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**Cover Golden years**



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# What can we learn from the COVID pandemic about care of older adults?

Nilamadhab Kar

## Abstract

The elderly population has been worst hit during the COVID pandemic. Society should take this challenge to learn from the experience to improve the support services for the elderly and preparedness for pandemic. Proper planning and strategies in health, social care, and public services are required.

## Key words

Aged, COVID-19, health services, multimorbidity, public health, social care

## Introduction

COVID-19 has been devastating for the world in the terms of resource loss from sheer number of human lives lost and affected, economic downturn and social problems. There is burgeoning literature on these issues. The pandemic has thrown a challenge to humanity, and it needs to be seen what we can learn from this. While it is essential that we reflect on this in general, this article is about focussing on the lessons that can bring changes to the care of older people.

### *Protecting the older adults, 'early'*

In most pandemic situations, older adults are understandably more vulnerable to the impact of the infection considering their physical state and associated morbidities. In the UK, the approach of 'shielding' was undertaken to protect the older adults from exposure to infection; and arrangements were made to support them in their day-to-day functioning. In the continuing pandemic and in future this could be an effective strategy. However, this 'shielding' should happen early in a pandemic situation and continued as long as it is necessary. Extra protective measures in wards, nursing homes and care facilities are important.

### *Vaccination*

Vaccines bring specific protection and have been available to older adults as a priority group in most countries. However, the lack of an adequate number of vaccines and

poor coordination have been noticed while arranging the vaccination programme for a large population. Besides, vaccine hesitancy and avoidance have been other concerns often secondary to inadequate information, myths and rumours. Methods to communicate and convince people to take vaccines should be well thought out and designed. Along with scientific communication, it appears there is role for social or community leaders to encourage people to take the vaccine and adhere to guidelines.

### *Continuing support for multimorbidity*

When the resources are diverted to deal with the pandemic, services for patients with other illnesses suffer, increasing morbidity and mortality. Treatment of many illnesses has been hampered, or delayed, e.g., for chronic non-communicable diseases, cancer treatments, the surgeries, interventions requiring hospital admissions etc. Patients with other illnesses should have unhindered support. This would need major planning and preparedness to balance the resources appropriately for dealing with pandemic situation while maintaining the usual service.

### *Facilitating telehealth care*

Experience during pandemic suggests that telehealth care has massive potential to increase, even beyond the pandemic. World over, it has been seen that remote reviewing, assessment and management has grown for many illnesses. It is amazing to notice that many diseases could be managed this way. Telehealth care strategies to assess, diagnose and treat many illnesses should explored and improved.<sup>1</sup> However, there are challenges such as unavailability of telehealth gadgets, skill to use them and internet connectivity in many regions. Although telehealth care may not replace the face-to-face inhouse care, a hybrid model is likely to be a common place, for chronic illnesses. With a coordinated approach, the usual support of medical, nursing care along with non-professional care could be available during a pandemic situation.

### *Managing stress and mental health*

There is a massive impact on mental health during the pandemic, not only upon the elderly people but also across the population including health professionals.<sup>2</sup> Early identification of mental health deterioration, resorting to

effective coping strategies, and appropriate intervention will be key. Stress related disorders, anxiety, depression, substance use, and suicidality are observed to be more common, and a huge proportion of people in the community suffer from this. However, considering inadequate information and resource, many are not identified or treated. The pandemic strategy should involve mental health support, integrated to health service provision at all levels. This should have a community focus through public health measures, as clinic-based services may not cope with the huge number of elderly people who would need help. Supporting primary care health professionals, making self-help measures and information available widely, and a referral system for those who need specialist care would be helpful.

### ***Prioritising the need for elderly***

It is positive to see that the elderly people were considered a priority group for vaccination. However, there are many health and social welfare issues their needs are not met adequately, appropriately, or timely. One of the often-neglected area is the diet of the elderly population during these challenging times; it is a particular concern in economically poor people, and this need to be addressed by the family and authorities. Arranging care and support for activities of daily living, maintaining the health-related needs of elderly living alone in their houses are massive concerns in pandemic periods. There is a need for home care by professional and non-professional caregivers. Many countries do not have integrated services to support elderly at home; these need to be urgently developed.

### ***Improving physical activities***

One of the major casualties of shielding, isolating, lockdowns and shutdowns is the lack of physical activities, which are so vital to maintain physical and mental health. This is especially important for the elderly population. It is important to have innovative strategies for maintaining activities at home, physical exercises and yoga can be modified, shared through media, and supported by the instructors remotely.

### ***Tackling isolation***

Isolation and its multifarious effects on mental and physical health, poor socialisation have been a major concern for the elderly during the pandemic.<sup>3</sup> It is interesting to note how socialisation can be continued through the help of technology, but more needs to be done as many do not have access, or skills to use them. Online meetings are helpful, where practically possible; or at least, support through telephone where elderly can call, and talk can be set up through community organisations. At the same time technology cannot replace the usual social interactions and this would need tackling the pandemic itself sooner.

### ***Improving connectivity***

Connecting to older adults through technology and internet is an important area to develop. Many elderly people may

not be able to use these, and they need to be supported by family members and staff in care homes. This will be a particular issue in developing economies. Internet connectivity, providing devices and making those voice controlled to simplify their use are some of the priorities. These methods can be used to develop local support networks where elderly people can interact regularly.

### ***Preventing elder abuse***

Elder abuse, primarily in the form of neglect has been common during pandemic. It is extremely important to remain watchful about the elder abuse and to prevent it. When there are health-related and financial difficulties in the family, the impact trickles down to the elderly whose needs are often ignored. The support programmes should include preventing, identifying early and tackling elder abuse during pandemics.

## **Conclusion**

Information about the effective practices and strategies for supporting the elderly population during pandemic should be shared. There should be a global cooperation to support the elderly population living in developing economies.

Current generation has given a massive price due to pandemic. There is much to learn from these devastating situations and develop ways to prevent and tackle future catastrophes. It is important to search for a silver lining.

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## **References**

1. Sivakumar PT, Mukku SSR, Kar N, Manjunatha N, Phutane VH, Sinha P, Kumar CN, Math SB. Geriatric telepsychiatry: Promoting access to geriatric mental health care beyond the physical barriers. *Indian J Psychol Med*. 2020; 42(5S):415–46S. doi.org/10.1177/0253717620958380
2. Kar N, Kar B, Kar S. Stress and coping during COVID-19 pandemic: Result of an online survey. *Psychiatry Research*, 2021; 295: 113598. doi: 10.1016/j.psychres.2020.113598.
3. MacLeod S, Tkatch R, Kraemer S, Fellows A, McGinn M, Schaeffer J, Yeh CS. COVID-19 Era Social Isolation among Older Adults. *Geriatrics (Basel)*. 2021 May 18;6(2):52. doi: 10.3390/geriatrics6020052.



Review

# ICD-11 and DSM-5 criteria for personality disorders: relevance for older people

Ayesha Bangash

## Abstract

With an aging population, the number of older adults with personality disorders will increase in the near future. There is a clinical need for adequate assessment of this age group. Diagnostic manuals have used a categorical approach to diagnosing personality disorders with little evidence to support their use in older people. Despite research on the demographics and management of late life personality disorders having progressed over time, diagnostic tool development has fallen behind. This article examines the personality disorder criteria of the DSM-5 and ICD-11, the diagnostic manuals currently in use. It discusses whether they can be applied to older people and if not, what can be done about it.

## Key words

Age-Neutrality, Diagnosis, DSM-5, ICD-11, Older Adults, Personality Disorder

## Introduction

Research on late life personality disorders is sparse owing to an assumption that they fade out over the lifespan. However, there is growing evidence that this is not the case. Studies show a prevalence rate of 7–80% in inpatient units.<sup>1</sup> With the increasing elderly population, there will be greater numbers of people with personality disorders hence an increased burden on health services.<sup>2</sup> The situation is not entirely bleak; many older people with personality disorders show more effective coping than their younger people, showing that experience and wisdom acquired with age may result in healthier coping responses despite probably greater exposure to losses and stressors. Dispositions that create personality disorders will probably not demonstrate much change, but their clinical presentations can sometimes be refined in ways that are less distressing for patients and carers. The timely identification of these patients is desperately needed so that they can receive support required to reduce their suffering.<sup>3</sup>

The Diagnostic and Statistical Manual of Mental Disorders (DSM) and the International Classification of

Diseases (ICD) are used to diagnose personality disorders. The eleventh edition of the ICD (ICD-11) will officially come into effect in 2022.<sup>4</sup> In contrast to the DSM system, the ICD system is the official world classification system for all diseases, including personality disorders.<sup>5</sup> The fifth edition of the DSM (DSM-5) was published by the American Psychiatric Association in 2013. The fourth edition of the DSM (DSM-IV), DSM-5 and the tenth edition of the ICD adopted a categorical approach to diagnosing personality disorders. In view of the evidence base not supporting the categorical model, both the DSM-5 and ICD-11 moved towards a dimensional approach; a focus on levels of impairment and personality traits.<sup>6,7</sup> A tremendous focus on traits versus categories has taken attention away from a consideration of personality disorders in later life.<sup>8</sup>

## DSM-5 criteria for personality disorders

Since the release of DSM-III, experts have discussed alternatives to the categorical approach to diagnosing personality disorders which was considered to demonstrate poor validity and lack of clinical utility.<sup>9</sup> The belief that personality disorders are categories is not supported by the literature. The allocation of symptoms to certain disorders does not correspond to their empirical covariation. Thus, many patients erroneously received numerous personality disorder diagnoses, a “not otherwise specified” personality disorder diagnosis or no diagnosis, even it was applicable to the clinical presentation.<sup>10</sup> A dimensional approach was initially recommended for DSM-5, in view of the diagnostic heterogeneity within categories. The Board of Trustees of the American Psychiatric Association decided to maintain the DSM-IV-TR categorical conceptualization of personality disorder in Section II of the DSM-5 in order to maintain continuity with current clinical practice. The proposed alternative model of personality disorders (AMPD) was included in Section III ‘Emerging measures and models’ of the DSM-5 as it needed more study.<sup>9</sup> In the AMPD, the individual’s personality is assessed in terms of personality functioning (Criterion A) and personality traits (Criterion B). Personality functioning is characterized by how an individual typically experiences him- or herself (identity and self-direction) as well as others (empathy and intimacy), while a personality trait is

the tendency to feel, perceive, behave, and think in relatively consistent ways across time and situations.<sup>11</sup>

Criterion A, assessed by the Level of Personality Functioning Scale (LPFS), aims to assess the presence and general severity of personality pathology by delineating five levels of impairment of personality functioning, ranging from little or no impairment (Level 0) to extreme impairment of personality functioning (Level 4). Criterion B refers to 25 pathological personality traits organized around 5 broad domains, negative affectivity, detachment, antagonism, disinhibition, and psychoticism. A moderate or greater impairment of personality functioning as well as the presence of at least one pathological personality trait are required in order to establish a personality disorder diagnosis. In addition to these 2 primary criteria, criteria C and D refer to inflexibility and stability across time, respectively. Criteria E, F, and G refer to ensuring that the personality disorder is not better explained by “another mental disorder” (E), the effects of a substance or a medical condition (F), and to not being normative for the person’s developmental stage or sociocultural environment (G).<sup>4</sup>

Combinations of functioning and traits are used to redesign antisocial, avoidant, borderline, narcissistic, obsessive-compulsive, and schizotypal personality disorders.<sup>12</sup> Personality disorder-trait specified replaces personality disorder not otherwise specified (a common DSM-IV diagnosis) in order to specify presentations that do not fit into particular types.<sup>4</sup> The measurement model of the pathological personality traits is the Personality Inventory for DSM-5 (PID-5).<sup>13</sup>

The PID-5 includes both self-report and informant report versions whereas the LPFS instrument is rated by a clinician.<sup>12,13</sup> Unlike the DSM-5, the ICD-11 does not contain an assessment of self-pathology.<sup>14</sup> The use of the LPFS and the PID-5 in the assessment of personality functioning and traits is relevant whether an individual meets criteria for a PD or not, as it is always important to know a person’s difficulties and strengths. In contrast to the categorical approach, personality functioning as well as personality traits apply to everyone in different degrees rather than being present versus absent.<sup>11</sup>

### ICD-11 criteria for personality disorders

There were problems with the ICD-10 diagnostic criteria for personality disorders which included a lack of evidence for 10 distinct categories and insufficient clinical utility. In contrast to assessing other mental disorders, assessing personality disorders is more difficult in routine clinical practice.<sup>6</sup> In response to these shortcomings, the ICD-11 adopts a dimensional approach thereby being notably closer to the AMPD than to the DSM-IV PD model.<sup>4</sup>

The first step is to classify the impairment of self and interpersonal personality functioning according to degree of severity (“Personality Difficulty”, “Mild Personality Disorder”, “Moderate Personality Disorder”, and “Severe

Personality Disorder”). One option is to stop there, concluding simply that a PD is present to a specific degree. However, the assessor also has the option to further describe the features of the case, using specifiers akin to the domains of the AMPD.<sup>4</sup> Specifically, the ICD-11 model describes trait domains of negative affectivity, detachment, dissociality, disinhibition, and anankastia. An optional qualifier is provided for ‘borderline pattern’, which was added to ensure continued recognition of borderline personality disorder, which has been of most use and interest to clinicians.<sup>3</sup> Personality Difficulty is not considered to be a mental disorder. One would have some problems in functioning which are not severe enough to cause significant disruption in social, occupational, and interpersonal relationships. Such problems may be restricted to specific relationships or situations. Problems with emotions, cognitions, and behaviours occur intermittently (e.g., during times of stress) or tend to be of a low intensity.<sup>6</sup>

### Can late onset personality disorders get diagnosed using the ICD-11 and DSM-5?

The applicability of criteria is questionable since the presentation of late life personality disorders was not sufficiently considered during the development of the DSM categorical or dimensional models, leading one to question their age-specificity and age-neutrality.<sup>15</sup>

The DSM-5 and ICD-11 refer to personality traits as being “relatively stable” across time. This would suggest stability across adulthood and into old age or for a limited period of years. The literature on older adults discusses how the expression of personality disorders varies according to the unique contexts and frequently occurring challenges of later life. In some cases, a person who earlier did not have a diagnosable personality disorder, may develop one later in life. Sometimes, emergence of personality disorder in older adults may be related to the loss of social supports that had previously helped to compensate for personality disturbance.<sup>6</sup> In an international Delphi study, experts on personality disorders in older adults reached a consensus on the concept of a ‘late-onset personality disorder’. This concept is consistent with ICD-11.<sup>16</sup>

The ICD-11, in particular, does not have an age limit for making a diagnosis except to have a preference for the presentation of the condition to have been present continuously for at least 2 years. Evidence suggests that this will probably raise the prevalence level of personality disorders in the population thus promoting the use of the diagnosis in older people.<sup>17</sup>

Most DSM-5 diagnostic criteria using the categorical approach do not take into account age-specific changes in behaviour and interpersonal functioning. In the ICD-11, the estimation of severity focuses on harm to self or others. Older adults with severe personality disorders, in contrast to younger people, tend to undergo diet restriction or medication misuse rather than self-mutilation.<sup>3</sup>

## Diagnostic tools for older people

There is a shortage of diagnostic instruments for older people. Moreover, tools to assess personality disorder in older adults are not well validated, raising questions about the DSM-5 diagnostic criteria using the categorical approach.<sup>16</sup> Diagnostic tools are generally not considered suitable for older people as they are in the form of lengthy structured interviews (particularly PID-5) that rely on the self-reporting of behaviours, which can be overwhelming for this age group.<sup>3</sup> Lengthy instruments are not deemed practical to use in psychogeriatrics due to comorbidity of somatic and other psychiatric problems.<sup>18</sup> Modern language often used in diagnostic assessment may not be helpful for older adults with less formal education. Language use can affect the validity of instruments. Older adults, in contrast to younger adults, are less likely to describe their lives in terms of “problems” or “stress”.<sup>19</sup> Personality disorders can manifest differently in later life as a result of psychosocial stresses, cognitive impairment and medication. Instruments do not always apply to older adults as most of the items were designed for younger adults. For example, borderline personality disorder criteria may be problematic for older adults. It would make sense for them to avoid abandonment, as they are dependent on others for support to meet their care needs.<sup>3</sup> Despite the paucity of diagnostic instruments specifically for older adults, research on assessing later life personality disorders is growing.<sup>20</sup>

The Severity Indices of Personality Problems (SIPP-118), a self-report questionnaire, has been shown to be a favourable tool for measuring personality pathology in younger people.<sup>21</sup> A number of studies have supported the psychometric qualities of the PID-5 however the later life context was not explicitly investigated during its development.<sup>22,23</sup> Due to the SIPP-118 being time-consuming and intensive for older adults, the shorter version i.e. the Short Form of the Severity Indices of Personality Problems (SIPP-SF) would be preferably used.<sup>21</sup> The same could be said for PID-5's shorter version i.e. Personality Inventory for Diagnostic and Statistical Manual of Mental Disorders, Fifth edition, Brief Form (PID-5-BF). The Dimensional Assessment of Personality Pathology – Basic Questionnaire (DAPP-BQ) contains factors for emotional dysregulation, dissocial behaviour, social avoidance and compulsivity. The DAPP-BQ has demonstrated a strong four-factor structure across various samples and cultures.<sup>24</sup>

The Gerontological Personality disorders Scale (GPS) is a screening tool for late life personality disorders that has been validated in community-dwelling elderly people sampled from general practices.<sup>20</sup> The literature shows that the SIPP-SF, PID-5-BF, DAPP-BQ and GPS are adequate instruments for assessing late personality disorders. However, as the studies were undertaken in either the general population or highly specific and relatively small study samples, the generalizability of these results may be limited. Overall, these studies indicate that over age groups the presentations of personality functioning (criterion A) can be more accurately assessed than the dysfunctional personality

traits (criterion B). Moreover, it appeared that personality functioning and maladaptive traits were more strongly correlated in older adults than in younger people. This would suggest that, in older people, certain domains of personality functioning can be more indicative for the presence of maladaptive traits.<sup>20</sup>

The Five Factor Model (FFM) helps one to understand both normative personality and maladaptive personality/personality disorders. It consists of the five broad domains of neuroticism, extraversion, openness, agreeableness, and conscientiousness. The FFM has empirical support across eastern and western cultures and a demonstrated temporal stability across the lifespan.<sup>25</sup> The five trait domains included in Section III of DSM-5 are maladaptive variants of the FFM which also served as a framework for the development of the ICD-11 dimensional approach. The FFM was a natural candidate given its robust representation in the literature and established connections to personality disorders.<sup>25,26</sup> The Five Factor Model is most commonly assessed using the Revised NEO Personality Inventory (NEO PI-R) whose age-neutrality has been empirically validated. An FFM count technique was developed that became a valid screening tool for the assessment of pathological personality traits in older adults.<sup>27</sup>

Studies on the face validity of DSM-5 categorical model demonstrate a bias against older adults. The Assessment of DSM-IV Personality Disorders (ADP-IV) is a self-report instrument that allows for both a dimensional and categorical assessment of the DSM-5 Section II personality disorder symptoms. A study of the ADP-IV showed that dimensional PD items gave a more nuanced analysis of different personality disorder symptom presentation across age groups.<sup>18</sup>

There are to date no instruments to screen the severity of later life personality disorders. A tool to detect older adults with severe personality disorders was developed via Delphi method, based on expert opinion. Psychometric properties were evaluated showing sufficient diagnostic accuracy. The tool could be used to detect older adults with severe personality disorders in order to refer them to highly specialized care in a timely manner.<sup>1</sup>

In view of the DSM-5 dimensional approach (particularly criterion A) demonstrating age-neutrality, information from diagnostic instruments created for the AMPD model can be used to form an ICD-11 personality disorder diagnosis. For example, the Structured Clinical Interview for the DSM-5 Alternative Model of Personality Disorders (SCID-AMPD) operationalizes personality functioning according to the DSM-5 Level of Personality Functioning Scale (LPFS) along with the 25 DSM-5 trait facets. The LPFS score along with the 25-facet personality profile can be converted into an ICD-11 Personality Disorder diagnosis using a “cross walk”.<sup>6</sup>

It is also vital to also use other sources of information in order to complement the assessment and guide its interpretation. Older adults may have had several

treatments during their life therefore their medical and/or psychiatric records can provide insight into their personality traits and psychosocial functioning. Informant report can be useful in verifying life-events when sensory and cognitive impairment can impact on self-reports. Self-reports can also be influenced by impaired self-awareness, severe psychopathology or an unwillingness to reveal information. Excluding medical conditions such as head trauma, is also advised.<sup>20</sup>

## Strengthening the evidence base for older people

There is the challenge of comparing personality disorder definition in the DSM-5 with late life epidemiological studies relating to the DSM-IV. There is also the question of what appropriate diagnostic labels can be given to paranoid, schizoid, histrionic, and dependent personality disorders; research suggests that these diagnoses can increase over the lifespan. Clinicians need to have a clear view on how the DSM-IV and DSM-5 relate to each other on the subject of late life personality disorders.<sup>23</sup>

Information on the course of personality disorders across the lifespan is deficient as a consequence of research being mostly in the form of reviews, editorials, comments, case reports and cross-sectional studies.<sup>3</sup> This could explain why it is difficult to ascertain their onset and temporal stability. More research including longitudinal studies are needed to ascertain whether the dimensional models of DSM-5 and ICD-11 can reflect changing presentations of personality disorders over time.<sup>28</sup>

Age-neutral measures are useful in that clinicians can rely on valid assessment instruments without having to adjust items to assess older adults. However, some clinicians may prefer measures validated for older people with items that explore the specific aging context. Further research and validation of such instruments are needed.<sup>19</sup> Investigating into previously examined instruments across various settings and cultures of older adults should also be carried out.<sup>20</sup>

A screening tool to detect older people with severe personality disorders and to direct them to the appropriate level of treatment would be beneficial. Increasing our knowledge about criteria for different levels of treatment would improve the efficacy of treatment for patients.<sup>2</sup>

## Conclusions

There is evidence of ongoing efforts to examine the age-neutrality of existing diagnostic measures, design age-specific tools and validate diagnostic tools in older adults. Poor awareness of personality pathology can drive up costs of mental health treatment due to time taken up by staff to manage issues caused by people with personality disorders, especially in long term care settings. A greater understanding of late life personality disorders can help professionals create effective management strategies in order that hospitalizations can thus be prevented. The dimensional models appear age-neutral and may be useful in later life.

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## References

1. Laheij-Rooijakkers LAE, van der Heijden PT, Videler AC, et al. Development of a tool to detect older adults with severe personality disorders for highly specialized care. *Int Psychogeriatr* 2020; 32(4): 463–471.
2. Molinari V. Research on personality disorders in late life. *Int Psychogeriatr* 2020; 32(4): 427–429.
3. Bangash A. Personality disorders in later life: epidemiology, presentation and management. *BJPsych Adv* 2020; 26: 208–218.
4. Krueger RF, Hobbs KA. An Overview of the DSM-5 Alternative Model of Personality Disorders. *Psychopathology* 2020; 53:126–132.
5. Bach B, Sellbom M, Skjernov M, et al. ICD-11 and DSM-5 personality trait domains capture categorical personality disorders: Finding a common ground. *Aust N Z J Psychiatry* 2018; 52(5): 425–434.
6. Bach B, First MB. Application of the ICD-11 classification of personality disorders. *BMC Psychiatry* 2018; 18:351. <https://doi.org/10.1186/s12888-018-1908-3>.
7. Widiger TA, McCabe GA. The Alternative Model of Personality Disorders (AMPD) from the perspective of the Five-Factor Model. *Psychopathology* 2020; 53: 149–156.
8. Oltmanns TF, Balsis S. Personality disorders in later life: questions about the measurement, course, and impact of disorders. *Annu Rev Clin Psychol* 2011; 7: 321–349.
9. Oltmanns JR, Widiger TA. A self-report measure for the ICD-11 dimensional trait model proposal: the Personality Inventory for ICD-11. *Psychol Assess* 2018; 30: 154–69.
10. Zimmermann J, Kerber A, Rek K, et al. A brief but comprehensive review of research on the Alternative DSM-5 Model for Personality Disorders. *Curr Psychiatry Rep* 2019. <https://doi.org/10.1007/s11920-019-1079-z>.
11. Bach B, Markon K, Simonsen E, et al. Clinical utility of the DSM-5 Alternative Model of Personality Disorders: six cases from practice. *J Psychiatr Pract* 2015; 21(1): 3–25.
12. Hummelen B, Braeken J, Buer Christensen T, Nysaeter TE, Germans Selvik S, Walther K, Pedersen G, Eikenæs I, Paap



- MCS. A Psychometric Analysis of the Structured Clinical Interview for the DSM-5 Alternative Model for Personality Disorders Module I (SCID-5-AMPD-I): Level of Personality Functioning Scale. Assessment. 2020 Nov 6;1073191120967972. doi: 10.1177/1073191120967972.
13. Lugo V, de Oliveira SES, Hessel CR, et al. Evaluation of DSM-5 and ICD-11 personality traits using the Personality Inventory for DSM-5 (PID-5) in a Brazilian sample of psychiatric inpatients. *Pers Ment Health* 2019; 13: 24–39.
  14. Oltmanns JR, Widiger TA. Evaluating the Assessment of the ICD-11 Personality Disorder Diagnostic System. *Psychol Assess* 2019; 31(5): 674–684.
  15. Debast I, Rossi I, van Alphen SPJ. Age-neutrality of a brief assessment of the section III alternative model for personality disorders in older adults. *Assess* 2018; 25(3): 310-323.
  16. Rosowsky E, Lodish E, Ellison JM, et al. Delphi study of late-onset personality disorders. *Int Psychogeriatr* 2019;21;1-7. doi: 10.1017/S1041610218001473.
  17. Tyrer S, Howard R. Late-onset personality disorder: a condition still steeped in ignorance. *BJPsych Adv* 2020;26(4):219-220.
  18. Debast I, Rossi I, van Alphen SPJ, et al. Age Neutrality of Categorically and Dimensionally Measured DSM–5 Section II Personality Disorder Symptoms. *J Pers Assess* 2015; 97(4):321–329.
  19. Rossi G, van den Broeck J, Dierckx E, et al. Personality assessment among older adults: the value of personality questionnaires unravelled. *Aging Ment Health* 2014;18(8), 936-940. DOI: 10.1080/13607863.2014.924089.
  20. Penders KAP, Peeters IGP, Metsemakers JFM, et al. Personality disorders in older adults: a review of epidemiology, assessment, and treatment. *Curr Psychiatry Rep* 2020; 22(3): 14. DOI: 10.1007/s11920-020-1133-x.
  21. van Reijswoud BE, Debast I, Videler AC, et al. Severity Indices of Personality Problems Short Form in old-age psychiatry: reliability and validity. *J Pers Assess* 2020. DOI: 10.1080/00223891.2020.1743710.
  22. Bach B, Sellbom M, Simonsen E. Personality inventory for DSM-5 (PID-5) in clinical versus nonclinical individuals: generalizability of psychometric features. *ASMNT* 2018;25(7):815-825.
  23. van Alphen SPJ, Rossi G, Segal DL, et al. Issues regarding the proposed DSM-5 personality disorders in geriatric psychology and psychiatry. *Int Psychogeriatr* 2013; 25:1, 1–5. DOI:10.1017/S1041610212001597.
  24. Aluja A, Garcia LF, Cuevas L et al. Dimensional pathological personality predicting personality disorders: comparison of the DAPP-BQ and PID-5 shortened Versions in a Spanish community sample. *J Psychopathol Behav Assess* 2019; 41:160–173.
  25. Oltmanns JR, Widiger TA. Five-factor model personality disorder traits, health behaviours, health perceptions, and insomnia symptoms in older adults. *PsyArXiv* 2020. DOI:10.31234/osf.io/qxd7r.
  26. Morey LC, Good EW, Hopwood CJ, et al. Global personality dysfunction and the relationship of pathological and normal trait domains in the DSM-5 alternative model for personality disorders. *J Pers* 2020; <https://doi.org/10.1111/jopy.12560>
  27. Van den Broeck J, Rossi G, De Clercq B, et al. Validation of the FFM PD count technique for screening personality pathology in later middle-aged and older adults. *Aging Ment Health* 2013; 17(2); 180-188.
  28. Videler AC, Hutsebaut J, Schulken JEM, et al. A life span perspective on borderline personality disorder. *Curr Psychiatry Rep* 2019; 21(7): 51. <https://doi.org/10.1007/s11920-019-1040-1>.



# COVID-19: An opportunity to learn resilience from the elderly

Suravi Patra

## Abstract

COVID-19 has forced lockdowns and social distancing across the world. This has increased feelings of loneliness and reduced opportunities for physical exercise and environmental stimulation for the elderly. It was feared that all this would cause poor mental health in the elderly. However, well-designed studies reported that medically fit elderly and those without psychiatric comorbidities coped well with the pandemic. Cognitive flexibility, ability to regulate emotions and healthy lifestyle helped the elderly cope with this challenging situation. This article discusses the resilience measures used by the elderly to cope with the pandemic and make recommendations for use by the general population during the unprecedented situation caused by the COVID-19 pandemic.

## Key words

COVID-19, coping, elderly, resilience

## Introduction

COVID-19 has shaken the entire world with a devastating impact on both physical and mental health. The vulnerable and disadvantaged sections of the society have been worst-hit. The elderly are more vulnerable being susceptible to COVID-19 infection and its severe consequences because of their co-occurring chronic diseases.<sup>1</sup> The immunological and hormonal changes associated with old age increase propensity for severe COVID-19 infections. These changes can trigger and worsen pre-existing mental disorders. Virus containment strategies like lockdown and social distancing took its emotional toll on the elderly. Forced isolation has reduced opportunity for physical exercise, limited emotional and psychological stimulation raising concerns about the mental health of the elderly.<sup>1</sup>

## Elderly and COVID-19

The World Health Organization has declared the elderly at high risk for severe COVID-19. In addition to high risk of contracting the virus, the elderly when infected are more prone for serious symptoms.<sup>2</sup> In the event of COVID-19 infection, the elderly face three times higher

mortality rates than the general population.<sup>3</sup> COVID-19 infection is documented to worsen underlying medical and psychiatric comorbidities in this population. Also, those with medical and psychiatric conditions experience more severe symptoms related to COVID-19.

## Lockdown restrictions and elderly

Local governments have imposed lockdowns with varying levels of restrictions to control the spread of the virus. Strict social distancing termed 'cocooning' was placed to contain the virus spread; in some areas the elderly were asked to go for 'shielding'. Higher vulnerability to virus infection in addition to strict social distancing has led to loneliness and decreased opportunity for physical exercise. The prevailing sense of fear, anxiety and a looming sense of uncertainty increased the risk of mental disorders in the elderly population. Loss of stimuli for cognitive activities, emotional, psychological well-being could also serve as a precursor for cognitive decline, feelings of stress, symptoms of anxiety, depression, insomnia and post-traumatic stress disorder symptoms in the elderly. The predicted adverse mental health consequences on elderly prompted recommendations for monitoring mental health manifestations and interventions for the elderly.<sup>2,4</sup>

## COVID-19 and mental health in the elderly

Among the vulnerable elderly are those with severe mental illness, dementia and those staying in nursing homes and assisted care facilities.<sup>1</sup> These elderly people are at high risk of experiencing mental disorders. In a recent study in the mental health condition of elderly with bipolar disorder during COVID-19, about 70% of patients reported being euthymic compared to 40% in the pre-pandemic period. This study compared patient outcomes at baseline (pre-COVID-19) and during COVID-19 outbreak.

Perceptions of loneliness, tendency to adopt a passive coping strategy and neuroticism were associated with poor mental health.<sup>5</sup> In a study in London related to ageing, about 13% of elderly reported worsening feelings of anxiety and depression when rated on Hospital Anxiety and Depression Scale during six weeks into the lockdown. Feelings of loneliness were the mediating factor for the subjective experience of anxiety and depression.<sup>6</sup>

## Mental well-being in elderly during COVID-19

Research carried out in the initial COVID-19 pandemic revealed better mental health in the elderly than the young. Surveys carried out in the USA, Spain, Canada, and the Netherlands highlighted the lower incidence of anxiety, stress and depression symptoms in elderly than in young adults.<sup>7</sup> Many hypotheses were generated to explain this seemingly unexpected finding; foremost being higher levels of resilience which mediated the capacity to generate an adaptive response to an evolving health emergency. The ability to regulate emotions, control stress reactivity is better in the elderly. Life's experiences of downturns and positive coping memories with adverse situations somehow equip the elderly for handling adverse psychosocial problems in a much-balanced manner. The positive psychological traits of extraversion, openness, agreeableness and conscientiousness, together with the cognitive capacity of self-reflection, spiritual view towards life, ability to have diverse points of view contributed towards enhanced resilience. Social skills of maintaining meaningful relationships further acted as a safety net against experiencing negative mental health consequences.<sup>8</sup> More studies are needed to see if elderly are able to maintain psychological resilience in the subsequent waves of lockdowns.

## Resilience measures in elderly

Resilience explains better coping with adverse situations. Active coping strategies such as sharing problems, having a network of meaningful relationships and harbouring a sense of social belongingness helped the elderly deal with the unprecedented conditions caused by the COVID-19 pandemic. Also, regular physical exercise, healthy and nutritious dietary habits, and productive hobbies helped them manage themselves better.<sup>9</sup> Better understanding of these resilience promoting factors can help devise mental health interventions for diverse populations in need.

## Lessons to be learnt from the elderly

Ability to visualize positive aspects of things and ignore distressing experiences fosters a sense of satisfaction and wellbeing. The capacity to form meaningful and close relationships which enhances the sense of connectedness is again something to be learnt from the elders.<sup>8</sup> Positive and meaningful relations generate a sense of belongingness; continuing to remain connected to one's loved ones and friends even during physical distancing by using technology re-enforces the sense of psychological wellbeing.<sup>1</sup>

Cognitive flexibility in terms of ability to have multiple views toward problems and alternative solutions is something which often the older adults foster. It means being able to adapt comfortably as per changing environmental situations.<sup>9</sup> In addition to these psychological and cognitive ways of coping, one needs to adopt a balanced and nutritious diet, regular physical exercise and avoidance of substance use. Exercises to build strength, stretching exercises and aerobics are

known to have beneficial effects on body and mind. Survey carried out by Centre for Disease Control has indicated lower rates of substance abuse in elderly compared with younger population during the COVID-19 pandemic.<sup>7</sup> Lower rates of substance abuse is known to promote mental wellbeing.

Many elderly lead a life of constant learning and growth by indulging in constructive hobbies like painting and music. Regular yoga, pranayama and mindfulness also foster physical and psychological wellbeing, increasing coping capacity during stressful life events.<sup>1</sup> An open and positive attitude towards life with the capacity to accept and move ahead is something one needs to learn from the elderly.

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## References

1. Grolli RE, Mingoti MED, Bertollo AG, Luzardo AR, Quevedo J, Réus GZ, Ignácio ZM. Impact of COVID-19 in the Mental Health in Elderly: Psychological and Biological Updates. *Mol Neurobiol*. 2021:1–12. doi: 10.1007/s12035-020-02249-x.
2. World Health Organization. [Internet] Mental health and psychosocial considerations during the COVID-19 outbreak.[cited 2021 January 5] Available at <https://www.who.int/publications/i/item/WHO-2019-nCoV-MentalHealth-2020.1>
3. Novel, Coronavirus Pneumonia Emergency Response Epidemiology. "The epidemiological characteristics of an outbreak of 2019 novel coronavirus diseases (COVID-19) in China." *Zhonghua liu xing bing xue za zhi= Zhonghua liuxingbingxue zazhi*. 2020 41:2,145-149.
4. Serafini G, Bondi E, Locatelli C, Amore M. Aged patients with mental disorders in the COVID-19 era: the experience of northern Italy. *Am J Geriatr Psychiatry*. 2020, 28:794–795.
5. Orhan M, Korten N, Paans N, de Walle B, Kupka R, van Oppen P, Kok A, Sonnenberg C, Schouws S, Dols A. Psychiatric Symptoms during the COVID-19 outbreak in Older Adults with Bipolar Disorder. *Int J Geriatr Psychiatry*. 2020 Dec 26. doi: 10.1002/gps.5489.
6. Robb CE, de Jager CA, Ahmadi-Abhari S, Giannakopoulou P, Udeh-Momoh C, McKeand J, Price G, Car J, Majeed A, Ward

- H, Middleton L. Associations of Social Isolation with Anxiety and Depression During the Early COVID-19 Pandemic: A Survey of Older Adults in London, UK. *Front Psychiatry*. 2020 Sep 17; 11:591120. DOI: <https://doi.org/10.3389/fpsyt.2020.591120>
7. Vahia IV, Jeste DV, Reynolds CF 3rd. Older Adults and the Mental Health Effects of COVID-19. *JAMA*. 2020 Dec 8;324(22):2253-2254.
8. Zager Kocjan G, Kavčič T, Avsec A. Resilience matters: Explaining the association between personality and psychological functioning during the COVID-19 pandemic. *Int J Clin Health Psychol*. 2021;21(1):100198.
9. Röhr S, Reininghaus U, Riedel-Heller SG. Mental well-being in the German old age population largely unaltered during COVID-19 lockdown: results of a representative survey. *BMC Geriatr*. 2020; 23;20(1):489.

Review

# COVID-19: Immunopathogenesis and symptomatology in elderly

Arpita Saxena, Shilpa Suneja, Sukanya Gangopadhyay

## Abstract

The 2019 coronavirus pandemic is caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) that represents the causative agent of a potentially fatal disease of great global public health concern. The last eleven months have marked the emergence of a worldwide threat to health which has placed the world on its knees. The disease has crippled billions in public health, the economy and everyday lives. While the virus is seen as a global public health pandemic, senior citizens are at a clearly identified increased risk. The World Health Organization has declared the elderly at high risk for severe COVID-19. In addition to high risk of contracting the virus, the elderly are more prone to serious symptoms of the infection along with a higher mortality rate than the general population. As the number of COVID-19 cases keeps on increasing in the world, it is time that we should focus on the course of SARS-CoV2 infection and its implications in the elderly. This article discusses the immunopathogenesis and symptomatology of the infection caused by SARS-CoV-2 in geriatric population and hence the care and support required by this vulnerable group during the unprecedented situation caused by the COVID-19 pandemic.

## Key words

Elderly, COVID-19, Immunopathogenesis, Symptoms

## Introduction

COVID-19 is a respiratory illness caused by one of five human coronaviruses of the genus Betacoronavirus, SARS-CoV-2. Till date there have been 5 million confirmed cases of COVID-19, including more than 1 million deaths as reported by WHO.<sup>1</sup> Unlike other respiratory diseases that have a lethality curve in the "U" type, COVID-19 mortality increases with age, where children were found to be less vulnerable to death as compared to elderly population due to their effete immune system and often association of underlying diseases like hypertension, diabetes, cardiovascular and lung diseases.<sup>2</sup> The highest lethality of COVID 19 has been reported among older people. Despite the reports of increased vulnerability, and more

severe after infection leading to greater mortality, literature on geriatric patients with COVID19 has remained very scarce.

## Susceptibility in elderly

Though COVID-19 infection affects all age-groups, but it appears to be more severe in elderly adults.<sup>3</sup> Several conditions are linked to increased virus susceptibility in COVID-19 infection. It has been shown that COVID-19 infection has distinctive behavior among elderly adults where it induces severe infection as compared with children and young adults where none or mild infection occurs.<sup>4</sup>

It is noteworthy that more severe infection and poorer outcomes can be attributed to vigorous and uncontrollable active pro-inflammatory immune responses in elderly and weak adults along with impaired anti-inflammatory responses in such population.<sup>5</sup> It seems that very high pro-inflammatory cytokine release, which is described as cytokine storm, is a pivotal pathophysiological mechanism in elderly COVID-19 patients.<sup>6</sup>

The exact underlying mechanism of cytokine storm in elderly adults with severe COVID-19 infection is far from clear. However, it is likely that "cytokine storm" phenomenon in elderly patients with severe COVID-19 infection is associated with many age-related pathophysiologic processes, including alteration of angiotensin-converting enzyme 2 (ACE2) receptor expression,<sup>7</sup> excess reactive oxygen species (ROS) production,<sup>8</sup> alteration of autophagy,<sup>9</sup> the inflammatory phenotype of senescent cell activity, particularly adipose tissue,<sup>10</sup> immune-senescence,<sup>11</sup> as well as lack of vitamin D content.<sup>12</sup> The poor outcome in such population can also be attributed age related co-morbidities like heart and lung disease, diabetes, dementia and the associated polypharmacy.<sup>13-16</sup> These cumulated factors are expected to result in increased morbidity and mortality in our older populations.

## Immunopathogenesis

### a. Disrupted immunologic responses

It is reported that up to 85% of infected individuals usually had mild to moderate infections, about 10% had

serious infections and about 5% died due to severe infections.<sup>17-19</sup> This 5% category of seriously ill patients included elderly and adults with comorbidities such as heart disease, diabetes, lung diseases etc. The reason behind the severity of infection could be due to immunopathogenic or extreme inflammatory response contributing to critical cases and death. The course of action of the virus in the human body is that when the virus reaches the cells, it presents its antigen to the antigen presentation cells (APC), which are key regulators of body's anti-viral immune system. Major Histocompatibility Complex presents antigenic peptides where SARS-Co-V antigen presentation relies primarily on MHC-I molecules but MHC-II also contributes to its presentation.<sup>20</sup> Normal antiviral immune response involves the activation of the immune system's inflammatory pathways; which, if left unregulated, can mount aberrant or exaggerated host immune system response which may lead to severe disease.<sup>21</sup> An integral part of the inflammatory process is cytokines released by many immune cells, including the innate macrophages, dendritic cells, natural killer cells, and the adaptive T and B lymphocytes. Several studies reported most patients with severe COVID-19 exhibit markedly increased serum levels of pro-inflammatory cytokines, including; IFN- $\alpha$ , IFN- $\gamma$ , IL-1 $\beta$ , IL-6, IL-12, IL-17, IL-18, IL-33, TNF- $\alpha$ , G-CSF, GM-CSF, IP10, C-reactive protein (CRP), MCP1, and MIP1 $\alpha$ .<sup>22-24</sup>

It is necessary to mention that this cytokines storm directly may lead to immune cell death, tissue damage, and respiratory shut down.<sup>6</sup> This rise in cytokines results in the influx of different immune cells such as macrophages, neutrophils, and T cells from circulation into the site of infection with devastating effects on human tissue ranging from endothelial cell destabilization to cell interactions, vascular barrier damage, capillary damage, diffuse alveolar damage, multi-organ failure, and eventually death. It was observed that ARDS, pneumonia and multi-organ dysfunction are the main immune-clinical symptoms of COVID-19 infection. Several studies evaluating cytokine profiles in COVID-19 patients indicated that the cytokine storm was specifically associated with lung damage, multi-organ failure and extreme COVID-19 adverse prognosis.<sup>25-30</sup>

#### **b. Angiotensin-converting enzyme 2 receptor (ACE2) in elderly**

The renin-angiotensin system (RAS) is an important regulator of several physiologic events, including cardiovascular and blood volume, natriuresis, diabetes, chronic renal disease, hepatic fibrosis and it is demonstrated that the highest expression of ACE2 is in the lungs (type II alveolar epithelial cells), kidney, heart, and also vascular beds.<sup>31,32</sup> This system is composed of two different pathways, including (ACE/Ang II/AT1) pathway; and (ACE2/Ang 1-7/Mas) pathway.

Recently, it is well accepted that ACE2 on lung epithelial cells are the entry-point receptors for COVID-19 particles.<sup>33</sup> Chen and colleagues in 2020 found markedly higher expression of ACE2 in Asian females compared to

males. Furthermore, they found an age-dependent decline of ACE2 expression, and also a highly significant decrease in type II diabetic patients. Additionally, they established a negative correlation between ACE2 expression and COVID-19 fatality.<sup>34</sup>

Various studies have suggested that ACE2 pathway has anti-inflammatory effects.<sup>31,35</sup> Several studies identified age-related decline of ACE2 expression.<sup>35,37</sup> Thus increase concentration of ACE2 receptors in lung epithelial cells in children and young adults may have a protective effect on severe clinical manifestations due to COVID-19 infection. Therefore, it is highly likely that low ACE2 expression during aging can lead to cytokine storm and lung shut down.<sup>33,36</sup>

#### **c. Increase ROS production in elderly**

It is well accepted that ROS considered as a signaling molecule (at low concentrations), and also as a mediator of inflammation (at high concentrations).<sup>37</sup> The main sources of ROS are mitochondrial respiratory chain and NADPH oxidase.<sup>38</sup> Excess ROS production during aging can turn on an inflammatory machine and subsequently increased release of pro-inflammatory cytokines, including TNF- $\alpha$ , IL-1 $\beta$ , IL-2, IL-6, and adhesion molecules. The excess ROS production in aging can initiate the proinflammatory generation through activation of multiple transcription factors, including human polynucleotide phosphorylase (hPNPaseold-35), nuclear factor kappa B (NF $\kappa$ B), activator protein 1 (AP-1), specificity protein 1 (Sp1), peroxisome proliferator-activated receptors (PPARs).<sup>39,40</sup>

#### **d. Senescent adipocytes in elderly**

Adipose tissue is a dynamic structure that plays an important contribution in modulating of metabolism and inflammation. It is highly likely that adipose tissue dysfunction (for instance obesity during aging) is associated with chronic inflammation in aged subjects.<sup>41</sup>

Senescent cells accumulate with aging in many animal and human tissues, leading to chronic inflammation and organ dysfunction.<sup>42</sup> Additionally, senescent cells can release pro-inflammatory cytokines, including IL-1 $\alpha$ , IL-1 $\beta$ , IL-6, IL-8, IL-18, CCL2, TNF- $\alpha$ , granulocyte macrophages colony-stimulating factor (GM-CSF), growth regulated oncogene (GRO), monocyte chemotactic protein (MCP-2, MCP-3), MMP-1, MMP-3.<sup>43,44</sup>

Therefore, the elevated release of pro-inflammatory cytokines by senescence adipocytes possibly leads to the elevated risk of the cytokine storm in COVID-19 infection in poor prognosis patients.

#### **e. Immunosenescence and inflammaging**

The potential interpretation of the pattern of COVID-19 infections and possible explanation of differences in reactivity of immune responses in elderly and young adults is based on the phenomenon "Immunosenescence"



and "Inflammaging". The immune system of older adults undergoes numerous age-related changes, collectively termed as immunosenescence.<sup>45</sup> In addition, continuous production of inflammatory mediators and cytokines in elderly is known as inflammaging.<sup>46,47</sup> Immune responses in older adults are slower, less coordinated, and less efficient, making older adults more susceptible to emerging infections. The development of naive T and B cells decreases in old age and the role of innate immune cells is impaired; thus, during an infection, cells involved in innate immunity are not activated effectively and progression to an adaptive immune response does not occur in a coordinated way.<sup>48</sup> A complex network between innate and adaptive immune effector cells is crucial for a competent response against microbes. Antigen presenting cells (APCs) play a significant role in recognition of microbes through toll-like receptors (TLRs), causing secretion of different cytokines and synchronising effector functions. Both expression and downstream signalling of TLRs seem to be impaired in elderly people leading to an improper immune response.<sup>49,50</sup>

Moreover, aberrant ciliary function and ciliary ultrastructural anomalies might inhibit the clearance of virus SARS-CoV-2 particles in older adults.<sup>51</sup> These changes decrease the efficacy of viral clearance and increase the risk of triggering a dysregulated immune response in which activated immune cells release cytokines extensively, resulting in a cytokine storm.<sup>52</sup> Chronic subclinical systemic inflammation, also known as inflammaging, is another well-recognized function of ageing immunity. Inflammation is a major pathogenic process in COVID-19, which has led to the worse outcome in elderly COVID-19 patients.<sup>53</sup> Unlike the elderly population, healthy adults have intact innate immunity along with adequate humoral and cell-mediated immunity. The net effect is that their immune system will restrict the progression of infection and develop recovery within 2-3 weeks of the onset of symptoms. These patients, therefore, recover from mild-moderate infection.

Nevertheless, this scenario does not explain why children do not develop the same immunopathogenic course as seen in older patients taken that children, in general, are more prone to develop pneumonia than older individuals. The potential reason for this finding is that kids are less capable of mounting a destructive and robust assault on alveoli and lung interstitial tissue which is cell mediated. This may be due to the absence of memory cells unique to other circulating coronaviruses that are common to adults. In adults, such memory cells are assumed to be abundant as they have been exposed to several respiratory infections induced by common flu-causing coronaviruses, whether symptomatic or asymptomatic.<sup>54</sup>

#### **f. Autophagy mechanism in elderly**

Autophagy is a conserved pathway of catabolic turnover in which cellular material is delivered into the lysosomes for degradation in eukaryotic cells. Autophagy process is related to the maintenance of cellular homeostasis, and its

dysregulation could lead to the development of several aging-related pathophysiological diseases.<sup>55</sup> It is observed that autophagy process decreases during aging and as a result leads to the accumulation of damaged macromolecules and organelles. The decline of autophagy during aging can induce dysfunctional mitochondria, and subsequent increased ROS production.<sup>56</sup> Although, the exact underlying mechanism of how the decline in autophagy and a rise in ROS levels during aging can elevate pro-inflammatory cytokine release is not clear but it is evident that there is crosstalk between the decline of autophagy pathways and elevated ROS levels during aging that can imbalance the immune system activity of elderly adults.<sup>57</sup>

#### **g. Vitamin D deficiency in elderly**

Vitamin D can modulate both innate and adaptive immune responses. Elderly adults are at risk for vitamin D deficiency due to several factors, including decreased pre-vitamin D production, poor skin integrity

decreased dietary intake of vitamin D, increasing adiposity, obesity, decreased renal function, as well as less time spent outdoors.<sup>58</sup> Vitamin D deficiency has been linked to various aging-related inflammatory diseases, including rheumatoid arthritis, asthma, inflammatory bowel disease, multiple sclerosis, cardiovascular disease, hypertension, diabetes mellitus, and cancer.<sup>59</sup> Additionally, there is a correlation between vitamin D deficiency and risk of respiratory tract infection such as COVID-19.<sup>60</sup>

#### **Symptoms in elderly**

Predominant symptoms in COVID-19, include fever, cough, and myalgias. However, diarrhoea and nausea may precede fever and respiratory symptoms.<sup>61</sup> Apart from these, the less common symptoms include loss of taste or smell, nasal congestion chills or dizziness, persistent pain or pressure in the chest, nausea or vomiting.<sup>62,63</sup> Although, fever is the most common symptom and is a key method of screening for COVID-19, but fever response is often blunted in older adults, especially in those who are frail. In addition, cough and shortness of breath may present as a decline in function, such as impaired mobility or falls, or confused with an exacerbation of heart failure or COPD rather than a distinct new complaint.

It is now widely accepted that one of the common presenting symptoms of older people affected by COVID-19 is delirium.<sup>64</sup> In frail patients, delirium is commonly hypoactive or mixed and can go undetected. But older adults may have none of these characteristics. Instead, they may seem "off" - not acting like themselves - early on after being infected by the coronavirus. They can sleep or quit eating more than normal. They can appear oddly apathetic or confused, losing their surroundings orientation. They may become dizzy and fall. Sometimes, seniors stop speaking or simply collapse.<sup>65</sup> Older adults with dementia present unique challenges, including symptom assessment and isolation strategies.

## Conclusion

It is important that we create opportunities to foster healthy ageing during this pandemic. Elderly patients, who are particularly susceptible to the adverse clinical outcomes in SARS-CoV-2 infection, pose a greater challenge where immunosenescence and comorbid disorders are more likely to produce viral-induced cytokine storm that causes life-threatening respiratory failure and multisystemic involvement. Unfortunately, the effectiveness of vaccines among older people against influenza-like illness has been reported to be reduced in comparison with younger subjects, reflecting an impairment of both effector memory T cells and efficient B cells.<sup>66,67</sup>

Therefore, early diagnosis and individualized therapeutic management should be developed for the geriatric population based on the personnel medical history and polypharmacotherapy. The development of new therapeutic approaches is urgently needed, and one alternative is to target the mechanisms of autophagy. Modulation of autophagy to restore homeostasis in the immune response to COVID-19 represents an important challenge and future studies are needed to improve knowledge of such mechanisms, as well as clinical trials to test drugs that target autophagy. However, prevention is the best and most effective approach for older adults and before more improvement in care is developed, it is recommended that the elderly population remain sheltered during COVID-19 outbreaks. Future vaccination strategies that will aim to elicit strong protective antibody responses in older adults, using age-appropriate adjuvants and anti-viral and immunomodulatory treatments are currently an area of intense study.

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## References

1. WHO [Internet] Coronavirus Disease (COVID-19) Dashboard. [cited 2020 Nov 11]. Available at <https://covid19.who.int>
2. Raoult D, Zumla A, Locatelli F, Ippolito G, Kroemer G. Coronavirus infections: epidemiological, clinical and immunological features and hypotheses. *Cell Stress*. 2020 Apr; 4(4): 66-75.
3. Molloy EJ, Bearer CF. COVID-19 in children and altered inflammatory responses. *Pediatr Res*. 2020; In Press, doi: 10.1038/s41390-020-0881-y.
4. Schoeman D, Fielding BC. Coronavirus envelope protein: current knowledge. *Virology*. 2019;16(1):69
5. Cao X. COVID-19: immunopathology and its implications for therapy. *Nat Rev Immunol*. 2020; 20:269–70.
6. Zhao M. Cytokine storm and immunomodulatory therapy in COVID-19: role of chloroquine and anti-IL-6 monoclonal antibodies. *Int J Antimicrob Agents*. 2020; In Press, doi: 10.1016/j.ijantimicag.2020.105982.
7. Yoon HE, Kim EN, Kim MY, Lim JH, Jang I, Ban TH, Shin SJ, Park CW, Chang YS, Choi BS. Age-associated changes in the vascular renin-angiotensin system in mice. *Oxid Med Cell Longev*. 2016; 5:1–14.
8. Garrido A, Cruces J, Ceprián N, Vara E, de la Fuente M. Oxidative-inflammatory stress in immune cells from adult mice with premature aging. *Int J Mol Sci*. 2019; 20(3):769.
9. Barbosa MC, Grosso RA, Fader CM. Hallmarks of aging: an autophagic perspective. *Front Endocrinol*. 2019; 9:790.
10. Stout MB, Justice JN, Nicklas BJ, Kirkland JL. Physiological aging: links among adipose tissue dysfunction, diabetes, and frailty. *Physiology*. 2017; 32(1):9–19.
11. Fuentes E, Fuentes M, Alarcon M, Palomo I. Immune system dysfunction in the elderly. *An Acad Bras Ciênc*. 2017; 89(1):285–99.
12. Meehan M, Penckofer S. The role of vitamin D in the aging adult. *J Aging Gerontol*. 2014;2(2):60–71
13. Zhou F, Yu T, Du R et al (2020) Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. *Lancet* 395:1054–1062.
14. Lionakis N, Mendrinou D, Sanidas E et al Hypertension in the elderly. *World J Cardiol* 2012; 4:135–147
15. Suastika K, Dwipayana P, Ratna Saraswati IM et al Relationship between age and metabolic disorders in the population of Bali. *J Clin Gerontol* 2011; 2:47–52
16. Palmieri L, Andrianou X, Barbariol P et al. [Internet] Characteristics of SARS-CoV-2 patients dying in Italy report based on available data on April 16th, 2020. SARS-CoV-2 Surveillance Group, Istituto Superiore di Sanità [cited 2021 Feb 15] Available at: [Report-COVID-2019\\_16\\_april\\_2020.pdf](https://www.iss.it/sites/default/files/Report-COVID-2019_16_april_2020.pdf) (iss.it)

17. Zhou P, Yang XL, Wang XG, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature*. 2020 Mar; 579(7798):270-273.
18. Liu K, Fang YY, Deng Y, Liu W, Wang MF, Ma JP, et al. Clinical characteristics of novel coronavirus cases in tertiary hospitals in Hubei Province. *Chin Med J (Engl)*. 2020 May 5; 133(9):1025-1031.
19. Krammer F, Smith GJD, Fouchier RAM, Peiris M, Kedzierska K, Doherty PC, et al. Influenza. *Nat Rev Dis Primers*. 2018;4(1):3-?.
20. Liu J, Wu P, Gao F, Qi J, Kawana-Tachikawa A, Xie J, et al. Immunodominant peptide presentation strategy: a featured HLA-A\*2402-restricted cytotoxic T-lymphocyte epitope stabilized by intrachain hydrogen bonds from severe acute respiratory syndrome coronavirus nucleocapsid protein. *J. Virol*. 2010; 84:11849-11857.
21. Braciale T, Hahn Y. Immunity to viruses. *Immunol Rev*. 2013;255:10.1111
22. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, Zhang L, Fan G, Xu J, Gu X, Cheng Z. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395(10223):497-506.
23. Schett G, Sticherling M, Neurath MF. COVID-19: risk for cytokine targeting in chronic inflammatory diseases? *Nat Rev Immunol*. 2020; 20:271-2.
24. Tan L, Wang Q, Zhang D, Ding J, Huang Q, Tang YQ, Wang Q, Miao H. Lymphopenia predicts disease severity of COVID-19: a descriptive and predictive study. *Signal Transduct Target Ther*. 2020;5(1):1-3.
25. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395 (10223):497-506
26. Ruan Q, Yang K, Wang W, Jiang L, Song J. Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. *Intensive Care Med*. 2020; 46:846-8.
27. Chen G, Wu D, Guo W, Cao Y, Huang D, Wang H, et al. Clinical and immunologic features in severe and moderate Coronavirus Disease 2019. *J Clin Invest*. 2020; 130:2620-9.
28. Gao Y, Li T, Han M, Li X, Wu D, Xu Y, et al. Diagnostic utility of clinical laboratory data determinations for patients with the severe COVID-19. *J Med Virol*. 2020; 92:791-6.
29. Chen L, Liu H, Liu W, Liu J, Liu K, Shang J, et al. Analysis of clinical features of 29 patients with 2019 novel coronavirus pneumonia. *Zhonghua Jie He He Hu Xi Za Zhi*. 2020; 43:203-8.
30. Sun D, Li H, Lu X, Xiao H, Ren J, Zhang F-R, et al. Clinical features of severe pediatric patients with coronavirus disease 2019 in Wuhan: a single center's observational study. *World J Pediatr*. 2020;19:1-9.
31. Tikellis C, Thomas MC. Angiotensin-converting enzyme 2 (ACE2) is a key modulator of the renin angiotensin system in health and disease. *Int J Pept*. 2012; 2012:256294.
32. Yu X, Cui L, Hou F, Liu X, Wang Y, Wen Y, Chi C, Li C, Liu R, Yin C. Angiotensin-converting enzyme 2-angiotensin (1-7)-Mas axis prevents pancreatic acinar cell inflammatory response via inhibition of the p38 mitogen-activated protein kinase/nuclear factor- $\kappa$ B pathway. *Int J Mol Med*. 2018;41(1):409-20.
33. Cristiani L, Mancino E, Matera L, Nenna R, Pierangeli A, Scagnolari C, Midulla F. Will children reveal their secret? The coronavirus dilemma. *Eur Respir J*. 2020; 55:2000749.
34. Chen J, Jiang Q, Xia X, Liu K, Yu Z, Tao W, Gong W, Han JD. Individual variation of the SARS-CoV2 receptor ACE2 gene expression and regulation. *Preprints*. 2020;2020030191
35. Imai Y, Kuba K, Rao S, Huan Y, Guo F, Guan B, Yang P, Sarao R, Wada T, Leong-Poi H, Crackower MA. Angiotensin-converting enzyme 2 protects from severe acute lung failure. *Nature*. 2005;436(7047):112-6.
36. Kolb R, Liu GH, Janowski AM, Sutterwala FS, Zhang W. Inflammasomes in cancer: a double-edged sword. *Protein cell*. 2014; 5(1):12-20.
37. Reuter S, Gupta SC, Chaturvedi MM, Aggarwal BB. Oxidative stress, inflammation, and cancer: how are they linked? *Free Radic Biol Med*. 2010; 49(11):1603-16.
38. Koziel R, Pircher H, Kratochwil M, Lener B, Hermann M, Dencher NA, Jansen-Dürr P. Mitochondrial respiratory chain complex I is inactivated by NADPH oxidase Nox4. *Biochem J*. 2013;452(2):231-9.
39. Lavrovsky Y, Chatterjee B, Clark RA, Roy AK. Role of redoxregulated transcription factors in inflammation, aging and age-related diseases. *Exp Gerontol*. 2000; 35(5):521-32.
40. Sarkar D, Fisher PB. Molecular mechanisms of aging-associated inflammation. *Cancer Lett*. 2006; 236(1):13-23
41. Stout MB, Justice JN, Nicklas BJ, Kirkland JL. Physiological aging: links among adipose tissue dysfunction, diabetes, and frailty. *Physiology*. 2017;32(1):9-19.
42. Davalos AR, Coppe JP, Campisi J, Desprez PY. Senescent cells as a source of inflammatory factors for tumor progression. *Cancer Metastasis Rev*. 2010; 29(2):273-83.
43. Freund A, Orjalo AV, Desprez PY, Campisi J. Inflammatory networks during cellular senescence: causes and consequences. *Trends Mol Med*. 2010; 16(5):238-46.
44. Stojanović SD, Fiedler J, Bauersachs J, Thum T, Sedding DG. Senescence-induced inflammation: an important player and key therapeutic target in atherosclerosis. *Eur Heart J*. 2020;1-14.
45. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y, et al. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet*. 2020; 395:497-506.
46. Aw D, Silva AB, Palmer DB. Immunosenescence: emerging challenges for an ageing population. *Immunology*. 2007; 120:435-446.
47. Longobardi L. Bronchial asthma in the elderly patient. *J Gerontol Geriatr*. 2016; 64:55-65

48. Castle SC. Clinical relevance of age-related immune dysfunction. *Clin Infect Dis*. 2000 Aug; 31(2):578-85.
49. Aiello A, Farzaneh F, Candore G et al. Immunosenescence and its hallmarks: how to oppose aging strategically? A review of potential options for therapeutic intervention. *Front Immunol*. 2019; 10:2247; doi: 10.3389/fimmu.2019.02247.
50. Cattaneo F, Guerra G, Parisi M et al. Expression of formyl-peptide receptors in human lung carcinoma. *Anticancer Res*. 2015; 35:2769–2774.
51. Ho JC, Chan KN, Hu WH. et al. The effect of aging on nasal mucociliary clearance, beat frequency, and ultrastructure of respiratory cilia. *Am J Respir Crit Care Med*. 2001;163:983–988.
52. Tay MZ, Poh CM, Rénia L, MacAry PA, Ng LFP. The trinity of COVID-19: immunity, inflammation and intervention. *Nat Rev Immunol*. 2020 Jun; 20(6):363-374.
53. Bonafè M, Prattichizzo F, Giuliani A, Storci G, Sabbatinelli J, Olivieri F. Inflammaging: Why older men are the most susceptible to SARS-CoV-2 complicated outcomes. *Cytokine Growth Factor Rev*. 2020 Aug; 54: 1–2.
54. Abdulmir AS, Hafidh RR. The Possible Immunological Pathways for the Variable Immunopathogenesis of COVID—19 Infections among Healthy Adults, Elderly and Children. *Electron J Gen Med*. 2020;17(4):em202.
55. Barbosa MC, Grosso RA, Fader CM. Hallmarks of aging: an autophagic perspective. *Front Endocrinol*. 2019; 9:790.
56. Salminen A, Kaarniranta K, Kauppinen A. Inflammaging: disturbed interplay between autophagy and inflammasomes. *Aging*. 2012;4(3):166.
57. Saxena M, Yeretssian G. NOD-like receptors: master regulators of inflammation and cancer. *Front Immunol*. 2014; 5:327.
58. Elizondo-Montemayor L, Castillo EC, Rodríguez-López C, Villarreal-Calderón JR, Gómez-Carmona M, Tenorio-Martínez S, Nieblas B, García-Rivas G. Seasonal variation in vitamin D in association with age, inflammatory cytokines, anthropometric parameters, and lifestyle factors in older adults. *Mediat Inflamm*. 2017; 2017:1–14.
59. Aslam MM, John P, Bhatti A, Jahangir S, Kamboh MI. Vitamin D as a principal factor in mediating rheumatoid arthritis-derived immune response. *BioMed Res Int*. 2019; 2019:1–12.
60. Şişmanlar T, Aslan AT, Gülbahar Ö, Özkan S. The effect of vitamin D on lower respiratory tract infections in children. *Turk Pediatr Ars*. 2016; 51(2):94.
61. Chen N, Zhou M, Dong X, Qu J, Gong F, Han Y, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. *Lancet*. 2020; 395:507–13.
62. WHO. [internet] Coronavirus symptoms. [cited 2020 Jun 14]. Available from: <https://www.who.int/westernpacific/health-topics/coronavirus>
63. NHS. [internet] Check if you or your child has coronavirus (covid-19) symptoms. [www.nhs.uk](http://www.nhs.uk). 2020 [cited 2020 Jun 14]. Available from: <https://www.nhs.uk/conditions/coronavirus-covid-19/symptoms/>
64. Nanda A, Vura NVRK, Gravenstein S COVID-19 in older adults. *Aging Clin Exp Res*. 2020. DOI: <https://doi.org/10.1007/s40520-020-01581-5>
65. Seniors with COVID-19 show unusual symptoms, doctors say. [Internet] [cited 2020 Sep 28] Available at [https://www.m3india.in/contents/clinical\\_news/137657/seniors-with-covid-19-show-unusual-symptoms](https://www.m3india.in/contents/clinical_news/137657/seniors-with-covid-19-show-unusual-symptoms). MedicalXpress Breaking News-and-Events
66. Weinberger B. Vaccines for the elderly: current use and future challenges. *Immun Ageing*. 2018;15(1):1-8.
67. Bianco A, Perrotta F, Barra G et al. Prognostic factors and biomarkers of responses to immune checkpoint inhibitors in lung cancer. *Int J Mol Sci*. 2019; 20(19): 4931. DOI: [10.3390/ijms20194931](https://doi.org/10.3390/ijms20194931)



Original Article

# Bengali version of the Recovering Quality of Life (ReQoL): linguistic validation

Mousumi Roy, Tanay Maiti, Susmit Roy, Nilamadhab Kar

## Abstract

**Background:** There is a need for a short quality of life measure for use in day to day psychiatric practice in Bengali language. We intended to translate Recovering Quality of Life (ReQoL) scale 10-item version to Bengali. **Method:** Translation and linguistic validation process used was suggested by Oxford University Innovation. It included forward translation, reconciliation, back translation, pilot study involving patients, discussion on the feedback from the patients, developing a consensus version and proof reading. **Results:** The emphasis during translation was on maintaining the conceptual and cultural appropriateness of the final version. The process involved many changes considering feedback from the patients during pilot testing. This led to the translated version being more appropriate and acceptable to patients with mental illness. **Conclusion:** The Bengali version of ReQoL-10 scale appears to be linguistically acceptable and is expected to be useful for Bengali speaking patients with mental illness.

## Key words

Bengali, English, Quality of Life, ReQoL, Translation

## Introduction

Quality of life (QOL) is a broad concept in which World Health Organisation (WHO) considers a person's physical health, psychological state, personal beliefs, social relationships and their relationship to salient features of their environment.<sup>1</sup> Among the available QOL scales though WHO-QOL and WHOQOL-BREF have Bengali versions,<sup>2,3</sup> applying them in daily clinical practice is often cumbersome and time consuming. Hence, a short scale on QOL with cultural appropriateness would be very useful in the current clinical and research context specific to mental health.

Recovering Quality of Life (ReQoL) scale for use in mental health has a brief 10-item and a 20-item measure along with a question for physical health.<sup>4,5</sup> The brief 10-item ReQoL has been translated to a few other major Indian languages and pilot tested with patients, establishing their linguistic validity.<sup>6-11</sup> We intended to translate ReQoL 10-item version to Bengali.

Bengali (also known as Bangla) is a globally acknowledged language which is used and spoken by nearly 250 million people.<sup>12</sup> Other than parts of India (mainly West Bengal, with approximate population of 100 million), it is the official language of the Republic of Bangladesh. Many people who migrated from both the countries India and Bangladesh to the other parts of the world use this language in their everyday life.

## Methodology

The translation to Bengali from the original English version was carried out using the standard procedure (Translation and Linguistic Validation Process) as suggested by Oxford University Innovation.<sup>9</sup> The process was completed in the following steps: Forward translation, forward translation reconciliation process, back translation and finally a pilot study involving patients. This led to a discussion on the feedback from the patients and arriving at a consensus on each question. The agreed changes were applied to the translation and a final draft of translation was prepared. It was supported by the proof reading from an expert in Bengali language.

The translation team included in-country investigator, co-investigators, four independent translators and a proof-reader from India. All the members were bilingual (Bengali and English), and well conversant in both the languages.

During translation process, special emphasis was given on conceptual equivalence, neutral wording and phraseology that will exactly incorporate the cultural nuances in Bengali speaking people. All the translators were especially requested for the same.

Mother tongue of all the patients who participated in pilot study was Bengali; they read, write and speak in Bengali. All of them had education in Bengali medium up to high school level of education. Anonymity, options to opt out and other ethical guidelines were adhered to. They provided written informed consent to participate in the study.

## Results

### Step 1: Forward Translation

The forward translation was done by two bilingual (fluent in both English and Bengali) translators, independently.



One of them was a consultant psychiatrist and other one an expert in Bengali language. The forward translation was done with ease as both the phrase and concept of QOL is well understood in Bengali language and culture.

### Step 2: Forward translation reconciliation process:

Reconciliation process following forward translations showed that item-3 (I felt unable to cope) was translated in Bengali as ‘difficulty in coping with mental stresses’. As the original question did not have an object; following discussion, the translation was changed around to the inability of the patient to cope. In the reconciled version the focus was re-established to the patient being unable to cope. There are few other minor points regarding the tense of verbs, which were easily modified.

### Step 3: Back translation of reconciled version:

There were no major issues following back translation to English. The back translated version in English was similar to the original English version.

### Step 4: Pilot testing:

Pilot testing was conducted with five monolingual patients; their profile is given in Table 1. The patients found the items understandable and were able to complete the scale in about 4-5 minutes. However they suggested modifications in eight out of eleven questions to make it more comprehensible for the patients. Their responses regarding the items in questionnaire are summarised in Table 2.

Table 1. Patients profile, clinical diagnosis and ReQoL Scores				
Patient	Age	Gender	Diagnoses	ReQoL score
1	42	F	Depression and cervical spondylosis	14
2	48	F	Recurrent depressive disorder, current episode severe depression without psychotic features	08
3	28	F	Paranoid schizophrenia	14
4	34	M	Moderate depression with somatic features	11
5	24	M	Severe depression without psychotic features	08

Table 2: Suggestions following pilot testing	
Question	Suggested modification in Bengali
1	<i>Rojkar kaaj shuru korte amar osubidhey hoyeche</i>
2	<i>Amar mone hoy aami onyoder upor vorsha raakhte perechilam</i>
3	<i>Aami maaniye nitey parchilam naa</i>
4	<i>Aami ja ja korte cheyechilam, korte perechilam</i>
5	No changes suggested
6	No changes suggested
7	<i>Aami ja ja korechilam, ta vaalo legechilo</i>
8	<i>Aami amar vobishyot somporke ashabaadi chhilam</i>
9	No change suggested
10	<i>Amar nijeke niye atmabishwasi laagchilo</i>
11	<i>Doya kore ....( ....ba saririk vaabe osustho bodh kora)...</i>

### Step 5: Review after pilot testing:

In the pilot testing phase, the patients faced multiple difficulties in different questions. In the first question, the Bengali word ‘*rojkaar*’ is a better representation (both in terms of frequency of usage and culture appropriateness) than ‘*protidiner*’ to represent the word ‘everyday’. In question 2, ‘*perechhi*’ has been replaced by ‘*perechilam*’ as the questionnaire is meant to assess the condition of patient in last week, i.e. the question should be asked in past tense where the word ‘*perechilam*’ is a better representation.

In question 3, rather than a more psychological state specific response mentioning ‘....*boley amar mone hoyeche...*’ where the patient perceives as if he is not been able to cope, which has been replaced with phrase ‘*aami maaniye nitey parchilam na*’ which is more direct and clear, where the patient clearly says he/she was unable to cope, with everything, without any certain specifier, to give an all-inclusive impression.

In question 4, rather than ‘*aami ja korte chaichilam, taa korte perechi*’ it has been suggested as ‘*ja ja korte cheyechilam*’ where by repeating ‘*ja ja..*’ its puts

emphasis and includes all the possible factors/scenarios, and ‘*perechilam*’ specifies the past tense as needed in the original version of questionnaire over ‘*perechhi*’ which suggests more of a present and continuous process.

Similarly, question 7 has been changed into past tense, and in question 8 ‘*aami aamar ...*’ was made over ‘*aamar...*’ to make it more clear and putting emphasis on self. In question 10 too, the importance was given more on self to get the full essence of ‘self-confidence’. Minor grammatical change has been made in question 11 keeping the rest same.

Following the review translation was updated and the final consensus version was prepared.

### Step 6: Proof reading:

The consensus version was proof-read by a Bengali language expert, who observed no further changes required about grammar and language.

## Discussion

This study translated and linguistically validated ReQoL in Bengali language, following the translation and linguistic validation process suggested by the Oxford Innovation. The forward translation and reconciliation was rather straight forward. However following the pilot study involving five patients, there were considerable changes to the three out of eleven items. The focus was on the easy comprehensibility by the patients in clinical scenario, especially those who were at the lower level of education.

The changes made the translation more conceptually and linguistically valid while allowing for the colloquial use of Bengali language. It was appreciated that scale could be adapted easily to Bengali language and could be used in people with different ethnic and cultural background. Result of this study is in line with other translated version of the ReQoL scale suggesting that ReQoL scale in different major Indian languages can be used in psychiatric patients.

## Conclusion

The Bengali version of ReQoL scale appears to be linguistically acceptable for Bengali speaking patients with mental illness. It is recommended that the Bengali version of ReQoL should be validated in a larger sample of psychiatric patients with various diagnoses.

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## References

1. WHO. WHOQOL: Measuring Quality of Life [Internet]. WHO. World Health Organization; [cited 2020 Mar 25]. Available from: <https://www.who.int/healthinfo/survey/whoqol-qualityoflife/en/>
2. Uddin MN, Amirul Islam FM. Psychometric evaluation of the modified 19-item Bengali version of WHOQOL scale using Rasch analysis: a cross-sectional study of a rural district in Bangladesh. BMC Psychology. 2020;8:44.
3. Tsutsumi A, Izutsu T, Kato S, Islam MA, Yamada HS, Kato H, et al. Reliability and validity of the Bangla version of WHOQOL-BREF in an adult population in Dhaka, Bangladesh. Psychiatry and Clinical Neurosciences. 2006;60:493–8.
4. Keetharuth AD, Brazier J, Connell J, Bjorner JB, Carlton J, Buck ET, et al. Recovering Quality of Life (ReQoL): a new generic self-reported outcome measure for use with people experiencing mental health difficulties. The British Journal of Psychiatry. 2018;212:42–9.
5. The University of Sheffield. Recovering Quality of Life (ReQoL) for users of mental health services [Internet]. [cited 2020 Mar 25]. Available from: <https://www.reqol.org.uk/p/overview.html>
6. Tharoor H, Gopal S, Kar N. English to Tamil translation and linguistic validation of Recovering Quality of Life scale (ReQoL). J Geriatr Care Res. 2017;4:55–7.
7. Sethi S, Punia V, Khurana H, Kar N. Translation of Recovering Quality of Life (ReQoL) to Hindi: addressing linguistic issues. J Geriatr Care Res. 2018;5:3–5.
8. Kar N, Patra S. Recovering Quality of Life (ReQoL) scale: translation and linguistic validation in Odia. J Geriatr Care Res. 2018;5:9–11.

9. Basavarajappa C, Kar N. Recovering Quality of Life (ReQoL) – Kannada Version: A report of translation project. J Geriatr Care Res. 2018;5:12–4.
10. Joy A, Namboodiri V, Kumar MT, Kar N. Recovering Quality of Life (ReQoL) scale: linguistic validation in Malayalam, an Indian language. J Geriatr Care Res. 2018;5:36–8.
11. Vankar G, Kelkar P, Patil P, Kar N. Brief quality of life measure in Marathi for persons with mental illness: translation of Recovering Quality of Life (ReQoL). J Geriatr Care Res. 2020;7:29–31.
12. Bengali language. In: Wikipedia [Internet]. 2021 [cited 2021 Feb 14]. Available from: [https://en.wikipedia.org/w/index.php?title=Bengali\\_language&oldid=1004709754](https://en.wikipedia.org/w/index.php?title=Bengali_language&oldid=1004709754)

Review

# Family members as caregivers of older people with mental illness: issues and interventions

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## Abstract

**Background:** Although caregiving is a positive experience, it becomes burdensome in many situations. Elderly mentally ill patients are mostly cared by their families and it could be a stressful experience sometime. **Objectives:** This article discusses magnitude of current issues related to caregiving, with a primary focus on India; it also explores the impact of caregiving on caregivers and the remedial measures. **Method:** Literature review based on relevant publications in electronic databases. **Result:** While most of the elderly are being cared for by their family members, it is a challenge in most situations. There are associated complexities such as multimorbidity, stigma, burnout and abuse. Stress and depression are common in caregivers. There is some clarity related to the contributing factors of caregivers' burden. There are many interventions reported which can be implemented by the clinicians and family caregivers; which can be primarily summarised as providing information, respite care, stress management, interventions for depression, community and social support, etc. Online training and support systems are also possible options. **Conclusion:** There is a need to refocus attention to the issues faced by family caregivers, and to take steps to ease their burden, which has the potentiality to improve the care of the elderly.

## Key words

Aged, Caregivers, Dementia, Depression, Family, Mental Health

around 10% in 2018,<sup>2</sup> and has been projected to increase to nearly 19% in 2050.<sup>3</sup>

Increasing age leads to more care needs as functional impairments and ill health gradually accumulate and dependence on the caregivers increase. In line with longevity, number of older adults with mental health problems is increasing too, especially those with depression, and dementia. In this regard it can be expected that the care needs gradually increase from youngest-old (older adults between 65 and 74 years) to middle-old (75 to 84 years) and oldest-old (85 years or above), as the older adults are usually categorised.<sup>4</sup>

It is a common observation that most beds in general hospital are now occupied by people above 60. Care homes and old age homes are increasing in number, but they cannot cater to the growing needs, people may not afford, and their quality of care is debatable.<sup>5</sup> In most scenarios, older adults would like to live in their own homes till their demise; for various reasons, e.g. memories, emotional attachments, to be with family. So most elderly live with their family and their care needs are addressed by their family members. However, situations are changing; many younger family members now-a-days live away for work, which sometimes leads to older people being alone at home, taking care of themselves. Besides living away, many younger members are busy in their works and have less time for the elderly. It is not surprising that the stresses, loneliness, helplessness of elderly are increasing; group or social activities and interactions are coming down.

## Introduction

It is well known that all over the world most elderly people are taken care of by their family members, although the extent varies depending upon the situations. Taking care of elderly family members has many facets, happiness to burden. Care needs for the older adults are increasing not only in the families but also in the communities. There are many reasons for this. Old age population is increasing along with life expectancy. As an illustrative example, in 2020, life expectancy in India was 71.8 years for female, 69.2 years for male, and 70.4 years for both, which has 17.7% of World population with around 1.38 billion people. Those aged 60 years or above were 8.6% in 2011,<sup>1</sup>

Considering above issues there is a need to review the current situation. Family caregivers play a curial role in supporting and caring for their mentally ill relatives. This paper intends to explore the concerns related to care of older adults with mental health problems focusing specifically on depression and dementia. The impact of caregiving on caregivers, and the remediation action that can be taken about this to support caregivers are also elaborated.

## Method

For a narrative clinical review, relevant literature was searched from electronic databases mainly PubMed and Google Scholar. Additional searches were carried on

specific topics related to caregiving. Although the focus was on Indian scenario, related research worldwide was included.

## Results

Data from the 75th Round National Sample Survey (NSS), India (November 2019) of 42,762 elderly individuals (60 years or above) suggested that more than a quarter (27.5%) of older adults aged 80 years and above are immobile; and 6.6% of elderly female and 1.6% male live alone. Half of male and 90% of female older adults are financially dependent on others and more so in poorer economic quintiles; and only 18.9% of the elderly had health insurance though chances of facing massive health expenditures were high among the elderly.<sup>6</sup>

### Magnitude of the old age-related mental health problems

**Dementia:** Global prevalence of dementia in the elderly is around 5–7%.<sup>7</sup> In Kerala, India it has been reported to be 3.2%.<sup>8</sup> Another study in rural India reported the prevalence of dementia among elderly to be 3.1%.<sup>9</sup> India is expected to have one of the largest numbers of elders with dementia. In 2015, an estimated 4.1 million persons aged over 60 years had dementia in India. This is estimated to rise to 6.35 million by 2025 and to 13.33 million (1.3 Crore) by 2050.<sup>2</sup>

**Depression:** Depression prevalence is higher in elderly compared to the younger population and there are more physical comorbidities of depression in elderly. A meta-analysis of 74 studies, including 487,275 elderly individuals found the worldwide median prevalence rate of depressive disorders as 10.3%. This study indicated a comparatively higher prevalence of geriatric depression in India (median 21.9%).<sup>10</sup> Another systematic review reported the prevalence of depression among Indian elderly population as 34.4%.<sup>3</sup> A study evaluating psychiatric disorders in elderly from the Indian sub-continent living in Bradford, UK reported depression in 20%, dementia in 4% and anxiety neurosis in 4%.<sup>11</sup>

That is the magnitude of dementia and depression in elderly in India. But that is not all the psychiatric problems in old age. Anxiety disorders, loneliness, suicidality is common too. There are many stresses which are more common in old age such as of bereavements and loneliness. For each person with these problems there is a family that is taking care of them, usually one of the family members having most of the responsibilities. Cumulatively speaking, this is the scenario in millions of families taking care of an elderly family member.

### Complexities of caregiving

There are many aspects of caregiving. These are often linked to the needs of the older adults and could be quite unique to an individual. In general, the issue of physical and mental health, activities of daily life (ADL), frailty, multimorbidity, diet, are commonly in the forefront. There are some issues that need to be attended in extremely ill or

frail elderly. These are related to availability and ease of accessing emergency services, support in the night, and support related to specific disease conditions. Non health related care issues are financial aspects, cost of care, cost of treatment, etc. so it is not just health it is an all-encompassing support for an older person with functional disabilities. So, the needs can be multifocal, and the complexities of care can be challenging and may need more than one caregiver.

One of the issues which can really complicate the caregiving and need to be considered is multimorbidity; which is extremely common, and it impacts caregiving negatively. Sensory deficits, such as difficulty in hearing or seeing, make caring more difficult and the communication becomes problematic between the caregiver and care-recipient. It demands for more resources, and it is more so for those with psychiatric disorders. Caring can be challenging when multiple comorbid conditions exist.

Stigma is very common and impacts on help-seeking by the family. Family caregivers while taking high level of burden of mentally ill elderly at home often experience stigma.<sup>12</sup> Mentally ill people themselves face the impact of stigma themselves. Their struggle is marginalized, undervalued, and often is invisible even to health professionals.

In a study in Thiruvannainallur, India, caregivers strongly felt that caregiving is an integral part of Indian culture, but they are not adequately trained in caregiving and it interfered with their personal and professional life. They also informed that elderly people prefer home-based care and the caregivers preferred government owned public health facility locally for medical care.<sup>9</sup>

### Typical caregiver

Based on the studies, a typical caregiver in family is likely to be a female, spouse, housewife, unwell themselves, tired, and have poor sleep. Many caregivers report problems in the family. Most of them feel that they are failing to cope. In a group intervention study for carers in India it was observed that 43% were spouses, 35% were adult children of the patient and 23% were 'other' (daughters-in-law, sons-in-law, brothers/sisters, friends, neighbours and other attendants).<sup>13</sup> Similarly in Italy, caregivers of patients with Alzheimer's disease (AD) were usually female (64%), mean age of 56.1 years, daughters (70.5%), pensioners and housewives (30%).<sup>14</sup> A typical carer of older elderly persons (aged 80 years or above) admitted in hospital, was a female aged 50 years plus; one in five had fair or poor health themselves; one quarter of them spent at least 8 hours per day caring, having only a few persons available to help them; and they reported mild to moderate stress.<sup>15</sup>

### Joys of caregiving

Caregiving is a positive and emotionally enriching experience. There is a sense of worth, fulfilment among the caregivers. It is associated with happiness and described as soul enriching activity. There are many positive constructs



in caregiving reported from studies involving caregivers of dementia. These are spirituality, resilience, rewards, and meaning in line with positive psychology theory.<sup>16</sup> A study in Netherlands reported that caregivers were happier than non-caregivers, when the care was around 6 hours a week; whereas more than 11 hours of caregiving a week had negative influence on the levels of happiness.<sup>17</sup>

Although family caregivers of people living with dementia have both positive and negative experiences of caregiving, but mostly negative aspects have been reported in literature. The positive aspects of caregiving are not given its due importance, they are not highlighted. Most of the assessment instruments on caregiving assess stress, however now there are instruments to measure positive aspects of caring for persons with dementia. There is need for more generic instruments that can be used in different situations. It is important that positive outcomes in caregiving should be given their due importance. Future research should aim to include appropriate measures in interventional research to facilitate a greater understanding of the positive aspects of caregiving and how these contribute to well-being.<sup>16</sup>

### **Impact of caregiving**

Caregiving can be a challenging experience. Caregiving becomes stressful in various conditions, e.g. being responsible all the while, long hours of caregiving with no adequate rest, when the caregivers own work, hobbies, social activities are affected; when there is no scope of sharing, no time for self, when others take it granted, etc. Most of the time their work is not recognised, and they get no positive feedback about their contribution.

The impact of caregiving may manifest in stress symptoms, anxiety, worry, depression and burnout and other physical or mental health symptoms. In some cases, it leads to abusive behaviour of the caregivers towards the elderly themselves. It is obvious stress of caregiving affects their quality of life. A study in Lucknow, India involving caregivers of patients with dementia reported that all key caregivers felt mild to moderate level of burden. Mean scores on physical, psychological, social relationship and environmental quality of life (QOL) were found to be on lower side, and a negative correlation was found between burden and QOL.<sup>18</sup>

In another study in India, caregivers presented a number of emotional and cognitive issues related to caregiving, such as anger, sadness, frustration, embarrassment, hypervigilance, acceptance, denial, disbelief, blame, and curiosity. They had concerns about the future of the elderly person especially about ADL, deteriorating biological functioning (sleep, appetite, bowel/bladder), ability to take basic household responsibilities and socialisation. Some other concerns were difficulty understanding erratic behaviour and increased dependence on adult children and extended family. Specific worries of female caregivers were burden of increased responsibility, loss of sense of protection and security, financial insecurity, and stigma of being blamed for spouse's condition. Comparatively male caregivers' concerns were difficulties with household

chores and a loss of routine. Some family members were found to be extremely critical of their ill elderly relative and were angry at the degree of deterioration, even though they understood the cause. They considered aged family members as a responsibility, and seemed to be resigned to their role as caregivers.<sup>13</sup>

In a study of caregivers of patients with AD, 53% had little time for themselves, 55% observed worsening of health, 56% are tired, and 51% are not getting enough sleep. Overall, 55% have problems with the patient's family and/or their own family, and 57% at work. Furthermore, 29% felt they are failing to cope with the situation and wished to move away from home.<sup>14</sup>

### **Mental health of caregivers**

#### ***Burnout***

Burnout a psychosocial syndrome that arises in response to chronic and interpersonal stressors is a common outcome of the stress of caregiving. Burnout affects caregivers' quality of life and can lead to poor caregiving, depressive and anxious symptoms in the older adults who are the care recipient. Sometimes the burnout can lead to abusive behaviour by the caregivers.<sup>19</sup> Three dimensions of burnout syndrome has been described in the caregivers: (i) emotional exhaustion (lack of energy and enthusiasm, as well as no emotional resources), (ii) depersonalization (adoption of an indifferent, impersonal and even cynical attitude between caregiver and patient), and (iii) reduction of personal fulfilment (perceiving care as negative or ineffective).<sup>19</sup>

#### ***Depression in caregivers***

Depression is common in caregivers; both clinical and subclinical depression have been reported. Subjective caregiver burden and depressive symptoms have been found to be positively associated.<sup>20</sup> The prevalence figures of depression vary across the reports. A study on clinical depression among the caregivers of dementia patients reported a prevalence figure of 14.9%; minimal symptoms of depression were experienced by 43.2%, moderate by 20.3%, moderate-severe by 6.8%, and severe by 3.6% of caregivers.<sup>21</sup> Another study reported more than a third (36%) of caregivers of patients with AD or physically disabled had depression.<sup>22</sup>

Prevalence of depressive symptoms among caregivers of elderly with disabilities was 37.7% which was partially contributed by the caregiver burden. Caregivers who were women, spent extended time in caregiving and were in poor health, had significantly higher depressive symptoms.<sup>23</sup>

#### ***Abuse of elderly by the caregivers***

It is a worrying fact that elderly people are often abused by their caregivers. It is alarming to learn that over 71% of elderly persons in India are victims of abuse by family members.<sup>24</sup> The types of abuse are usually physical, verbal aggression, emotional, neglect, isolation, disrespect, denial of basics amenities, medicine, material abuse, etc. The prevalence varies in different regions and situations.

A study in 12 major cities of India reported prevalence of different kinds of elder abuse: verbal abuse (60%), physical abuse (48%), emotional abuse (37%), and economic abuse (35%). In addition, 20% of elderly felt neglected by their family as well as by the society. At the national level, it has been found that 50% of elders have experienced abuse personally. It is also reported that 72% of the abused elderly people belong to the age group 60–69 years, 25% of them belong to the age group 70–79 years and only 3% of them are of 80 or above 80 years. The main reasons for abuse were reported to be economic dependency (40%), emotional dependency (25%), physical immobility (15%) and property (10%).<sup>25</sup>

However, the reported rates of abuse vary. Another study in India reported a comparatively lower figure of 11.4% as the overall prevalence of elder abuse; and 6% in the month before the survey.<sup>26</sup> Similarly type of abuse in another Indian study were: physical 5.3%, verbal 10.2%, economic 5.4%, disrespect 6%, and neglect 5.2%.<sup>27</sup>

Reports about main perpetrator are varied and often the number of perpetrators was more than one. In the multi-city study in India, 50% respondents reported the daughter-in-law as the main perpetrator followed by the son (42%); daughters (10%) and other relatives (23%) including brothers, sisters-in-law whereas reported, were also noted as perpetrators.<sup>25</sup> The most common perpetrator in another study was the son, who was reported to be responsible for the abuse among 41% of male victims and 43% of female victims.<sup>27</sup>

### Predictors of caregivers' stress

There are many predictors of caregiver stress. Higher stress scores of carer for oldest old were associated with female caregivers, poorer caregiver health, more hours per day spent caring for the patient, and the presence of depression and hearing impairment in the elderly.<sup>15</sup> Considering the caregivers for Alzheimer's patients, severity of the illness was directly linked to increase degree of anxiety and depression in carers; in addition, memory loss, movement restrictions and loss of perception were predictive of stress in the caregivers.<sup>14</sup> Significant predictors of depression of caregivers of dementia patients have been reported as primary caregiver, severe dementia, behavioural problems, lower education and spousal caregivers.<sup>28</sup> Depression in caregivers is closely related to severity of AD due to additional issues as well, e.g. behavioural problems, low income, and patient age of <65 years.<sup>14</sup>

While non-caregivers are observed to have the lowest stress, high-intensity caregivers report highest level of stress. If the intensity of caregiving increases from low level, stress of caregivers also increases; and it can be higher than that of the high-intensity caregivers. Those who stop caregiving, regardless of intensity level, their stress level matches to that of non-caregivers.<sup>29</sup> In a comparative study of caregivers versus non-caregivers of elderly parents with disabilities, it was reported that having a caregiving sibling was associated with increased depression among non-caregivers.<sup>30</sup> In this study non-

caregivers reporting severe parental disability were significantly more likely to have depression symptoms.

### Intervention

The provision of holistic care is essential for older people, which can address their multiple needs. The World Health Organisation Guidelines on Integrated Care for Older People (ICOPE) propose evidence-based recommendations for health care professionals to prevent, slow or reverse declines in the physical and mental capacities of older people. The WHO recommends that the caregivers should be supported through psychological intervention and training. Support should be offered to family members and other informal caregivers of older people. This should be done especially when the need for care is complex and extensive; and there is significant caregiver strain.<sup>31</sup>

#### Box 1. Intervention for caregivers' burden

- Information
- Psychological support
- Stress management
- Coping strategy review
- Supportive therapy
- Respite care
- Group therapy
- Activity therapy
- Peer support
- Decision support
- Social support
- Contact with professionals
- Training and support

Following three focus group discussions, in an Indian study it emerged that the expectations of caregivers were wide ranging: they required information about identification and management of dementia, to support caregiver well-being; use of simple language, cultural relevance, and an interactive design. There were many challenges identified as well: Lack of time, difficulty in accessing the internet, lack of awareness about the portal, difficulty in reaching the rural population.<sup>32</sup>

A study in Chennai, India about care of elderly during COVID-19 pandemic, the caregivers requested video-consultations, telephone-based support, clinic-based in-person visits to meet their needs and wanted more services post-pandemic and the researchers suggested multi-layered approach, systemic changes, policies and frameworks, increased awareness, use of technology, and better access to health for the caregivers.<sup>33</sup>

Despite increasing numbers of persons living with AD and Alzheimer's-related dementias (ADRD) in Asia, particularly in low-and-middle-income countries (LMIC), there is inadequate information about the interventions for family caregiver and their efficacy.<sup>34</sup> However some intervention studies are available which reported

significant improvement in depression, burden, QOL, self-efficacy of caregiver. Multicomponent interventions are a promising approach.<sup>34</sup> Three main themes of support to caregivers have been informational support, positive activities and social support.<sup>35</sup> There is a need for more studies about interventions that may help family caregivers, especially in LMIC where most elderly and patients of dementia reside. Some of the interventions in literature are narrated here.

There are many reports of interventions for people with specific illnesses. For example, an integrated framework of support for caregivers of dementia patients focuses on four strategic areas; they are: physical-care demands, behavioural problems, caregiving competency, and loss and grief of caregivers.<sup>28</sup> Professional help and supportive psychotherapy can be provided to the key caregivers of dementia patients to reduce their burden, strengthen the coping skill and thus improve their QOL.<sup>18</sup>

There are some intervention ideas for caregivers in Indian scenario have been suggested. Community health workers could be trained to identify and provide help to older people with mental health problems and their caregivers. Community outreach programmes for elderly could be set up and those can be particularly relevant in the rural areas;<sup>36</sup> which may help caregivers.

### ***Respite care***

Respite care could be a key component for the family caregivers' support. The examples include adult day care and related services, respite services, in-home care, and overnight respite. But implementation, availability of services, access to services, affordability, cost of setting these services in various areas are important concerns. However research on its efficacy has been limited and has not produced a substantial body of empirical evidence on outcomes, either for caregivers or for persons receiving respite.<sup>37</sup> These kinds of researches face methodological challenges and more robust studies are needed.

### ***Group intervention***

Group interventions for caregivers of geriatric patients have been reported. A study in India structured these interventions to three sessions: (i) psychoeducation on health problems related to old age, (ii) psychosocial management of the aged person and (iii) welfare measures available for the aged in India.<sup>13</sup> For these interventions information about their effectiveness are needed. Group therapy might provide the caregivers an opportunity to vent their feeling and specific concerns, a sense that they are not alone, and learn from others' experience in caregiving.

### ***Online support***

There are many online supports for the caregivers of older adults with specific illnesses. There are mostly in the form of web-based tools, mobile applications and social network services. A systematic review on online interventions for family caregivers of dementia patients reported that the interventions mainly focused on contact with health or

social care providers, peer interaction, provision of information, decision support, and psychological support. Most studies indicated that interventions may help family caregivers' well-being, manage depression, anxiety, and burden. Psychological support provided online also improves mental health of caregivers. If the online information can be tailored specifically for the individual and used as part of a multicomponent intervention it can be most useful. Online peer support had positive effects on stress. Similarly online contact with a professional was valuable for easy access to personalized practical advice, emotional support, which reduced the burden.<sup>38</sup>

An online computerised intervention in the UK for challenging behaviour of people with dementia staying in their homes, which also included average nine contacts per family with specialist care, found no impact on challenging behaviour after 6 months of treatment. This suggested a care gap for families supporting relatives with dementia and challenging behaviour.<sup>39</sup> More research is needed to assess the long-term effects of online interventions on caregiver stress and resilience.<sup>35</sup>

### ***Other interventions***

There are some other interesting examples of specific intervention for caregivers. A home-based physical exercise programme of one hour per week for 36 weeks, which was supervised by a personal trainer, was made available for the family caregivers of patients with dementia. This resulted in a positive impact on subjective burden and decreased risk of depression.<sup>40</sup> A intervention model in Ontario, Canada for dementia patients has specific section of caregiver-directed interventions for dementia and economic analysis of these interventions emphasizing their role and contribution to the process.<sup>41</sup>

### ***Social and legal avenues supporting caregivers***

There are many legal provisions in India to protect the interests of the elderly and to ensure their care by family, although their implementation is far from perfect. While these can take care of mainly the financial aspects, they may not be able to deal with the emotional and psychosocial needs of the elderly. However, their presence is reassuring. Similarly, there should be policies to support caregivers. These can be in the form of financial support as most of them are not able to work outside, respite care providing a personal time for the caregiver. They can be supported through online programmes linking professional organisations, disease specific support groups, and training. They can also be provided specific need-based support.

### ***Agencies that may help the caregivers***

There are many professional, social, and non-governmental organisations which are helping caregivers, providing information and practical help. Professional organisations, e.g., Alzheimer Disease International, Alzheimer's and related dementia society of India, HelpAge, GeriCaRe (Geriatric Care and Research Organisation) are some of the examples. There are many

organisations that can help caregivers by supporting the elderly and sharing the care burden, e.g., in the UK there are: Age UK, Alz Café, Young-Onset Dementia Support Group, Carer Support Team, Crossroads Caring for Carers, Dementia UK, Carers UK, Telecare etc. Many specific disease support groups are helpful too e.g. Huntington's Disease Association, The Neurological Alliance, The Bladder and Bowel Foundation, Stroke Services and Stroke club and so on. It would be beneficial for the caregivers to have these kinds of supporting organisations in other countries.

## Conclusion

Taking care of older adults at home by the family member is associated positive aspects such as a sense of fulfilment and happiness; however, this may be burdensome and stressful at times. This is linked to anxiety, depression, burnout or caregivers, and even abuse of the elderly. This affects QOL of the caregivers. Family caregivers need support for themselves and to take better care of the elderly.

Clinicians can support the caregivers in many ways. While taking care of the elderly patients, enquiring about the wellbeing of the caregivers in the family, identifying the primary caregiver and exploring their needs and how they can be supported may be helpful. Screening for stress, depression, anxiety can be done clinically or through small self-report scales and interventions can be put into place.

Usual support would include, providing information, psychological support, through listening, assuring, and providing practical help. Discussions on culturally relevant coping methods, relaxation techniques, respite care, joining local self-help groups and above all, recognising and adding value to their work will be helpful. Clinic or community-based support group for the caregivers can be set up which can be face to face or online. They can be encouraged to attend disease specific carer support groups locally or nationally.

There has been a lot of work on dementia carers; however, there is not much information on the caregivers of older adults with depression and other psychiatric problems. There is a need to consider care issues related to multimorbidity which is common in old age. There is a definite research need on the interventions for the caregivers and their efficacy in decreasing carers' burden and improving their mental health and QOL.

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## References

1. Rath P. Profile of elderly population in India: evidences from Indian censuses. *J Geriatr Care Res.* 2016;3(1):13–9.
2. Nulkar A, Paralikar V, Juvekar S. Dementia in India – a call for action. *Journal of Global Health Reports.* 2019 Dec 1;3:e2019078.
3. Pilonia M, Yadav V, Bairwa M, Behera P, Gupta SD, Khurana H, et al. Prevalence of depression among the elderly (60 years and above) population in India, 1997–2016: a systematic review and meta-analysis. *BMC Public Health.* 2019 Jun 27;19(1):832.
4. Lee SB, Oh JH, Park JH, Choi SP, Wee JH. Differences in youngest-old, middle-old, and oldest-old patients who visit the emergency department. *Clin Exp Emerg Med.* 2018 Dec 31;5(4):249–55.
5. Rath DN, Biswal PK, Panda SK. Care facilities for elderly people in Odisha. *Journal of Geriatric Care and Research.* 2017;4(1):32–4.
6. Ranjan A, Muraleedharan VR. Equity and elderly health in India: reflections from 75th round National Sample Survey, 2017–18, amidst the COVID-19 pandemic. *Globalization and Health.* 2020 Oct 8;16(1):93.
7. Sathianathan R, Kantipudi SJ. The dementia epidemic: Impact, prevention, and challenges for India. *Indian J Psychiatry.* 2018;60(2):165–7.
8. Shaji S, Promodu K, Abraham T, Roy KJ, Verghese A. An epidemiological study of dementia in a rural community in Kerala, India. *Br J Psychiatry.* 1996 Jun;168(6):745–9.
9. Gurukartick J, Dongre AR, Shah D. Social Determinants of Dementia and Caregivers' Perspectives in the Field Practice Villages of Rural Health Training Centre, Thiruvannainallur. *Indian J Palliat Care.* 2016 Mar;22(1):25–32.
10. Barua A, Ghosh MK, Kar N, Basilio MA. Prevalence of depressive disorders in the elderly. *Ann Saudi Med.* 2011 Dec;31(6):620–4.
11. Bhatnagar K, Frank J. Psychiatric disorders in elderly from the Indian sub-continent living in Bradford. *Int J Geriatr Psychiatry.* 1997 Sep;12(9):907–12.



12. Ebrahim OS, Al-Attar GST, Gabra RH, Osman DMM. Stigma and burden of mental illness and their correlates among family caregivers of mentally ill patients. *J Egypt Public Health Assoc* [Internet]. 2020 Nov 9 [cited 2021 Jan 6];95. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7649189/>
13. Henry J, Jagannathan A, Bhavana K, Thomas B, Bharath S, Varghese M, et al. Group intervention for carers of geriatric patients: experiences from a clinic in India. *Int Psychiatry*. 2010 Apr 1;7(2):30–2.
14. Ferrara M, Langiano E, Di Brango T, Di Cioccio L, Bauco C, De Vito E. Prevalence of stress, anxiety and depression in with Alzheimer caregivers. *Health and Quality of Life Outcomes*. 2008 Nov 6;6(1):93.
15. Desbiens NA, Mueller-Rizner N, Virnig B, Lynn J. Stress in caregivers of hospitalized oldest-old patients. *J Gerontol A Biol Sci Med Sci*. 2001 Apr;56(4):M231–235.
16. Stansfeld J, Stoner CR, Wenborn J, Vernooij-Dassen M, Moniz-Cook E, Orrell M. Positive psychology outcome measures for family caregivers of people living with dementia: a systematic review. *Int Psychogeriatr*. 2017 Aug;29(8):1281–96.
17. van Campen C, de Boer AH, Iedema J. Are informal caregivers less happy than noncaregivers? Happiness and the intensity of caregiving in combination with paid and voluntary work. *Scand J Caring Sci*. 2013 Mar;27(1):44–50.
18. Srivastava G, Tripathi RK, Tiwari SC, Singh B, Tripathi SM. Caregiver Burden and Quality of Life of Key Caregivers of Patients with Dementia. *Indian J Psychol Med*. 2016 Apr;38(2):133–6.
19. Alves LC de S, Monteiro DQ, Bento SR, Hayashi VD, Pelegrini LN de C, Vale FAC. Burnout syndrome in informal caregivers of older adults with dementia: A systematic review. *Dement Neuropsychol*. 2019;13(4):415–21.
20. del-Pino-Casado R, Cardoso MR, López-Martínez C, Orgeta V. The association between subjective caregiver burden and depressive symptoms in carers of older relatives: A systematic review and meta-analysis. *PLOS ONE*. 2019 May 29;14(5):e0217648.
21. Alfakhri AS, Alshudukhi AW, Alqahtani AA, Alhumaid AM, Alhathlol OA, Almojali AI, et al. Depression Among Caregivers of Patients With Dementia. *Inquiry* [Internet]. 2018 Jan 18 [cited 2021 Jan 12];55. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5798670/>
22. Luchesi BM, Degani GC, Brígola AG, Pavarini SCI, Marques S, Luchesi BM, et al. Evaluation of depressive symptoms in older caregivers. *Archives of Clinical Psychiatry (São Paulo)*. 2015 Apr;42(2):45–51.
23. Zhong Y, Wang J, Nicholas S. Social support and depressive symptoms among family caregivers of older people with disabilities in four provinces of urban China: the mediating role of caregiver burden. *BMC Geriatrics*. 2020 Jan 2;20(1):3.
24. The Economic Times. Over 71 pc senior citizens in India victims of abuse by family members: Survey - The Economic Times [Internet]. 2019 [cited 2021 Apr 17]. Available from: [https://economictimes.indiatimes.com/news/politics-and-nation/over-71-pc-senior-citizens-in-india-victims-of-abuse-by-family-members-survey/articleshow/69777963.cms?utm\\_source=contentofinterest&utm\\_medium=text&utm\\_campaign=cppst](https://economictimes.indiatimes.com/news/politics-and-nation/over-71-pc-senior-citizens-in-india-victims-of-abuse-by-family-members-survey/articleshow/69777963.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst)
25. Vardhan R. Elder Abuse and Elder Victimization: A Sociological Analysis. *International Annals of Criminology*. 2017 May;55(1):99–113.
26. Sathya T, Premkumar R. Association of functional limitations and disability with elder abuse in India: a cross-sectional study. *BMC Geriatrics*. 2020 Jun 23;20(1):220.
27. Skirbekk V, James K. Abuse against elderly in India – The role of education. *BMC Public Health*. 2014 Apr 9;14:336.
28. Ying J, Yap P, Gandhi M, Liew TM. Iterating a framework for the prevention of caregiver depression in dementia: a multi-method approach. *Int Psychogeriatr*. 2018 Aug;30(8):1119–30.
29. Lyons JG, Cauley JA, Fredman L. The Effect of Transitions in Caregiving Status and Intensity on Perceived Stress Among 992 Female Caregivers and Noncaregivers. *J Gerontol A Biol Sci Med Sci*. 2015 Aug;70(8):1018–23.
30. Amirkhanyan AA, Wolf DA. Caregiver stress and noncaregiver stress: exploring the pathways of psychiatric morbidity. *Gerontologist*. 2003 Dec;43(6):817–27.
31. Thiyagarajan JA, Araujo de Carvalho I, Peña-Rosas JP, Chadha S, Mariotti SP, Dua T, et al. Redesigning care for older people to preserve physical and mental capacity: WHO guidelines on community-level interventions in integrated care. *PLoS Med* [Internet]. 2019 Oct 18 [cited 2021 Jan 9];16(10). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6799894/>
32. Baruah U, Shivakumar P, Loganathan S, Pot AM, Mehta KM, Gallagher-Thompson D, et al. Perspectives on Components of an Online Training and Support Program for Dementia Family Caregivers in India: A Focus Group Study. *Clin Gerontol*. 2020 Dec;43(5):518–32.
33. Vaitheswaran S, Lakshminarayanan M, Ramanujam V, Sargunan S, Venkatesan S. Experiences and Needs of Caregivers of Persons With Dementia in India During the COVID-19 Pandemic-A Qualitative Study. *Am J Geriatr Psychiatry*. 2020 Nov;28(11):1185–94.
34. Hinton L, Tran D, Nguyen T-N, Ho J, Gitlin L. Interventions to support family caregivers of people living with dementia in high, middle and low-income countries in Asia: a scoping review. *BMJ Glob Health* [Internet]. 2019 Nov 12 [cited 2021 Jan 6];4(6). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6861057/>
35. Shin JY, Choi SW. INTERVENTIONS TO PROMOTE CAREGIVER RESILIENCE. *Curr Opin Support Palliat Care*. 2020 Mar;14(1):60–6.
36. Shaji KS, Kishore NRA, Lal KP, Pinto C, Trivedi JK. Better mental health care for older people in India. *Indian J Psychiatry*. 2004 Oct;46(4):367–72.



37. Zarit SH, Liu Y, Bangerter LR, Rovine MJ. Exploring the Benefits of Respite Services to Family Caregivers: Methodological Issues and Current Findings. *Aging Ment Health*. 2017 Mar;21(3):224–31.
38. Hopwood J, Walker N, McDonagh L, Rait G, Walters K, Iliffe S, et al. Internet-Based Interventions Aimed at Supporting Family Caregivers of People With Dementia: Systematic Review. *J Med Internet Res*. 2018 Jun 12;20(6):e216.
39. Moniz-Cook E, Hart C, Woods B, Whitaker C, James I, Russell I, et al. Challenge Demcare: management of challenging behaviour in dementia at home and in care homes – development, evaluation and implementation of an online individualised intervention for care homes; and a cohort study of specialist community mental health care for families [Internet]. Southampton (UK): NIHR Journals Library; 2017 [cited 2021 Jan 9]. (Programme Grants for Applied Research). Available from: <http://www.ncbi.nlm.nih.gov/books/NBK447072/>
40. Madruga M, Gozalo M, Prieto J, Domínguez PR, Gusi N. Effects of a home-based exercise program on mental health for caregivers of relatives with dementia: a randomized controlled trial. *International Psychogeriatrics*. 2020;1–14.
41. Medical Advisory Secretariat. Caregiver- and patient-directed interventions for dementia: an evidence-based analysis. *Ont Health Technol Assess Ser*. 2008;8(4):1–98.

Research Article

# Prevalence of delirium and analysis of its risk factors among inpatients above the age of 65 years in a tertiary care hospital in Chennai, India - a cross-sectional study

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## Abstract

**Background:** Delirium in hospitalised older persons is common and correlated with a number of risk factors. Studies from India are limited to case note studies. This cross-sectional study aimed to measure prevalence of delirium and some of the risk factors, including alcohol. **Objective:** Study evaluated prevalence of delirium and risk factors in older adults in a tertiary care hospital in India. **Methods:** 209 older inpatients (>65) in the medical ward were evaluated over a five month period. Delirium was screened using the confusion assessment method (CAM) diagnostic algorithm and problem drinking was screened with CAGE questionnaire. **Results:** Overall prevalence was 26.8% in older adult patients. Males and patients above 80 years of age showed higher prevalence. Logistic regression showed higher number of prescribed drugs and alcohol contributed as risk factors in the development of delirium. **Conclusion:** Delirium remains a major problem in medical wards and should be considered in hospitalized older adults. Alcohol and prescribed drugs are major contributors.

## Key words

Aged, alcohol, delirium, inpatient, medicine, prevalence

## Introduction

Delirium or acute confusional state is an acute disorder characterised by disturbed consciousness, cognitive function, orientation, memory, thought, perception and behaviour.<sup>1,2</sup> Usually, it is a potentially reversible brain dysfunction with a fluctuating course. Delirium is seen in a higher incidence and prevalence among the hospitalised patients above the age of 65. Delirium occurs in 10-50% of hospitalized patients and is associated with prolonged hospital stay and increased morbidity and mortality.<sup>3,4</sup>

Available data for Prevalence and Incidence is varied; depends on settings in which studies have been done. Study done by Lange et al<sup>5</sup> in Netherlands stated that prevalence of delirium in the population among elderly aged 65+ is 1-

2%, and 10% among population aged 85+ years. Point prevalence of delirium in the community is 1.1% among general population above 55 and 6-14% among 85+ years. In long term care, prevalence ranges between 1.4 and 70%.<sup>5</sup> The prevalence of delirium when individuals are admitted to the hospital ranges from 14-24% and estimates of incidence of delirium arising during hospitalization range from 6-56% in general hospital populations. In a study done in New Zealand in elderly hospitalised patients in a tertiary care hospital, point prevalence was 7.8%.<sup>6</sup> Study done by Wass et al<sup>7</sup> in Australia found that 15-30% of elderly patients would have delirium on admission to hospital and 56% of elderly patients during their stay.

There have been relatively very few studies in India on delirium in the elderly. These studies showed relatively high incidence and prevalence rates of 25% and 40% respectively.<sup>8</sup> A recent nationwide web-based survey conducted across hospitals in India has shown that delirium remains an under-recognized entity.<sup>9</sup> Study done by Kukreja et al<sup>8</sup> in India showed the overall prevalence of delirium in elderly persons living in the community is low (1-2%) but increases with age, rising to 14% among individuals older than 85 years. The prevalence is 10-30% in older individuals presenting to emergency departments, where delirium often indicates a medical illness. In the study by Siddiqi et al,<sup>10</sup> prevalence of delirium at admission ranged from 10-31%, incidence of new delirium per admission ranged from 3-29% and occurrence rate per admission ranged from 11-42%. Study done by Solomon et al stated that the prevalence of delirium was 9.75%.<sup>11</sup> Khurana et al<sup>12</sup> reported delirium in medicine ward inpatients aged >65 years in 27% of cases, including 19% who were delirious at first assessment within 24 hours of admission and 8% who developed delirium >24 hours after admission. In another study by Grower et al, prevalence of delirium in a subset of elderly population, defined as age >60 was 48.8%;<sup>13</sup> this study was limited by retrospective nature. Another study in India reported delirium in 3% of inpatients aged >65 years.<sup>14</sup> Male gender (69.23%) and age above 60 years (66.67%) were significantly associated with delirium. Delirium went undiagnosed in 61.64% of the cases.

Research in the elderly has identified a multitude of risk factors like age,<sup>3,9</sup> sensory deprivation, sleep deprivation, social isolation, physical restraint, use of bladder catheter, poly-pharmacy (more than six medications or more than three new medications added),<sup>15-16</sup> use of psychoactive drugs, co-morbidities, severe illness (especially infection, fracture or stroke), prior cognitive impairment, temperature abnormality (fever or hypothermia), dehydration, malnutrition, low serum albumin and environment in hospitals. The serious sequelae associated with failure to quickly detect and treat delirium early are well known. Despite its clinical importance, it is often not suspected, screened and looked for, and hence remains under-detected and misdiagnosed.<sup>17</sup>

Older people may show complex patterns and combinations of substance use (e.g. alcohol plus inappropriate use of prescribed medications). Alcohol is now, by far, the most commonly misused drug by people of all ages. A substantial percentage of older adults consume above the recommended limits.<sup>18</sup> Older people are also particularly at risk from the harmful effects of substances because of polypharmacy<sup>19</sup> and altered metabolism.<sup>20</sup> As people age, there is a fall in the ratio of body water to fat, decreased hepatic blood flow and inefficiency of liver enzymes. The responsiveness of the brain alters, so that alcohol produces a more rapid depressant effect, resulting in, for example, impaired coordination and memory. Alcohol problems in the elderly often remains undetected as well.<sup>21</sup> Alcohol remains a major factor contributing to confusional state, particularly when alcohol dependent patients are withdrawing from alcohol in hospital settings, unless treated. The presentation of such problems can be subtle or non-specific; and under diagnosis and/or underreporting may therefore have contributed to unreliable estimates of the level of problems associated with substance misuse.<sup>22</sup> So, this study aims to find out the prevalence of delirium in patients above the age of 65 in an inpatient unit of general medical wards of a tertiary care centre in Chennai. In addition, this study looks at some of contributory risk factors for delirium including alcohol and prescribed medications.

## Methods

This study was designed as a prospective cross-sectional evaluation of patients looking at the point prevalence of delirium in a medical ward setting. The study took place in an urban tertiary care university teaching hospital in Chennai, India. Ethical approval of the study was obtained from local Ethics Committee (Ref No 2017-05902). Study was done between April 2018 and August 2018.

All patients above the age of 65, admitted to medical inpatient unit were screened for delirium using Confusion Assessment Method (CAM),<sup>23</sup> shortened version. The Australian society for geriatrics medicine, the American Psychiatry Association and the British Geriatric's Society all recommend the CAM as the screening tool specifically designed to detect delirium. It has sensitivity of more than 94%, specificity of more than 90% and is easy to use in clinical settings.

In addition to CAM, patients were screened for alcohol problems. Four clinical interview questions, the CAGE questions,<sup>24</sup> have proved useful in helping to make a diagnosis of alcoholism. The questions focus on Cutting down, Annoyance by criticism, Guilty feeling and Eye opener which form the mnemonic CAGE. Questions on CAGE were asked by researchers and recorded. Data from case file on alcohol status was recorded. The normal cut off for the CAGE is two positive answers. Cases showing a score of 2 or above were further interviewed for Alcohol dependence. Diagnosis of alcohol dependence was done using DSM V criteria.<sup>25</sup>

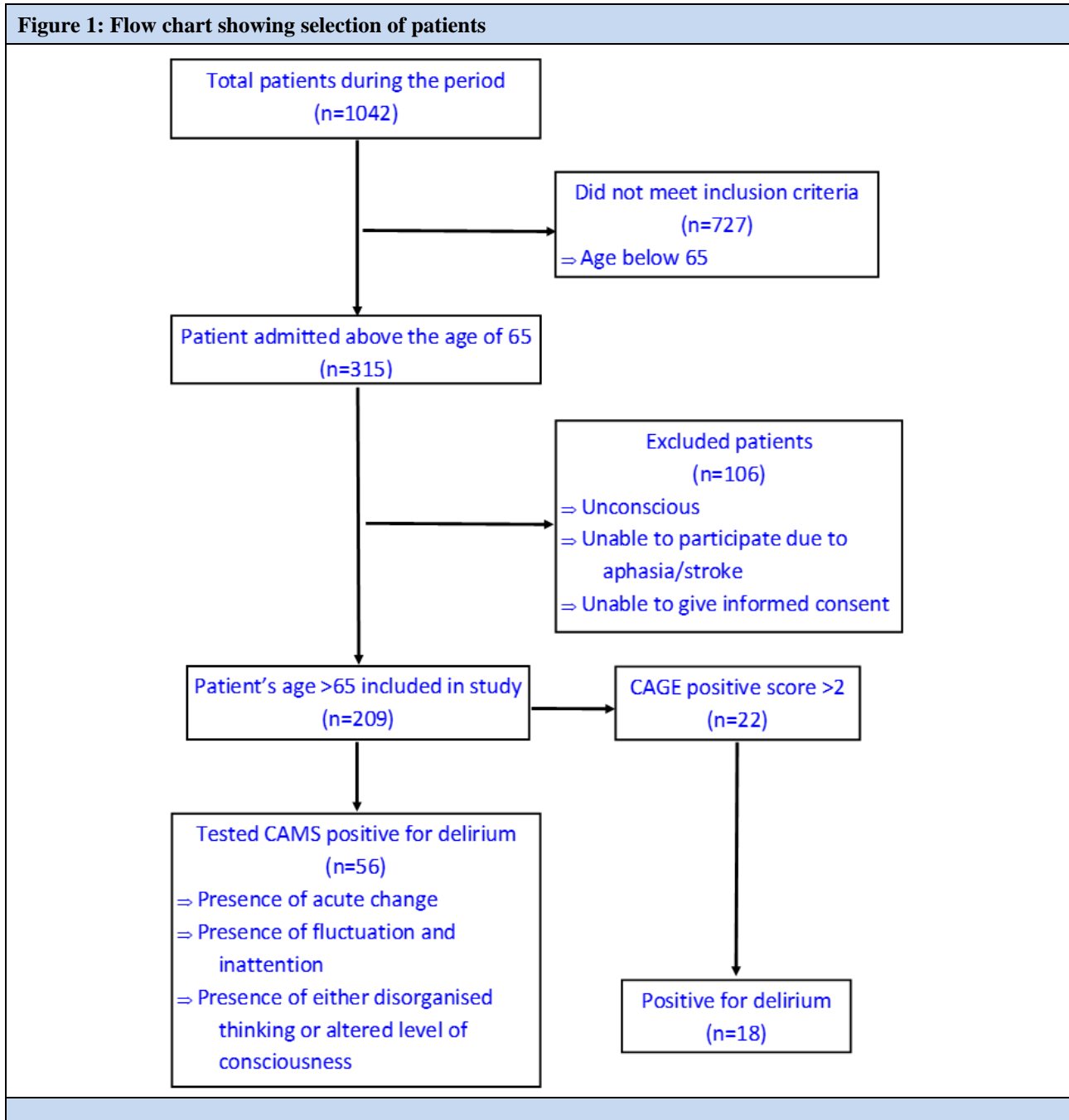
Patients who were unconscious and unable to answer questions due to dysphasia/aphasia or unable to give informed consent were excluded from the study. The researchers conducted a patient and/or caregiver interview and chart review to collect the following data: socio demographic details, age, sex, current medications with the Anatomical Therapeutic Chemical classification. Recording of socio demographic data of the patients and data on the number of medications they received at the time of evaluation were recorded from the case notes. Junior researchers were trained to apply CAM by the consultants in the research team. After obtaining informed consent, CAM scale shortened version was applied in the vernacular language to all patients included in the study. In the shortened version, delirium was identified with presence of acute change, fluctuation and inattention and either disorganised thinking or altered level of consciousness.

## Data Analysis

Statistical analysis was done using SPSS for windows version 24.0.<sup>26</sup> Analysis was two tailed and evaluated for significance at the 0.05 level. Power calculation was done to estimate the sample size. We estimated the power at 80% and needed a sample size of 315. Demographic and clinical characteristics were analysed by frequency and percentage calculation. Chi-square analysis was employed to compare demographics and delirium status. Correlation analysis was done to look at any association of risk factors to delirium. Correlation analysis using Kendal's tau was done for population with positive CAM score for delirium and population diagnosed as delirium or confusional state with age, sex, alcohol problems with a CAGE score above 2, prescribed number of drugs and sleeping hours. A multinomial logistic regression analysis was done to look at risk factors contributing to the development of delirium.

## Results

A flow chart of the selection of patients is given in Figure 1. Of the 315 patients older patients above the age of 65 admitted in the department, 209 patients were enrolled into the study. Average age of the participants was 70.39 years. Among the study participants (n=209), the age group of 65-70 years constitute more than half of the total population (Table 1). Table 1 shows the prevalence of delirium among various age groups. Clearly, prevalence of delirium is high in the age group above 80 i.e. 75%, which is statistically significant at  $p < 0.05$ . Overall prevalence of delirium was 26.8% (males: 31.3%, and females: 19.2%; it did not reach statistical significance ( $p = 0.057$ )).

**Figure 1: Flow chart showing selection of patients****Table 1: Characteristics of the whole group showing distribution of delirium.**

Characteristics		Whole group (n=209)	No delirium	Delirium	
		n (%)	n (%)	n (%)	p
Age groups in years	65-70	120(57.4%)	89 (74.2%)	31 (25.8%)	0.018
	71-75	71(33.9 %)	54 (76.1%)	17 (23.9%)	
	76-80	10 (4.8%)	8(80%)	2 (20%)	
	81-85	8 (3.9%)	2(25%)	6 (75 %)	
Sex	Male	131(62.7%)	90 (68.7%)	41(31.3%)	0.057
	Female	78 (37.3%)	63(80.8%)	15 (19.2%)	
Number of medications	1-4	109 (52.2%)	91(83.2%)	18 (16.8%)	0.002
	5-7	88 (42.1%)	55 (62%)	33 (38%)	
	>7	12 (5.7%)	7(59.8%)	5 (41.2%)	
CAGE	<2	187 (89.5%)	135(18.2%)	52(81.8%)	0.001
	>2	22(10.5%)	18(81.8%)	4(18.2%)	

**Table 2: Correlates of subjects with delirium**

Variable	Kendal's tau	Significance
Age	.054	.421
Sex	-.132	.057
Alcohol problem	.426	.000
Number of prescribed drugs	.235	.000
Sleeping hours	-.043	.517

**Table 3: Nominal regression- likelihood ratio tests**

Variable (Effect)	Model fitting criteria	Likely hood ration tests		
	-2 Log Likelihood of reduced model	Chi-Square	df	sig
Intercept	69.44	.000	0	
Age	79.12	9.68	3	.021
Sex	69.5	0.048	1	.827
Alcohol	97.68	28.24	1	.000
Number of prescribed drugs	75.77	6.32	2	.042

Mean number of medications were  $6.21 \pm 0.47$ . The proportion of delirium cases increased with the increase of the number of drugs taken (Table 1). Number of medications in patient with delirium significantly high compared to patient without delirium ( $p=0.002$ ). When rated on CAGE questionnaire for alcohol use, 10.5% ( $n=22$ ) had a score above 2 and 89.5% ( $n=187$ ) did not have problems with alcohol.

Table 2 shows the correlation of patients' risk factors with delirium. Alcohol problems rated on CAGE and total number of prescribed drugs showed significant positive correlations. A further logistic regression analysis showed that alcohol and total number of prescribed drugs were factors which significantly contributed to development of delirium (Table 3). Total number of prescribed drugs and alcohol problems were significant contributors for delirium. Though age showed a significant likelihood, interpretation should be with caution in view of poor correlation.

## Discussion

Our study is possibly the first from India to look at delirium in the elderly population on a prospective basis. One-quarter of the patients admitted to the medicine department during the study period had delirium. This figure is in agreement with the data of the literature for this population.<sup>8-12</sup> Though a previous Indian study in subset of elderly defined as  $>60$  years, showed a prevalence of 49%, this was a chart-based retrospective study compared to our study which was prospective assessment. This study used the CAM for diagnosis of delirium; a tool that has very high sensitivity and specificity.<sup>27,28</sup> Our study showed that prevalence increased with age and was more in male sex, though these did not reach statistical significance. This may be due to inadequate power. Increase in age and male sex has been shown to be risk factors for delirium in various other studies.<sup>8,11</sup>

Although a relationship between cognitive disorders and medications has indeed sometimes been suggested,<sup>27,29</sup> it is difficult to establish an independent causal link and to identify accurately the nature of the involvement. Polypharmacy may also be associated with inappropriate use of medications,<sup>30</sup> poorer adherence to treatment,<sup>31</sup> and an increased risk of iatrogenic adverse events.<sup>32-35</sup> Moreover, the iatrogenic risk increases in proportion to the number of medications.<sup>36-38</sup> Onder et al emphasized that the number of medications is an independent predictive factor of adverse drug reaction-related hospital admissions (OR 1.24 for each supplementary drug).<sup>37</sup> Polypharmacy may be also a major determinant of medication non-adherence among older persons.<sup>31,39</sup>

There have not been many previous prospective studies in India investigating the relation between polypharmacy, alcohol and delirium in an elderly population. Some studies have examined elderly patients in emergency departments,<sup>8</sup> and others have addressed patients directly admitted to geriatric units,<sup>14</sup> or intensive care units (ICU).<sup>15,40</sup> There are studies on delirium which were looked retrospectively as well.<sup>13</sup> In our study, patient selection criteria was not restrictive, and we were able to study a relatively large number of patients in "real-life" conditions. It would also have been interesting to analyse the reasons for hospitalization. Gathering of data on past episodes of delirium was difficult and incomplete, either because of lack of an informant, lack of awareness of informant or because previous records only very rarely included this item because of lack of awareness by physicians and the healthcare team and possibly because of the difficulty of diagnosis and or under diagnosis.

Our study showed a significant independent association between the diagnosis of delirium in recently hospitalized elderly patients and polypharmacy. In our study group, the mean number of daily medications was 6.21. This is consistent with a previous study in ICU.<sup>18</sup> Explanation of



the link between polypharmacy and delirium remains complex. Delirium is a major health concern in countries with aging populations and is still a serious cause and complication of hospitalization in elderly patients. For these reasons, prevention, early recognition, and effective treatment of delirium are essential. There are two possible definitions of polypharmacy.<sup>41</sup> The first is concurrent use of several medications. However, while some authors use a cut-off of 3 to 5, there is no definite accepted figure. Another definition is “overuse” or the use of more medications than is clinically necessary. This definition has the negative connotation of suboptimal prescription and does not set an arbitrary cut-off. Similarly, potentially inappropriate medication is the medication that increases the risk of adverse reactions when there is a safer alternative available.<sup>42</sup> It is used to define the quality of the prescribed medications rather than the accumulated quantities. The most appropriate definition in geriatrics would, therefore, be the accumulation of medications considered to be useless and/or likely to cause drug interferences. In view of the absence of a consensual definition of polypharmacy, we used a cut-off of five medications, as this is the one most commonly accepted.<sup>41</sup> Moreover, a Norwegian multicentre prospective study of elderly hospitalized patients using five or more drugs showed that each unit increase in number of drugs increased the number of drug-related problems by 8.6%.<sup>43</sup> Polypharmacy is associated with increases in many adverse outcomes, including drug interactions, adverse drug reactions,<sup>42</sup> falls, hospital admissions, length of hospital stay, re-admission rate soon after discharge, and mortality rate.<sup>44,45</sup> Delirium is diagnosed in a medical setting, it is not often identified elsewhere, and when the diagnosis is in fact made, this does not always result in better care and management of the elderly patient with delirium.

Our study showed association of delirium to alcohol. Alcohol is well known to cause delirium tremens. Studies have demonstrated that alcohol can be a predisposing factor in delirium.<sup>46</sup> An independent causality due to alcohol was difficult to analyse in our study due to our methodology. It would be prudent to look at the contribution of alcohol as causative or predisposing in such cases of delirium. Hence, interpretation should be done with caution when there is an association seen with alcohol in delirium patients, but it seems plausible to think that alcohol increases the risk of development of different types of delirium other than delirium tremens as shown in previous studies.

### Strengths and limitations

Strength of our study includes its prospective nature and that it follows STROBE checklist. Our study has methodological limitations. Some cases might have been excluded due to lack of capacity to consent and absence of appropriate relative to give informed consent. This remains a limitation. The results are not generalizable to all delirium patients. While our participants are from medicine wards only, this may limit the external validity of our findings to all patient population. CAGE being a self-assessment tool, it is possible that alcohol intake might have been underestimated. Indeed, the acute disease that

led to admission can participate the occurrence of delirium. Though the sample size required to get all the significant risk factors was higher, this would not have led to getting significant results for at least few variables we evaluated.

### Conclusion

In conclusion, we observed that polypharmacy was a factor associated with delirium independently of the number of medications prescribed. In addition to prevention of drug-induced delirium, development of tools for identifying elderly patients at risk of adverse drug events is recommended. Improved prescribing in hospital, in particular a review of patients with several medications, is required. By reconciling pre-hospital prescriptions and those required during hospitalization, the pharmacist could improve prescribing in the elderly, especially for patients at high risk of delirium such as those with dementia. Interventional studies are required to show whether treatment review in all elderly patients admitted decreases the prevalence of incident delirium. Alcohol was another factor that independently contributed to the development of delirium. Identification and management of alcohol related delirium in elderly deserves focused clinical attention and research.

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## References

- Levkoff S, Cleary P, Liptzin B, Evans DA. Epidemiology of delirium: an overview of research issues and findings. *International Psychogeriatrics* 1991;3(2):149–67.
- Trzepacz PT. Delirium. *Advances in diagnosis, pathophysiology, and treatment. Psychiatric Clinics of North America* 1996; 19(3):429–48.
- Inouye SK, Westendorp RG, Saczynski JS. Delirium in elderly people. *Lancet* 2014;383:911–22.
- Ryan DJ, O'Regan NA, Caoimh RÓ, et al. Delirium in an adult acute hospital population: predictors, prevalence and detection. *BMJ Open* 2013;3:e001772.
- de Lange, E., Verhaak, P.F.M. and van der Meer, K. Prevalence, presentation and prognosis of delirium in older people in the population, at home and in long term care: a review. *Int J Geriatr Psychiatry* 2013, 28(2):127–34. doi: 10.1002/gps.3814
- Scott J, Jauhari S, Pilkington G, Vykopal B, Radhakrishnan R. A short report on point prevalence of delirium in hospitalised older adult patients in Auckland, New Zealand. *Journal of Geriatric Care and Research* 2019, 6(1): 9–14.
- Wass S, Webster PJ, and Nair BR. Delirium in the Elderly: A Review. *Oman Medical Journal*, 2008 Jul; 23(3): 150–157.
- Kukreja D, Günther U, and Popp J. Delirium in the elderly: Current problems with increasing geriatric age. *Indian J Med Res.* 2015 Dec; 142(6): 655–662.
- Chawla R, Myatra SN, Ramakrishnan N, Todi S, Kansal S, and Dash SK. Current practices of mobilization, analgesia, relaxants and sedation in Indian ICUs: A survey conducted by the Indian Society of Critical Care Medicine. *Indian J Crit Care Med* 2014; 18 : 575–84.
- Siddiqi N, House AO, Holmes JD. Occurrence and outcome of delirium in medical on-patients: a systematic literature review. *Age Ageing* 2006. Jul;35(4):350–364. doi:10.1093/ageing/af1005
- Solomon S, Thilakan P, Jayakar J. Prevalence, phenomenology and etiology of delirium in medically ill patients. *International Journal of Research in Medical Sciences*, 2016 Mar; 4(3):920–925
- Khurana P, Sharma PSVN, Avasthi A. Prevalence of delirium in geriatric hospitalized general medical population. *Indian J Psychiatry* 2002; 44:41–6.
- Grover S, Subodh BN, Avasthi A, Chakrabarti S, Kumar S, Sharan P, et al. Prevalence and clinical profile of Delirium: a study from a tertiary care hospital in north India. *Gen Hosp Psychiatry.* 2009;31(1):25–9.
- Sood A, Singh P, Gargi PD. Psychiatric morbidity in non-psychiatric geriatric inpatients. *Indian J Psychiatry* 2006;48:56–61.
- Sharma A, Malhotra S, Grover S, Jindal SK. Incidence, prevalence, risk factor and outcome of delirium in intensive care unit: a study from India. *Gen Hosp Psychiatry.* 2012
- Hein C, Forgues A, Piau A, Sommet A, Vellas B, and Nourhashémi F. Impact of polypharmacy on occurrence of delirium in elderly emergency patients. *Journal of the American Medical Directors Association*, 2014 15, (11): 850.e11 – 850.e15
- Ely EW, Stephens RK, Jackson JC, Thomason JW, Truman B, Gordon S, et al. Current opinions regarding the importance, diagnosis, and management of delirium in the intensive care unit: A survey of 912 healthcare professionals. *Crit Care Med* 2004;32:106–12.
- Moos RH, Schutte KK, Brennan P, et al. Older adults' alcohol consumption and late life drinking problems: a 20 year perspective. *Addiction*, 2009, 104: 1293–1302.
- O'Connell H, Chin A, Cunningham C, et al. Alcohol use disorders in elderly people: redefining an age-old problem in old age. *BMJ*, 2003, 327, 664–667.
- Dunne FJ & Schipperheijn JAM. Alcohol and the elderly: need for greater awareness. *BMJ*, 1989, 298, 1660–1661.
- Our invisible addicts: First report of the Older Persons' Substance Misuse Working Group of the Royal College of Psychiatrists: College Report CR165; June 2011
- McCusker J, Cole M, Bellavance F, Primeau F. Reliability and validity of a new measure of severity of delirium. *Int. Psychogeriatrics* 1998;10:421–433.
- Inouye S, van Dyck C, Alessi C, et al. Clarifying confusion: The confusion assessment method. *Annals of Internal Medicine.* 1990; 113(12); 941–948.
- Ewing JA. Detecting Alcoholism: The CAGE Questionnaire. *JAMA.* 1984;252(14):1905–1907.
- American Psychiatric Association. Diagnostic and statistical manual of mental disorders, 5th edition. Washington, DC: Author; 2013.
- IBM Corp. Released 2016. IBM SPSS Statistics for Windows, Version 24.0. Armonk, NY: IBM Corp.
- Wong CL, Holroyd-Leduc J, Simel DL, et al. Does this patient have delirium? Value of bedside instruments. *JAMA* 2010; 304:779e786.
- Wei LA, Fearing MA, Sternberg EJ, et al. The Confusion Assessment Method: A systematic review of current usage. *J Am Geriatr Soc* 2008;56: 823e830.
- Elie D, Poirier M, Chianetta J, et al. Cognitive effects of antipsychotic dosage and polypharmacy: a study with the BACS in patients with schizophrenia and schizoaffective disorder. *J Psychopharmacol* 2010; 24: 1037–1044.
- Fialová D, Topinková E, Gambassi G, et al. Potentially inappropriate medication use among elderly home care patients in Europe. *JAMA* 2005;293: 1348e1358.
- Vik SA, Maxwell CJ, Hogan DB. Measurement, correlates, and health outcomes of medication adherence among seniors. *Ann Pharmacother* 2004; 38:303e312.

32. Leendertse AJ, Egberts AC, Stoker LJ, et al, HARM Study Group. Frequency of and risk factors for preventable medication-related hospital admission in The Netherlands. *Arch Intern Med* 2008;168:1890e1896.
33. Laroche ML, Charmes JP, Nouaille Y, et al. Is inappropriate medication use a major cause of adverse drug reactions in the elderly? *Br J Clin Pharmacol* 2007; 63:177e186.
34. Handler SM, Wright RM, Ruby CM, et al. Epidemiology of medication-related adverse events in nursing homes. *Am J Geriatr Pharmacother* 2006;4:264e272.
35. Carbonin P, Pahor M, Bernabei R, et al. Is age an independent risk factor of adverse drug reactions in hospitalized medical patients? *J Am Geriatr Soc* 1991;39:1093e1099.
36. Laroche ML, Charmes JP, Nouaille Y, et al. Is inappropriate medication use a major cause of adverse drug reactions in the elderly? *Br J Clin Pharmacol* 2007; 63:177e186.
37. Onder G, Pedone C, Landi F, et al. Adverse drug reactions as cause of hospital admissions: Results from the Italian Group of Pharmacoepidemiology in the Elderly (GIFA). *J Am Geriatr Soc* 2002; 50:1962e1968.
38. Field TS, Gurwitz JH, Avorn J, et al. Risk factors for adverse drug events among nursing home residents. *Arch Intern Med* 2001; 161:1629e1634.
39. Gellad WF, Grenard JL, Marcum ZA. A systematic review of barriers to medication adherence in the elderly: Looking beyond cost and regimen complexity. *Am J Geriatr Pharmacother* 2011; 9:11e23.
40. Lahariya S, Grover S, Bagga S and Sharma A. Phenomenology of delirium among patients admitted to a coronary care unit. *NORDIC JOURNAL OF PSYCHIATRY*, 2016 VOL. 70, NO. 8, 626–632. <http://dx.doi.org/10.1080/08039488.2016.1194467>
41. Hanlon JT, Schmader KE, Ruby CM, et al. Suboptimal prescribing in older inpatients and outpatients. *J Am Geriatr Soc* 2001; 49:200e209.
42. Opondo D, Eslami S, Visscher S, et al. Inappropriateness of medication prescriptions to elderly patients in the primary care setting: a systematic review. *PLoS One*. 2012;7(8):e43617. doi:10.1371/journal.pone.0043617
43. Viktil KK, Blix HS, Moger TA, et al. Polypharmacy as commonly defined is an indicator of limited value in the assessment of drug-related problems. *Br J Clin Pharmacol* 2007; 63:187e195.
44. Rollason V, Vogt N. Reduction of polypharmacy in the elderly: A systemic review of the role of the pharmacist. *Drugs Aging* 2003; 20:817e832.
45. Campbell SE, Seymour DG, Primrose WR. A systematic literature review of factors affecting outcome in older medical patients admitted to hospital. *Age Ageing* 2004; 33:110e115.
46. Yang Q, WangJ, Huang X, Xu Y and Zhang Y. Incidence and risk factors associated with postoperative delirium following primary elective total hip arthroplasty: a retrospective nationwide inpatient sample database study. *BMC Psychiatry* (2020) 20:343 <https://doi.org/10.1186/s12888-020-02742-6>

Insight

# Potential barriers to handle the second wave of COVID-19 in India

Ramdas Ransing, Sujita Kumar Kar, Vikas Menon

## Abstract

Second wave of COVID-19 has infected millions of Indians in a short period of time. India has faced significant challenge to anticipate, plan for, avoid, and handle the second wave of COVID-19 effectively, despite having experience with the first wave of COVID-19 and ample opportunities for preparation of the imminent second wave of COVID-19 pandemic. As a result of which the country suffered with rapid rise in number of cases, high mortality, exhaustion of infrastructure and manpower resources, which ultimately resulted in a big chaos in the country. This article highlights the potential factors that attributed to poor control of second wave of COVID-19 pandemic and their possible remedial measures.

## Key words

COVID-19; India, Pandemic, Risk Factors, Second Wave

## Introduction

The second wave of COVID-19 has affected millions of Indians within a short time.<sup>1</sup> Despite having experience in efficient and effective management of the first wave of COVID-19 and having adequate opportunities for preparation of the impending second wave of COVID-19 pandemic, it appears India has failed to predict, prepare, prevent, and manage the second wave of COVID-19 effectively.<sup>2</sup> The ongoing impact of the second wave on the Indian population is catastrophic and it is likely that this will have long term consequences. Here, we attempt to explore some potential factors which may have hindered India's response to the second wave of COVID-19 and outline some measures to improve them.

## Potential factors

### *Limitations of the Indian public health system:*

Indian health care system is complex, fragmented, includes mixed practitioners (allopathic and traditional medicine), mainly delivered by private sectors, resource deficient government sectors (human, infrastructure, technical expertise), and has inequitable distribution across the geographical regions.<sup>3</sup> The public health measures and treatment guidelines were implemented during the second

wave without sufficient consideration in terms of their feasibility, acceptability in Indian settings. For example, India has started several COVID-19 care centers without considering the human resource deficiency. These centers were closed immediately after the end of the first wave rather than integrating them into the existing public health system. During the second wave, India is making an effort to rebuild new COVID-19 centers which have put an additional financial burden on the government.<sup>4</sup> India has a huge population and there is a rapid spike in the number of cases as a result of which the existing resources and manpower fall short to meet the need.

### *Inadequate utilization of resources:*

Despite increasing the number of patients, Government agencies have prepared or approved limited designated COVID-19 care centers with limited resources (e.g., oxygen, essential drugs, patient beds, and health professionals).<sup>5</sup> However, these limited resources have raised anxiety among the patients and people. The health professionals working in COVID-19 facilities were overburdened due to a surge of patients. On other hand, resources under private sectors and non-COVID-19 hospitals remain unutilized due to poor coordination and collaboration regarding patient care and referral services.

### *Inadequate mobilizations of services:*

Variable level of pre-existing deficiencies in public health systems, inadequate number of dedicated COVID-19 centers in a rural region, and insufficient evaluation about the performance of health care services during the first wave by state research units (e.g., Medical Research Council of Maharashtra) have affected the development of appropriate interventions for people living in rural and remote regions. Currently, the health services are difficult to access and afford by the rural, remote, poor, and marginalized population, due to loss of livelihood for many people during the first wave, reduced per capita income, lack of transport facilities (due to lockdown measures), poor public health infrastructure, huge cost of private health care services, technological illiteracy (no access to information about hospital bed availabilities), inflated prices of essential medicines due to unregulated panic buying and non-availability bed in health care services under government sectors.<sup>6,7</sup>



**Mass vaccination movement:**

The government has initiated mass vaccination movement at free of cost. Many Indian companies in collaboration with international agencies are involved in vaccine production. Furthermore, though some vaccines (e.g., Covaxin) were developed by the union government agencies (Indian Council of Medical Research), lack of coordination among the state –the union government has delayed the transfer of technology or patent to state government-owned vaccine industries (Haffkin Institute). There is tardy rollout of vaccines and inadequate efforts to address vaccine hesitancy among Health Care Workers (HCW) and the public in the first few months. These factors have delayed the nationwide vaccination program.<sup>8</sup>

**Other contextual factors:**

There were ongoing political rallies, protests, and religious gatherings at several places. The duration of exposure and lack of social distancing measures in those contexts increased the chances to acquire COVID-19 infection. Also, there was laxity in continuing to emphasize the need to continue COVID-appropriate behaviours.

**Measures****State control, multi-level interventions and use of technology:**

State government should take administrative control of all private health care facilities and allied services (e.g. distribution of essential medicine) to provide free and affordable health care services to all groups of people. Due to the poor quality of health care services in some of the government settings, people infected with COVID-19 prefer private health care services. In this scenario, the free and affordable health services in private hospitals can be provided through various pre-existing state health insurance systems, e.g. Maharashtra: Mahatma Jyotiba Phule Jan Arogya Yojana,<sup>9</sup> Andra Pradesh: Arogyasri,<sup>10</sup> etc. All private hospitals should dedicate a proportion of beds to the COVID pool and have a tiered/stepped system of COVID management – where less severely ill are managed in peripheral centers and the sick are managed in tertiary care centers. The use of technology for triage and referral services should be encouraged to improve coordination among all sectors and to strengthen the effective delivery of health services. This will reduce panic buying of investigational drugs, anxiety, and fear among the people and will promote a sense of security and equality.

**Screen, test, and treat at the first contact level:**

Most people living in remote and rural regions remain undiagnosed or untreated due to a lack of dedicated COVID-19 testing and treating facilities. Government should encourage rapid antigen COVID-19 screening at every point of service for all suspected persons. If screened positive, patients should be treated or referred to the appropriate level using triage protocol. Early identifications and intervention at the first contact level

will reduce caseloads and the complications of COVID-19 infection. Initial contact with any health care system (e.g., general practitioners, primary health care centers, sub-centers, HCW) should be considered the first contact level and these should have appropriate facilities.

**Involvement of all health care professionals:**

The provision of health care services only under dedicated COVID-19 facilities is currently affecting the early and prompt care to many patients. Considering the human resource deficiency and burnout among the HCW, the general practitioners and clinicians of different specialties should be allowed to screen and treat COVID-19 patients without any restrictions. While mobilizing the COVID-19 health care services during a surge of COVID-19 cases, the government should designate specialized services for non-COVID-19 patients. In addition, every HCW should be empowered to provide primary care to COVID-19 patients, referral services, triaging the patients, and promote vaccination among people at every possible level. Virtual support of experts through the telemedicine model should be provided to minimize the movement of patients with moderate disease from rural and remote regions to urban centers. Management of mild COVID-19 patients and supportive care to the moderate to severe cases of COVID-19 can be delivered with the help of AYUSH practitioners.

**Strengthening the teleconsultation for other medical conditions:**

As the whole focus of healthcare has been shifted to COVID-care, people with various other medical conditions and psychiatric disorders are not getting due attention and care. It is important to strengthen online consultation. The government had taken an initiative to start *e-sanjeevani* OPD, which needs to be promoted and spread on a large scale.

**Conclusion**

To conclude, coordination among the various stakeholders, governments (state, union, and local), public health authorities, and vaccine manufacturers is needed to handle the second wave of the COVID-19 pandemic in India. It seems that the COVID-19 pandemic is not going to be controlled very soon. Many countries witnessed the third wave of pandemic and India is expecting the third wave anytime within few months. Learning from the challenges faced during the second wave will help in enhancing the preparedness to combat the challenges in coming days.

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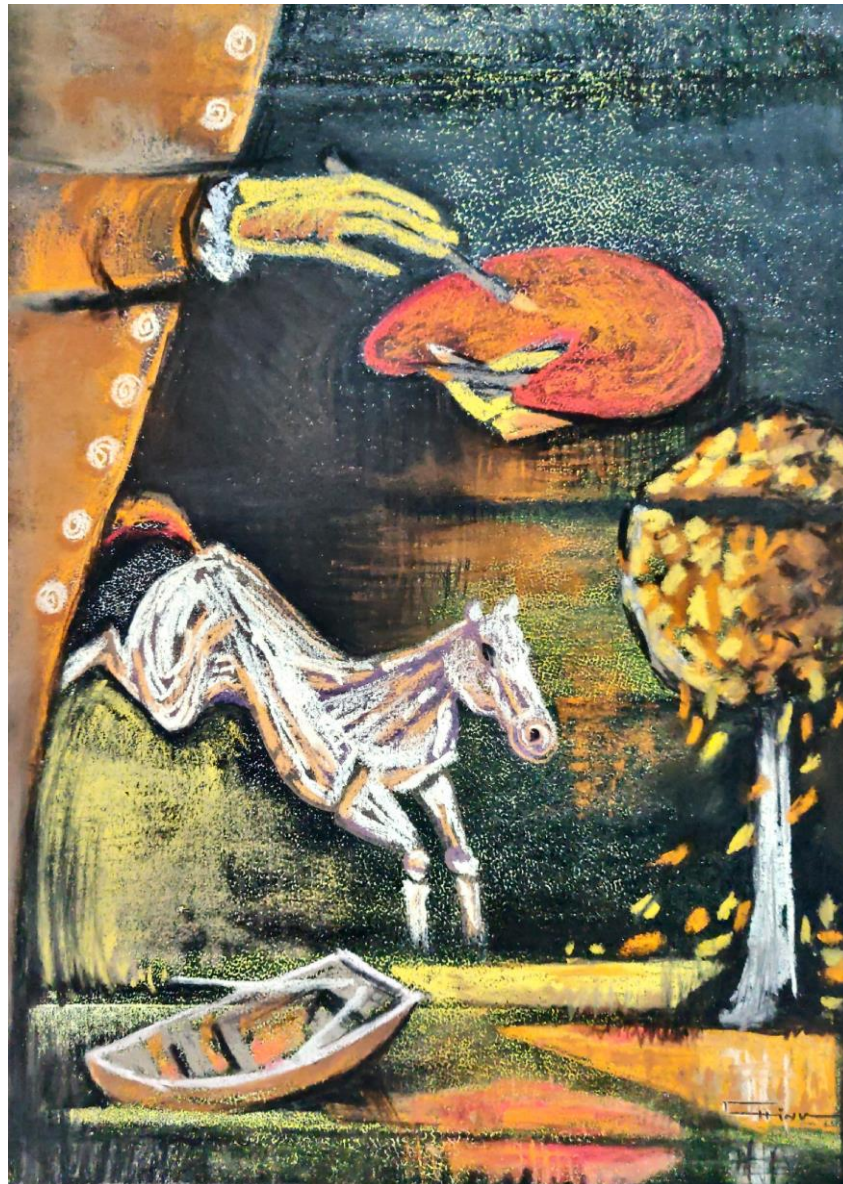
## References

1. Radhakrishnan V, Sen S, Singaravelu N. [Internet] Data | Dissecting India's second COVID-19 wave. *The Hindu*, 13 April 2021, [cited 2021 April 21]. Available at: <https://www.thehindu.com/data/dissecting-indias-second-covid-19-wave/article34305418.ece>.
2. Menon V, Kar SK, Ransing R, et al. Impending second wave of COVID-19 Infections: What India needs to do? *Asia Pac J Public Health* 2021; 1010539521998862.
3. Chokshi M, Patil B, Khanna R, et al. Health systems in India. *J Perinatol* 2016; 36: S9–S12.
4. Mumbai December 16 PU, December 16 2020 UPDATED: Ist 2020 08:37. [Internet] BMC to shut down jumbo Covid facilities by January first week. *India Today*. [cited 2021 April 21]. Available at: <https://www.indiatoday.in/coronavirus-outbreak/story/bmc-to-shut-jumbo-covid-facilities-by-january-first-week-1749900-2020-12-16>
5. Crisis of beds, drugs, O2 cylinders, ventilators... India's health infra under severe strain. [Internet] *The Economic Times*. [cited 2021 April 21]. Available at: <https://economictimes.indiatimes.com/news/india/crisis-of-beds-drugs-o2-cylinders-ventilators-indias-health-infra-under-severe-strain/articleshow/82090674.cms>
6. Chaudhary M, Sodani PR, Das S. Effect of COVID-19 on Economy in India: Some Reflections for Policy and Programme. *Journal of Health Management* 2020; 22: 169–180.
7. PMC fears increase in inflated bills' complaints. [Internet] *Pune News - Times of India*. [cited 2021 April 21]. Available at: <https://timesofindia.indiatimes.com/city/pune/pmc-fears-increase-in-inflated-bills-complaints/articleshow/81713861.cms>
8. Mumbai's Haffkine Institute gets Centre's nod to produce Covaxin; targets 22.8 cr vials of the vaccine per year. [Internet] *cnbctv18.com*. [cited 2021 April 21]. Available at: <https://www.cnbctv18.com/healthcare/mumbais-haffkine-institute-gets-centres-nod-to-produce-covaxin-8957521.htm>
9. Mahatma Jyotirao Phule Jan Arogya Yojana. [Internet] [cited 2021 June 3]. Available at: <https://www.jeevandayee.gov.in/>
10. YSRAHCT Home page. [Internet] YSRAHCT-Government-of-A.P. [cited 2021 June 3]. Available at: <https://www.ysraa.rogysari.ap.gov.in/>

Creative Expressions

## Autumn Light

Chinmayi Nath



The contemporary art title “Autumn Light” was displayed in Suffolk Art Exhibition. This depicts the serenity of morning light is spreading as a rising sun from an artist’s palette. Whilst piercing through the dusky night with the warmth of its amber light falling on shining autumn leaves. The resting rowboat on freezing sparkling stream as it hangs on to its last day, whereas the grazing wild horse gallops through the meadow which creates a sense of movement to this composition. Moreover, explains the beauty of an emblematic English landscape. White wild

horse and autumn leaves enlightens co-existence of life and death in different forms and substances.

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Creative Expressions

## A living requiem to my child

Subas Pradhan

I had an abiding thought  
After I saw my father elderly;  
Struggling to live with respect  
Yet failing to do so miserably!

Once upon a time I was in awe  
Of his dexterity and blast  
But lo, now he looks so drained  
Like a pale shadow of his past.

I have this sick feeling my child.  
I am on his way sooner than later  
Waiting to fall free  
Like a ripe mango from a tree!

Would you be patient and calm  
To give my aching ego some balm  
When I no longer can do my chores  
Or even live on my own scores?

But then, I woke up with a wild jerk..  
My father is still a dignified man.  
I gotta love and live with him  
As best and as long as I can.

Hopefully, that'll bring some smile  
On his face  
And for you, my child.  
To learn how to deal with me  
When I am old and hapless!!

---

Old age has been portrayed as a point of no return. We tend to give up on older people rather easily knowing fully well that we are on that inevitable path sooner than later! Nothing could be more counter-intuitive and insensitive than this. If at all, older people need an extra dose of love and understanding.

Here are some of my thoughts, when I saw my elderly father trying his best to cope with the hassles of his advancing age. It's narrated as an adage to my daughter who's starting her life from the other end of the spectrum! Hopefully, she will someday reflect over this.

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## Manuscript Preparation

# Instructions for authors

## Introduction

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## Editorial process

The *JGCR* follows in principle the Recommendations for the Conduct, Reporting, Editing and Publication of Scholarly Work in Medical Journals by the International Committee of Medical Journal Editors (ICMJE) and the Committee on Publication Ethics (COPE).

Contributions for *JGCR* are accepted for publication on the condition that their substance (whole or part) has not been published or submitted for publication elsewhere, including internet. If there are other papers from same database, then the authors must send all details of previous or simultaneous submissions.

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If a professional medical writer was used for manuscript preparation, their name and contact details must be given in the acknowledgement and any conflicts of interest must be disclosed.

The corresponding author must sign the contributors form on behalf of all the authors, once a manuscript has been accepted. This author must take responsibility for keeping all other named authors informed of the paper's progress.

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.

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### Patient consent and confidentiality

A statement regarding informed consent must be included in the methodology. Studies involving humans must have written informed consent from the patients. Where the individual is not able to give informed consent for lack of mental capacity, 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 legal representative or other authorised person as a matter of medical ethics.

The authors 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; and must archive the signed informed consent form.

The process used to assess the subject's capacity to give informed consent and safeguards included in the study design for protection of human subjects should be mentioned.

### Publication Ethics

Authors should consider all ethical issues relevant to publication. This includes (but not restricted to) avoiding multiple submission, plagiarism and manipulation of figures/data. Any concerns in this regard must be brought to the attention of the Editor and these will be investigated by procedures recommended by the Committee on Publication Ethics (COPE). If conclusive evidence of misconduct is found, the *JGCR* undertakes to publish a correction or retraction of article as necessary.

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

## Type of manuscripts

### Research article

The research article should normally be between 3000 and 4000 words in length (excluding references, tables and figure legends). Only the essential references should be given, preferably not more than 25 beyond those describing statistical procedures, 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.

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, and Conclusions.

Key words: Up to six key words should be provided. Please use Medical Subject Headings (**MeSH**) as key words.

Article should have Introduction, Method, Results and Discussion sections. Authors may use relevant subheadings under these sections. Introductions should normally be no more than one paragraph; longer ones may be allowed for new and unusual subjects. The Discussion should always include limitations of the paper to ensure balance. A paragraph of practical implications of the observations is encouraged.

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Short reports (brief communications) are based on original research, observational or evaluation studies, clinical audits etc. These are structured as research articles and require an unstructured abstract of one paragraph, not exceeding 100 words. The report should not exceed 1500 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.

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Case reports and series require up to 100 word abstract, and the length should not exceed 1000 words (excluding references, tables and figure legends). The written informed consent of the individuals must be obtained and submitted with the manuscript. 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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These articles focus on highly topical issues based on evidence. Professional perspectives, viewpoints, commentary and opinion are included here. It can also include clinical review relevant to the practitioners. These articles are usually more broad-based than editorials. They can include tables and figures. Usual length is around 1500 words (excluding references) with an unstructured abstract up to 100 words.

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

### Insight

These articles include variety of topics which may reflect an individual perception, involvement or contribution to geriatric care. It can include good practice examples, inspirational experiences and highlight neglected areas. Essays in descriptive prose can be submitted on any topic related to geriatric care. These are usually written by a single author but a second author may be included occasionally. The length of the articles may vary considerably depending upon the topic and may be up to 2000 words excluding references. An unstructured summary of around 100 words is preferred but not mandatory. Use of subheadings is encouraged.

### First person account

In first person accounts *JGCR* publishes experiences of older persons or their care providers about the care and concerns of the elderly, that can be considered significant and provide learning points for others.

### Columns

These comprise a range of materials considered to be of interest to readers of the *JGCR*. This section includes reviews on book, film or web resources as short articles up to 400 words. Some other examples include News regarding developments that can influence the care of elderly, poems, paintings, photographs, quotations, information about important internet links, etc. These articles are published individually or as fillers at the end of other articles where space allows.

## Preparation of Manuscripts

Prepare article in Word, A4 size page, with 1 inch margin, double spaced throughout.

### Article information page

1. Type of manuscript:
2. Title of the article: Brief and relevant
3. Running title / key words / subject area
4. Name of the authors: (underline Last name)
5. Details of authors: academic degrees, professional position, institutional affiliations, professional address, email
6. Corresponding author: name, address, phone, fax, e-mail and ORCID
7. Contributions of each author:
8. Word count for abstract:
9. Word count for the text (excluding references):
10. Number of photographs/images (to be provided separately in high quality JPEG files):
11. Acknowledgement:
12. Competing interests:
13. Funding
14. Suggested Reviewers Up to 3, (not from authors' institution). Name, Position, Institution and Email

No identifiable details beyond this page.

### Article Text pages

The article text pages do not contain any identifiable information, for a blind review. It should contain: Title of the article, Abstract and Key words (depending upon the article type) and the Text of the article. Please refer to article types for detail information. As a general rule, please have an Introduction and Conclusion subheadings whenever possible along with other required subheadings.

### 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 [ICMJE 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/>.

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Tables should be numbered and have an appropriate heading. The tables should be mentioned in the text such as Table 1 and the desired position in the manuscript should be indicated. Information in tables must not be duplicated in the text. The heading of the table, together with any footnotes or comments, should be self-explanatory. The table should be placed at the end of the manuscript after references, each in a separate page. Authors must obtain written 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.

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Figures must be of high quality and provided in JPEG files separately. They should be clearly numbered and

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