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Research Article

Resilience and Adaptability of Older Adults: Findings from the COVID-19 Impact Survey

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Abstract

The COVID-19 pandemic caused abrupt changes in daily routines, social connections, and ways of life. It is yet unknown the full impacts these extended changes have had on the long-term mental well-being of those who shared this global experience. As a contribution to our overall understanding of this phenomena, this study explored the effects of the COVID-19 pandemic on the mental well-being of older adults in the Southern United States. Secondary data analyses were performed using the COVID-19 Emotional Impact Survey, which included four open-ended questions allowing qualitative analyses for this study. Thematic analysis was conducted in three coding phases by five team members to ensure validity and rigor in consensus and determination of the themes. Respondents included 118 participants aged 55 years and older. The overarching theme which emerged in our analysis related to the impact of the COVID-19 pandemic on respondents' mental well-being was *adaptability*, with sub-

themes of *awareness* and *socialization*. Awareness was further associated with spirituality, mortality, and health; socialization was further associated with trust/distrust, anxiety, and fear. Older adults in this study exhibited resilience and demonstrated greater adaptability. Despite expressing increased awareness of vulnerability to the virus, they coped with this stress by placing greater value on relationships with friends and family. Attributes of resilience were frequently noted throughout the study, although we did not specifically assess resilience of older adults in this study. The degree of adaptability older adults applied in their responses to the COVID-19 pandemic suggest a resilience unique to their age and this study provides support for future research probing the concept of resilience in older adults.

Keywords
COVID-19; pandemics; spirituality; socialization; aged; friends; trust

1. Introduction

The devastating and lingering effects from the health crisis of COVID-19 pandemic continue to impact global populations from very young to very old. After emerging in late 2019, SARS-CoV-2 rapidly spread across continents, causing illnesses that overwhelmed healthcare systems, and resulted in unprecedented loss of human lives. The impact of COVID-19 extended far beyond the realm of physical health and affected social, psychological, and economic domains of health [1]. Governors issued directives to shut down schools, gyms, indoor entertainment venues, and dine-in restaurants [2]. These measures to contain the virus disrupted daily routines, strained social connections, and profoundly changed the way of life across all populations. We are particularly interested in the effects of COVID-19 on older adults. The purpose of our study is to explore the impact of COVID-19 on the mental well-being of older adults and how to prepare for the possible challenges of future pandemics.

1.1 Effects of Previous Epidemics

Although often forgotten by many, The Purple Death, also known as the 1918 pandemic, is more memorable to the older adult population. The 1918 pandemic was first observed in the United States Military. Because the pandemic of 1918 plagued many healthy young adults, octogenarians, nonagenarians, centenarians, and supercentenarians passed on resilience as their legacy.

Early in life, contemporary older adults learned to navigate the effects of major pandemics: the 1918 H1N1, the 1957 the H2N2, the 1968 H3N2, and the 2009 H1N1 [3]. Poor mental health outcomes resulting from the lengthy periods of isolation and social distancing during quarantine [4] resulted in lasting psychological impact of COVID-19. Older adults are at a unique intersection, equipped with both the memory of past epidemics ranging from Polio to Influenza [5], and 24-hour televised health crisis and instant world-wide communication via social media [6] (Figure 1).

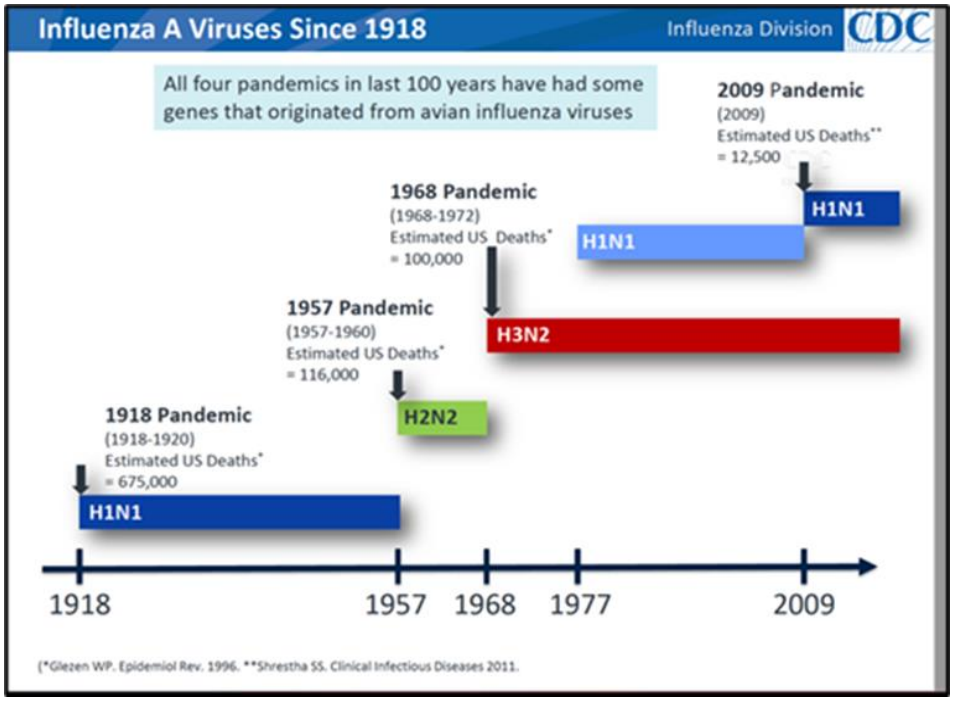

Figure 1 Jernigan DB. 100 years since 1918: are we ready for the next pandemic? 2016. Accessed at https://www.cdc.gov/flu/pandemic-resources/1918-commemoration/pdfs/1918-pandemic-webinar.pdf.

The physical manifestations of illness due to COVID-19 are well-known. Although there is evidence asserting an increased level of emotional resilience with advancing age [7], the possibility of a *Long COVID* on geriatric mental health is undefined and overlooked. Emotional and psychological impact on well-being is far less studied, particularly from the perspective of older adults. Through surveying a variety of older adults and their caregivers, we aimed to better understand the extent to which older adults adapted to changes associated with everyday life and the strategies employed to reduce the burden on mental health and well-being.

2. Methods

Data were collected through an online survey from a larger study of older adults and their caregivers investigating the impact of COVID 19 that was approved by the university Institutional Review Board. Flyers were placed in teaching hospital clinics and the Department of Health in the southern United States. Potential participants were asked to call or email research staff to participate. Inclusion criteria were male or female adults 18 years of age or older who were willing to complete the survey. Younger adults were included because caregivers for older adults are often younger. Exclusion criteria were adults 17 years of age or younger. A demographic sheet included zip code, role (caregiver or patient), gender, occupation, ethnicity, race, background, age, and education. There was one overall open-ended question that asked the participant to share a personal experience related to COVID-19.

The survey included 23 questions. Eleven questions were yes/no responses. Two of these questions were followed up with multiple choice selections. Nine questions were multiple choice. Binary and multiple-choice survey questions, and demographic information other than one open-ended question were analyzed with descriptive statistics.

Three questions were open-ended:

Are you doing phone visits or video visits with your doctors-If it is not satisfactory what are your concern; Name 3-5 things that you really look forward to doing after the coronavirus ends.

Has the virus changed the way you think about your life?

If you'd like, please share a few sentences about your experience during this time.

The three open-ended questions from the survey and one open-ended question from the demographic sheet were analyzed using thematic analysis.

Validity and rigor were ensured through three coding phases for the open-ended questions. In Phase 1, a qualified research assistant coded the data. In Phase 2, the coded data was disseminated to one medical doctor and two doctoral-prepared nurses who also coded the data on three separate occasions until consensus was reached. In Phase 3, a doctoral-prepared nurse with experience in thematic analysis conducted a blind review of the data arrived at the overall theme and agreed with the themes from Phase 2. Theming the data was used to conduct the Phase 3 blind review. Theming is a technique permitting the development of an integrative theme (adaptability) as an antecedent to an overarching narrative or categorization of data. This technique allowed extended statements within themes compared with shorter codes to interpret the meanings of responses from participants [8]. By using extended statements, the Phase 3 reviewer provided validity and rigor by agreement with the themes and provided additional agreement for the extent to which the themes were linked to Maslow's Theory of Human Motivation [9].

3. Results

There were 118 participants aged 55 years and older who responded to the COVID-19 Emotional Impact Survey. Of the 118 respondents, over half the respondents were White (n = 81; 69%); 21% of respondents were Black (n = 25), and 10% reported mixed or unknown race (n = 12). There were 92 females (78%) and 26 males (22%) (Table 1).

Table 1 Demographics.

	Total N (%) n = 118 [1]	**White N (%)** n = 81	**Black N (%)** n = 25	**P-value** [2]
Race				
Black	25 (21%)	-	-	-
White	81 (69%)	-	-	-
Mixed/unknown	12 (10%)	-	-	-
Gender				$P_{\chi} = 0.58$
Female	92 (78%)	64 (79%)	21 (84%)	
Male	26 (22%)	17 (21%)	4 (16%)	
Education				$P_{MWU} = 0.19$
Graduate/post-graduate	45 (38%)	30 (37%)	8 (32%)	
Trade school or some college *(included college)*	50 (42%)	40 (49%)	9 (36%)	
High school or less	23 (19%)	11 (14%)	8 (32%)	

Occupation				$P_{\chi\text{-exact}} = 0.13$
Retired	80 (68%)	60 (74%)	14 (56%)	
Employed	34 (29%)	19 (23%)	9 (36%)	
Unemployed	4 (4%)	2 (2%)	2 (8%)	
Living Arrangements				
Disadvantaged background	19 (16%)	10 (12%)	7 (28%)	$P_{\chi\text{-exact}} = 0.11$
Disabled	14 (12%)	7 (9%)	6 (24%)	$P_{\chi\text{-exact}} = 0.074$
Living alone	33 (28%)	24 (30%)	8 (32%)	$P_{\chi} = 0.82$
Living in medically underserved	16 (14%)	9 (11%)	5 (20%)	$P_{\chi\text{-exact}} = 0.31$
Urban setting	67 (57%)	45 (56%)	17 (68%)	$P_{\chi} = 0.27$
Rural setting	33 (28%)	28 (35%)	3 (12%)	$P_{\chi} = 0.030$ *
Other setting	16 (14%)	8 (10%)	5 (20%)	$P_{\chi\text{-exact}} = 0.29$
Covid-19 Testing				
Tested for COVID-19	39 (33%)	22 (27%)	10 (40%)	$P_{\chi} = 0.22$
Ever positive for COVID-19 [3]	15 (38%)	5 (23%)	4 (40%)	$P_{\chi\text{-exact}} = 0.41$

[1] The "Total" column includes all 118 respondents, including those with multiple or unknown race.

[2] Race comparisons of education level were performed by Mann Whitney U Test (P_{MWU}), rather than by Chi-square. All others were performed by Chi-square (P_{χ}) or Chi-square exact ($P_{\chi\text{-exact}}$) as described in methods.

[3] The denominator for "Ever positive for COVID-19" is based on the 39 who were tested for COVID-19.

* P-value < 0.05

3.1 Summary of Responses

3.1.1 Are You Doing Phone Visits or Video Visits with Your Doctors-If It Is Not Satisfactory What Are Your Concerns?

There were a small number of responses to the telemedicine question and concerns or reasons for dissatisfaction with telemedicine were not described. Therefore, these responses were omitted from analysis.

3.1.2 Name 3-5 Things That You Really Look Forward to Doing after the Coronavirus Ends

Four participants did not provide a response to this question. Of the 114 responses, 78 were White, 25 were Black, (8) were Asian, two (2) were mixed race, one (1) did not identify any race. Ninety-one (91) were female and twenty-three (23) were male. Responses included going to church, travel, eating out, visiting, family, social interactions, shopping, exercising, physical touch, and not wearing masks. Family, friends, and church were important to both older Black and White adults. Across all races, 27% looked forward to going to church, 38% looked forward to spending time with family, and 34% looked forward to spending time with friends. Compared with those who looked forward to not wearing masks (18%), relationships were more important (Table 2 and Figure 2).

Table 2 Question 17: What are some of the things you really look forward to doing after the coronavirus?

Theme	# of responses
Socializing (parties, church, travel, dining, visiting friends and family, movies, sending kids back to school, parties, going places without feat of contamination)	243
Getting out to do necessary things (gym, shopping, shopping without having to deal with rude people)	33
Need for human contact (physical touch, hugs; contact with friends and family)	12
Stop wearing a mask (not wearing mask, burn the masks, no masks, being around people with not concerns or fears)	21

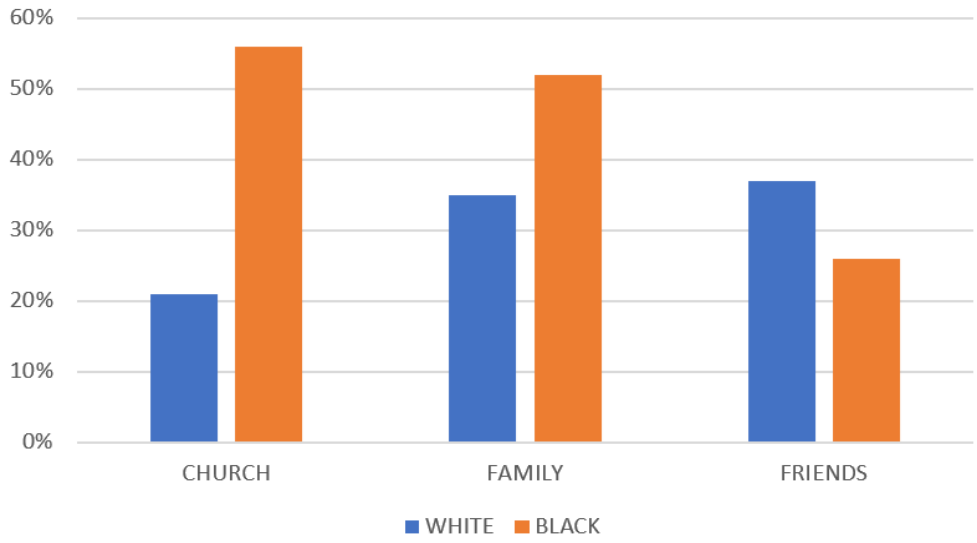

Figure 2 Comparisons by Race.

3.1.3 Has the Virus Changed the Way You Think about Your Life?

There were 62 responses to how COVID-19 changed the way they thought about life. One interesting observation was that these comments were phrased as advice. For example: Enjoy life, Value life more, Treasure relationships, Life is fleeting don't take it for granted (Table 3).

Table 3 Question 18: How has the virus changed the way you think about your life?

Theme	# of responses
Awareness & Appreciation (awareness of fragility of life, life is not easy, enjoy each day physical health and safety, learning to adapt to being at home, carefulness; appreciation of family, health and safety; financial stability)	34

Uncertainty/Loss of Control/Missing out (humans are not in control of anything; a realization that humans do not have as much control)	8
Fear/Confusion (confusion regarding government, political system, fear of dying, feat of becoming incapacitated & ending up in a nursing home fear of people who might have covid and fear that they may unwittingly give covid to someone)	3

3.1.4 If You'd Like, Please Share A Few Sentences about Your Experience during this Time.

There were 35 responses to open-ended sharing experiences with COVID-19. Respondents commonly described being isolated, trapped, stuck, and bored. Others felt safe at home and enjoyed cooking, reading, watching birds, television, and exercising on ZOOM. One person stated there was time to reflect on life and "my 72 years on earth" (Table 4).

Table 4 Question 24: If you would like, please share a few sentence about your experiences.

Theme	# of responses
Distrust (government, political system, anti-mask, anti-vaccine folk & anti-social distancing folk; news media re cases, deaths, & negative results); disappointed in American response to Covid and uncaring anti mask/vaccine folk; malignant conduct of president; a rejection of guidelines; news media causes panic; media scaring people; dismayed at lack of government leadership and scoffing at wearing masks)	7
Loneliness/Isolation/Sadness/Fatigue (lonely and bored by not being able to get on with life due to covid; eating more; tired of covid and wondering when it will end; no energy to exercise; miss going to library and walking with friends; don't have energy to do things; tire easily; tired of hearing about covid. Sad for 14 friends who lost spouses and children from covid).	3
Finding new ways to adapt to pandemic (exercise on Zoom, Facebook with daughter, increase phone calls to friends; cooking more, doing puzzles, bible study, watch the birds in backyard; learned to access Zoom, Skype, Google Meet, read on Kindle app. Had to adjust to doing things new way.	5
Awareness/Appreciation (will have a greater appreciation for life & opportunities. Family had more times together even while maintaining social distance, children interacting in a new way, discovering bird nests, social media a plus; Enjoy being at home taking care of infant, watching TV, feel safe and plan to remain that way in my home. Understand it takes discipline to live safely and sanely in a pandemic; Grateful for house calls program for elderly parents).	7

Fear/Confusion (going anywhere because might be a carrier and give virus to someone else; fear of incorrect covid results, for example, someone tested negative and did not quarantine, exposed my family then found out test was positive. Don't understand why people do not wear masks, feeling stuck in a situation with no end. Husband had major confusion after vaccination x 2 weeks with no relatives nearby to help).	4
Dislike wearing masks (hard to understand people talking). Would rather stay at home than wear a mask; hate it).	2
Nothing at this time (days are same, teaches online, paints/water sketch, mindfulness mediation; take a drive in the car).	1

4. Conclusions

4.1 Adaptability

The overall theme for the open-ended questions was *adaptability*. Two sub-themes of awareness and socialization emerged that correlated with Maslow's Hierarchy of Needs [9]. Awareness was associated with spirituality, mortality, and health. Socialization included characteristics of trust/distrust, anxiety, and fear (Graphic Abstract and Figure 3). Our findings are consistent with a cross sectional survey that also found characteristics of adaptability and resilience in older adults at the onset of the COVID-19 pandemic [10].

Primary Theme	Secondary Themes	Secondary Sub-Themes	Sample Quotes From Secondary Sub-Themes
adaptability	awareness	spirituality	"We have become distracted and basically forgot the about He who created us"
		health	"[I need to be] more careful with health related issues; more careful in all things"
		mortality	"Thinking more about death"
	socialization	trust/distrust	"[I am] more careful who I get around"
		anxiety	"Kind of scary when out, you never know when you'll come in contact with someone infected"
		fear	"being secluded has given me a fear of someday needing to go to nursing home"

Figure 3 Adaptability and Sub-themes.

The adaptability of older adults as reflected in the survey fits into existing literature in the Roy Adaptation Theoretical Model based on the use of awareness and choice to create a means of socialization [11]. In this study, older adults demonstrated coping strategies to respond to stressors

beyond their locus of control. Older adults relied on their values, goals, and beliefs to adapt to situations that impacted their lives.

In the health-related literature [12], there are two broad categories of meaning associated with negative events on adaptability: 1) global meaning - perceptions of one's place in the world, including one's values, goals, and beliefs; and 2) situational meaning - perceptions tied to a certain situation, including how the situation impacts one's values, goal, and beliefs. Adaptive systems are threatened if global meaning and situational meaning are incongruent [12], suggesting congruence of global meaning (spirituality, mortality, and health) and situational meaning (trust/distrust, anxiety, and fear), resulting in heightened adaptability.

The sub-themes of awareness and socialization [12] suggested congruence of global meaning resulting in a heightened adaptability of older adults as shown in this survey. Figure 3 In some instances, older adults with limited family and social networks experienced more isolation than those with consistent family and social networks.

4.2 Awareness

Older adults in this survey shared similar experiences to older adults post-Katrina and Rita. Over 60% reported symptoms of psychological distress that persisted years after the storms ended. In the COVID-19 survey, older adults expressed not only the fear of contracting COVID-19, but a dread of the loneliness and isolation that became their lives. One other person encountered 14 friends who lost spouses and children. When so many people were dying from the disease, most likely this interfered with sleep, mental status, and nutrition. In addition, a hesitancy to interact with family members due to their fear of spreading the disease to them, isolated them even more.

Heightened awareness for hand washing, masking, social distancing resulted in comments such as "greater awareness for little things", "budgeting money", and things "I can live without". They expressed a greater overall awareness for adapting to changes associated with COVID-19 and health care delivery. One older adult who did not have video equipment for telehealth reported the need to describe symptoms in more detail. Masks were a challenge for communication and socialization. COVID-19 restrictions for quarantine were a factor that required skills for adaptability and resulted in statements such as "continuing certain activities", "exercising alone", "visiting with friends" or positive thoughts including looking forward to a time when may be able to travel again.

4.3 Socialization

A qualitative study comparing coping behaviors during COVID-19 of young people ages 13 to 24 years compared to adults ages 70 years and older in the United Kingdom found that older adults more often adapted their lifestyles during the pandemic out of concern for their increased vulnerability to the virus [13]. In addition, a hesitancy to interact with family members due to their fear of spreading the disease to them, isolated them even more. Our participants resided in the community. Although isolated at home, they did not have exposure to multiple deaths associated with living in a nursing home. Physical health and income were expressed but did not significantly dominate responses to the survey.

Cultural perspectives on freedom were a strong theme. One older adult expressed that, "a health crisis can change the world quickly" and another realized, "I don't have as much control as I thought."

Another comment was, "I realize how important it is to be able to participate in group activities and have the freedom to go where I please."

As COVID-19 presented challenges to the participants, they experienced creative adaptation and transition. Statements such as, "I thrive in social environment[s], but have enjoyed the less hectic schedule", reflect a recognition of this transition. Some evidence of attainment of Maslow's top level of self-transcendence was exemplified by participants' desires to live their best lives: "It's important to experience joy each day, and I use the good dishes. I don't save things for a special occasion."

4.4 Resilience

Results showed that older adults demonstrate resilience despite adversity. The American Psychological Association defines resilience as "the process and outcome of successfully adapting to difficult or challenging life experiences, especially through mental, emotional, and behavioral flexibility and adjustment to external and internal demands" (https://www.apa.org/topics/resilience). Life events are precursors to resilience [14].

Knowing that they are most vulnerable to contracting the virus, older adults fear spreading it to family members. Social distancing takes a toll on older adults who, prior to COVID-19, may have had active social lives. With the advent of COVID-19, they could no longer go to their church, to the senior center to play bingo, or to the movies. Fear and social distancing leads to loneliness and isolation. Older adults may begin to question their safety themselves and that of their families from an infectious disease that has literally turned their lives upside down.

Concepts from resilience models can be applied to surprising results from our study on the psychological effects of COVID-19 on older adults. Recent focus on strengths-based models to health care interventions resulted in a comprehensive concept analysis of resilience [15], demonstrated by participants abilities to adapt, transition, and achieve optimistic outlooks [15].

4.5 Limitations

This study was limited in that we analyzed existing data from open-ended survey questions. Because of this, we were unable to determine data saturation, and could only report the results in descriptive narrative. A future study could provide richer data and a deeper investigation of the impacts of COVID-19 on mental well-being in older adults by performing semi-structured interviews.

The sample size was small (n = 114) and therefore precludes making a generalizable statement as to the overall effect of COVID-19 on older adults. In addition, there were more white respondents (n = 78) surveyed than other races [(African American, n = 25; Asian (n = 8) and more than one race (n = 1)]. Our participants were also generally well-educated, with 38% reporting having graduate or post-graduate education. The impact of COVID-19 on older adults and caregivers in a more diverse population sample will need to be studied.

In addition, we did not assess resilience of older adults in this study, although the attributes of resilience seemed to be a common thread throughout our results. Future works should include some assessment or consideration of resilience when investigating the intersection of hardships and adaptability in older adults.

4.6 Recommendation for Future Directions

Pandemics are not new to older adults. Perhaps older adults who survived the effects of the Great Depression learned coping mechanisms strengthened emotional resilience during COVID-19. COVID-19 surpassed the 1918 flu as the deadliest pandemic in U.S. history [16]. With the globalization of Americans, it is probable that more diseases such as COVID-19, may arise. What we can do until then is prepare and educate older adults about what to expect during a pandemic. Preparedness and implementing measures to combat loneliness and isolation for older adults might bring about increased adaptability and less fear, distrust, and anxiety.

The results of this study provide support for measuring adaptability and loneliness in future studies. One cross-sectional study on college students (n = 462) in Israel [17] measured adaptability during COVID-19 using the Adaptability Scale [18] and loneliness using the UCLA Loneliness Scale. Future studies could replicate this study to determine the unique responses of older adults. Resilience in old age was investigated by Maercker, Hilpert, and Burri [14] using Unger's [19] model of resilience. This model could also be used to explore older adults' resilience exhibited during the COVID-19 pandemic in older adults.

The purpose of this survey was to identify the responses of older adults and their caregivers regarding the impact of the COVID-19 pandemic on their mental, emotional, and social well-being. Consistent with Maslow's Theory of Human Motivation [9], humans respond and adapt to what they estimate to be important to their general well-being. The pandemic challenged the way older people communicated, socialized, and lived all over the world [20, 21]. Minahan et al. demonstrated greater resilience of older adults during the COVID-19 pandemic by using standard tools to measure depression, anxiety and coping skills [20]. Another group of investigators developed an adaptability tool for use in Spaniards during COVID-19 [21]. Our study is unique in having investigated through open-ended questions, not only the technological coping skills and comfort level of older adults, but also the impact of the pandemic of their value systems, spirituality, and purpose in life. In addition, most of those we surveyed were from rural and underserved areas in the southern US. Practical implications of this study could be developing this instrument further to probe and measure and capacity for adaptability in young versus older adults. Future work could also focus on development of educational programs to enhance resilience and adaptability skills in all age groups and sociodemographic regions across the country.

Author Contributions

All authors reviewed the results and approved of the final manuscript.

GOHAR AZHAR: 1. made a substantial contribution to the concept or design, acquisition, analysis, and interpretation of data for the article; AND 2.drafted the article and revised it critically for important intellectual content; AND 3. approved the version to be published; AND 4. agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

MELODEE HARRIS: 1. made a substantial contribution to the concept or design, acquisition, analysis, and interpretation of data for the article; AND 2.drafted the article and revised it critically for important intellectual content; AND 3. approved the version to be published; AND 4. agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Competing Interests

The authors have declared that no competing interests exist.

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