Gender Differences in the Factors Associated With the Fear of COVID-19 Among Taiwanese Older People

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Abstract

Objectives: Due to the COVID-19 pandemic, older people are threatened, and there may be different psychological responses toward COVID-19 between women and men. The present study explored the factors and gender differences related to the fear of COVID-19 among older women and men in Taiwan. **Methods:** Geriatric patients (n = 139; 42 men; mean age = 71.73 years) who visited outpatient departments were recruited. They self-reported demographic data and completed questions asking about (i) their fear of COVID-19, (ii) whether they paid attention to COVID-19 news, (iii) whether searched for COVID-19 news, (iv) whether they believed in COVID-19 news, and (v) their preventive COVID-19 behaviors. **Results:** Both women and men reported a low fear of COVID-19, paid close attention to COVID-19 news, and practiced good preventive COVID-19 infection behaviors. The perceived chance of COVID-19 infection was a significant factor contributing to the fear of COVID-19 among both women and men. Preventive behaviors had a positive effect in lowering the fear of COVID-19. News about COVID-19 had a negative effect in lowering the fear of the disease among women but not men. **Conclusions:** As the performing of preventive COVID-19 infection behaviors was associated with a lower fear of COVID-19, healthcare providers should consider strategies for improving preventive behaviors among older people to help ease their worries and fears concerning COVID-19.

Highlights

- What do we already know about this topic?
Older people are threatened by the COVID-19 pandemic and may have different psychological responses toward COVID-19.

- How does your research contribute to the field?
The present study explored the factors and gender differences related to the fear of COVID-19 among older women and men in Taiwan.

- What are your research's implications toward theory, practice, or policy?
Healthcare providers should consider strategies for improving preventive behaviors among older people to help ease their worries and fears concerning COVID-19.

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Introduction

The novel coronavirus disease 2019 (COVID-19) has become a global pandemic. As of September 15, 2021, 16,098 people had been diagnosed with COVID-19 in Taiwan. Compared to the 225,516,973 people who had been diagnosed with COVID-19 globally, the epidemic prevention measures in Taiwan have achieved remarkable results.[1,2] Although several vaccines such as the AstraZeneca COVID-19, Moderna, and Pfizer-BNT vaccines have been developed, many people still question the effect of the vaccine and its subsequent side-effects. Furthermore, given that COVID-19 has a high infection rate and the current knowledge on the variants of coronavirus (eg, Alpha, Beta, Gamma, and Delta) is limited, many people feel anxious and afraid of this disease, especially older people.[1,3–7]

In addition to the fact that older people are more likely to be worried about COVID-19 because they have a higher risk of severe consequences (eg, death) from the disease,[8,10] gender differences have been observed in the clinical symptoms and incidence of COVID-19.[11,12] Chen et al[11] explored the epidemiological and clinical characteristics in China, and found that older men with medical comorbidities were more likely to become infected with worse outcomes. In addition, some studies have found that the response to the disease and preventive behaviors are different between genders.[13,14] More specifically, several recently published studies have reported that women have more negative psychological responses to COVID-19 than men, including higher levels of stress, anxiety, and depression.[15,16]

Apart from the psychological responses, women and men may take different actions and have different attitudes toward COVID-19-related information. One prior study examining 1004 individuals aged under 60 years found that women had a higher level of worry and fear of COVID-19 than men, and were more likely to adopt preventive behaviors.[17] Therefore, women and men may react differently to COVID-19 news reported in media such as newspapers, radio, and television programs regarding information on the incidence, statistics, and practical advice regarding COVID-19.

From the perspective of public health, increasing awareness of the impact of COVID-19 can promote preventive infection behaviors and subsequently reduce the risk of infection. However, although such COVID-19-related news may successfully increase awareness of the disease, it may also cause fear and anxiety with regards to COVID-19.[18] Therefore, it is important for health policymakers to avoid increasing peoples fear when publishing news concerning COVID-19. One prior study in Hong Kong found that individuals with a moderate anxiety level were more likely to take precautionary measures against infection during the SARS outbreak.[13] On the other hand, high fear of COVID-19 levels has been associated with psychological problems, including suicide.[16,19] Therefore, it is important to understand the factors related to fear so that they can be adequately controlled.

As the COVID-19 pandemic is ongoing, healthcare systems worldwide need to provide effective strategies according to specific needs. In order to respond to these needs, several teams have developed different psychometric scales to understand various psychological responses during the COVID-19 outbreak.[3,20-23] Additionally, the factors related to the fear of COVID-19 have also been studied.[18,19] For example, one study found that receiving accurate health information and adopting hygiene strategies (eg, hand-washing) were associated with lower psychological stress during the COVID-19 epidemic.[24] However, most of the evidence concerning gender differences and psychological responses has come from the general population,[15,24] and such information concerning older people is lacking. As older people are more vulnerable to COVID-19 infection,[8,10] there is an urgent need to investigate the degree to which older people pay attention to COVID-19 news, related psychological responses, and preventive COVID-19 infection behaviors. Moreover, it is important to understand the factors related to the fear of COVID-19 among older people so that appropriate programs can be designed. Therefore, the aims of the present study were to: (1) compare the differences in COVID-19 factors (including perceived chances of COVID-19 infection, paying attention to COVID-19 news, believing in COVID-19 news, and preventive COVID-19 infection behaviors) between older women and men; and (2) explore gender differences related to the fear of COVID-19 among older women and men.

Methods

Participants and Recruitment Procedure

The study was approved by the Ethical Committee at Taipei Medical University (registered number: TMU-JIRB N202005044). All of the participants in this study were geriatric patients who visited the orthopedic outpatient departments of one medical center in Taipei, Taiwan from late April to early May 2020. Several research assistants approached the eligible participants and explained the study purpose to them. If they agreed to participate, the research assistant asked them to sign a written informed consent form. The research assistant then used a questionnaire (see Appendix 1) to interview the participants. All face-to-face interviews were completed in a private room in the outpatient departments.

The inclusion criteria were the following: (1) being aged over 60 years; (2) having sufficient cognitive ability to understand the interview; and (3) voluntarily agreeing to participate in the study. The exclusion criteria were (1) being hospitalized during the study period, and (2) having a diagnosis related to psychotic symptoms. A total of 139 participants (97 women and 42 men) were included in the study.

Measures (please see Appendix 1 for detailed item descriptions)

Fear of COVID-19 Scale (FCV-19S). The seven-item FCV-19S was used to assess an individual's fear of COVID-19. All of the items are rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree), where a higher score indicates a higher level of fear toward COVID-19. An example item is "I cannot sleep because I'm worrying about getting coronavirus-19." The FCV-19S was originally developed for a general Iranian population, and its psychometric properties have been found to be satisfactory (eg, Cronbach's α = .82[3]). The Chinese FCV-19S also has promising psychometric properties.[25] Moreover, the Cronbach's α of the FCV-19S in the present study was good (α = .79). The FCV-19S total score computed in the present study used the following method: summing up the FCV-19S item scores and dividing by 7 (ie, the number of items).

Believing COVID-19 Information Scale (BCIS). The six-item BCIS was used to assess the extent to which an individual believes in the COVID-19 information obtained. All of the items are rated on a five-point Likert scale ranging from 1 (no belief at all) to 5 (total belief), where a higher score indicates a greater level of believing the obtained COVID-19 information. The BCIS items include an item stem of "How much do you believe in the COVID-19 information on…," and different media sources are added to the stem. More specifically, the sources include traditional newspapers, television, online news, *Facebook*, *LINE* chat rooms, and *LINE* news pages. The heavier emphasis on social media sources is because *LINE* and *Facebook* are the most frequently used online social media platforms among Taiwanese individuals.[26,27] Chang et al[25] designed the BCIS to assess how much Taiwanese people with mental illness believe the COVID-19 information from these sources. Moreover, the Cronbach's α of the BCIS in the present study was good (α = .74).

Attention to COVID-19 news. One item was used to assess how the participants paid attention to news reporting COVID-19 information. The item was rated on a five-point Likert scale ranging from 1 (not care at all) to 5 (care a lot), where a higher score indicates paying more attention to the COVID-19 information.

Perceived chances of infection. One item was used to assess how the participants evaluated the chances of being infected by COVID-19. The item was rated on a five-point Likert scale ranging from 1 (very low) to 5 (very high), where a higher score indicates a higher perceived chance of being infected by COVID-19.

COVID-19 news search. One item was used to assess how often the participants searched for news related to COVID-19. The item was rated on a five-point Likert scale ranging from 1 (never) to 5 (always), where a higher score indicates more frequently searching for COVID-19 news.

Preventive COVID-19 behaviors. Three behaviors recommended by the World Health Organizational[10] to prevent COVID-19 infection were used to assess how frequently the participants performed each behavior. The three behaviors were handwashing, avoiding touching eyes/nose/mouth, and covering the mouth when sneezing. All of the behaviors were rated on a five-point Likert scale ranging from 1 (rarely) to 5 (always), where a higher score indicates more frequently performing a behavior.

Demographics and clinical characteristics. Age, sex, educational status, and chronic diseases were reported by the participants. More specifically, the participants reported whether they had the following diseases using a yes/no question: hypertension, diabetes mellitus, valvular heart disease, coronary artery disease, renal disease, stroke, hemodialysis, peritoneal dialysis, hepatitis, affective disorders, gastrointestinal ulcer, and cancer. The number of chronic diseases a participant had was then calculated for further data analysis.

Data Analysis

Descriptive statistics, including means (and standard deviations) and frequencies (percentages), were used to understand the participants' characteristics and their information on COVID-19 questions. Independent *t*-tests and Cohen's *d* were then used to understand differences in the characteristics and information on COVID-19 questions between the female and male participants. For Cohen's *d*, a value of .2 indicates a *small* effect, a value of .5 a *moderate* effect, and a value of .8 a *large* effect.[28] Pearson correlation coefficients were used to understand associations among all of the studied variables. Finally, two regression models were constructed to identify the significant factors related to the fear of COVID-19 among the participants. One of the regression models was applied for women and the other for men. Both regression models used the fear of COVID-19 as the dependent variable, and age, educational status (junior high or below vs. senior high or above), number of chronic diseases, perceived chances of COVID-19 infection, attention to COVID-19 news, COVID-19 news search, believing in COVID-19 news, handwashing, avoiding touching eyes/nose/mouth, and covering the mouth when sneezing as independent variables. All statistical analyses were performed using IBM SPSS 24.0 (IBM Corp, Armonk, NY).

Results

The characteristics of the participants are presented in Table 1. The mean age of the participants was 71.73 years (SD = 7.90), and most were women (n = 97; 69.8%). Nearly one-third of the participants had completed their education at junior high or below. On average, the participants had 1.16 chronic diseases (SD = 1.28), and 54 of them did not report any chronic diseases (38.8%). Therefore, the sample was somewhat healthy. The participants perceived chances of being infected by COVID-19 were relatively low (mean

score = 1.51), and they did not specifically search for COVID-19 news (mean score = 2.00). Although the participants did not specifically search for news, their attention to COVID-19 news was high (mean score = 4.10), and they frequently performed preventive COVID-19 behaviors (mean score = 4.74-4.86). Moreover, they believed COVID-19 information to a moderate level (mean score = 2.84) and had low fear of COVID-19 levels (mean score = 1.80).

Table 2 shows the characteristics and responses to COVID-19 questions among the women and men. No significant gender differences were found in any variable. However, effect sizes showed that compared to men, the women were younger ($d = -.24$), had fewer chronic diseases ($d = -.36$), more frequently performed preventive behaviors ($d = .23$-.32), and had less fear of COVID-19 ($d = -.31$). Table 3 illustrates the Pearson correlations between the studied variables. The participants who perceived a higher chance of being infected by COVID-19 searched more frequently for COVID-19 information ($r = .28$; $P < .01$) and had a greater fear of COVID-19 ($r = .40$; $P < .001$). Those who paid more attention to COVID-19 information also searched more frequently for COVID-19 information ($r = .23$; $P < .01$) and believed more in the COVID-19 information ($r = .28$; $P < .01$).

Multiple regression models demonstrated that the perceived chance of COVID-19 infection was a significant factor in explaining the fear of COVID-19 among both women ($\beta = .30$; $P = .006$) and men (standardized coefficient [β] = .44; $P = .01$). Except for the perceived chances of being infected by COVID-19, no other significant factors explained the men's fear of COVID-19. However, believing in COVID-19 news ($\beta = .21$; $P = .04$) and covering the mouth when sneezing ($\beta = -.46$; $P = .03$) were also significant factors in explaining women's fear of COVID-19 (Table 4).

Discussion

The present study attempted to delineate the response patterns in the behavior and fear of COVID-19 between older women and men in Taiwan. The findings showed that both women and men had a low fear of COVID-19, paid high attention to COVID-19 news, and practiced good preventive COVID-19 infection behaviors. The correlation matrix showed that those who had more chronic diseases and perceived higher chances of COVID-19 infection were more afraid of COVID-19. However, the findings were different after women and men were separated out in the regression models.

The older individuals in the present study had low levels of fear toward COVID-19 (mean score = 1.8) compared with a prior study examining the fear of COVID-19 among 1032 older adults aged 60–69 years (mean score = 2.8) in Bangladesh.[9] Also, Li et al[29] examined the measurement invariance of the FCV-19S items by analyzing data from ten countries

Table 1. Participants' Characteristics and Responses to COVID-19 Questions (N = 139).

	N (%) or Mean (SD)/Range
Age (year)	71.73 (7.90)/60–97
Women	97 (69.8)
Men	42 (30.2)
Educational status (junior high or below)	46 (33.1)
Number of diseases	1.16 (1.28)/0–5
Perceived chances of COVID-19 infection	1.51 (.88)/1–5
Paying attention to COVID-19 news	4.10 (1.10)/1–5
COVID-19 news searching	2.00 (1.40)/1–5
Believing in COVID-19 news	2.84 (.63)/1–5
Handwashing	4.78 (.68)/2–5
Avoid touching eyes/nose/mouth	4.74 (.71)/1–5
Covering mouth when sneezing	4.86 (.57)/1–5
Fear of COVID-19	1.80 (.80)/1–5

Table 2. Comparing Participants' Characteristics and Responses to COVID-19 Questions Between Gender.

	Mean (SD)			
	Female (N = 97)	Male (N = 42)	t (P-value)	Cohen's d
Age (year)	71.16 (8.09)	73.05 (7.36)	1.29 (.20)	−.24
Educational status (junior high or below)[a]	37 (38.1)	9 (21.4)	3.70 (.054)	—
Number of diseases	1.02 (1.24)	1.48 (1.33)	1.94 (.054)	−.36
Perceived chances of COVID-19 infection	1.47 (.83)	1.60 (.99)	.74 (.46)	−.14
Paying attention to COVID-19 news	4.08 (1.04)	4.14 (1.24)	.30 (.77)	−.05
COVID-19 news searching	1.97 (1.37)	2.07 (1.47)	.40 (.69)	−.07
Believing in COVID-19 news	2.84 (.64)	2.85 (.62)	.06 (.95)	−.02
Handwashing	4.86 (.54)	4.62 (.91)	1.91 (.06)	.32
Avoid touching eyes/nose/mouth	4.79 (.66)	4.62 (.79)	1.35 (.18)	.23
Covering mouth when sneezing	4.92 (.40)	4.74 (.83)	1.73 (.09)	.28
Fear of COVID-19	1.72 (.69)	1.99 (1.00)	1.84 (.07)	−.31

[a]Presented using n (%) and tested using χ^2.
Cohen's d is calculated using (mean of female group–mean of male group)/SD_{pooled}, an absolute d at .2 indicates *small* effect; at .5 *moderate*; at .8 *large*.

(including Bangladesh and the United Kingdom) and reported that the mean score on the FCV-19S was 2.0–3.9 among populations aged 16–68 years. A possible reason may be the effective infection prevention policy in Taiwan. As soon as COVID-19 appeared to be a transmissible disease in Wuhan, China in December 2019, the Taiwanese government paid close attention to the danger of the disease and took immediate action. For example, the government added COVID-19 as the fifth category of notifiable infectious diseases in January 2020,[2] so that once an individual was diagnosed with COVID-19, healthcare professionals were required to notify the health authority within 24 hours. Subsequently, the Taiwanese government conducted tourism history surveys from the airport to the community, and implemented home quarantine for individuals who returned from

countries with COVID-19 outbreaks.[2] The data collection of this study was from late April to early May 2020. Compared to other countries (eg, European countries and USA), Taiwan did very well in controlling COVID-19 and attracted global attention for their disease-inhibiting policies during the period.[12] Therefore, the lowest incidence of COVID-19 in Taiwan compared to other countries may explain the lower fear of COVID-19 score among the older Taiwanese population in this study.

The relationships between preventive COVID-19 infection behaviors and fear are complex. Several behavioral theories and models (eg, the Fear Drive Model, Health Belief Model, and Protection Motivation Theory) have suggested that individuals' threat/fear drives them to perform preventive behaviors[30-32] through increased risk perception.[16] Therefore, frequently performing preventive behaviors is very

Table 3. Pearson Correlation Among Studied Variables.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	—										
2. Education	−.36***	—									
3. Disease	.32***	−.25**	—								
4. Chance	−.09	.04	.03	—							
5. Attention	−.13	.19*	−.01	.10	—						
6. Searching	−.25**	.25**	−.08	.28**	.23**	—					
7. Believing	.02	.06	.07	.04	.28**	.15	—				
8. Handwashing	.05	−.09	.04	−.14	−.03	−.15	.01	—			
9. Touch	−.04	−.06	−.02	−.03	−.003	−.15	−.02	.26**	—		
10. Cover	−.21*	.05	−.03	−.18*	−.02	−.08	−.09	.49***	.62***	—	
11. Fear	.11	−.04	.19*	.40***	.01	.04	.15	−.02	−.01	−.15	—

*P < .05; **P < .01; ***P < .001.
Disease = number of diseases; Chance = Perceived chance of COVID-19 infection; Attention = Paying attention to COVID-19 news; Searching = COVID-19 news searching; Believing = Believing in COVID-19 news; Touch = Avoid touching eyes/nose/mouth; Cover = Covering mouth when sneezing; Fear = Fear of COVID-19.

Table 4. Regression Models in Explaining Fear of COVID-19. Bold values indicated the factors reached statistical significance (*P*-value <.05).

	B (SE)/β (*P*-value)	
	Male (N = 42)	Female (N = 97)
Age	.03 (.03)/.19 (.37)	−.003 (.01)/−.03 (.78)
Educational status	−.43 (.43)/−.18 (.32)	.05 (.17)/.04 (.76)
Number of diseases	.03 (.13)/.04 (.83)	.09 (.06)/.17 (.11)
Perceived chance of infection	**.45 (.17)/.44 (.01)**	**.25 (.09)/.30 (.006)**
Attention to COVID-19 news	.07 (.15)/.09 (.64)	−.07 (.07)/−.11 (.30)
COVID-19 news searching	−.03 (.12)/−.04 (.82)	−.04 (.06)/−.08 (.46)
Believing in COVID-19 news	.12 (.26)/.08 (.64)	**.23 (.11)/.21 (.04)**
Handwashing	.11 (.23)/.10 (.65)	−.01 (.13)/−.01 (.92)
Avoid touching eyes/nose/mouth	.21 (.32)/.17 (.52)	.03 (.12)/.03 (.77)
Covering mouth when sneezing	−.07 (.38)/−.06 (.85)	**−.46 (.21)/-.27 (.03)**
	Model fit	
F (*P*-value)	1.36 (.25)	3.10 (.002)
R² (adjusted R²)	.31 (.08)	.27 (.18)

likely to lower fear. This may partly explain the negative association between covering the mouth when sneezing and fear of COVID-19 among the women in the present study. However, this association was not found among the men. Prior studies have also reported gender differences in health-related behaviors.[33,34] For example, Vlassoff reported that women are more likely to self-treat or use alternative therapies and men are more likely to seek treatment from formal health services.[33] Deeks et al[34] and Ek[35] reported that women are more willing to get information regarding health or illness prevention than men. These findings may further explain why preventive behaviors were not significantly related to reducing fear of COVID-19 among the men in the present study.

Additionally, the women in the present study had higher levels of fear toward COVID-19 when they believed more in COVID-19 news. However, this association was not found among men. A possible explanation is that women are more sensitive to stress than men.[36] As COVID-19 news reports can be stressful (eg, hearing the number of infections and deaths), women may be more sensitive to this news when they believe in it. In contrast, men may not have the same feelings as women. Moreover, the findings indicated that when the participants perceived higher chances of COVID-19 infection, they had higher levels of fear of COVID-19 irrespective of gender. This finding is reasonable because older people may be more afraid of the consequences of COVID-19 infection.[8,10]

Unlike prior evidence showing higher levels of fear of COVID-19 among women than among men,[15,16,24] the findings of the present study indicated that the women had a relatively lower level of fear of COVID-19 than the men. This finding may be explained by the different features between women and men. In the present study, the men had more chronic diseases than the women. Given the reported association between chronic diseases and mortality among people infected by COVID-19,[37] the men in the present study may have had a greater fear of COVID-19 due to their chronic diseases.

There are several limitations to the present study. First, the older people were somewhat healthy (as they had few chronic diseases), and therefore the results of the study may not be generalizable to older people with severe illnesses or prolonged chronic diseases. Second, the study used convenience sampling with a relatively small sample size. Moreover, the participants were community-dwelling older people who visited the outpatient departments at one specific medical center in Taipei. Therefore, the present sample is more representative of older people who take care of their health. In this regard, the attention to COVID-19 and preventive COVID-19 infection behaviors among the study participants may be higher than in other older populations. Third, all of the data were self-reported by the participants, so the present study suffers from bias due to self-reports, such as recall bias and social desirability bias.

Conclusion

The findings of this study showed that the older people who performed preventive behaviors more often had a lower fear of COVID-19, and that this may be related to the policies of the Taiwanese government. News from the media had a negative effect in lowering the fear of COVID among women but not among men. These findings may be helpful for healthcare providers who should consider strategies for improving preventive behaviors among older people to help ease their worries and fears concerning COVID-19.

Appendix I

Covid-19 Survey

Demographics and Clinical Characteristics

Name	Date
Gender: ☐ Male ☐ Female ☐ Other:	Age:
Highest educational level:	☐ None ☐ Elementary ☐ Junior high ☐ Senior high ☐ Collage ☐ Graduate school
Chronic underlying disease: (Multiple choice)	☐ Hypertension ☐ Diabetes mellitus ☐ Valvular heart disease ☐ Coronary artery disease ☐ Renal disease ☐ Stroke ☐ Hemodialysis/Peritoneal dialysis ☐ Hepatitis ☐ Affective disorders ☐ Gastrointestinal ulcer ☐ Cancer history ☐ Others:

Fear of COVID-19 Scale	Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
I am most afraid of coronavirus-19					
It makes me uncomfortable to think about coronavirus-19					
My hands become clammy when I think about coronavirus-19					
I am afraid of losing my life because of coronavirus-19					
When watching news and stories about coronavirus-19 on social media, I become nervous or anxious					
I cannot sleep because I am worrying about getting coronavirus-19					
My heart races or palpitates when I think about getting coronavirus-19					

Attention to COVID-19 News	Not Care at all	Not Care	Average	Care	Care a Lot
How much do you care about the news reporting COVID-19 information?					

COVID-19 News Search	Rarely	Sometimes	Often	Usually	Always
How often do you search for news related to COVID-19?					

Perceived Chance of Infection	Very Low	Low	Average	High	Very High
How high do you think the chances are of being infected by COVID-19?					

Believing COVID-19 Information Scale	Strongly Disbelieve	Disbelieve	Neither Believe nor Disbelieve	Believe	Strongly Believe
How much do you believe in COVID-19 information in LINE chat rooms?					
How much do you believe in COVID-19 information in LINE news pages?					
How much do you believe in COVID-19 information on Facebook?					
How much do you believe in COVID-19 information in online news?					
How much do you believe in COVID-19 information on television?					
How much do you believe in COVID-19 information in traditional newspapers?					

Preventive COVID-19 Infection Behaviors Scale	Almost Never	Rarely	Sometimes	Often	Almost Always
How often do you regularly and thoroughly clean your hands with an alcohol-based hand rub or wash them with soap and water?					
How often do you avoid touching eyes, nose, and mouth?					
How often do you cover your mouth and nose with your bent elbow or tissue when you cough or sneeze?					

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