Spatial Distance to Epicenter, Risk Perceptions, and Preventive Behaviors Against Health Risks in the Initial Stage of the COVID-19 Pandemic

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Abstract

Background: The rapid global spread of COVID-19 has become a monumental public health emergency. Gauging people's psychological and behavioral reactions in an initial alerting stage is crucial for helping public health authorities to manage the epidemic.

Objective: To investigate how spatial distance from the epicenter of Wuhan influenced people's risk perceptions regarding COVID-19. Additionally, how risk perceptions, in concert with demographic variables, influenced the adoption of different preventive behaviors in the early stages of the outbreak.

Methods: We conducted a national cross-sectional survey from January 21, 2020 to January 23, 2020. We assessed the association between spatial distance from the epicenter and participants' risk perceptions using linear regression models. We used binomial logistic regression models to calculate the determinants of the adoption of six preventive behaviors against COVID-19.

Results: Our data contain 1988 valid responses from 31 provinces in mainland China; 28.2% of respondants resided in Hubei province (n=560). Participant locations were roughly coded into five categories based on their geographical distance from the epicenter. We found that the closer people were to the initial epicenter in Wuhan, the higher susceptibility they felt (?=-.24, t=-11.12, P<.001), while their perceived severity displayed no significant variation based on location (?=-.02, t=-.93, P=.35). Compared with those in the peripheral provinces, people in Hubei and the forth-category provinces reported higher odds of wearing facemasks when going out (odds ratio [OR] 2.635 95%CI 1.33-4.17, P<.001; OR 3.19, 95%CI 1.78-5.72, P<.001, respectively). Participants with higher perceived susceptibility had a higher likelihood of wearing masks (OR 1.15, 95%CI 1.01-1.31, P=.04), however, lower odds of avoiding social gatherings (OR 0.87, 95%CI 0.77-0.99, P=.03) and avoiding visiting Wuhan (OR 0.69, 95%CI 0.61-0.77, P<.001). Participants' perceived severity was positively associated with their engagement in washing hands and frequent ventilation (OR 1.12, 95%CI 1.00-1.24, P=.05), wearing masks in public (OR 1.39, 95%CI 1.25-1.55, P<.001), avoiding social gathering (OR 1.25, 95%CI 1.12-1.38, P<.001) and avoiding traveling to Wuhan (OR 1.13, 95%CI 1.02-1.25, P=.02). Participants' sex was also associated with their perceived severity and the engagement of precautionary behaviors.

Conclusions: These results characterize an "epicenter effect" early in the pandemic. Our findings expand the understanding of perceived susceptibility and severity, which acted as two distinct dimensions of risk perception, and led to different behavioral outcomes.

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Conclusions: These results characterize an "epicenter effect" early in the pandemic. Our findings expand the understanding of perceived susceptibility and severity, which acted as two distinct dimensions of risk perception, and led to different behavioral outcomes.

Keywords: COVID-19; preventive behavior; risk perception; perceived susceptibility; perceived severity; epicenter

Introduction

The rapid proliferation of COVID-19 across the globe has become the most monumental public health emergency in recent history. In a matter of months, COVID-19 went from an epidemic across China, to a true global pandemic with more than 96 million cases by the beginning of 2021 [1]. As the epicenter of the outbreak has shifted outward, preventive public health measures, such as quarantines, community testing, lockdowns, and travel restrictions have been implemented [2].

Risk perception is an important aspect in most health behavioral theories [3-5], including the health belief model [6], protection motivation theory [7], and the extended parallel process model [8]. It consists of both perceived susceptibility (one's vulnerability to a disease) and severity (the seriousness related to the outcome of the disease) [8]. Gauging people's psychological and behavioral reactions in an initial alerting stage is crucial for public health authorities' ability to to manage an epidemic [9]. The concept of epicenter has been introduced into studies on risk perceptions [10-13]. Compelling evidence suggests that an individual's risk perception is associated with their proximity to the center of an outbreak [14], but the specific effect of this factor remains open to debate. Some have suggested that the percieved impact of an outbreak gradually decays as ripples expand from the center to the peripheral, known as the "ripple effect" [15, 16]. The ripple effect conjecture suggests that the closer people are to the center of the crisis, the more concern and negative emotions they may have about health risks [16]. In sharp contrast, researchers have also observed a "typhoon eye effect" during global epidemics such as SARS [9, 17], which indicated that people's risk perception reached its lowest level at the epicenter, and gradually increased while moving outward [9]. With COVID-19, researchers found that people in areas closer to the epicenter (based on the accumulative confirmed cases) perceived more serious threats [18].

Extensive literature has focused on the biases of healthy people in their risk perceptions as potential determinants of behavior [19, 20]. Two dimensions of risk perception(perceived susceptibility and perceived severity) work multiplicatively [21] or additively [22] andcan be seen as one of the primary predictors of people's behavioral adoptions. Some studies conceptualize risk perception as a whole [23], but other research has indicated that these two dimensions of risk perceptions are distinct [24, 25]. For example, some studies distinguish between the concepts of susceptibility and the severity [26, 27]. By analyzing 50 health conditions that varied based on several risk characteristics, there was an inverse relationship between perception of susceptibility and severity [26], which suggested that these two dimensions, along with their predictors and outcomes, should be investigated separately. Despite this, there is a large body of research documenting the influenc of the relationship between risk perception and the intention of taking protective behaviors [25, 28, 29]. However, few studies have examined people's actual behavioral responses, especially at an early stage.

Although many studies have confirmed that risk perception plays an important role in predicting behavior [30-32], there was little prevention guidance from either scientists or health authorities at the time of data collection (early January 2020). According to the WHO in early March 2020, quarantine, the use of masks, handwashing, and staying at home are behaviors that reduce the spread of SARS-CoV-2 [2]. At the beginning of the epidemic, it was critical to adopt these behaviors, particularly the wearing of masks and staying at home, in many countries [33, 34]. However, research has shown that people were more likely to engage in certain preventive behaviors than others [35]. Specifically, compared to a behavioral response of wearing masks and staying at home, people seemed to be more proactive in taking preventive measures such as washing hands, covering their mouths when sneezing, maintaining social distancing, and avoiding public transportation [9, 12, 36]. Although, there is evidence that, with the development of the pandemic, individuals became more aware of the health risks caused by the virus and engaged in protective behaviors with increasing frequency, the probability of adopting different preventative behaviors was not equal [34,

37, 38].

This study aims to assess the perceptional and behavioral responses of the Chinese population at an early phase of the epidemic. Moreover, we aim to examine the effect of spatial distance from the epicenter on people's risk perceptions through the lens of perceived susceptibility and perceived severity. In addition, we further investigate how geographical distance, risk perceptions, and demographic factors including sex and age, jointly influence people's adoption of different precautionary behaviors.

Methods

Recruitment

On January 20, 2020, Chinese health authorities confirmed person-to-person transmission of the novel coronavirus and infection in medical staff [39]. On January 23, 2020, the Chinese central government imposed a lockdown in Wuhan, the initial epicenter of the outbreak, with travel restrictions imposed on several other cities in Hubei province within the next few days [40]. A cross-sectional survey was conducted from January 21, 2020 to January 23, 2020, and a free professional survey platform *Tencent Questionnaire* was used for data collection. The self-administered questionnaire was designed and distributed to measure associations between geographical proximity to Wuhan, Chinese people's perceptions towards risks, as well as their engagement in preventive behaviors at an early stage of the outbreak. Overall, 2299 people participated in the survey, from across the 31 provinces of mainland China (excluding Hong Kong, Macau and Taiwan). Those who had not heard of the novel coronavirus were excluded after data screening. Therefore, the final sample size was 1988 in total. This study received ethical approval from Tsinghua University in Beijing, China.

Measurement

Upon consent, *Tencent Questionnaire* automatically recorded users' locations. Participants' provincial-level locations were roughly classified into five categories (Table 1), and people's geographical distances to the epicenter Wuhan were coded from 1 (center) to 5 (peripheral).

Table 1. Categorization of distances between participants' locations and the epicenter in Wuhan

Provinces	Code
Hubei	1
Shannxi, Henan, Chongqing, Hunan, Jiangxi, Anhui	2
Shanxi, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Gansu	3
Qinghai, Inner Mongolia, Ningxia, Beijing, Tianjin, Shanghai, Hong Kong, Macau, Yunnan	4
Hainan, Tibet, Xinjiang, Liaoning, Jinlin, Heilongjiang	5

Three items were employed to measure people's perceived susceptibility, including "I am in or will pass by the susceptible areas," "There are suspected or confirmed cases of COVID-19 around me," and "I am at a very high risk of contracting COVID-19." Each was measured on a 5-point Likert scale, anchoring from 1 "strongly disagree" to 5 "strongly agree" (Cronbach alpha=.638). Perceived

severity was measured by asking another three questions on a 5-point Likert scale: “I am more likely to contract COVID-19 if going out without wearing a mask,” “I may die if I contract COVID-19,” and “I may pass it on to some else if I contract COVID-19.” We calculated the mean scores for these three items. Higher scores represented higher perceived severity (Cronbach alpha=.753). Together, the six items measuring people’s risk perceptions towards COVID-19 had acceptable reliability (Cronbach alpha=.714).

There were no specific guidelines for precautions towards the novel coronavirus during the time of data collection. Thus, we chose six common practices for minimizing the risk of contracting infectious diseases, the majority of which were later included in the recommendations of the World Health Organization in response to the epidemic [2]. Through a multiple-choice test, participants were asked to choose which following measures they had been taking: (a) washing hands and frequent ventilation, (b) wearing masks when going out, (c) using sanitizer at home, (d) taking medicine, (e) avoiding social gatherings, (f) avoiding traveling to Wuhan, (g) other, (h) not taking any specific measures. Items a to f were later recoded into dichotomous variables (0=no, 1=yes) so that they could be analyzed separately to investigate people’s behavioral responses.

Each participant was also asked their sex and age group as part of the survey.

Statistical Analysis

In this study, a multiple regression analysis was utilized to examine the associations between geographical distance and participants’ perceived susceptibility and severity. We then conducted binomial logistic regression analyses of the preventive behaviors. In the multiple regression analysis, participants’ genders and age groups were entered in step 1 (Model 1s in Table 3 and Table 4), geographical distance (the distance from participants’ reported locations to the epicenter in Wuhan) was entered in step 2 (Model 2s in Table 3 and Table 4). In the binomial logistic regression analysis, demographic factors including gender, age group, and geographical location, were entered in step 1 (see Model 1s in Appendix 1), perceived susceptibility was entered in step 2 ((see Model 2s in Appendix 1), and perceived severity was entered in step 3 (see Model 3s in Appendix 1) . The following results regarding these predictors of behavioral engagement (Figure 2-7) summarize the effects of all variables in Model 3s. SPSS 25 (IBM Corp) was used for the analyses.

Results

Baseline Characteristics

Our study included 1988 participants (740 males and 1248 females). Among all participants, 6.2% were under 20 years old, 44.4% were 21-30 years old, 33.5% were 31-40 years old, 11.9% were 41-50 years old, 3.3% were 51-60 years old, 0.7% were 61-70 years old, and 0.1% (N=2) answered “other” (Table 2). The participants reported lower percieved infection likelihood (M=1.86, SD=.90) than perceived severity (M=3.72, SD=1.00).

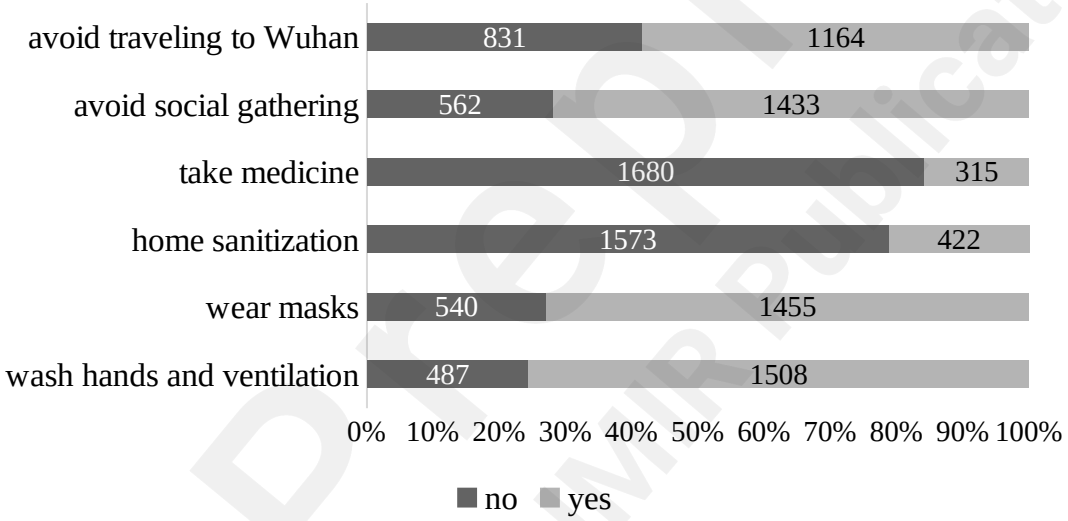
Table 2. Sample Characteristics (N=1988)

Variables		Participants	
Gender, n (%)	male	740	37.2%
	female	1248	62.8%
Age group, n (%)	≤20	123	6.2%
	21-30	882	44.4%
	31-40	666	33.5%
	41-50	236	11.9%
	51-60	66	3.3%
	61-70	13	0.7%
	□70	2	0.1%

	Hubei	560	28.2%
	Shannxi, Henan, Chongqing, Hunan, Jiangxi, Anhui	288	14.5%
Geographical distance, n (%)	Shanxi, Hebei, Shandong, Jiangsu, Zhejiang, Fujian, Guangdong, Guangxi, Guizhou, Sichuan, Gansu	606	30.5%
	Qinghai, Inner Mongolia, Ningxia, Beijing, Tianjin, Shanghai, Yunnan	473	23.8%
	Hainan, Tibet, Xinjiang, Liaoning, Jinlin, Heilongjiang	61	3.1%

Pertaining to the engagement of six types of preventive behaviors (Figure 1): 75.5% of participants reported washing hands and ventilating their rooms properly, 72.9% of participants reported wearing a mask when going out, and 71.8% avoided social gatherings during the studied period. Fewer people chose to avoid traveling to the initial epicenter in Wuhan (n=1157, 58.2%), cleaning and sanitizing their home (n=418, 21%), or taking medicine (n=315, 15.8%) in order to prevent the novel coronavirus.

Figure 1. Self-reported engagement in different preventive behaviors



Evaluation Outcomes

Geographical distance, risk susceptibility and severity

Our data show that participants' geographical distances from the center of the outbreak in Wuhan were negatively associated with their perceived susceptibility (β=-.24, t=-11.12, *P*<0.001). However, geographical distance had no significant influence on how severe participants perceived that the outbreak was (β=-.02, t=-.93, *P*=.35) (Table 3 and Table 4).

Table 3. Hierarchical regression analysis results on the perceived susceptibility

	Model 1					Model 2				
	B	*SE*	*β*	*t*	*P*	*B*	*SE*	*β*	*t*	*P*
Sex	-0.04	0.04	-0.02	-0.95	.34	-0.02	0.04	-0.01	-0.55	.59
Age	0.02	0.02	0.02	0.81	.42	0.03	0.02	0.03	1.37	.17
Geographical						-0.18	0.02	-0.24	-11.12	<.001

Distance Constant	1.88	0.09		20.38	<.001	2.29	0.10		23.65	<.001
r^2	0.00					0.06				
Δr^2	0.00	0.45				0.06	<0.001			

Table 4. Hierarchical regression analysis results on the perceived severity

	Model 1					Model 2				
	B	*SE*	*β*	*t*	*P*	*B*	*SE*	*β*	*t*	*P*
Sex	0.26	0.05	0.13	5.63	<.001	0.26	0.05	0.13	5.66	<.001
Age	-0.01	0.02	-0.01	-0.37	.71	-0.01	0.02	-0.01	-0.32	.75
Geographical						-0.02	0.02	-0.02	-0.93	.35
Distance Constant	3.32	0.10		32.69	<.001	2.29	0.10		23.66	<.001
r^2	0.02					0.02				
Δr^2	0.02	<.001				0.00	.35			

Predictors of behavioral responses

Our results indicated that respondents' spatial distances from the epicenter had different influences on their odds of wearing masks, and their plans to travel to Wuhan. Compared with those in the peripheral provinces, people in Hubei province reported a higher chance of wearing a facemask in public (OR 2.635 95%CI 1.33-4.17, *P*<.001). Additionally, participants who were relatively closer to Hubei, including Qinghai, Inner Mongolia, Ningxia, Beijing, Tianjin, Shanghai and Yunnan were more likely to wear masks for prevention (OR 3.19, 95%CI 1.78-5.72, *P*<.001). In contrast, compared with participants located in the peripheral provinces, people in Hubei were less likely to avoid visiting Wuhan (OR 0.15, 95%CI 0.08-0.29, *P*<.001). Similarly, people in the third-category provinces also reported lower odds of avoiding travel to Wuhan during the outbreak (OR 0.52, 95%CI 0.27-0.99, *P*=.04) than people living in the peripheral provinces.

With respect to the effect of risk perception on people's engagement in prevention behaviors, we found that people who perceived higher risk susceptibility had a higher likelihood of wearing masks (OR 1.15, 95%CI 1.01-1.31, *P*.04), but lower odds of avoiding social gatherings (OR 0.87, 95%CI 0.77-0.99, *P*=.03), and avoiding travel to Wuhan (OR 0.69, 95%CI 0.61-0.77, *P*<.001). However the respondant's perceived risk severity proved to be positively associated with their engagement in washing hands and ventilation (OR 1.12, 95%CI 1.00-1.24, *P*=.05), wearing masks in public (OR 1.39, 95%CI 1.25-1.55, *P*<.001), avoiding social gatherings (OR 1.25, 95%CI 1.12-1.38, *P*<.001) and avoiding travel to Wuhan (OR 1.13, 95%CI 1.02-1.25, *P*=.02).

Figure 2. Binomial logistic regression results for washing hands and ventilation

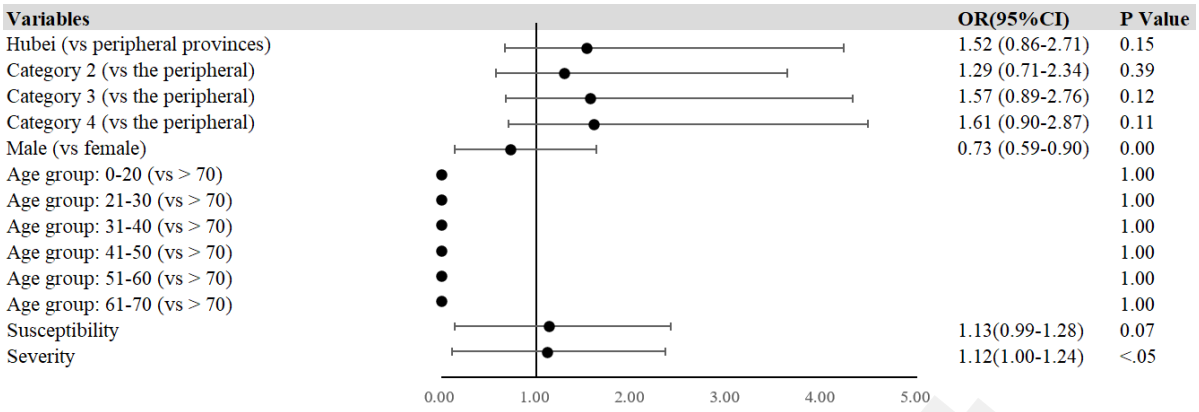


Figure 3. Binomial logistic regression results for wearing masks when going out

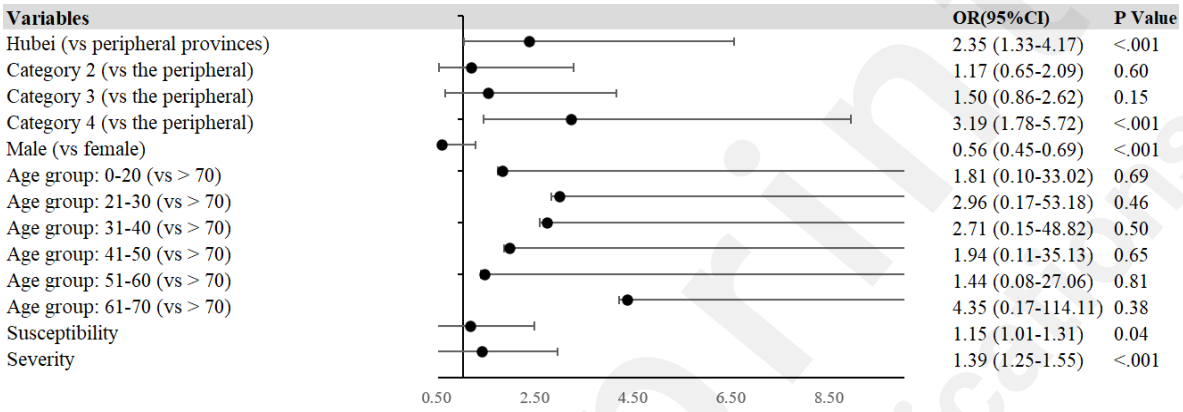


Figure 4. Binomial logistic regression results for home sanitization

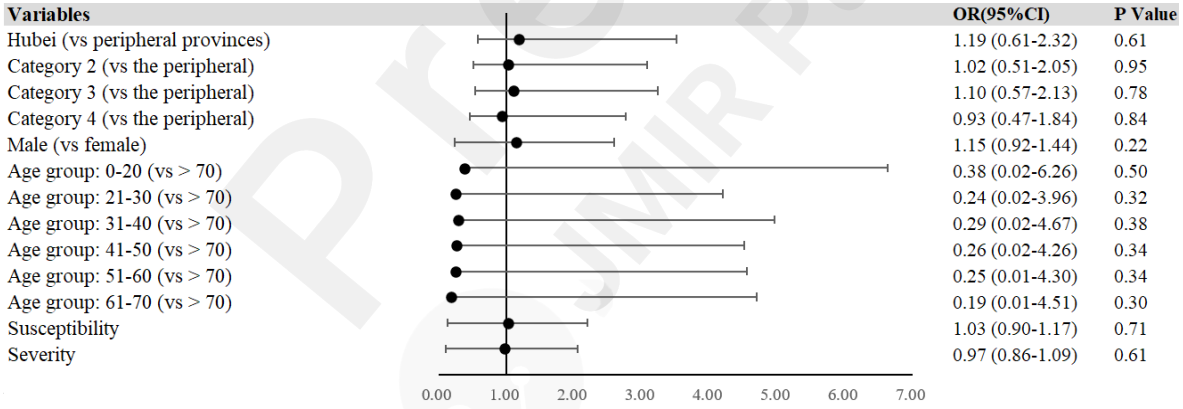


Figure 5. Binomial logistic regression results for taking medicine

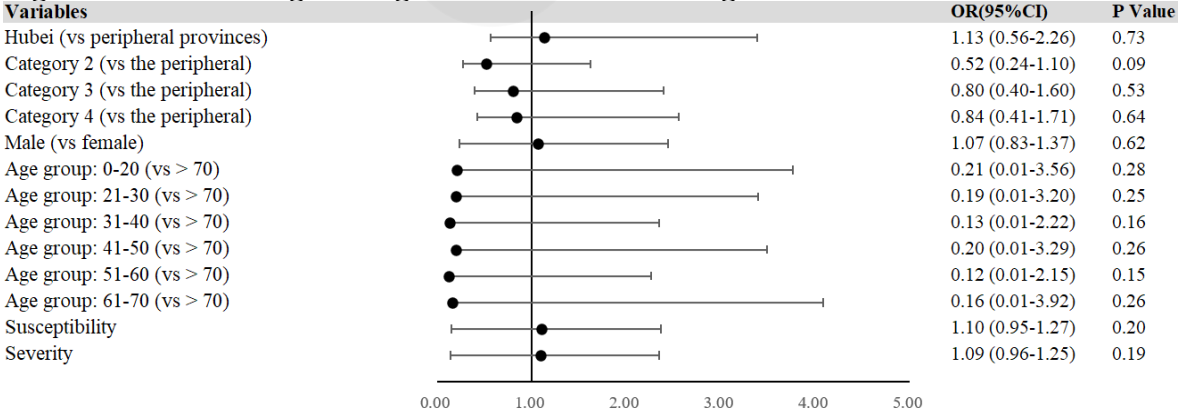


Figure 6. Binomial logistic regression results for avoiding social gatherings

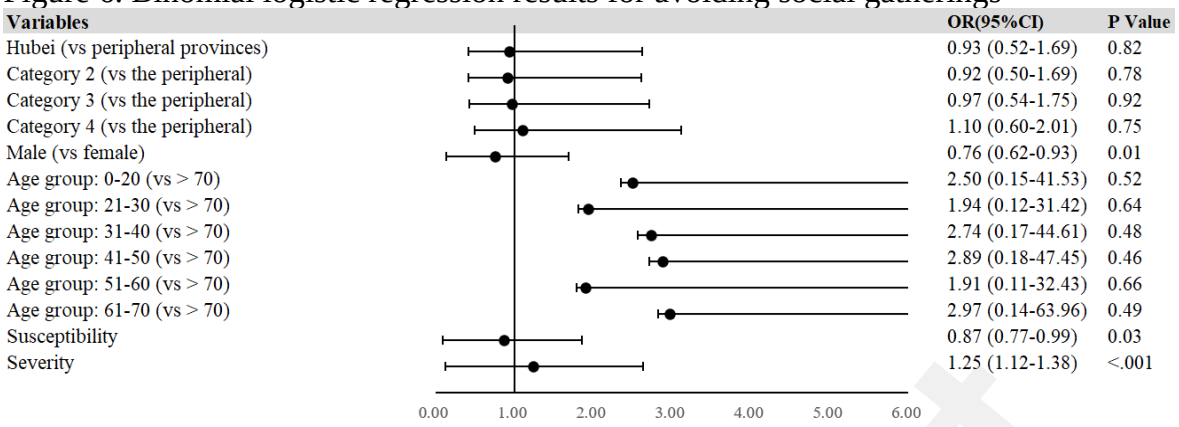
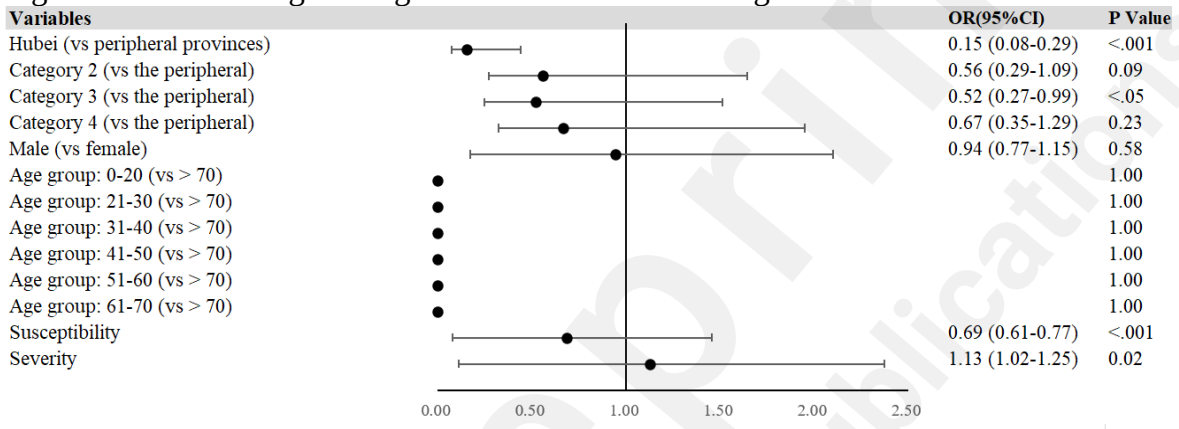


Figure 7. Binomial logistic regression results for avoiding travel to Wuhan



The effects of demographic characteristics

As shown in Table 4, participants' sex showed significant influence on perceived severity. Females tended to report a higher severity of risk than males (β=.13, t=5.66, *P*<0.001). Participants' age groups didn't have a significant effect on either perceived susceptibility or severity (Table 3 and Table 4).

Compared with their female counterparts, at the early stages of COVID-19, males were less likely to wash their hands and ventilate their houses properly (OR 0.73, 95% CI 0.59-0.90, *P*<.001), wear masks in public places (OR 0.56, 95%CI 0.45-0.69, *P*<.001), and avoid social gatherings (OR 0.76, 95%CI 0.62-0.93, *P*=.01). However, there was no significant difference in taking any preventive measures between people from different age groups.

Discussion

Principal Results

This study examined the effect of spatial distance from the COVID-19 pandemic's epicenter in Wuhan on people's risk perceptions through the lens of perceived susceptibility and perceived severity. In addition, we investigated how geographical distance, risk perception, and demographic factors including sex and age, jointly influenced people's adoption of different preventive behaviors.

Above all, the study indicated that the closer people were to the epicenter, the higher likelihood of infection they percieved. This is in accordance with what the ripple effect concept suggests; people's perceived risks are direct reflections of objective hazards [14]. However, a study conducted in late February regarding Chinese people's risk perceptions during the COVID-19 pandemic showed the

opposite effect, suggesting that geographical distance from the epicenter positively predicted people's risk perceptions [41]. There are two possible explanations regarding these inconclusive results. On the one hand, the real risk levels changed over time as the epidemic spread across the country. By January 23, 2020, the accumulative confirmed cases in Hubei province had reached 500, while those of the other provinces remained under 50 [42]. Thus, in an initial stage, people in Hubei were more likely to gain exposure to the risk of infection; with more sub-centers emerging, the exposure level of people in other provinces also increased, which might lead to a higher perceived threat [18]. On the other hand, people in the original epicenter may have become psychologically immune to coronavirus risks after repeated exposure [43]. As the outbreak developed over time, people in Hubei may have regarded the coronavirus disease as something they were less susceptible to and also may have thought of it as less severe than people in other regions who had not had as much contact with the crisis early on.

Besides this, our study reported that geographical distance significantly altered participants' perceptions of infection likelihood (perceived susceptibility), yet it did not influence their estimates of the seriousness of COVID-19 (perceived severity). These findings indicate that the two dimensions that comprise risk perceptions are distinct from one another. While perceived susceptibility represented people's cognitive assessments of risk probability, perceived severity indicated its outcome value [14, 27]. Some studies have even revealed an inverse relationship between these two dimensions, noting that the assessment of risk perception might be misleading if either dimension is downplayed [26]. Considering that people generally reported higher risk severity than susceptibility, we argue that at the very beginning of the outbreak, most people, regardless of their proximity to the epicenter, gained relevant information from various sources to assess the severity of the novel coronavirus. Nevertheless, their perceptions of the odds of contracting the disease themselves changed according to their spatial boundaries.

Moreover, geographical distance was associated with people's engagement in certain behaviors. Compared with people in the peripheral provinces, those who were closer to Hubei were more likely to put on face masks when going out, which might partly be due to the mediating effect of higher susceptibility perception. However, the results pertaining to the relationships between perceived susceptibility and behavioral engagements were found to be inconclusive. When people felt they were more likely to contract the novel coronavirus, they were more willing to carry out hygiene behaviors (i.e., wearing masks), yet less likely to be compliant with avoidant behaviors (i.e., avoiding social gatherings, avoiding travel to Wuhan). These findings shed light on how people evaluate different precautions before making decisions. On the one hand, external factors such as the accessibilities and cost of different measures should be taken into consideration [34, 37, 38]. On the other hand, people who felt they were more likely to contract the COVID-19 paid more attention to personal hygiene, but they might have thought that restrictions on socialization, such as avoiding public gatherings, would be less effective in preventing the epidemic.

The findings also show that the two dimensions of risk perception (perceived susceptibility and severity) may lead to different behavioral outcomes. For instance, it was found that participants who perceived higher risk susceptibility had lower odds of avoiding social gatherings and avoiding travel to Wuhan, yet higher perceived severity proved to be positively associated with their engagement in these two precautionary behaviors. In fact, despite the fact that the existing literature has suggested that risk perception is key to behavioral changes in the realm of public health [44], the distinct effects of perceived susceptibility and severity have been relatively understudied [26]. Our study team remains open to future research on the cognitive and psychological processes involved in people's risk perceptions, the contrast between perceived susceptibility and perceived severity, as well as the potential effects these perceptions have on individual adherence to health guidance.

Lastly, the results regarding the effect of participants' sex and age showed some noteworthy patterns. Though previous research on SARS has found that women tended to perceive themselves as more susceptible than men [10], our study revealed no significant gender difference in perceived

susceptibility. Instead, women were more sensitive to the seriousness and harmfulness of the novel coronavirus even in an initial stage. Besides this, compared with their female counterparts, men were less likely to take preventive behaviors, such as washing hands and ventilating their home, wearing a mask when going out, and avoiding social gatherings. In contrast to the popular notion of generation gaps in risk perception and mental health during the outbreak [45], our results found that, in an initial stage of the COVID-19 pandemic, no significant association was observed between age and participants' risk perceptions, nor between age and their behavioral responses.

Our findings also provide valuable insights for health practitioners in conducting effective interventions among the public to help prevent the spread of the outbreak. In the initial stage of an epidemic, early prevention of infectious diseases should focus more on raising people's risk awareness, especially their susceptibility to the outbreak, in order to encourage people to engage in precautions. More importantly, additional attention needs to be paid to relatively lower-risk areas (compared to the epicenter) starting early on in the pandemic.

Strengths and Limitations

Recent studies have noted the value of rapid online surveys in tracking and investigating the development of a global epidemic [37, 46]. Gauging people's psychological and behavioral reactions at an early stage is crucial for public health authorities to manage the epidemic [35]. To our best knowledge, this is the earliest nationwide large-scale survey of risk perceptions and precautions in Chinese residents regarding the novel coronavirus crisis. Our results offer valuable insights into perceptional and behavioral states at a crucial time in this ongoing pandemic.

There are several limitations in our study. First, given that the online questionnaire was released using WeChat using convenience sampling, the characteristics of our sample are relatively lacking in representation compared to the demographic profile of the general Chinese population. Besides this, the assessment of people's geographical distances to the epicenter could have been more detailed and more accurate.

Conclusions

In an initial alerting stage of an epidemic, it is essential for health authorities to accurately assess the public's psychological and behavioral reactions. This article reports the effect of spatial distance from the epicenter on people's perceived susceptibility early in the pandemic, suggesting that the closer people were to the epicenter in Wuhan, the higher likelihood of being infected they perceived. The results also demonstrate significant individual differences as females tended to perceive higher risk severity and were more likely to engage in precautionary behaviors. Moreover, these findings broaden the understanding of perceived susceptibility and perceived severity, the two distinct dimensions of risk perceptions that act separately and lead to different behavioral outcomes. It also offers valuable insights for health practitioners in improving surveillance and alert mechanisms, and conducting effective interventions to help prevent the spread of the outbreak.

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Liu D. drafted the paper, analyzed and interpreted the data, and revised the manuscript for important intellectual content. Wen S. helped design the study, recruited participants, drafted the paper, and critically revised the manuscript. Su J. helped design the study, recruited participants, and critically revised the manuscript.

Conflicts of Interest

None declared.

Abbreviations

WHO: World Health Organization
COVID-19: Coronavirus Disease 2019
OR: Odds Ratio

Multimedia Appendix 1

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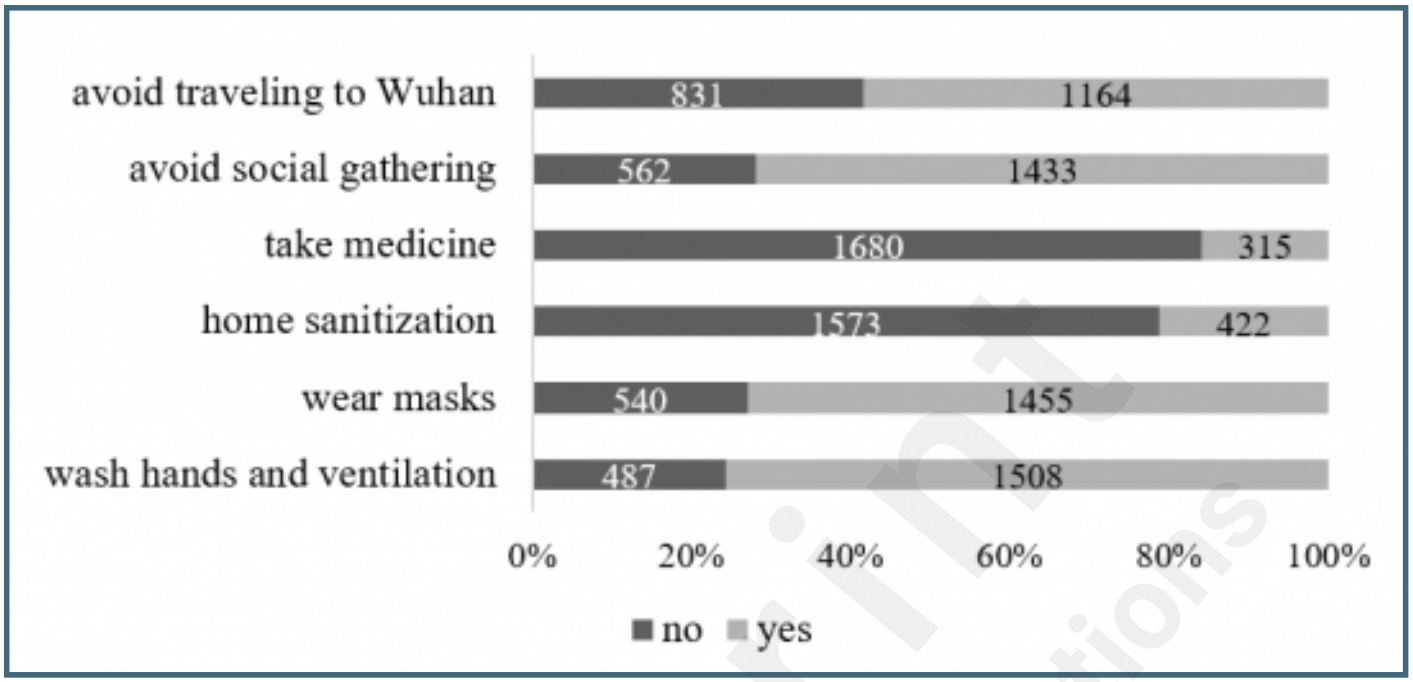
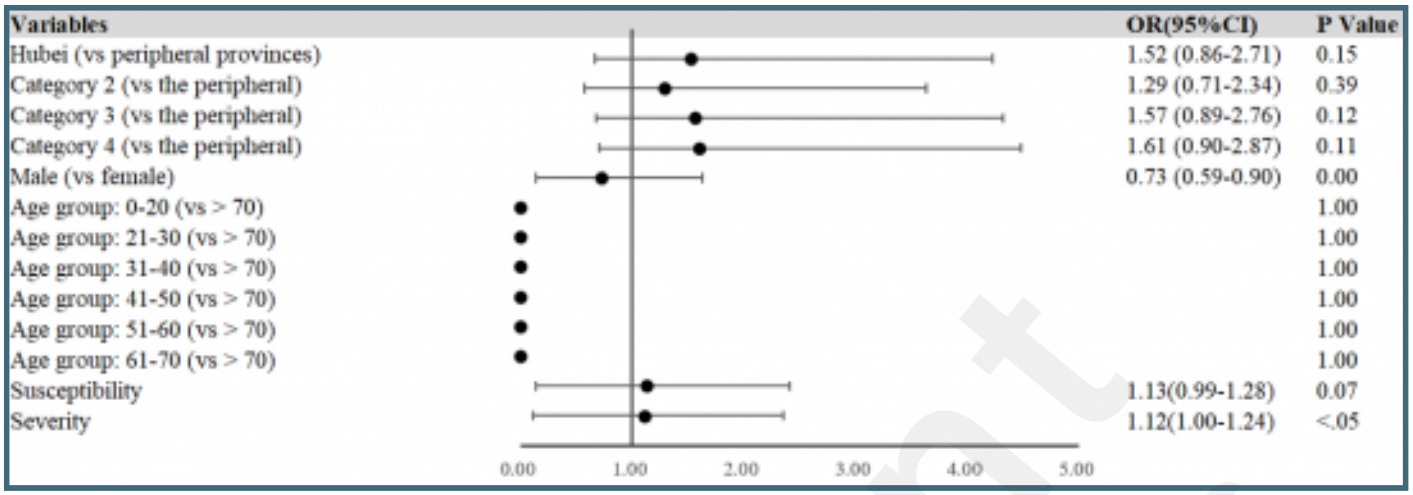
Supplementary Files

Figures

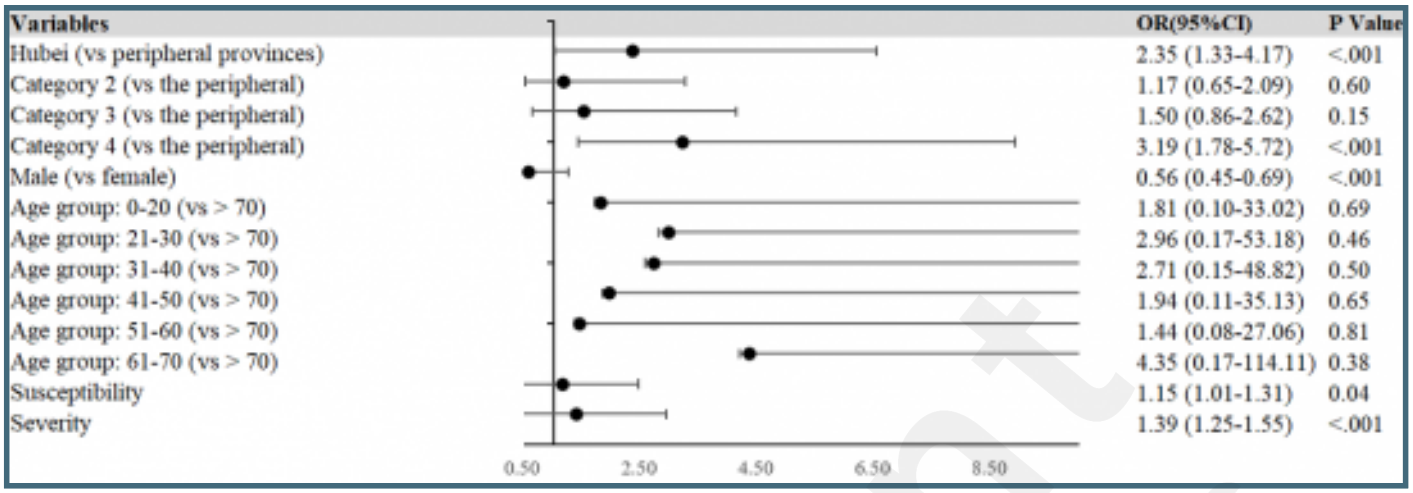
Self-reported engagement in different preventive behaviors.



Binomial logistic regression results for washing hands and ventilation.

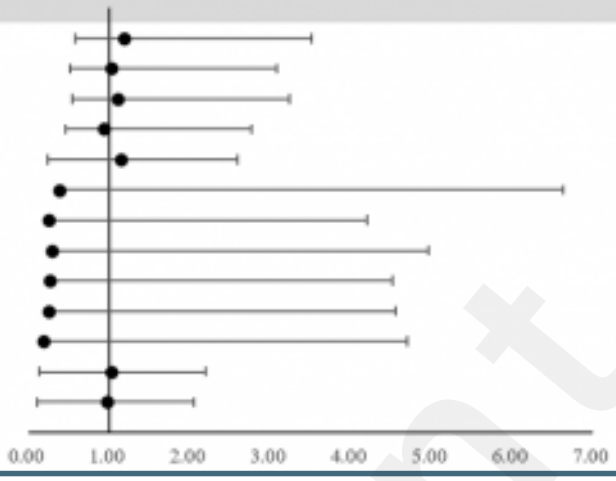


Binomial logistic regression results for wearing masks when going out.

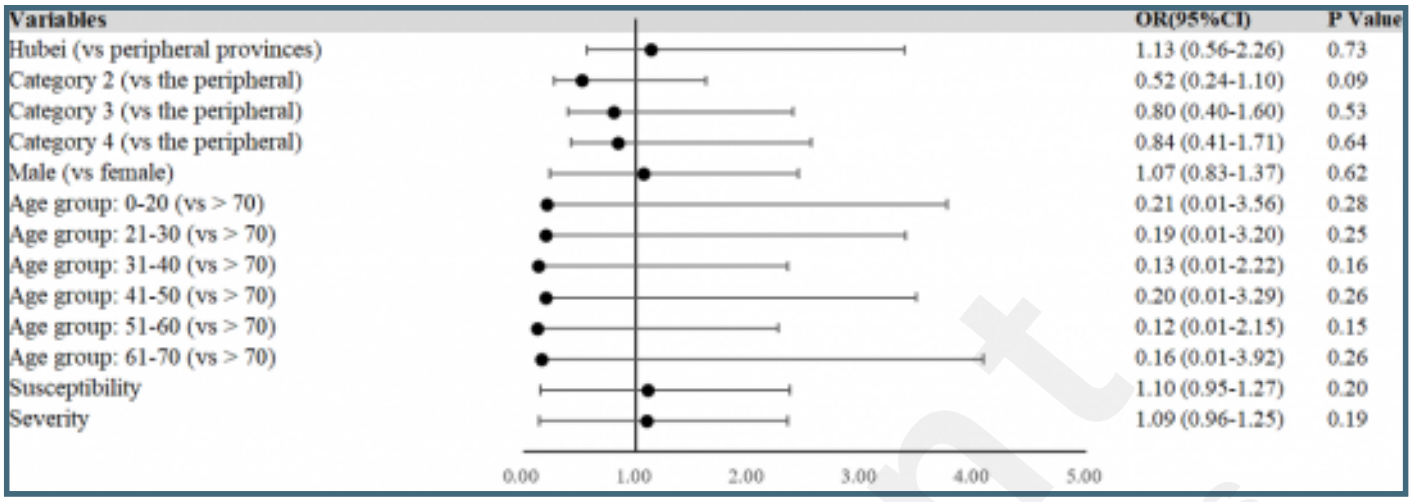


Binomial logistic regression results for home sanitization.

Variables	OR(95%CI)	P Value
Hubei (vs peripheral provinces)	1.19 (0.61-2.32)	0.61
Category 2 (vs the peripheral)	1.02 (0.51-2.05)	0.95
Category 3 (vs the peripheral)	1.10 (0.57-2.13)	0.78
Category 4 (vs the peripheral)	0.93 (0.47-1.84)	0.84
Male (vs female)	1.15 (0.92-1.44)	0.22
Age group: 0-20 (vs > 70)	0.38 (0.02-6.26)	0.50
Age group: 21-30 (vs > 70)	0.24 (0.02-3.96)	0.32
Age group: 31-40 (vs > 70)	0.29 (0.02-4.67)	0.38
Age group: 41-50 (vs > 70)	0.26 (0.02-4.26)	0.34
Age group: 51-60 (vs > 70)	0.25 (0.01-4.30)	0.34
Age group: 61-70 (vs > 70)	0.19 (0.01-4.51)	0.30
Susceptibility	1.03 (0.90-1.17)	0.71
Severity	0.97 (0.86-1.09)	0.61



Binomial logistic regression results for taking medicine.



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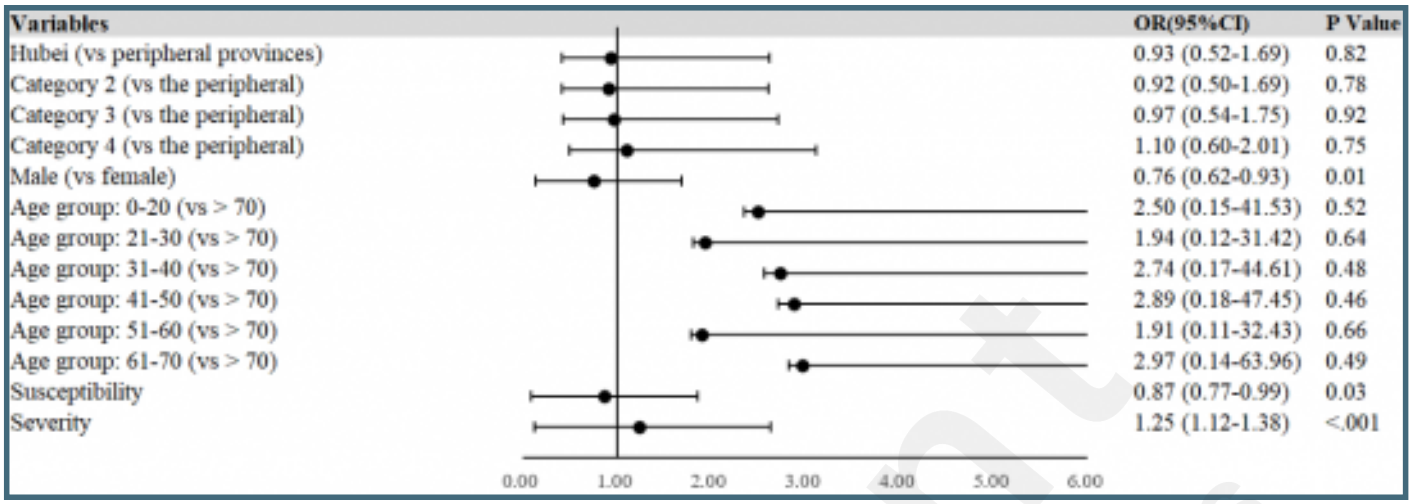
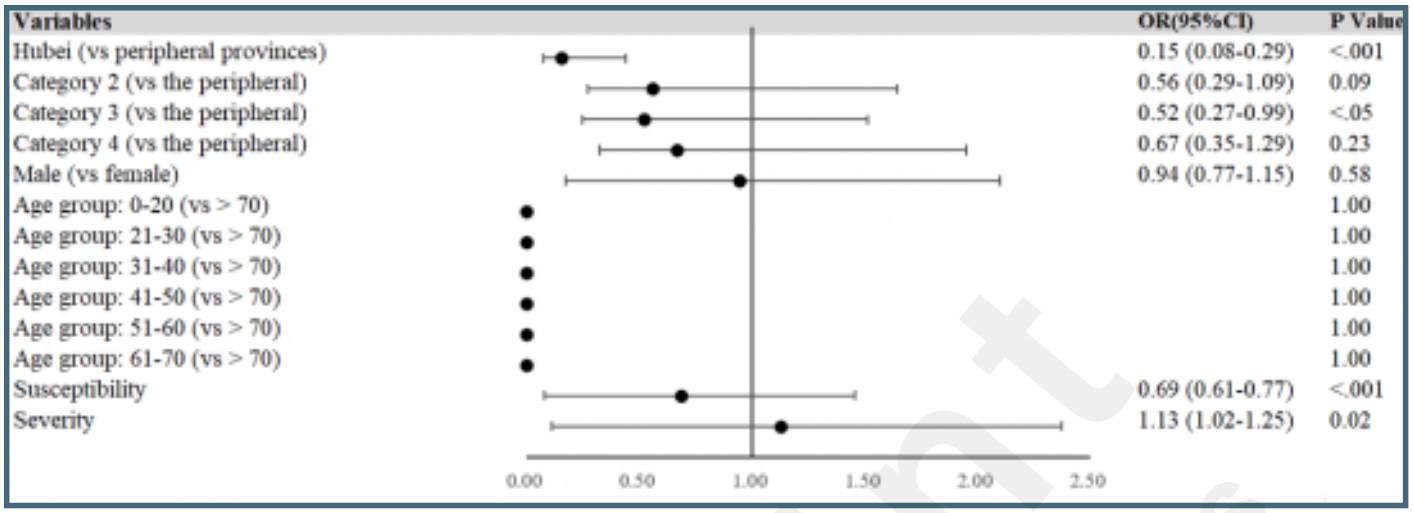
Binomial logistic regression results for avoiding social gatherings.



Figures

Binomial logistic regression results for avoiding visiting Wuhan.



Multimedia Appendixes

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