EDITORIAL

Loneliness; a risk factor for neurological diseases and death

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For the human brain, loneliness is a biological state of high alert that accelerates neurological disease. The brain perceives a lack of social ties as a survival threat, triggering inflammatory cascades that physically alter neural processing. This risk is twofold: it stems from both social isolation—the objective lack of contact—and loneliness, the subjective feeling of being alone. Together, these overlooked stressors represent a physiological crisis affecting a vast portion of the population. Approximately 24% of community-living Americans aged 65 or older are socially isolated, while loneliness affects 35% of adults aged 45 and older and 43% of those over 60.[1] While data on these effects remains limited in Pakistan, Japan reported some of the highest rates in Asia, and according to government surveys, nearly half of the Japanese elderly population experiences loneliness and social isolation.[2]

A massive meta-analysis of 70 prospective studies, covering 3.4 million participants, revealed that social isolation, loneliness, and living alone are each independent and significant predictors of mortality. Even after adjusting for demographic and health variables, the risk of death rose by 26% for those reporting loneliness, 29% for the socially isolated, and 32% for those living alone.[3] Complementing these findings, a comprehensive review by Holt-Lunstad and colleagues across 148 independent studies found that stronger social connections are associated with a 50% increase in the likelihood of survival. When measuring multidimensional social integration, that survival advantage jumped to 91%. The magnitude of these effects is substantial, proving comparable to well-established behavioural and biomedical risk factors.[4] Loneliness also elevates the risk of cerebrovascular diseases like stroke. Among U.S. cohorts, baseline loneliness significantly increased incident stroke risk, even after controlling for confounding variables. Longitudinal analyses demonstrate that persistent loneliness poses a greater threat than transient episodes, an association that remains robust even after adjusting for depressive symptoms.[5]

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To measure loneliness or social isolation, researchers rely on validated psychometric instruments. These tools are selected based on whether they intend to measure the subjective experience of the individual or the objective structure of their social environment. A popular instrument for assessing subjective loneliness is the UCLA Loneliness Scale (Version 3). Developed by Russell, this scale measures loneliness as a unidimensional emotional distress resulting from a perceived gap between desired and actual social contact.[6] For a more nuanced view, the De Jong Gierveld Loneliness Scale is employed.[7] Unlike the UCLA scale, this tool differentiates between emotional loneliness (the absence of a close, intimate attachment like a partner) and social loneliness (the absence of a broader social network or "community" feel). To measure social isolation rather than loneliness, the Lubben Social Network Scale (LSNS-6) is the clinical standard.[8] This scale focusses on the frequency of contact and the level of perceived support from two specific areas: family and friends. Finally, in the context of neurological disease, these scales are often paired with the Berkman-Salfeld Social Network Index, which looks at marital status, religious membership, and volunteer participation to provide a macro-level view of social integration.[9] Combining these tools allows clinicians to determine if a patient's risk for cognitive decline is driven by their physical environment (social isolation) or their internal perception of their relationships (loneliness).

In South Asia, the traditional, protective joint family narrative is shifting due to urbanization and migration. The most robust data from India comes from the Longitudinal Ageing Study in India (LASI). Findings from this national cohort indicate that approximately 20.5% of adults aged 45 and older report moderate loneliness, while 13.3% report severe loneliness.[10] Crucially, these feelings of loneliness are significantly associated with poorer cognitive performance across multiple areas, including memory and executive function.[11] In urban settings, where traditional kinship ties are deteriorating more quickly, the prevalence of loneliness is often higher, acting as a standalone risk factor for late-life depression and subsequent cognitive decline.[12]

In Pakistan, industrialization has eroded the joint family system, leaving the elderly increasingly isolated as younger generations move for socio-economic reasons.

Research using the Social Isolation Scale (SIS) on 600 older adults identifies key demographic risks.[13] Notably, elderly males in Pakistan report higher isolation than females, often due to lower emotional support and a historical reliance on employment for social networks. Living arrangements are decisive: those in nuclear families or living alone exhibit higher isolation than those in joint families.[13]

Furthermore, marital status and education are major determinants in Pakistan. Spousal death is a leading cause of isolation, while higher education serves as a protective factor. Graduate-level individuals often maintain social well-being through community mentorship, reading, and welfare activities.[13] Future South Asian research must prioritize longitudinal interventions addressing gender-specific isolation and the urban-rural divide.

Addressing risks of loneliness and social isolation requires a multi-faceted clinical and social approach. One approach is Cognitive Behavioral Therapy (CBT), or psychological interventions that are used to reshape "maladaptive social cognitions," the tendency for lonely individuals to perceive social interactions as threatening or inherently negative.[14] In a similar vein, health systems are beginning to integrate "social prescribing," where clinicians refer patients to community-based programmes to reduce objective isolation and improve social support networks.[15] Further, promoting physical activity and sleep hygiene is critical, as isolated individuals are statistically more likely to engage in sedentary behaviours that exacerbate neurological risks.[16] Finally, while in-person contact is ideal, technological tools and video-mediated communication are increasingly used to bridge the gap for homebound older adults.[17]

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