Forgetting Loved Ones: The Relationship between Loneliness, Anxiety and Cognitive Function

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December 8th, 2022

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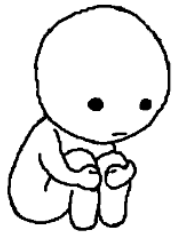
Outline

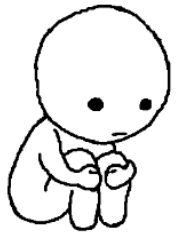
- Loneliness: Definition, prevalence, relationship with cognitive function
- Anxiety: Definition, prevalence, relationship with cognitive function
- Clinical identification of loneliness and anxiety

Loneliness



- Loneliness is the subjective experience of feeling socially isolated
- Loneliness and social isolation are related, but not the same
- Older adults are at higher risk of loneliness than younger adults as they more often face predisposing factors:
  - Living alone
  - Loss of family or friends
  - Chronic illness
  - Sensory impairments

Loneliness

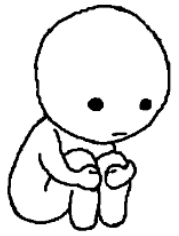


- Loneliness is assessed in research studies using the UCLA loneliness scale:

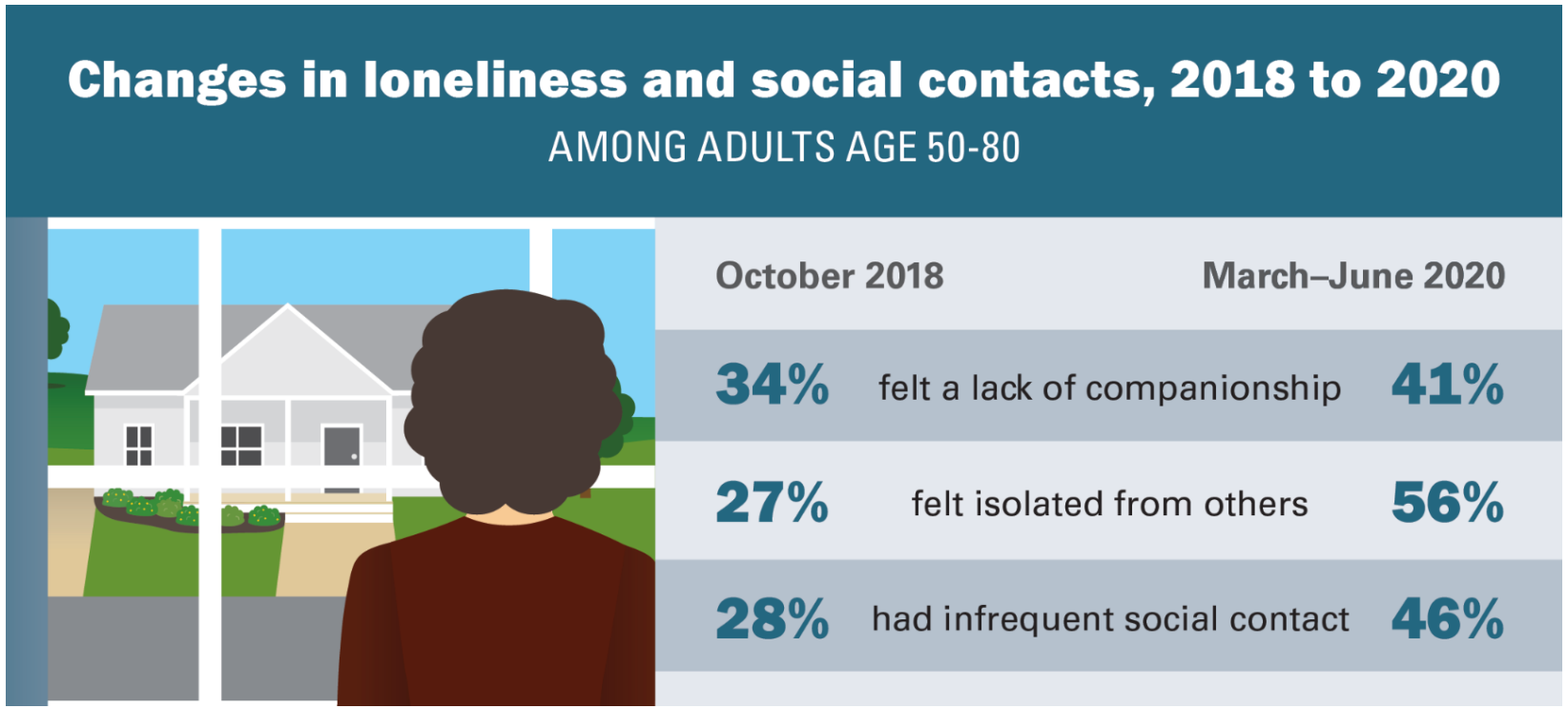
    1. How often did you feel you lacked companionship?
    2. How often did you feel left out?
    3. How often did you feel isolated from others?

- Response options are: *Often*, *some of the time*, *hardly ever*

Loneliness

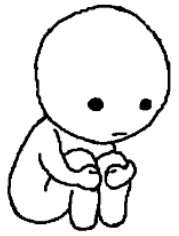


- The prevalence of loneliness among older adults has increased since the COVID-19 pandemic and remained elevated since the pandemic onset.



Source: US National Poll on Healthy Aging, Sept. 2020

Loneliness



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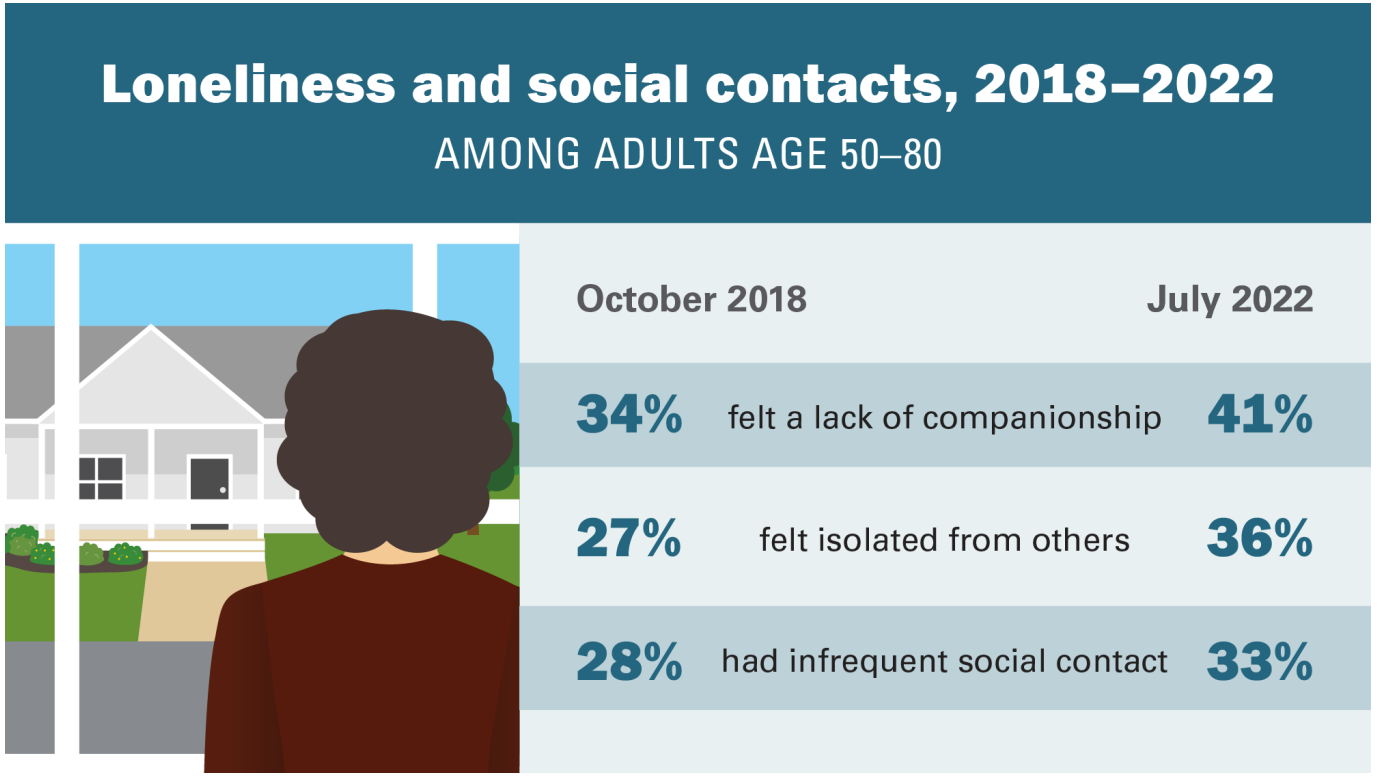

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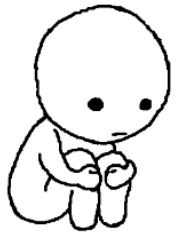
Source: US National Poll on Healthy Aging, 2022

Loneliness



- Loneliness is associated with a range of negative health outcomes amongst older adults

INC. LIFE

Loneliness Is as Lethal As Smoking 15 Cigarettes Per Day. Here's What You Can Do About It

Lonely people are 50% more likely to die prematurely than those with healthy social connections.

Observations

Loneliness Is Harmful to Our Nation's Health

Research underscores the role of social isolation in disease and mortality

The New York Times

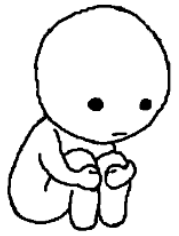
PERSONAL HEALTH

The Surprising Effects of Loneliness on Health

Give this article 318

Paul Rogers

Loneliness



- Incident and persistent loneliness among women are particularly associated with worse cognitive function, according to the MoCA (Framingham Heart Study)

Neurocognitive test scores	Incident loneliness		Transient loneliness		Persistent loneliness	
	β (95%CI)	*P* value	β (95%CI)	*P* value	β (95%CI)	*P* value
All (*n* = 2585)						
AD8 score	0.17 (0.06, 0.28)	0.002	0.14 (0.05, 0.23)	0.001	0.47 (0.32, 0.61)	<0.001
MoCA score	−0.06 (−0.19, 0.07)	0.35	−0.07 (−0.17, 0.03)	0.19	−0.19 (−0.32, −0.06)	0.005
Female (*n* = 1386)						
AD8 score	0.11 (−0.02, 0.25)	0.1	0.06 (−0.04, 0.17)	0.25	0.48 (0.27, 0.69)	<0.001
MoCA score	−0.14 (−0.29, 0.01)	0.07	−0.10 (−0.24, 0.04)	0.14	−0.27 (−0.45, −0.08)	0.005
Male (*n* = 1199)						
AD8 score	0.27 (0.09, 0.46)	0.004	0.26 (0.12, 0.41)	<0.001	0.45 (0.26, 0.64)	<0.001
MoCA score	0.06 (−0.17, 0.29)	0.62	−0.03 (−0.19, 0.12)	0.65	−0.09 (−0.28, 0.09)	0.32

***Table 3*: The associations between loneliness types and the AD8 and MoCA scores stratified by sex.**
Robust regression models were used to investigate the relationship between loneliness types as risk factors and the cognitive tests including the Washington University Dementia Screening Test (AD8, z-score) and Montreal Cognitive Assessment (MoCA) score (z-score) as outcomes. All models were adjusted for baseline age, sex, education, and time difference between exam 2 and exam 3.

Tao et al., eClinicalMedicine 2022

Loneliness

- Loneliness is associated with increased dementia risk among older adults

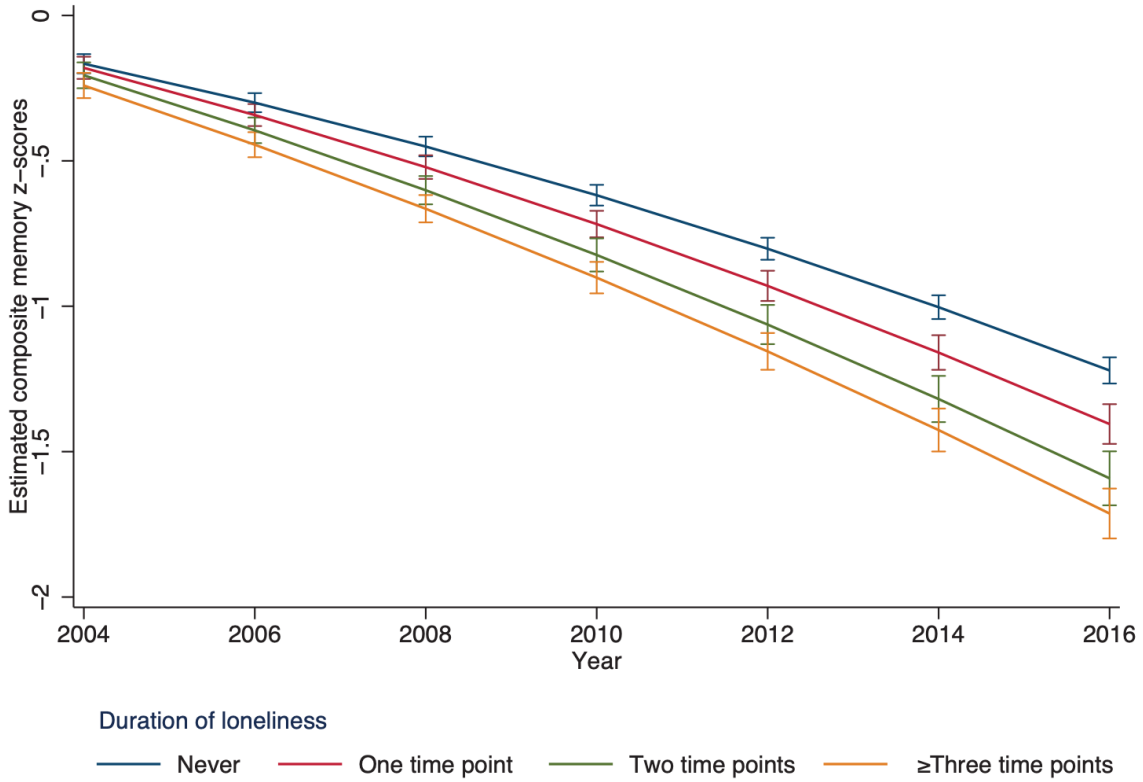


Figure 1. Rate of cognitive decline during aging according to cumulative duration of loneliness (Yu et al., *Alz Dement* 2022)

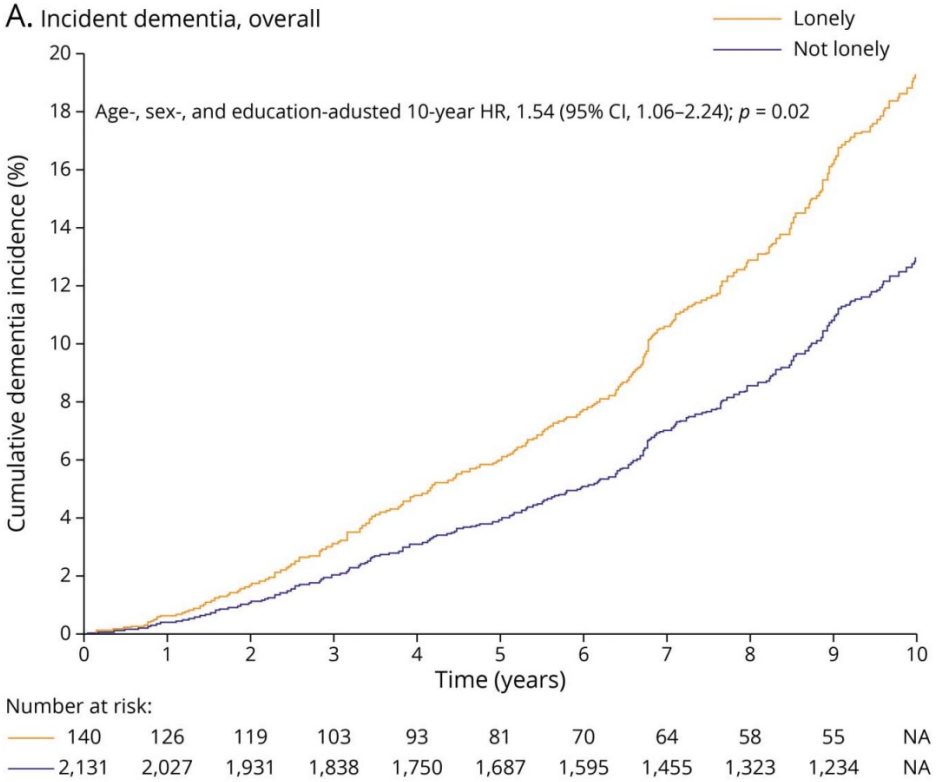


Figure 2. Incidence of dementia over time, according to loneliness status (Salinas et al., *Neurology* 2022)

Question 1:

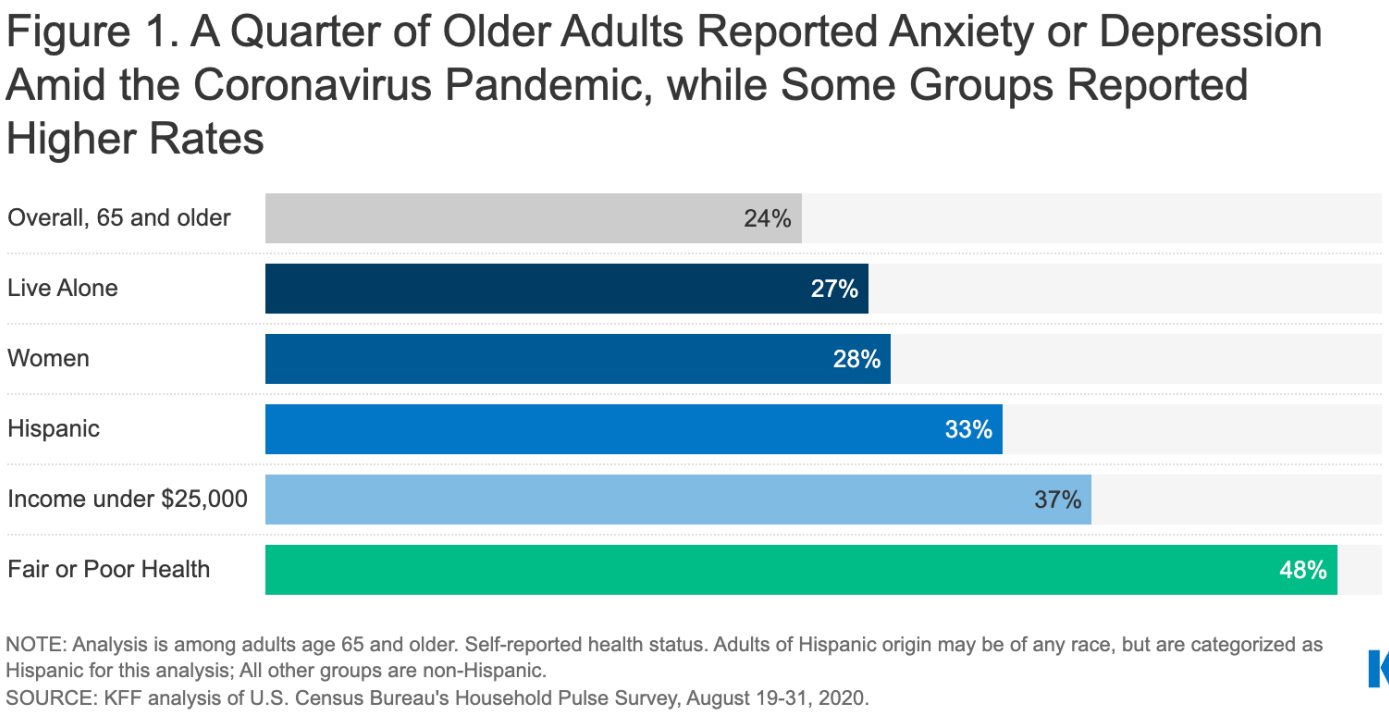
- Which of these items comprise the UCLA Loneliness Scale?
    1. How often did you feel left out?
    2. How often did you feel you could not get going?
    3. How often did you feel isolated from others?
    4. How often did you feel that people were unfriendly?
    5. How often did you feel you lacked companionship?
- Possible answers:
    a) 1, 3, and 4
    b) 2, 3, and 4
    c) 1, 3, and 5
    d) 2, 4, and 5

Anxiety

- Unlike loneliness, anxiety is characterized by a range of symptoms:
  - Feeling nervous, restless or tense
  - Having a sense of impending danger, panic or doom
  - Having an increased heart rate
  - Breathing rapidly (hyperventilation)
  - Sweating
  - Trembling
  - Feeling weak or tired
  - Trouble concentrating or thinking about anything other than the present worry
  - Having trouble sleeping
  - Experiencing gastrointestinal (GI) problems
  - Having difficulty controlling worry
  - Having the urge to avoid things that trigger anxiety

Anxiety

- The prevalence of anxiety among older adults increased during the COVID-19 pandemic



Source: Kaiser Family Foundation, 2020

Anxiety

- Several large systematic reviews and meta-analyses have identified that anxiety is a risk factor for incident dementia (Santabárbara et al., *J Clin Med* 2020; Gimson et al., *BMJ Open* 2018)

- Greater anxiety symptom burden, but not diagnosis of an anxiety disorder, was associated with meaningful decrements in MoCA test scores two years later in a sample of older adults in Montreal (Friere et al., *Can J Psychiatry* 2017)

- In a national sample of older US adults during COVID-19, experiencing greater-than-usual levels of anxiety symptoms was associated with meaningfully worse cognitive symptoms (1/3 of a population standard deviation decrement in cognitive score) (Kobayashi et al., *SSM Mental Health* 2022)

Research challenges

- Challenges to understanding the cause-and-effect nature of the relationships between each of loneliness, anxiety, and dementia risk:
  - Anxiety and loneliness can be caused by dementia
  - Levels of anxiety and loneliness can change over time
  - Anxiety and loneliness often co-occur with depression

Question 2:

- Which of the following statements is false:

a) Transient, but not persistent loneliness is associated with worse MoCA test scores

b) Studies comparing anxiety symptom burden and diagnosis of an anxiety disorder show some inconsistencies with cognitive test scores

c) Loneliness is associated with increased risk of incident dementia

d) It is difficult to disentangle the effects of loneliness and anxiety from the the effects of depression on dementia

Clinical identification of loneliness and anxiety

- US Preventive Services Task Force (USPSTF) does not recommend routine screening for loneliness or anxiety in asymptomatic adults over 65

- USPSTF makes recommendations based on primary prevention, with consideration of the benefits and harms of screening

- Accordingly, the focus should rather be on the identification of loneliness and anxiety in clinical settings rather than routine screening *per se* for each condition (National Academies of Medicine, 2020)

Clinical identification of anxiety

- The USPSTF released draft recommendations on screening for anxiety in adults in September 2022:

Recommendation Summary

Population	Recommendation	Grade
Adults age 64 years or younger, including pregnant and postpartum persons	The USPSTF recommends screening for anxiety in adults, including pregnant and postpartum persons.	B
Older adults age 65 years or older	The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of screening for anxiety in older adults.	I

Source: USPSTF, 2022

Clinical identification of anxiety

USPSTF Assessment of Magnitude of Net Benefit −

The USPSTF concludes with moderate certainty that screening for anxiety in adults, including pregnant and postpartum persons, has a **moderate net benefit**.

The USPSTF concludes that the **evidence is insufficient** on screening for anxiety in older adults. Evidence on the accuracy of screening tools and the benefits and harms of screening and treatment of screen-detected anxiety in older adults is lacking, and the balance of benefits and harms cannot be determined.

See the Table for more information on the USPSTF recommendation rationale and assessment. For more details on the methods the USPSTF uses to determine the net benefit, see the USPSTF Procedure Manual.[8]

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Source: USPSTF, 2022

Clinical identification of loneliness

- Identifying loneliness in clinical settings is controversial
  - Some patients desire screening for loneliness
  - Other patients do not see it as an “illness”
  - The root causes of loneliness are sociological – can the health care system intervene?

- Lack of evidence from implementation studies to guide use of loneliness assessments in clinical settings
  - The National Academies of Medicine recommends the 3-item UCLA loneliness scale as likely to have the greatest success for clinical use

Clinical identification of loneliness

- The National Academies of Medicine suggests implementation needs for clinical assessment of loneliness:
  - Identify who should receive the assessment (i.e., everyone, or those at risk?)
  - Identify who should conduct the assessment
  - Identify the ideal frequency of assessment for different subpopulations
  - Identify the appropriate interventions, referrals, and follow-up care

Question 3:

- Which of these is a reason why routine anxiety screening is not recommended by USPSTF for adults aged >65?

a) Anxiety disorders are uncommon amongst this age group

b) It is not possible to intervene on anxiety disorders to reduce dementia risk

c) There are no screening tools for anxiety that can be used in clinical settings

d) Many screening tools are not applicable to older adults due to their emphasis on somatic and sleep-related symptoms of anxiety

Summary

- Loneliness and anxiety are prevalent amongst older adults
  - Their prevalence is thought to have increased since the COVID-19 pandemic
- While evidence is of varying quality, both loneliness and anxiety are associated with cognitive decline and dementia risk
  - Loneliness, anxiety symptoms, and cognitive impairment may co-occur, although the order of causality may be difficult to establish for a given patient
  - Older adults experiencing cognitive impairment may also experience loneliness or anxiety
- While routine screening is not recommended, their identification in clinical settings to identify at-risk patients may be of value
  - Because loneliness does not have a clinical syndrome or set of symptoms, the necessary conditions to warrant its clinical identification need to need to be in place

Thank you!

- Acknowledgements:
  - National Poll on Healthy Aging
  - www.healthyagingpoll.org – access reports, publications, join mailing list

- Funding support from the National Institute on Aging:
  - NIA R01AG070953
  - NIA R01AG069128

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References

- Freire ACC, Pondé MP, Liu A, Caron J. Anxiety and Depression as Longitudinal Predictors of Mild Cognitive Impairment in Older Adults. Can J Psychiatry. 2017 May;62(5):343-350. doi: 10.1177/0706743717699175.
- Gimson A, Schlosser M, Huntley JD, Marchant NL. Support for midlife anxiety diagnosis as an independent risk factor for dementia: a systematic review. BMJ Open. 2018 Apr 30;8(4):e019399. doi: 10.1136/bmjopen-2017-019399.
- Koma W, True S, Biniek JF, Cubanski J, Orgera K, Garfield R. One in four older adults report anxiety or depression amid the COVID-19 pandemic. Kaiser Family Foundation (Online). Published: October 9 2020. Available at: https://www.kff.org/medicare/issue-brief/one-in-four-older-adults-report-anxiety-or-depression-amid-the-covid-19-pandemic/
- Kobayashi LC, O'Shea BQ, Joseph C, Finlay JM. Acute relationships between mental health and cognitive function during the COVID-19 pandemic: Longitudinal evidence from middle-aged and older US adults. SSM Ment Health. 2022 Dec;2:100097. doi: 10.1016/j.ssmmh.2022.100097.
- National Academies of Sciences, Engineering, and Medicine 2020. Social Isolation and Loneliness in Older Adults: Opportunities for the Health Care System. Washington, DC: The National Academies Press. https://doi.org/10.17226/25663.
- Piette J, Solway E, Singer D, Kirch M, Kullgren J, Malani P. Loneliness Among Older Adults Before and During the COVID-19 Pandemic. University of Michigan National Poll on Healthy Aging. September 2020. Available at: http://hdl.handle.net/2027.42/162549
- Salinas J, Beiser AS, Samra JK, O'Donnell A, DeCarli CS, Gonzales MM, Aparicio HJ, Seshadri S. Association of Loneliness With 10-Year Dementia Risk and Early Markers of Vulnerability for Neurocognitive Decline. Neurology. 2022 Mar 29;98(13):e1337-e1348. doi: 10.1212/WNL.0000000000200039. Epub 2022 Feb 7.
- Santabárbara J, Lipnicki DM, Olaya B, Villagrasa B, Bueno-Notivol J, Nuez L, López-Antón R, Gracia-García P. Does Anxiety Increase the Risk of All-Cause Dementia? An Updated Meta-Analysis of Prospective Cohort Studies. J Clin Med. 2020 Jun 9;9(6):1791. doi: 10.3390/jcm9061791.
- Tao Q, Akhter-Khan SC, Ang TFA, DeCarli C, Alosco ML, Mez J, Killiany R, Devine S, Rokach A, Itchapurapu IS, Zhang X, Lunetta KL, Steffens DC, Farrer LA, Greve DN, Au R, Qiu WQ. Different loneliness types, cognitive function, and brain structure in midlife: Findings from the Framingham Heart Study. EClinicalMedicine. 2022 Sep 6;53:101643. doi: 10.1016/j.eclinm.2022.101643.
- Yu X, Westrick AC, Kobayashi LC. Cumulative loneliness and subsequent memory function and rate of decline among adults aged ≥50 in the United States, 1996 to 2016. Alzheimers Dement. 2022 Aug 3. doi: 10.1002/alz.12734.