Loneliness in adults:

Evidence-based research and interventions for NPs

Abstract: Loneliness is a complex psychophysiologic concept, a health risk factor, and a worrisome trend across the globe. This article reviews the latest research on the negative health effects associated with loneliness. Evidence-based NP interventions aimed at improving patients' perceived social connections are also explored.

By Tamera Pearson, PhD, FNP, ACNP

Loneliness is defined as a feeling or personal perception that one's social relationships and connections are lacking. The prevalence of loneliness is estimated to be 40% to 69% in the US and 10% to 60% in European countries.[1–4] Reported incidence of loneliness may differ based on the measurement tool used or the influence of cultural beliefs. One common finding is that loneliness is a pervasive and universal issue for all individuals, regardless of age, gender, income, or education.

Some researchers advocate that loneliness is a significant public health issue that may impact healthcare costs in the US.[5,6] Loneliness has been officially recognized as a determinant of health by the World Health Organization (WHO) and in the United Kingdom.[7,8] Over the past decade, numerous research studies have demonstrated that loneliness is correlated with poorer health status.[6,9–12] Investigations also show that loneliness is associated with increased mortality.[2,13–16] This article provides an integrative overview of the evidence on loneliness as a psychophysiologic health risk, discusses contributing factors to loneliness, and suggests potential interventions for NPs to consider for their patients.

Search methods

The author conducted her evidence search in the Cumulative Index to Nursing and Allied Health Literature (CINAHL), PubMed, and EBSCO Host interfaces to MEDLINE. Search terms included "loneliness" or "lonely," "physical health," and "disease" or specific conditions (including diabetes, dementia, heart disease, and chronic obstructive pulmonary disease). The search was limited to English language, peer-reviewed publications within the past 10 years. Initially, this resulted in 1,536 articles. The author then limited the

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search to the past 5 years (2014 to 2019), full-text links, and to adult populations, which resulted in 155 titles that were reviewed.

The author excluded publications with a sole focus on social isolation or isolation due to cancer treatment or acute injury. In the end, 39 articles met the inclusion criteria. The author also examined reference lists of the identified articles for additional key studies and publications, which have been included in this overview to provide a broad perspective.

Loneliness versus social isolation

Researchers often aim to delineate the difference between loneliness and social isolation as two separate concepts with distinct meanings. Loneliness is usually defined as a subjective state, while social isolation is typically thought of as an objective condition. Individuals can experience loneliness when physically alone and when around others because of a lack of emotional and psychological connection with significant individuals. Social isolation is described in terms of the number of notable interactions with others over a specified time. Loneliness is described as perceived social isolation or a believed inadequacy in personal or community relationships. The overlapping issues of loneliness and social isolation may require researchers to consider both when conducting reviews of their negative health impacts.[10]

Stress reactivity could be one of the main processes that account for the effects of loneliness on health.

Meta-analysis is challenging because of the incongruent use and measurement of the terms "loneliness" and "social isolation." This difficulty led to the recent appeal for a transdisciplinary approach to defining loneliness.[17] Although developing and using a common definition of loneliness is a logical academic quest, implementing that plan would require global efforts. More important, research indicates no difference between the objective and subjective measures of loneliness and social isolation in terms of the negative effects on mortality.[14] Currently, the literature shows that social isolation and loneliness are indeed closely intertwined, both with reciprocal and simultaneous effects on physical and mental health.[13]

Mind-body connection

The physical impact of loneliness has been documented for over 60 years. In 1955, Dr. Hildegard Peplau, a nurse theorist, wrote that, "True loneliness is so painful that the patient has to hide it, disguise it, defend himself against it. His defenses are what the nurse must deal with as she helps him learn how to live productively with people."[18] The interconnection of the mind and body is the basis of the complex psychophysiologic consequences of loneliness. Whether isolation is enumerated in terms of the number of physical contacts or perceived as an emotional disconnect, morbidity and mortality are both negatively impacted.

Scientists note that the brain has neuroendocrine mechanisms that respond to social input and emotions commonly associated with the stress response.[19] (See *Neuroendocrine–immune system regulation of the stress response*.) Researchers point out that stress reactivity could be one of the main processes that account for the effects of loneliness on health.[20] The main pathways controlling the physical reaction to mental stress are the hypothalamic-pituitary-adrenocortical (HPA) axis and the sympathetic adrenal-medullary axis when triggered by the prefrontal and limbic regions of the brain.[19] Stress activates a cascade of responses that result in increased levels of cortisol, activation of the immune system, inflammation, and elevated glucose levels, all of which contribute to disease over time. The link between the mental stress of loneliness and consequential poor health is extremely complex. Psychosocial variables that cause loneliness and the intricacies of the physiologic systems involved in the underlying stress response are difficult to quantify. Researchers have engaged in diverse types of studies using many different measurements to try to understand the health effects of loneliness. The most recent findings from such efforts are presented below.

Health effects of loneliness. The health consequences of loneliness are multifaceted and result in both psychological and physiologic issues.[12,21-24] Research is aimed at understanding the role that loneliness plays in both the development and worsening of health problems.[15,16,25] Many acute conditions and chronic diseases are either initiated or exacerbated by the physiologic effects of emotional and mental stress.[26,27]

Stress and inflammation. Research indicates that loneliness, as a source of stress, may influence

dysregulation of the HPA axis.[28] A case-cohort study of middle-aged adults found that social isolation, defined as having few close relationships or social ties, which is more in line with the current delineation of loneliness, is a significant risk factor for elevated c-reactive protein (CRP) levels.[29] Another prospective study discovered a significant independent association between loneliness and higher levels of glycated hemoglobin regardless of a diabetes mellitus diagnosis, which could be a result of impairment of the negative feedback loop of the HPA axis because of high cortisol levels.[30] Yet, recent retrospective studies have not detected the same direct effect or association between loneliness and elevated CRP, but investigators question whether a one-time measure can accurately assess the inflammatory biomarkers that influence chronic disease states.[31,32]

Researchers suggest that additional prospective longitudinal studies are needed to better understand persistent inflammatory changes that occur in relationship to chronic loneliness. Consistent findings in the research indicate that stress contributes to loneliness, which influences physiologic responses, inflammatory reactions, and immune mechanisms.[20,30,33] This multidimensional interconnection between loneliness and stress is evident in the alterations that lead to poor health.

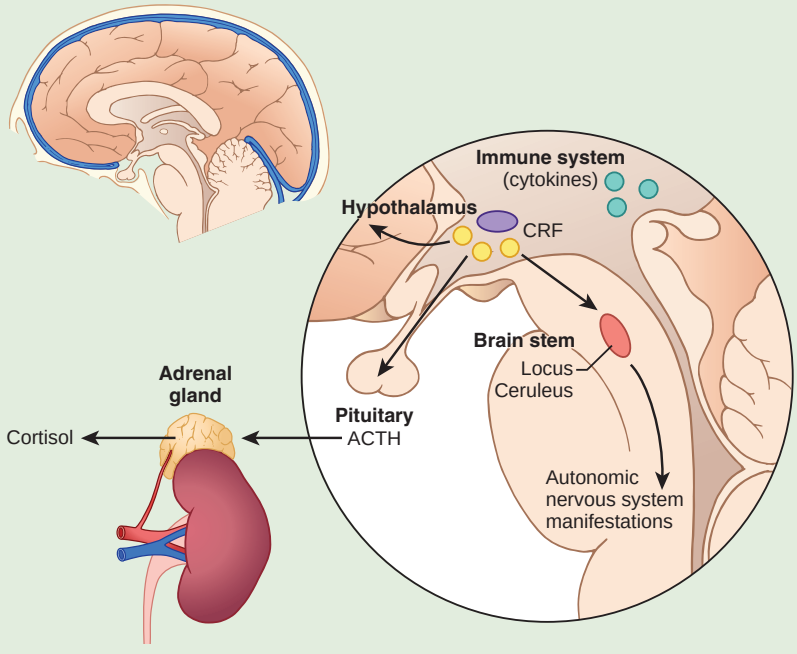
Cardiovascular disorders. Ten years ago, a retrospective study of over 3,000 participants revealed a significant association between loneliness and coronary heart disease in women, after controlling for confounding variables.[21] Over the past decade, studies have noted the negative effects of loneliness on the cardiovascular system, specifically observing an association with coronary artery disease and chronic heart failure, as well as problems and risks such as hypertension and high cholesterol.[10,21,22,29,34,35]

In addition, loneliness is associated with unhealthy behaviors such as sedentary lifestyle, smoking, alcohol use, and with health risks such as obesity.[14,15,19,35-39] To separate out the role of risks factors, such as lack of physical activity, from the effect of loneliness on the development of cardiovascular disease is difficult. Although the exact physiologic mechanism of loneliness on the cardiovascular system is not yet understood, researchers believe the adverse reaction of loneliness is cumulative.[38] The intricacy of the psychological and physiologic connection is illustrated in a recent cross-sectional data analysis that found an association between loneliness and cardiovascular disease in women, but further note that this link was significantly influenced by depression.[34]

Depression. The coexistence of depression as a major factor is one of the commonly reported findings from various research efforts on loneliness as a health problem.[2-4,10,12,23,33,34,36,38,40,41] A recent meta-analysis of 88 studies that investigated the association between loneliness and depression established that loneliness

Neuroendocrine-immune system regulation of the stress response

Research findings demonstrate that an individual's stress reactivity may be one of the main processes that account for the effects of loneliness on health. Each component of the systemic stress response results in a potential negative impact on the body.



CRF = corticotropin-releasing factor; ACTH = adrenocorticotropic hormone.

Source: Grossman SC, Porth CM. *Porth's Pathophysiology Concepts of Altered Health States*. 9th ed. Philadelphia, PA: Lippincott Williams & Wilkins; 2014.

has a consistent and significant effect on worsening levels of depression across age groups and participant types (caregivers, patients, older adults, adolescents, and people from a variety of backgrounds).[23] Researchers discuss the difficult situation that occurs when society leaves individuals alone with their problems, which tends to result in self-imposed social distancing, ensuing loneliness and more depression. Other investigators suggest that depression contributes to, and intensifies, loneliness.[33,38,40] The circular nature of loneliness as a factor in health issues is noted in the results of a 6-year longitudinal study that concludes loneliness affects and was affected by depression.[16] A recent prospective observational study reports that loneliness is not only associated with depression but also with generalized anxiety disorder, another mental health problem.[36]

The impact of loneliness and additional detrimental outcomes. Attempting to separate the distinct health effects of loneliness is challenging because of the mind-body connection and the interwoven physiologic mechanisms that lead to illness and disease. Loneliness is a complex phenomenon that affects both mental and physical health in a negative manner. Scientists have studied the effect of loneliness on a variety of specific health issues and note that loneliness is associated with many detrimental outcomes and overall negative well-being.

The health risk of loneliness and social isolation are comparable to health hazards, such as physical inactivity, obesity, unsafe sexual activity, injury and violence, substance use, immunization deficiencies, and lack of access to healthcare.[14] This finding exemplifies the tremendous impact loneliness can have on mental and physical health. Individuals who are lonely experience more pain and fatigue and report overall poorer health compared with less lonely adults.[12] Loneliness is associated with decreased functional status and contributes to an exacerbated decline in function over time.[16,24,26]

In addition to the health risk that loneliness poses, current literature seems to suggest a type of reciprocal relationship between physical health and loneliness. Individuals with a higher number of chronic diseases and physical disorders have increased loneliness, which is exacerbated by stress and depression.[26,40] Those experiencing loneliness have more health problems, increased morbidity, and higher mortality.[13,42] Individuals who are lonely actually feel worse when they are sick than nonlonely individuals who are sick. A recent prospective study demonstrated this phenomenon when participants who scored high on baseline loneliness using the Short Loneliness Scale also reported more severe illness than those who were less lonely, when infected with the same common cold virus.[25] Regardless of whether loneliness or poor physical health occur first, a synergistic worsening of both often transpires.

Older adults

Although loneliness affects individuals of all ages and the literature included in this review is focused on adults, some studies address the impacts of loneliness specifically on older adults. Investigators report that loneliness is associated with decreased mental cognition, processing speed, and memory recall in older adults.[24] Loneliness is significantly associated with cardiovascular disease, diabetes mellitus, and migraines in older adult women and cardiovascular disease and migraines in older adult men, all of which are augmented when stress, poor sleep, inactivity, or smoking are present.[27]

Another disturbing finding is that loneliness is associated with suicidal ideation in older adults.[36,43] Older adults in a different study indicated that they did not believe their primary care providers understand mental and emotional problems, nor the importance of a close relationship in order to discuss sensitive issues like loneliness.[44] Yet, additional research found that older adults want their providers to talk about social issues like loneliness and offer referrals for those issues.[45] Although the research suggests diverse viewpoints on what older adults are comfortable discussing, the negative effect that loneliness can have on an older person's mental and physical well-being must be addressed by primary care providers.

Healthcare use

Several studies report that loneliness is associated with an increased number of primary care- and medical-related community health visits. A prospective study over 5 years in Germany, a retrospective study of US data, and a prospective study in Sweden all conclude that individuals with loneliness seek more frequent ambulatory healthcare services.[3,6,36] Some inconsistent findings are reported in a recent systematic review in which older adults with less social support had increased readmissions and longer hospitalizations, but did not place greater demands on ambulatory

services.[46] The conclusion is that older patients' visits to ambulatory care centers are warranted by their health status, independent of their social support situations.[46] The fact that older adults with loneliness require more evaluation and treatment in ambulatory settings is the consistent finding among all of the research. An interconnection between mind and body underlies the illnesses that prompt healthcare use; the essential question becomes how to best manage patient needs and promote health.

Interventions

Although research over the past 2 decades has clearly established that loneliness affects health in a negative manner, the psychophysiologic mechanisms involved are not completely understood, so interventions are lagging. The first step to reduce adverse health reactions that result from loneliness is for primary care providers to be aware of the extent and significance of the problem among patients. Interventions for loneliness must aim at improving social networks and quality relationships; social support can be a buffer against loneliness.[8,13,40,43,47] This is demonstrated in a home phone monitoring study that showed older adults with the fewest number of incoming calls had higher levels of loneliness.[48] Participants with the most incoming calls reported less loneliness, leaving the researchers to recommend scheduled calls from family and friends as an intervention to consider. Developing relationships, maintaining communication with a significant social support network, and avoiding social isolation are important in the treatment of loneliness.

Addressing loneliness can be challenging, which is demonstrated in a few of the studies on potential interventions. When women with high loneliness scores and known chronic disease were interviewed in a qualitative study, they described managing their loneliness by remembering happy times, staying busy, and getting out.[26] However, underlying chronic disease often hindered their options. Adults in a study by Kharicha and colleagues were reluctant to engage in any community intervention designed to offer help with loneliness because they said such feelings are a complex and private matter.[44] Yet, the same participants were open to becoming involved in group activities that were based on common interest. Older adults in a study by Gaggioli and colleagues were willing to join in weekly meetings with several children where they were asked to reminisce and share stories.[49] Participants who took part in the group meetings with children reported less loneliness and the children expressed more positive views about aging at the conclusion of the study. Yet, group interventions are not appropriate for all patients, some patients need more individualized plans. For other patients struggling with loneliness, traditional cognitive behavioral therapy or medications to treat the associated depression could be beneficial.[20]

Research studies also demonstrate a reduction in loneliness after completing individual or group mindfulness-based stress reduction courses.[50,51] Findings from a randomized controlled trial demonstrated that mindfulness training offered via telephone conference with adults in community settings led to a 22% reduction of loneliness scores over a 2-week period.[52] Investigators suspect the promising results seen in this short time are attributable to fostering an ability to monitor and accept feelings with a calmness that may allow loneliness to dissipate and encourage greater daily engagement with others.[52]

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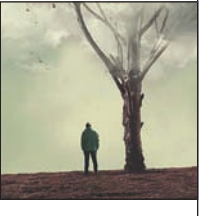

Technology may hold some promise in the endeavors to help patients work through their loneliness, thereby avoiding the negative health consequences. Studies show beneficial results from the use of videoconferencing and general internet use as a way to stay in touch with others and reduce loneliness.[51,53,54] Although outcomes from the use of videoconferences were positive for older adult participants, researchers identified several barriers to be considered.[54] Hinderances to the implementation of a video chat intervention include staff turnover, which meant lack of assistance with the technology in care facilities, and scheduling conflicts for family and friends that limited their ability to commit to connect at a specific time.[54] Other researchers report that higher levels of general internet use is predictive of reduced levels of loneliness.[53] Appropriate functioning equipment and knowledge of how to

use the devices are paramount to the usefulness for technology-based interventions.

Another interesting experiment that reduces loneliness, at least in older adults, is intergenerational living. This novel approach to living situations started in the Netherlands to address two problems: housing costs for university students or young people in general, and the growing need for older adults to have contact and someone to check on them.[55] Canada has also put an emphasis on addressing loneliness in its society and has implemented promotion of integrational living.[56] The US is beginning to explore the alternative of intergenerational living. Case Western University in Cleveland, Ohio, and Western University in London, Ontario, are two examples of institutions that have initiated and supported living arrangements of university students residing in long-term care or retirement facilities.[55] The results of intergenerational living are a benefit to the younger household member by providing housing and to the older adults by decreasing their loneliness and allowing for monitoring of physical needs and assistance with simple tasks.[55] As with many health problems, the intervention or treatments to help reduce loneliness will need to be individualized. (See *Key interventions for loneliness*.)

Key interventions for loneliness

To improve and build social networks and avoid social isolation:

- schedule incoming phone calls from friends and family
- routinely use online video engagement tools
- frequently use social media
- interact with children on a regular basis
- pursue cognitive behavioral therapy
- take antidepressant medications when prescribed
- participate in hobby or special interest group activities
- practice mindfulness training
- maintain an active schedule with outings in the community
- explore intergenerational living arrangements.

Implications for NPs

- Be aware of loneliness as a health hazard.
- Know the common risks for loneliness.
- Recognize negative health effects of loneliness.
- Assess for potential loneliness.
- Understand that sensitivity is essential.
- Schedule longer or more frequent patient visits.
- Consider loneliness in patients with complaints of stress.
- Consider loneliness in patients with diagnosis of depression.
- Suggest key interventions, as appropriate.
- Develop a resource/referral package that includes social and community organizations.
- Treat underlying medical problems while initiating interventions for loneliness.
- Schedule follow-up appointments. Continual encouragement is imperative.

Implications for NPs

As advanced practice providers, NPs are in a key position to address loneliness as a health problem. (See *Implications for NPs*.) The first step is to be aware of the problem, the common risks, and the multitude of health effects that are associated with loneliness, especially in older patients. Next, integrating an assessment of an individual patient's loneliness status will require a clear but sensitive discussion that may involve more than one visit. As noted above, symptoms and complaints of stress or depression could be the presenting complaint of patients suffering from loneliness.

The social and emotional circumstances that are the source of loneliness are unique for each person and individual physiologic responses vary in degree. Research studies center on stress and depression as underlying and related factors causing loneliness that in turn affects health in many ways. Treating the related emotional and physical problems with medication may be warranted. When the loneliness has also been identified as a potential contributor to a patient's poor overall well-being or specific health problems, additional interventions could be explored.

Clearly the NP cannot assume all the responsibility for possible interventions to reduce loneliness. Depending on the location and type of setting NPs practice in, the resources available will vary and patient's mobility will play a role in the appropriateness of different interventions. Therefore, having a list of local social and community organization contacts and referral agencies is imperative. Interprofessional teams working together in primary care are the ideal model to help address loneliness interventions, but practice settings with this type of support are still rare, especially in small rural settings. Recommending simple ideas and activities, based on the current research, may be a constructive way for NPs to begin addressing the

issue of loneliness. Consider suggesting that the patient set up scheduled phone calls with family and friends, join a group related to their personal interest or hobby, encourage the use of technology and appropriate social media to stay connected, and even consider discussing unique living situations as an alternative. As with all psychophysiologic issues that NPs help patients work through, follow-up on the loneliness intervention at the next visit is imperative. As with lifestyle changes, patients will need encouragement to break old habits that contribute to the situation or to put recommendations meant to help into action.

Conclusion

Loneliness is a problem for patients of all ages but is especially problematic for older adults and can be magnified by chronic disease. The health effects of loneliness are numerous, resulting in mental and physical health problems that have a tremendous impact on both longevity and quality of life. This social determinant of health is recognized by many countries and the WHO because of the prevalence and significance to the aging populations across the globe. NPs can make a difference by staying informed, assessing for loneliness, and recommending interventions supported by ongoing research.

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Loneliness in adults: Evidence-based research and interventions for NPs

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- Read the article. The test for this CE activity is to be taken online at **www.nursingcenter.com/CE/NP**. Tests can no longer be mailed or faxed.
- You'll need to create (it's free!) and log in to your personal CE Planner account before taking online tests. Your planner will keep track of all your Lippincott Professional Development online CE activities for you.
- There's only one correct answer for each question. A passing score for this test is 13 correct answers. If you pass, you can print your certificate of earned contact hours and access the answer key. If you fail, you have the option of taking the test again at no additional cost.
- For questions, contact Lippincott Professional Development: 1-800-787-8985.
- Registration deadline is September 3, 2021.

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