Featured Article

The impact of COVID-19 on older adults: Results from an annual survey

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ABSTRACT

Objectives: Assess well-being among older adults through secondary analysis measured during an annual survey in 2018, 2019, and 2020, to determine trends from before and during the COVID-19 pandemic.
Methods: Mailed surveys sent annually included measures related to various psychosocial factors.
Main findings: Response rates were 29% in 2018, 25% in 2019, and 24% in 2020. Most respondents reported average or high resilience (89% 2018-2020), high purpose (64% in 2018 and 2019, 63% in 2020), moderate optimism (46% in 2019, 44% in 2020) and low stress (88% in 2019 and 2020). Reported loneliness increased 13% from 2018 to 2020. In 2020, only 45% reported high comfort with technology, decreasing with age (>75).
Principal conclusion: Psychosocial well-being of respondents were doing well despite changes related to COVID-19. However, increased loneliness may negatively impact long-term health outcomes; thus, a focus on technology options to stay socially connected and access healthcare are needed.

Introduction

Adults age 65 years and older are currently the fastest growing age segment in the US, with a population estimated to double by 2050.[1,2] Estimates suggest that by 2035, the number of older adults in the US will outnumber children age 18 years or younger.[3] Additionally, by 2030, the entire Baby Boomer generation will be over the age of 65.[3] In 2020, as the COVID-19 virus began to spread, older adults were identified early in the pandemic as the highest risk age group for health complications and mortality resulting from infection.[4] To protect the safety of those at risk as the COVID-19 virus began to spread, media outlets and public health statements frequently paired "older people" as a "highly vulnerable group".[5] While the purpose of this discourse was to protect the older population, these efforts ignored underlying conditions that also play a role in dangers related to COVID-19, and this narrative likely contributed to an increased risk of social isolation and psychosocial distress among this population, as well as younger populations changing the way they interact with older adults, and internalizing feelings of aging negatively.[6,7] As ramifications from the pandemic continue, older adults' mental and physical health status will continue to be impacted, likely over the longer term.

Psychosocial well-being encompasses a wide variety of thoughts and feelings used to positively view one's life and identify and act towards meaningful actions,[8,9] and can provide enhanced positive health outcomes and a decrease in untimely mortality.[8-10] Some constructs identified as encompassing psychological well-being include purpose, optimism, social support and resilience.[11]

Resilience is defined as the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress, or "bouncing back" from difficult experiences.[12] Purpose in life is defined as having goals, a sense of direction, and meaning in life.[13] Optimism is the extent to which people hold favorable expectations about the future and has also been associated with successful aging.[14,15] Finally, perceived social support, the connection between at least two individuals, impacts health through behavior, psychosocial, and physiological pathways, and can be measured by counting social interactions during a typical week and month.[16,17]

Individually, each of these resources have been shown to contribute to overall health and well-being among older adults. Together, enhancing these protective factors appears to amount to even greater protection in decreasing negative psychosocial health outcomes among older adults.[18] However, during the current pandemic, each of these protective factors have been tested, resulting in increased risk of social isolation and stress, reduced purpose and resilience, and lower optimism, as well as increased risk of loneliness.[19,20]

In the US, loneliness impacts a significant and growing proportion of the older adult population, with up to nearly 60% of those age 65+

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reporting moderate or severe loneliness.[21,22] Loneliness, which differs from lack of social connection, is considered a subjective view of inconsistency between one's desired and actual social relationships.[23,24] While loneliness and social isolation are unique constructs, feelings of loneliness tend to be common among those who are also socially isolated.[23] Research indicates that older adults who report loneliness or social isolation tend to have higher rates of depression, more chronic health conditions, greater mortality risk, and other suboptimal health outcomes, including decreased physical functionality, psychosocial well-being, and reduced longevity.[16,25-27] This number has likely increased in recent months due to widespread "stay-at-home" orders to slow the spread of COVID-19 and keep vulnerable populations safe during the pandemic. According to data gathered in mid-2020, 7.4 million adults in the UK suffered from "Lockdown Loneliness", loneliness resulting from social disconnect due to social distancing and lockdown requirements during the COVID-19 pandemic 20. Meanwhile, showing further impacts of the pandemic's shifting social environment, recent studies have found a relationship between positive psychological resources, such as optimism, resilience, and purpose, as protective factors for negative health outcomes related to COVID-19.[28-31]

Considering the growing prevalence of loneliness and the negative health consequences associated with increased loneliness, solutions explored in recent years have begun to encompass innovative approaches, including technological tools and strategies, especially as technology adoption grows within older groups.[32] In a recent AARP study, 51% of older adults responded that they bought at least one type of technology product in the past year, including smartphones, computers and laptops, smart televisions, tablets, smart home technology or devices, and wearable devices.[33] During the COVID-19 pandemic, older adults reported spending on average 79 minutes a day socializing virtually with others and virtually connecting with others approximately 43 times in the two weeks before taking the survey.[34] Technology use has also shown to be a predictor for lower loneliness, which in turn is associated with better self-rated health, fewer chronic illnesses, higher subjective well-being, and lower depression.[35]

To better understand older adults' well-being and the current impact of the pandemic, UnitedHealthcare (UHC) and AARP Services, Inc. (ASI) leveraged their annual survey to older adults covered under AARP® Medicare Supplement Plans insured by UnitedHealthcare Insurance Company or an affiliate (collectively "UnitedHealthcare"). The adapted survey included a focus on both previous measures used to assess trends related to the psychosocial well-being of older adults, as well as new questions related to the impacts of the COVID-19 pandemic.

Statement of purpose

The primary purpose of this study was to assess the psychosocial well-being of older adults during the initial months of the COVID-19 pandemic through an annual survey sent out yearly in 2018, 2019, and 2020, specifically trends in resilience, optimism, purpose, loneliness, perceived stress, and social support as compared to before the pandemic. We also aimed to better understand the use and comfort level with technology among participants, specifically related to technology use for social interactions during this time. Our research hypothesis expected a negative impact on psychosocial well-being from the 2020 survey compared to trends from 2018 and 2019 survey results influenced by the COVID-19 pandemic. We also suspected lack of technology use would contribute to an even greater decline in psychological well-being, as well as an increase in loneliness. This paper will overview these findings and provide recommendations on additional research to better understand the impact of COVID-19 on older adults.

Research design

Study sample

Participants were recruited as part of an annual national survey campaign to evaluate the health and well-being of the AARP Medicare Supplement population. In 2020, approximately 4.2 million Medicare insureds were covered by an AARP® Medicare Supplement Insurance Plan from UnitedHealthcare Insurance Company or an affiliate (collectively "UnitedHealthcare"). These plans are offered in all 50 states, Washington DC and various US territories. Eligibility for this annual survey includes age of at least 65 years with a minimum of 12-months continuous medical plan enrollment. This annual survey has been conducted since 2018 with potential participants randomly selected to receive the survey. The survey was mailed to 16,000 insureds in 2018 and 16200 insureds in 2019. In 2020, the survey was sent to 10,000 insureds. Survey results from each year were analyzed to understand trends over time from before and during the COVID-19 pandemic.

Survey

This mailed survey was developed by UHC to assess both physical and psychological health outcomes associated with older adults. The annual survey began in 2018, with a focus on the Personal Determinants of Health (PDOH) model.[11] In 2018, the survey included 56 questions. This increased in 2019 with 69 questions, and 76 questions on the 2020 survey. Additional questions related to technology use and the impact of COVID-19 were added in 2020. The survey was mailed with a two-month window to the stratified sample in June of each year with a repeat mailing in July to those who had not yet responded. Results from 2018 and 2019 were included as secondary analysis for the purpose of analysis of this data to test the hypothesis of this paper. This study was approved by the New England Institutional Review Board (NEIRB #120180028).

Demographics and socioeconomic status

Demographic information for all participants included age (65-74, 75-84, 85+) and gender. Medical service utilization from medical claims was calculated with the Charlson Comorbidity Index (CCI).[36] CCI is a method of categorizing comorbidities based on International Classification of Diseases (ICD) diagnosis codes found in administrative data, such as hospital abstracts data. Each comorbidity category has an associated weight (from 1 to 6), based on the adjusted risk of mortality or resource use, and the sum of all the weights results in a single comorbidity score for a patient. A score of zero indicates that no comorbidities were found. The higher the score, the more likely the predicted outcome will result in mortality or higher resource use.

Socioeconomic status included income levels, education levels, and health resource information such as Primary Care Provider (PCP) rate levels and Mental Health Provider (MHP) rate levels, which were geocoded from member-level zip codes.

Survey measures

Resilience

Resilience was measured with the six-item Brief Resilience Scale (BRS).[37] In this measure, participants were asked about their ability to bounce back from life experiences in the previous month on a five-point scale from 1 (strongly disagree) to 5 (strongly agree). Responses to the items were averaged so that the average scores ranged from 1 to 5, with cut offs of low resilience (1.00-2.99), normal (3.00-4.30), and high (4.31-5.00). Cronbach's α for resilience was .83 overall.

Optimism

Optimism was measured using the six-item Life Orientation Test-Revised (LOT-R).[14] Participants were asked how much they agreed with statements about expecting the best or being optimistic. Responses were scaled from 1 (I disagree a lot) to 5 (I agree a lot) and were summed to create a total score ranging from 6 to 30, with 6-19 considered low optimism and 20-30 high optimism. Cronbach's α for optimism was .81 overall.

Purpose in life

Purpose in life was measured with the Life Engagement Test (LET), which defined the degree to which a person engages in activities he or she finds meaningful.[38] Responses, ranging from 1 (strongly disagree) to 5 (strongly agree), were averaged across the questions such that the average ranged from 1 to 5. Scores under 4 were considered having low purpose, and 4 and above indicated high purpose. Cronbach's α for purpose was .84 overall.

Perceived stress

Perceived stress was measured using the four-item Cohen perceived stress scale (PSS-4).[39] Questions 1 and 4 were scaled from 1 (never) to 5 (Very often) and questions 2 and 3 were reverse scaled. Responses were averaged across the questions for the average score of 1 to 5. The average score was then categorized into three groups: low stress (1-2.99), moderate (3-3.99) and high stress (4-5). Cronbach's α for perceived stress was .70 overall.

Social network

Social connections were measured using the Social Network Index (SNI), an objective count of the number of contacts across four different categories of social connectedness: talking to friends, family, or neighbors on the telephone per week; getting together with friends or relatives per week; attending church or religious services per month; and attending meetings of clubs or organizations per month.[40] Measuring social connections during COVID-19 restrictions required some accommodations; therefore, there were additional modifications. The first question in the index was edited in the survey from "In a typical week, how often do you get together with friends or relatives; such as going out together or visiting in each other's homes?" to "In a typical week, how often do you see or speak with friends or relatives?" for the 2020 survey only. Responses were scaled from 0 to 3 for the social connections and 0 or 1 for a yes/no married question, so a total score ranged from 0 to 13.

Due to the timing of survey distribution near the start of most pandemic stay-at-home orders, each of the questions from the SNI were followed by a social connection question related to technology use. These included, "Did you use technology to see or speak with friends or relatives?", "Did you use technology to attend church or religious service or activities of your religious organization?", and "Did you use technology to attend meetings of clubs and/or organizations?" with response options of yes or no for all three questions. These questions were cross tabbed with the original SNI to determine if technology use played a role in social connections during the time of this survey.

Loneliness

Loneliness was measured using the three-item short version of the UCLA Loneliness Scale (UCLA-3).[41] Participants were asked on a three-point scale about their general feelings related to being lonely, left out, or isolated. Responses ranged from 0 (hardly ever or never) to 3 (often) and were summed to create a score ranging from 0 to 9. Scores were categorized into not lonely (0-3), moderately lonely (4-5), and severely lonely (6-9). Cronbach's α for loneliness was .83 overall.

Technology use

Questions related to technology use were added to the survey in 2020. These included "Has your technology use increased in the past three months?", with response options of yes or no; and "On a scale of 0 to 10, how comfortable do you feel with your technology use?" with a scale of 0-10, categorized into low comfort (0-4), moderate comfort (5-7) and high comfort (8-10).

Statistical testing

All data was imported into SAS Enterprise Guide Version 7.1 (SAS Institute Inc., Cary, NC, USA). Basic demographics were all checked. Outcome measures were individually scored as mentioned above by each year. To test significance of trends in outcome measures, chi square tests were first performed to determine if differences in scores were found each year. Linear regressions were then run on the three years with time as independent, followed by the multilevel regression analysis to evaluate the trends of each repeated outcome measure used in the survey years over time.

Results

The highest response rate for this survey was seen in 2018, with 4,696 (29%) responding to the survey. In 2019, 3,976 (25%) responded to that year's survey, and a total of 2,726 (27%) responded to the 2020 survey. Respondents each year were more likely to be female (58% in 2018, 54% in 2019, 55% in 2020). Age varied slightly each year, with most respondents between 65-74 in 2018 (45%), and between 75-84 in 2019 (40%), and 2020 (47%). A geographic comparison showed similar results as well, though fewer individuals (16%) located in the Midwest responded to the survey in 2020 compared to previous years (19% and 20% in 2018 and 2019), which may have impacted survey results in 2020 due to differences in stay-at-home orders during the COVID-19 pandemic. Full demographic results can be found in Table 1.

Trends in resilience, optimism, purpose, and perceived stress remained steady in 2020 compared to the previous year's results despite the ongoing pandemic, as shown in Table 2. Trends continued to show that respondents reported normal resilience (70%), and high optimism (44%) and purpose (63%). Perceived stress trends remained steady as well, with almost all respondents reported low (88%) or moderate (11%) feelings of stress.

Trends in social connection showed significant differences from to 2018 and 2019 to 2020, in 2020 with 33% reporting diverse, 43% moderate, and 24% low social networks in 2020 compared to 27%, 43%, and 29% in 2018 and 27%, 43%, and 31% in 2019. When comparing responses on social networks with technology use to connect, respondents who used technology were more likely to continue to connect with family and friends during this time compared to those who did not use technology.

Loneliness scores indicated a significant rising trend in loneliness in 2020 compared to previous years. In 2018, 19% of survey respondents reported being severely lonely, and 24% reported being moderately lonely. This distribution increased slightly in 2019, with 20% reporting severe loneliness and 26% moderate loneliness. However, in 2020, 26% reported being severely lonely and 30% moderately lonely, resulting in a 7% increase in severe loneliness, and a 6% increase in moderate loneliness across survey respondents in the past three years (Table 2).

Table 1
Unadjusted demographic characteristics by year.

Year	2018	2019	2020
	4,661	3,976	2,726
	%	%	%
Demographics			
Female	58.2	54.1	55.5
Age			
65-74	45.0	39.0	40.8
75-84	38.3	40.3	47.0
85+	16.7	20.7	12.3
Region (From Zip Code)			
Midwest	19.2	19.8	16.1
Northeast	24.8	24.7	24.8
South	35.1	34.6	36.5
West	21.0	21.0	22.6
Income			
Low	14.6	14.7	12.1
Medium	37.2	37.2	34.9
High	48.2	48.1	53.1
Education Status			
Low	10.4	10.5	9.7
Medium	35.7	35.4	35.9
High	53.9	54.1	54.4
Charlson Comobidity Index			
0	36.5	34.7	34.1
1-2	44.0	43.7	44.7
3-4	14.9	16.4	16.1
5+	4.6	5.2	5.1

Regarding comfort with technology use, 18% of respondents stated they felt very low comfort with using technology, 36% were moderately comfortable, and only 43% felt high comfort. Comfort with technology use steadily decreased as age increased within this sample. However, almost half of respondents (47%) reported increased technology use during the three months prior to the survey period (March-May 2020) (Table 3).

Regression analysis

Linear regressions showed a significant trend of change in loneliness and social networks over each year. As seen in Table 4, results indicated a positive change in mental health from 2018 to 2019, and then a decrease in 2020. Most notably, the regression analysis

Table 2
Descriptive trends of health outcomes by year.

	2018 %	2019 %	2020 %	P-value
Resilience				
High	19.5	19.6	19.2	0.9493
Normal	69.5	69.4	70.1	
Low	11.0	11.0	10.7	
Optimism				
High		45.9	43.8	0.0473
Low		54.1	56.2	
Purpose				
High	64.0	64.4	62.6	0.1422
Low	35.9	35.6	37.4	
Perceived Stress				
High		1.0	.6	0.0864
Moderate		11.1	11.1	
Low		87.9	88.3	
Social Network Index				
Diverse	27.3	26.5	33.5	<.0001
Moderate	43.4	42.9	42.9	
Limited	29.3	30.6	23.7	
Loneliness				
Severe	19.1	20.2	26.4	<.0001
Moderate	24.3	25.7	30.4	
Not Lonely	56.7	54.2	43.2	

Table 3
Technology use questions, year 2020, N=2,726.

Technology Use Questions, Year 2020	% Responded with "Yes"
Did you use technology to see or speak with friends or relatives?	75.6
Did you use technology to attend church or religious services or activities of your religious organization?	33.3
Did you use technology to attend meetings of clubs and/or organizations?	21.5
On a scale of 0 to 10,	
High (8-10)	42.8
Has your technology use increased in the past three months?	47.3

demonstrated the steady increase in loneliness over time, starting with a slight increase from 2018 to 2019, and then a larger increase from 2019 to 2020. There was the start of a slight decrease in social connection from 2018 to 2019, and then a significant increase from 2019 to 2020 (Table 4).

Discussion

The primary purpose of this study was to better understand psychosocial trends found in a survey for older adults administered both before and during the initial few months of the pandemic. This survey also aimed to better understand the prevalence and comfort level with technology use, specifically related to social interactions as well as the role and satisfaction with telehealth during the pandemic.

Results show that in some measures, trends remained stable both before and during the pandemic. Resilience, optimism, purpose, and perceived stress remained stable and high despite significant challenges during this time. However, loneliness continued to increase year over year, with a large increase from 2019 to 2020. The stability of personal determinants of health measures was seen in other studies looking at the mental well-being of older adults during this time.[42,43] An increase in loneliness is also supported by results from other surveys that took place during a similar time period during the first few months of the pandemic.[34,44-46] There are two notable differences between other research and these results. The first difference is that data from the other surveys were mostly collected online, while the data in this study was a mailed survey, potentially allowing for a somewhat different demographic. The second difference is this study had the added benefit of data collected prior to COVID 19 (2018 and 2019) as well as data collected during the pandemic rather than just a specific point in time.

Reported social connections also increased in the 2020 survey, which initially seemed surprising given the continued increase in reported loneliness. Considering the variation on the first question in the SNI due to COVID-19, this may indicate that when the question became broader to include all types of speaking interaction with friends or relatives, whether in person or over the phone, respondents reported speaking more to their friends or relatives. Further research would be needed to better understand if and how this change may impact social connection and other outcome measures.

Interestingly, other research conducted during the COVID-19 pandemic suggests older adults who are more socially connected and have strong positive relationships with others may have been more

Table 4
Trend effect, significant estimates from multilevel regression analysis.

Year	2018	2019	2020	P value
Loneliness	4.0	4.1	4.5	<.0001
Social Network Index	5.9	5.9	6.4	<.0001

at risk for loneliness during the pandemic.[34] As the pandemic continued, prolonged restrictions and physical distancing may have put older adults at additional risk for loneliness.[47]

The higher rates of social connections may also explain why those respondents who used technology to connect to others had higher scores of social connections. However, respondents reporting low, moderate, or no comfort with technology use, were less likely to have increased their technology use for social connections during the pandemic. This may indicate those who are not comfortable with using technology are at an increased risk of social isolation and potentially loneliness. These findings are unsurprising given recent discussions on how the combination of physical isolation during the pandemic and limited access, comfort, or knowledge of technology contributes to an increase in isolation for older adults when online connections where of an utmost necessity.[48]

Limitations and strengths

This study used self-reported data across all measures and took place during the first six months of the COVID-19 pandemic, which may not accurately account for shifts observed in later months. These results are also limited to individuals from the AARP Medicare Supplement insured population and thus may not be generalizable to other older adults' feelings and experiences in previous years and during this time. It is also possible there may be a non-response bias among those who were sent the survey but choose not to respond, comparing to those who did respond to the survey each year.

Meanwhile, the study has several important strengths. The current survey has been consistently distributed for multiple years, capturing feelings and attitudes of older adults at different time points. The response rate for a mailed, multiple page survey is high. This survey also examines many different psychosocial well-being measures to get a broad picture of how older adults are doing each year.

Conclusion

Results from this survey demonstrate that before and during the COVID-19 pandemic, older adults were doing well in many measures related to psychosocial well-being, including having high resilience, purpose, optimism, and low stress. However, surveys over time show that loneliness has steadily increased in recent years, with increased levels of loneliness during the initial months of the pandemic. Many common ways to reduce loneliness were limited or restricted during the past year and a half, making it more difficult for those with increased feelings of loneliness to have options to improve even if they are interested and willing. Technology, which has become a critical aspect of life since the onset of the COID-19 pandemic, may provide the needed alternative to participate in behaviors to decrease loneliness.

During this time, many have relied on technology to support physical well-being (i.e., ordering groceries, participating in online workouts, setting reminders to take medication) and mental well-being (i.e., speaking or texting with family members, using video calls to see people, using meditation apps, staying connected via social media). Teletherapy and developed digital interventions targeted specifically for older adults may be helpful in improving both the physical and mental health of this population. However, the ability to use technology, access to technology, and confidence in use will be required. Results indicate that a lack of comfort and confidence may result in a lack of technology use, leaving behind those who are not able to use or access these important resources. Support and education regarding technology use may be necessary to help increase the likelihood of practice with these resources for those who reported low comfort. It will also be necessary to continue to assess the stability in the protective factors' trends examined in this survey that may

help to support better long-term health outcomes to determine their stability over time after the pandemic.

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