Loneliness and health

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Loneliness is associated with increased mortality and a higher risk of some cardiovascular, metabolic and neurological disorders. Co-ordinated approaches at the individual, community and society levels are needed to reduce loneliness.

> Preventing and alleviating loneliness requires a multi-pronged and multi-level approach

Loneliness is defined as the distress that accompanies a perceived discrepancy between desired and actual social relationships. The discrepancy usually arises from having relationships that are of poorer quality than wanted. Loneliness is not synonymous with objective isolation (which is living alone or having few social interactions); thus, people interacting with others can be lonely and, conversely, be alone yet not lonely.

Measures of loneliness have not yet been widely adopted in clinical settings, but in research settings they consist of either a single direct question such as 'How often do you feel lonely?' or multiple indirect questions about feelings related to loneliness (such as 'how often do you feel left out?'). Examples of the latter are the R-UCLA and the De Jong Gierveld Loneliness Scale. Indirect measures of loneliness in children and adolescents include the Loneliness and Social Satisfaction Questionnaire, the Children's Loneliness and Social Dissatisfaction Scale and the Loneliness and Aloneness Scale for Children and Adolescents.

Estimates of loneliness prevalence are influenced by the type of loneliness measure and the cut-offs used to distinguish individuals who are lonely from those who are not. No consensus has been reached on appropriate cut-offs. One relatively consistent finding is that the frequency of loneliness (where response options can include never, rarely, sometimes, often and always) is highest in young adulthood, declines in middle adulthood and early old age, and then increases into oldest old age[1]. Contrary to some reports, there is currently little evidence for a loneliness epidemic. Loneliness frequency levels did not differ in one study of 57–65 year olds between 2005 and 2015, and, although objective isolation increased, loneliness decreased between 1978 and 2009 in US college students[2]. Moreover, contrary to expectations, the COVID-19 pandemic has had a relatively small effect on the prevalence of frequent loneliness even though objective isolation was markedly more prevalent[3]. Research is ongoing to understand which sub-populations of society, such as older adults living in long-term care facilities, are at greater risk of persistent and elevated levels of loneliness.

Loneliness is associated with a range of adverse health outcomes, such as effects on mortality, morbidity, health behaviours and health-care utilization[4] (FIG. 1). In one meta-analysis of 70 studies, individuals who were lonely had 26% greater odds of early mortality than non-lonely individuals[5]. Moreover, loneliness is associated with increased risk of cardiovascular disease (including coronary heart disease and stroke), metabolic syndrome, functional disability, dementia and mild cognitive impairment[6]. Loneliness can also affect mental and emotional health and has been associated with depression, lower well-being, anxiety, suicidal ideation and, in older adults, susceptibility to elder abuse[6]. From childhood through early to middle adulthood, loneliness has also been associated with impaired executive control, which supports behavioural and emotional self-control[6]. For example, in adolescents and younger adults, this is evident in impaired control of eating behaviour among individuals who are lonely. Loneliness is also prospectively associated with poor sleep quality[6]. Although data are limited, loneliness has been associated with increased rates of hospitalization admissions and readmissions, longer hospital stays and increased frequency of physician visits among older adults and veterans[7].

Loneliness is often erroneously considered an individual problem, a personal failing. Accordingly, most interventions have focused on the individual, offering social contact, support and skills training, as well as cognitive behavioural treatment to address maladaptive social cognitions[8]. However, the growing evidence base linking loneliness with adverse health outcomes has raised the profile of loneliness to a public health concern. In the UK, this recognition resulted in the establishment of a Loneliness Minister in 2018. This was followed by the launch of a 'social prescribing' approach by the National Health Service, by which doctors can prescribe patients informally identified as lonely to take part in a community social activity at a subsidized rate. In Australia, the Ending Loneliness Together initiative was launched to raise awareness, implement standardized measures of loneliness and provide health practitioners and community care services with evidence-based approaches to alleviate loneliness. The USA does not have a unified national approach to loneliness, nor have physicians been advised how to assess for loneliness. This is beginning to change with the publication of the National Academies of Sciences, Engineering and Medicine consensus report on Social Isolation and Loneliness in

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https://doi.org/10.1038/s41572-022-00355-9

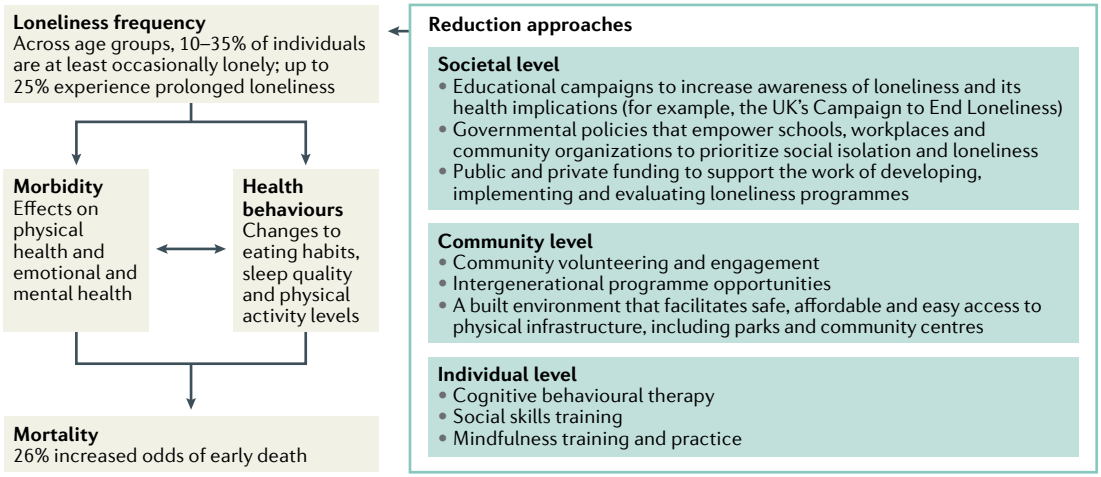

Fig. 1 | **Effects of loneliness on health and loneliness reduction approaches.** Loneliness has diverse effects on health and health behaviours. Societal, community and individual-level approaches can be used to reduce loneliness; evidence is limited regarding the effects of loneliness reduction on health. Not shown are reverse pathways from morbidity and health behaviours to loneliness.

Older Adults: Opportunities for the Health Care System[4] and their recommendation that measurement be standardized to use the three-item UCLA Loneliness Scale. However, unlike the UK, health-care practitioners in the USA typically lack information on organizations and resources to which they can refer patients who present as lonely. Organizations such as the Coalition to End Social Isolation and Loneliness are promoting national awareness of loneliness and its effects on individuals, communities and society. The World Health Organization together with the United Nations have acknowledged the breadth of the problem of loneliness and social isolation and have assumed a role in the management of loneliness and social isolation at the global level. However, evidence-based loneliness programmes and interventions are lacking, leaving a research gap that needs filling to justify scaling of interventions.

Preventing and alleviating loneliness requires a multi-pronged and multi-level approach that includes individuals, community organizations and society (FIG. 1). In addition, data are needed to demonstrate that loneliness reduction programmes have health benefits. Among the few studies providing evidence of health benefits, mindfulness practice has been shown to reduce loneliness[9] and to shift gene expression profiles away from a predominantly pro-inflammatory profile associated with increased risk for chronic diseases. Moreover, an exercise programme provided to older adults by a health insurance company in the USA showed benefits for both physical activity and loneliness levels[10]. Nevertheless, many of the physiological processes that lead to poor health in older age are not reversible, even when loneliness is, pointing to the need to prevent loneliness early and across the life course. Policies are needed to establish standardized procedures to measure and document loneliness in health-care systems. Resources are needed for local community organizations and for experts to evaluate and disseminate scalable approaches to loneliness. Finally, parallel efforts in education, employment and other sectors are necessary to cultivate a society that takes social connection seriously.

For further information, please see the National Academies of Sciences, Engineering and Medicine consensus report on Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System[4], the Campaign to End Loneliness and the International Loneliness and Social Isolation Research Network.

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Acknowledgements
The author gratefully acknowledges the National Institute on Aging and the National Institutes of Health for their ongoing support of the National Social Life, Health and Aging Project (R01AG021487; R37AG030481; R01AG033903; R01AG043538; R01AG048511; R01AG043538-08S1).

Competing interests
The author declares no competing interests.

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