost half to two thirds of the hospital beds are occupied by the older persons.[1,2] Although the reported figures vary widely these are usually alarmingly high with considerable implications. It is reported that unplanned admissions for people over 65 account for around two-thirds of hospital emergency bed days;[3] and almost 80% of emergency admissions which results in hospital-stay for more than two weeks are for older people.[4]

While it is understandable that older people with more physical and mental health issues are vulnerable and would need care and interventions, most of the admissions and length of stay in hospital are observed as inappropriate to their needs. In one study in Southern Italy, 9.8% of hospital admissions for elderly and 39.5% of hospital days were considered inappropriate.[5] It is known that considerable proportion of older people stay on in the hospital for lack of suitable accommodation or intervention facility in the community. The issue is highlighted by a study which found that almost a quarter of older people died in hospital waiting for a long-term placement.[6]

Implications

The reasons why this issue of inappropriate admissions and unnecessarily prolonged hospitalisation need to be studied are manifold. Admission to hospitals is an uncomfortable experience for anyone and particularly so for the older people who have to adjust in a new environment affecting their activities of daily living. It is disruptive to their routine and may be unsettling. Hospitalisation may bring new clinical and psychological risks, impact on the functional abilities, lead to "iatrogenic disability" and may increase their dependency.[7,8] There are risk of hospital acquired infections and increased rates of complications associated with prolonged length of stay.[9,10] Overall it may impact upon the quality of life of the patients.

Prolonged hospitalisations increases cost, adds to the economic burden of the patients and families or the state, depending upon who pays for the expenses. Delayed discharges definitely affect the ability of the health care system to care for more acutely needy patients and to cut the waiting list.[9] Undoubtedly it also takes a toll of emotional and physical wellbeing of family members and care-givers.

Reasons

There are various factors that contribute to inappropriate and prolonged hospitalisations for older people. While reasons like an overcautious physician making premature admissions and an indecisive one delaying the discharge have been suggested,[5] these appear minor in the face of more pressing issues. Admissions for diagnostic procedures or interventions that could have been done in the community or out-patients are probably more frequent because of lack of such facilities.

Similarly, delay in completing therapeutic interventions in the hospital due to resource issues and delay in discharge secondary to lack of appropriate community accommodation,[6,11] or homelessness[12] are often the reasons that prolong the hospitalisation period.

There are many patient or illness related factors, e.g. problem of mobility, use of a urethral catheter, lack or inadequate plan or resources for rehabilitation.[11,12] In a study in Japan, older persons with prolonged hospitalisation were more likely to be women, with low activities of daily living and living alone.[12] Patient profile associated with inappropriate days of care in a study in Dublin were female gender, age over 75, being single and entitlement to free medical care; and hospital misutilisation was linked to self-referral, admission for observation, social and multiple reasons for admission, and the diagnosis of cerebrovascular disease.[13]

Remedial measures

There should be multi-pronged approaches that may decrease unnecessary admissions, facilitate early discharge and more importantly prevent such admissions in the first place. Although there is some role of the hospital procedures in dealing with this, the primary importance lies in strengthening community resources.

Community-based services such as primary health-care, social services, local authority and other non-governmental organisations can help in the process.[3] Facilities for early identification and intervention for many ailments are key factors that may ease the pressure immensely. These can be set up in the community or out-patient departments. Where possible, timely preventive measures may help decrease the number of hospitalisations. This may include preventive health checks, care-coordination of older persons in the needs of various supportive services, specific geriatric clinics in community or out-patient departments, community-based rehabilitation services.[14]

Interaction between health and social services are important. Well-coordinated and collaborative work, sharing information between multiple agencies may help in arranging supportive resources for the patient. These initiatives may facilitate early discharge.[3,14]

As reducing the length of stay for older people has the most potential for reducing hospital bed use,[4] it is important to explore the methods of interventions that can minimise hospital days and expedite discharge. There is a need for more specific studies about interventions in the community that may be helpful in avoiding hospital admissions. The research on the effectiveness of initiatives like community-based medicines reviews, day hospital services, exercise interventions in hospital and nurse-led transitional care, falls prevention services, tele-medicine, etc. are scant or currently inconclusive. Similarly health improvement programmes for the older persons like adequate exercise and nutrition may need attention.

One of the important factors is the availability of financial and human resources to meet these requirements. Difficulty in arranging adequate resource for the care of older people is evident in almost all countries; and it is a matter of great concern.

Conclusion

While in all probabilities, the admissions for the elderly will remain high, it is the unnecessary ones which should be avoided and the hospital stay should be minimised to what is actually required. It is clear that improvement in the available systems holistically is needed with emphasis on integrated multispecialty working together to tackle this. While there is a role for effective and timely intervention in the hospital to minimise the length of stay, community resources and interventions should be reinforced to prevent unnecessary hospital admissions and to assure early discharges.

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Creative Expressions

'Seasons' by Lynne Bevan, England.

The water colour painting 'Seasons' captures a time at the end of summer that imperceptibly merges into autumn, when flowers just begin to lose their first bloom. It is like a time when people from their active work-life move into retirement. There is probably a distinct empathy between the painting and the artist. Whether as a new found hobby or a specific plan for the afternoon years, painting can be started at any age and it can become an integral part of one's life. Like the artist, most people find it enjoyable and can continue it even when the cognitions dwindle as the years advance.

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Insight

Safeguards for older persons in India

There are various safeguards already in place to protect the needs of older people in India. However many people may not be aware of these. It is important that not only people should know about the available support systems; but the safeguards need to be appropriately practised and adhered. Some of these initiatives are described here as examples.

The Constitution of India, mentions that "the state shall, within the limits of its economic capacity and development, make effective provision for old age, sickness and disablement and in other cases of underserved want" (Directive Principle of State Policy, Article 41).[1]

There are various specific clauses in the existing laws to support and protect older people. The Code of Criminal Procedure (Chapter IX), Section 125(1)(2) requires persons having sufficient monetary means to take care of their parents if the latter are unable to take care for themselves. Similarly, the Hindu Adoption and Maintenance Act, 1956 Section 20 requires Hindu sons and daughters to maintain their elderly parents when parents are unable to maintain themselves.[1]

There is a specific legislation initiated by the Ministry of Social Justice and Empowerment, Government of India for the support of older persons. Maintenance and Welfare of Parents and Senior Citizens Act, 2007 is a major attempt to support and protect older persons. This Act makes it compulsory for children to provide a monthly allowance to their parents and other senior citizens of the family. Older persons who are unable to maintain themselves have a right under this Act to make an application to the designated tribunal to claim their maintenance amount from their children. This Act also provides guidelines for setting up of old age homes.[1,2] Definition of children in this act includes son, daughter, grandson, granddaughter but not a minor; and parent means father or mother whether biological, adoptive or step father or step mother. Maintenance is defined as provision for food, clothing, residence, medical attendance and treatment.[2] While the law is in place, its appropriate implementation is the crucial element which requires efforts from all concerned.

The Government of India has a National Policy for Older Persons supporting welfare measures and empowering the older persons. This policy guides setting up of a pension fund for persons working in the unorganized sector, construction of old age homes, day care centres, resource centres and re-employment offices for people above 60 years, and suggests concessional fare for travel. It also emphasizes compulsory geriatric care in all the public hospitals.[3]

There is an public education initiative by National Human Rights Commission through a booklet for elderly people under the 'Know your rights' series.[4] This has an objective of achieving better understanding of the human rights issues related to older persons. This booklet gives information about various initiatives, supportive programmes, relevant laws and their provisions, facilities and schemes available for older persons.

In spite of the above systems, many preventable concerns of old age and older persons are common and continuing unnecessarily. There is a need to increase the awareness amongst general public about the problems faced by the older persons, the supports and the safeguards available to them and to implement the legal provisions when appropriate.

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Manuscript Preparation

Instructions for authors

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Unless otherwise stated corresponding author will be considered as the guarantor of the article. However one or more authors/contributors can be guarantor. The guarantor accepts full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

Declaration of interest

All submissions to the *JGCR* (including editorials and letters to the Editor) require a declaration of interest. This should list fees and grants from, employment by, consultancy for, shared ownership in, or any close relationship with, at any time over the preceding three years, an organisation whose interests may be affected by the publication of the paper.

Ethics approval of research

The *JGCR* expects authors to follow the World Association's Declaration of Helsinki and base their article on researches conducted in a way that is morally and ethically acceptable. The research protocol must have been approved by the locally appointed ethics committee and informed consent must have been obtained from subjects (or their guardians).

Authors must explicitly state in the covering letter (on the first page of submission) that any necessary ethics committee approval was secured for the study. This fact should also be explicitly stated in the manuscript with the name and location of the approving ethics committee(s). The editors may request research ethics committee approval papers and may contact the ethics committee chair directly, where there is doubt about research ethics approval.

Patient consent and confidentiality

Studies involving humans must have written informed consent from the patients. A statement regarding this must be included in the methodology. Where the individual is not able to give informed consent, it should be obtained from a legal representative or other authorised person. If consent cannot be obtained because the patient cannot be traced then publication will be possible only if the information can be sufficiently anonymised. Anonymisation means that neither the patient nor anyone could identify the patient with certainty. Such anonymisation might, at an extreme, involve making the authors of the article anonymous. If the patient is dead, the authors should seek permission from a relative as a matter of courtesy and medical ethics. They should check the specific laws in their country. Contributors should be aware of the risk of complaint by individuals in respect of breach of confidentiality and defamation.

Structure of manuscripts

Research article

The title should be brief and relevant.

A structured abstract not normally exceeding 150 words should be given at the beginning of the article, incorporating the following headings: Background; Aims; Method; Results; Conclusions.

Key words: Up to six key words should be provided.

Introductions should normally be no more than one paragraph; longer ones may be allowed for new and unusual subjects. This should be followed by Method, Results and Discussion sections. The Discussion should always include limitations of the paper to ensure balance. Use of subheadings is encouraged.

A subheading of practical implications of the observations is encouraged at the end of the article.

The article should normally be between 2500 and 3500 words in length (excluding references, tables and figure legends) and normally would not include more than 25 essential references beyond those describing statistical procedues, psychometric instruments and diagnostic guidelines used in the study. Authors are encouraged to present key data within smaller tables in the appropriate places in the running text. This applies also to review articles and short reports.

Review

Systematic and narrative review articles should be structured in the same way as research articles, but the length of these may vary considerably, as will the number of references. It requires a structured abstract like that of research articles.

Short report

Short reports require an unstructured summary of one paragraph, not exceeding 100 words. The report should not exceed 1000 words (excluding references, tables and figure legends) and contain no more than one figure or table and up to 10 essential references beyond those describing statistical procedures, psychometric instruments and diagnostic guidelines used in the study.

Case report

Case reports and series require up to 100 word abstract, and the length should not exceed 750 words (excluding references, tables and figure legends). The written informed consent of the individuals must be obtained and submitted with the manuscript. The individual should read the report before submission. Please refer to patient consent and confidentiality paragraph for further detail. In general, case studies are published in the *JGCR* only if the authors can present evidence that the case report is of fundamental significance and it is unlikely that the scientific value of the communication could be achieved using any other methodology.

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Editorials require an unstructured summary of one paragraph, not exceeding 50 words. Editorials should not exceed 1000 words and may contain no more than one figure or table and up to 10 essential references.

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Letters may be submitted either as responses to published articles, to inform about particular situation or raise pertinent issues, for expert opinion or as general letters to the Editor. Letters may be up to 400 words in length with a maximum of 5 references.

First person account

In first person accounts *JGCR* publishes carers' or patients' own experiences in the care or the elderly, that can be considered significant and provide learning points for others.

Insight

This section includes reviews on recent research findings, book, film or web resources as short articles up to 400 words. Authors can include good practice examples, inspirational experiences, and highlight neglected areas. Essays up to 1500 words in descriptive prose can be submitted on any topic related to geriatric care.

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These are personal opinion pieces which may reflect an individual perception, involvement, or contribution to geriatric care and should be prepared like a Review.

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Fillers are published at the end of articles where space allows. These comprise a wide range of material considered to be of interest to readers of the *JGCR*. Examples include news regarding developments that can influence the care of elderly, poems, painting, photographs, quotations, important internet links, etc.

References

Authors are responsible for checking all references for accuracy and relevance in advance of submission. All references should be given in superscripted number in the order they appear in the text. Place superscript reference number after commas and full stops, unless the superscript is attached to authors name or title of book/database. At the end of the article the full list of references should follow the Vancouver style. If there are more than six authors, the first six should be named, followed by 'et al'.

Example of journal articles:

The authors' names are followed by the full title of the article; the journal title abbreviated according to the PubMed; the year of publication; the volume number; (issue number in bracket); and the first and last page numbers.

1 Singh SP, Singh V, Kar N, Chan K. Efficacy of antidepressants in treating the negative symptoms of chronic schizophrenia: meta-analysis. Br J Psychiatry. 2010; 197(3): 174-9.

References to books should give the names of any editors, place of publication, editor, and year. Examples are shown below.

2 Murray PR, Rosenthal KS, Kobayashi GS, Pfaller MA. Medical microbiology. 4th ed. St. Louis: Mosby; 2002.

3 Meltzer PS, Kallioniemi A, Trent JM. Chromosome alterations in human solid tumors. In: Vogelstein B, Kinzler KW, editors. The genetic basis of human cancer. New York: McGraw-Hill; 2002. p. 93-113.

4 Foley KM, Gelband H, editors. Improving palliative care for cancer [Internet]. Washington: National Academy Press; 2001 [cited 2002 Jul 9]. Available from: http://www.nap.edu/books/0309074029/html/.

5 Cancer-Pain.org [Internet]. New York: Association of Cancer Online Resources, Inc.; c2000-01 [updated 2002 May 16; cited 2002 Jul 9]. Available from: http://www.cancer-pain.org/.

Personal communications need written authorisation (email is acceptable); they should not be included in the reference list. Unpublished doctoral theses may be cited (please state department or faculty, university and degree). No other citation of unpublished work, including unpublished conference presentations, is permissible.

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Tables

Tables should be numbered and have an appropriate heading. The tables should be mentioned in the text but must not duplicate information. The heading of the table, together with any footnotes or comments, should be self-explanatory. The table should be placed at the desired position of the manuscript.

Authors must obtain permission from the original publisher if they intend to use tables from other sources, and due acknowledgement should be made in a footnote to the table.

Figures

Figures should be clearly numbered and include an explanatory legend. All figures should be mentioned in the text and the desired position of the figure in the manuscript should be indicated.

Authors must obtain permission from the original publisher if they intend to use figures from other sources, and due acknowledgement should be made in the legend.

Statistics

Methods of statistical analysis should be described in language that is comprehensible to most readers. Raw data for the studies may be asked at any time up to 5 years after publication of research in the *JGCR* and the authors are suggested to keep these safe.

Qualitative research

The *JGCR* welcomes submissions of reports of qualitative research relevant to the scope of the care of elderly.

Registration of clinical trials

The *JGCR* recommends that all clinical trials are registered in a public trials registry.

Abbreviations, units and footnotes

All abbreviations must be spelt out on first usage and only widely recognized abbreviations will be permitted. Abbreviations usage should be consistent throughout the article. Use abbreviations sparingly; consider using one if it is repeated more than three times.

The generic names of drugs should be used.

Generally, SI units should be used; where they are not, the SI equivalent should be included in parentheses.

Footnotes are not allowed, except table footnotes.

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A proof will be sent to the corresponding author of an article which should be sent back within 7 days.

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Open access

There is no submission or publication fee at present for papers published in the *JGCR*. All papers published in the *JGCR* become freely available.

Clinical trial registration

All clinical trials must be registered in a public trials registry. This is a requirement for publications of the trials.

Ethical considerations

Authors should consider all ethical issues relevant to their research, and briefly address each of these in their articles. Authors of reports on human studies, especially those involving placebo, symptom provocation, drug discontinuation, or patients with disorders that may impair decision-making capability, should consider the ethical issues related to the work and include detailed information on the informed consent process in the Methods and Materials section of the manuscript) including the method or methods used to assess the subject's capacity to give informed consent, and safeguards included in the study design for protection of human subjects. Approval from an institutional review board (IRB)/ ethics committee should be mentioned in the methods. In organizations where IRB is not available; the authors must include a statement that research was conducted in accordance with the Helsinki Declaration.

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