Received: 14 September 2023 | Revised: 6 November 2023 | Accepted: 16 January 2024

DOI: 10.1002/hsr2.1857

ORIGINAL RESEARCH

Health Science Reports Open Access WILEY

Development and psychometric testing of the Coronavirus Awareness and Preparedness Scale: A cross-sectional study

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Abstract

Background and Aims: A comprehensive standardized evaluation tool was needed to assess community awareness and preparedness when the pandemic hit the United States. This study aimed to develop and validate a new Coronavirus Awareness and Preparedness Scale (CAPS) through psychometric testing.

Methods: This study unfolded in two phases. Phase 1 (conducted in March and April 2020) focused on the development of the scale. Phase 2 (conducted in June and July 2020) measured the reliability and validity of the scale. Psychometric testing, including exploratory factor analysis and reliability testing, was performed with a convenience sample of 1237 faculty, staff, and students at a southern university in the United States.

Results: The final CAPS model consists of four factors with 26 items: threat (seven items), confidence (11 items), individual precautions (three items), and public precautions (five items). The scale demonstrated satisfactory internal consistency (Cronbach's $\alpha = 0.75$). Strong and statistically significant item correlations were observed within the subscales through item analysis.

Conclusion: The CAPS is a reliable and valid comprehensive evaluation instrument designed to gauge community awareness and preparedness during the early stages of the COVID-19 pandemic. Its adaptability makes it suitable for measuring readiness and preparedness concerning any novel airborne disease or future airborne pandemic within a community.

KEYWORDS

COVID-19, factor analysis, internal consistency, preparedness, psychometric testing

1 | BACKGROUND AND PURPOSE

COVID-19, the coronavirus disease 2019 caused by a novel coronavirus, SARS-CoV-2, has resulted in over 770 million infections and approximately seven million deaths as of September 6, 2023.[1] The first outbreak of COVID-19 occurred in Wuhan, China, in December 2019 and subsequently spread to the United States and worldwide.[2] The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020.[3]

On January 21, 2020, the Centers for Disease Control and Prevention (CDC) announced the first US laboratory-confirmed case of COVID-19 in Washington state.[2] The rapid spread of

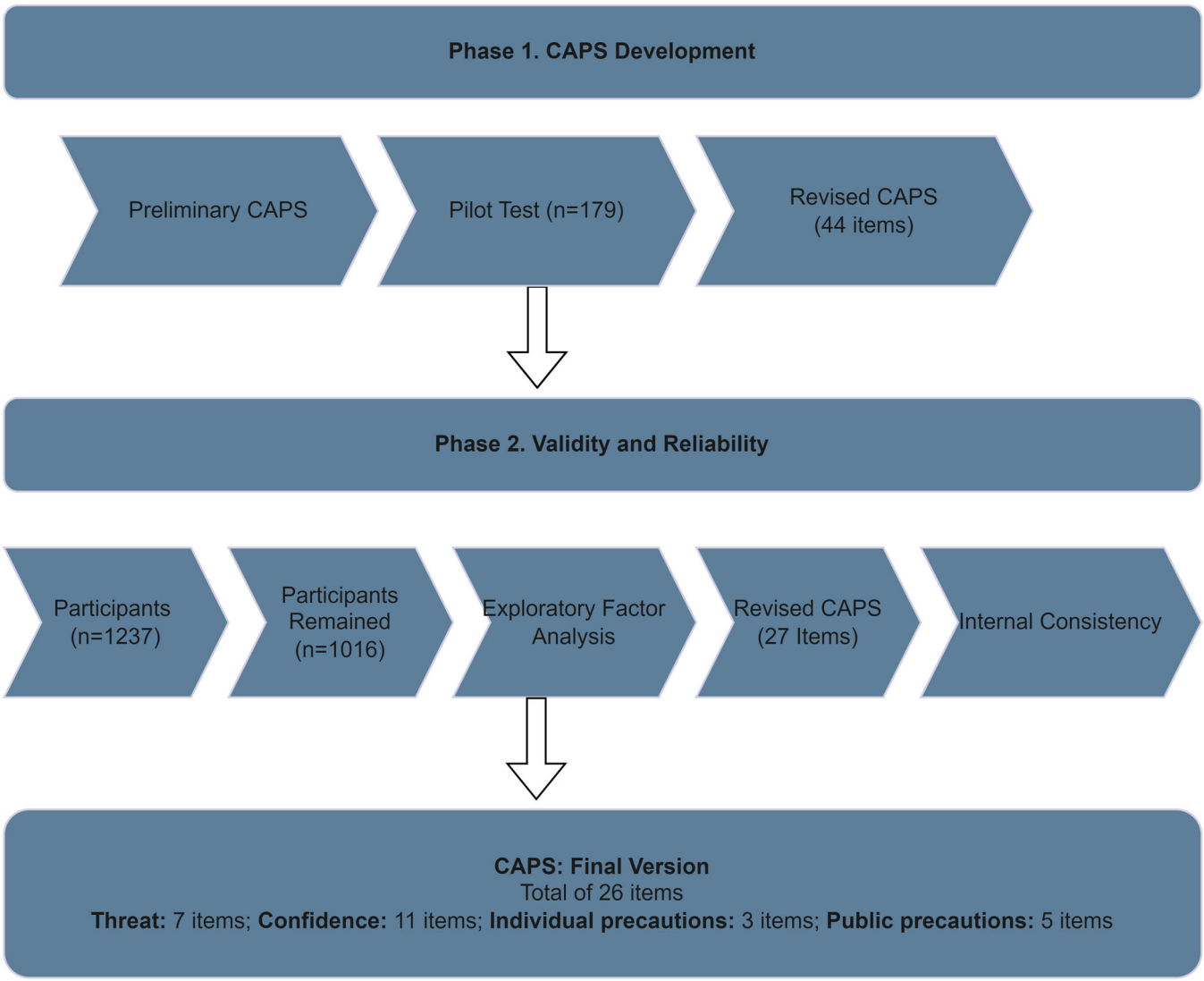

FIGURE 1 Flowchart of Coronavirus Awareness and Preparedness Scale (CAPS) development and psychometric testing.

COVID-19 mandated that communities be adequately prepared in their awareness of the COVID-19 threat and questioned whether their knowledge of adequate infection control was sufficient and if society was prepared to keep the COVID-19 spread under control. As the COVID-19 virus is highly contagious, public awareness and precautions are crucial to constrain its spread. In response, the CDC published a myriad of guidelines to support healthcare professionals, public health agencies, and communities in coronavirus infection control.[2] Health education on these precautions anticipated the preparedness of the public to keep COVID-19 under control, while health policy played a crucial role in negating the transmission of COVID-19.

A standardized instrument could explore the preconceptions and predilections of a community toward COVID-19, which is especially useful at an early stage of a pandemic. The tool could also guide public health officials' insight into which levers could be more advantageous at various phases of a multiyear pandemic. Most scales developed for COVID-19 primarily focus on psychometric properties related to COVID-19, such as fear, stigma, stress, anxiety, and psychological distress,[4–9] or on coping strategies, such as vaccine hesitancy, quarantine coping, face mask use, and attitudes toward remote work.[10–14] Interestingly, to our knowledge, there are no scales that specifically address community awareness or preparedness, which may be due to the lack of community data collected during the early stages of COVID-19.

Due to the lack of a comprehensive evaluation tool to measure preparedness for the COVID-19 pandemic, a Coronavirus Awareness Preparedness Scale (CAPS) was developed. As the CAPS is a newly developed scale, the aim of this paper is to conduct psychometric testing to ensure that the scale is valid and reliable by (1) applying factor analysis to assess the construct validity of the CAPS (2) examining the internal consistency of the CAPS and all its subscales.

2 | METHODS

This study was conducted in two phases. Phase 1 focused on developing the scale, while Phase 2 measured the reliability and validity of the scale. Figure 1 visually demonstrates how this study was conducted.

2.1 | Phase 1: Scale development

Based on expert opinions, the initial CAPS consisted of 51 questions, which were divided into four subscales: perceived preparedness for coronavirus control, perceived threat of coronavirus, perceived precautions against coronavirus, and perceived accuracy of information received.[15] All questions were constructed in a Likert-scale format where respondents indicated their level of agreement, threat, or confidence with each statement. A minimum rating of "1" indicated the strongest disagreement or least threat/confidence, a maximum rating of "5" indicated the strongest agreement or highest threat, and a maximum of "7" indicated the strongest confidence.[15] The other items were answered by "yes," "no," or "don't know."[15]

In the pilot testing of the CAPS, we distributed this survey to 179 faculty members at a southern university in the United States in March and April 2020 through Qualtrics. The demographic information of these participants was reported in our previous publication.[15] Based on the feedback from these participants, we deleted eight items, such as "Do you avoid people of Chinese origin or appearance so as not to contract the coronavirus?" that were more related to coronavirus stigma. We also removed the option of "don't know" from the items with "yes" or "no" responses to make the survey easier to follow. In addition, we revised all the Likert-scale responses in the CAPS to comply with a five-point Likert scale format. Therefore, the confidence level was measured as follows: 1 = *very unconfident*; 2 = *unconfident*; 3 = *neutral*; 4 = *confident*; and 5 = *very confident*. As a result, we arrived at a revised CAPS comprising 44 items.

2.2 | Phase 2: Psychometric testing

The sample size was estimated by power analysis using the formula $n = Z2 \times P\,(1 - P)/d2$.[16] With Kolmogorov–Smirnov (Z) at 95% confidence interval, the response distribution (P) at 50%, and an error of marginal (d) of 5%, the survey recruited at least 384 participants with no limit to the maximum number of subjects.

2.2.1 | Data collection

Using a nonexperimental design with convenience sampling, an anonymous large sample survey was distributed to faculty, staff, and students working or studying at a southern Texas university in June and July 2020 after receiving Institutional Review Board approval. Data collected included demographic information such as age groups, gender, ethnicity, education, employment status, and healthcare background as well as the revised version of the CAPS survey with 44 items.

The survey was conducted online through Qualtrics, a web-based survey platform. A detailed explanation of the research purpose was provided in the consent form, and participants voluntarily participated in the survey.

TABLE 1 Demographics (n = 1237).

	Frequency (n)	Percentage
Gender		
Female	877	70.9
Male	344	27.8
Other	16	1.3
Age		
18–24	362	29.3
25–34	239	19.3
35–44	222	17.9
45–54	172	13.9
55–64	179	14.5
>65	63	5.1
Ethnicity		
Non-Hispanic White	673	54.4
Hispanic/Latino	423	34.2
African American	42	3.4
American Indian/Alaskan Native	11	0.9
Pacific Islander/Native Hawaiian	2	0.2
Asian	53	4.3
Other	33	2.7
Education		
High school/equivalent	387	31.3
Bachelor's degree	402	32.5
Master's degree	310	25.1
Doctoral degree	41	3.3
Other	97	7.8
Employment		
Full-time employed	771	62.3
Part-time employed	329	26.6
Not employed	137	11.1
Healthcare background		
Yes	673	54.4
No	564	45.6

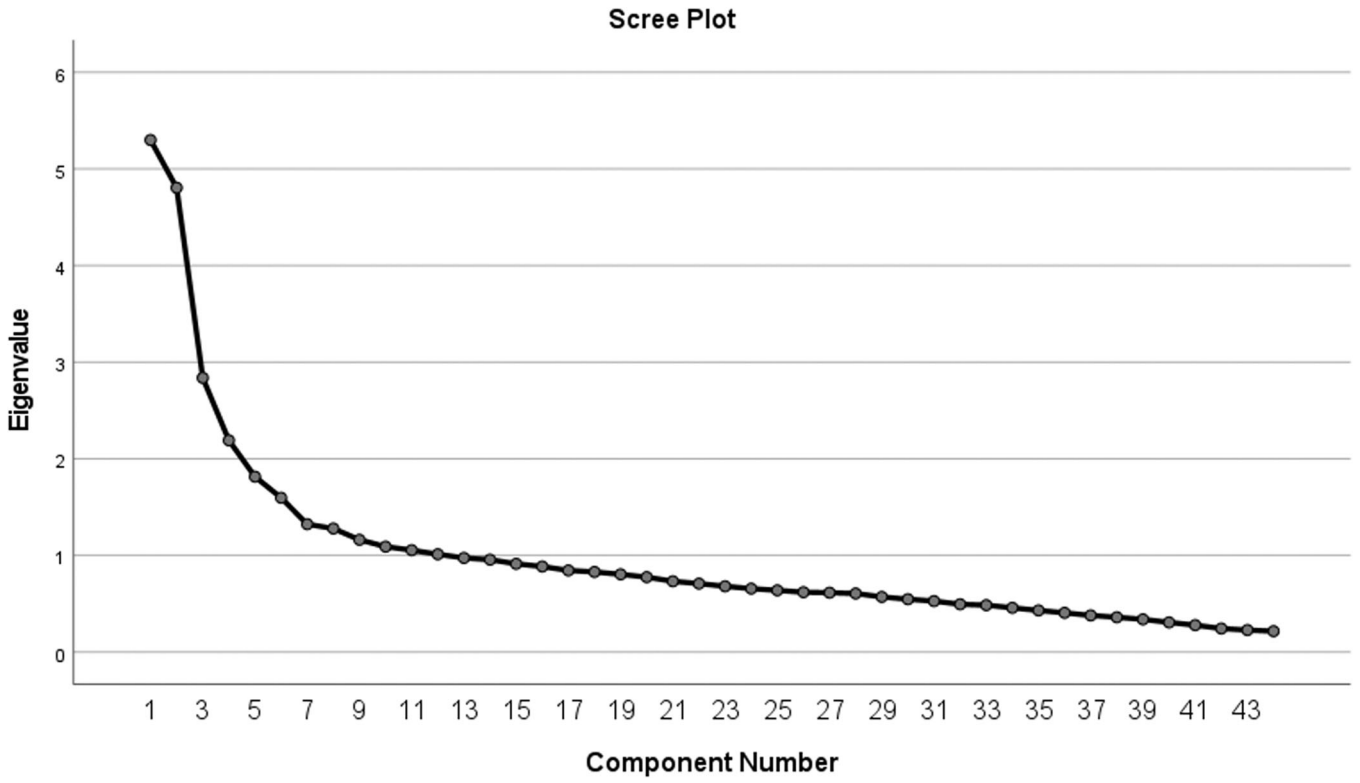

FIGURE 2 Scree Plot illustrating factors retrieved from exploratory factor analysis and eigenvalues.

2.2.2 | Data analysis

A total of 1237 responses were received. After excluding incomplete responses, exploratory factor analysis was conducted using IBM Statistical Package for Social Sciences (SPSS) version 28.0 on the data set comprising 1016 complete surveys. Exploratory factor analysis aims to reveal underlying factors and reduce dimensions by grouping items into one or more latent variables.[17] This process typically results in retaining a reduced number of items on the scale.[17,18] To assess the appropriateness of the data for factor analysis, the Kaiser–Mayer–Olkin measure of sample adequacy and Bartlett's test were performed.[17,18] As the revised CAPS consists of four subscales, principal component analysis with Varimax rotation, based on a fixed number of four factors, was carried out on the 44 items. The eigenvalues of these four factors were examined to determine if they exceeded 1.[18,19] Items with factor loadings greater than 0.40 within their respective subscales were retained, as they were considered significantly relevant.[20,21]

Subsequently, a Pearson correlation coefficient was employed to calculate the correlation of each item with the total questionnaire as part of the item analysis.[22] The internal consistency of each subscale was assessed using Cronbach's α. A Cronbach's α value of 0.7 or higher,[23] also referred to as coefficient α, was considered indicative of acceptable internal consistency.

3 | RESULTS

3.1 | Demographic characteristics of participants

Among the participants (n = 1237), the majority were under the age of 55 (80.4%), identified as females (70.9%), non-Hispanic White (54.4%), employed on a full-time basis (62.3%), possessed a healthcare background (54.4%), and held at least a bachelor's degree or higher (60.9%). Table 1 demonstrates the demographic characteristics of the study participants.

3.2 | Construct validity: Exploratory factor analysis

Construct validity is a crucial technique when assessing the effectiveness of a particular instrument or measure. It refers to the degree to which a measure accurately reflects the underlying construct or concept it is intended to measure.[24] With 1016 completed surveys, the four-factor principal component analysis revealed that all four factors had eigenvalues above 1, indicating acceptable importance.[18,22] Collectively, these factors explained 34.4% of the total variance, as illustrated in the Scree Plot in Figure 2. The variance values for each of the four factors were 12.04, 10.92, 6.45, and 4.98, respectively (see Table 2).

Based on the four factors identified through exploratory factor analysis, we interpreted the items within these factors and renamed them as follows: threat (perceived threat in coronavirus awareness), confidence

TABLE 2 Exploratory factor analysis and item analysis ($n = 1016$).

Item	Factor loadings 1	2	3	4	Item-total correlations
Threat					
Q2. What level of threat do you think the coronavirus poses to you personally?		0.66			0.62
Q3. What level of threat do you think the coronavirus poses to your family?		0.67			0.67
Q4. What level of threat do you think the coronavirus poses to your local community?		0.77			0.73
Q5. What level of threat do you think the coronavirus poses to the world?		0.74			0.65
Q15. What level of threat do you think a social gathering of large crowds of people poses to contracting the coronavirus?		0.58			0.41
Q16. What level of threat do you think traveling by airplane poses to contracting the coronavirus?		0.52			0.39
Q22. What level of threat do you think shaking hands poses to contracting the coronavirus?		0.52			0.33
Individual precautions					
Q17. Do you wear a face mask in daily life so as not to contract the coronavirus?			0.79		0.49
Q18. Do you think wearing a face mask correctly can protect yourself from the coronavirus in daily activities?			0.69		0.44
Q19. Do you think an N95 mask is more effective than a surgical mask in protecting you from the coronavirus in daily activities?			0.63		0.31
Q39. Do you agree or disagree with the following: more Pharmaceutical Companies will soon develop vaccines or treatments for the coronavirus?			0.55		0.30
Confidence					
Q26. Based on what you have seen, read, or heard, how confident are you that Healthcare Professionals in your country are prepared and can effectively deal with the coronavirus?	0.71				0.65
Q27. Based on what you have seen, read, or heard, how confident are you that the World Health Organization is prepared and can effectively deal with the coronavirus?	0.70				0.60
Q28. Based on what you have seen, read, or heard, how confident are you that Hospitals in your local area are prepared and can effectively deal with the coronavirus?	0.71				0.65
Q29. Based on what you have seen, read, or heard, how confident are you that the National Government is prepared and can effectively deal with the coronavirus?	0.67				0.61
Q30. Based on what you have seen, read, or heard, how confident are you that your Local Government is prepared and can effectively deal with the coronavirus?	0.68				0.61
Q31. Based on what you have seen, read, or heard, how confident are you that Airlines and Airports in your country are prepared and can effectively deal with the coronavirus?	0.62				0.56
Q32. How much confidence do you have in the accuracy of Medical Professionals, such as Doctors and Nurses, on information about the coronavirus?	0.45				0.34
Q33. How much confidence do you have in the accuracy of Television, Radio, Magazines, and Newspapers on information about the coronavirus?	0.57				0.44
Q34. How much confidence do you have in the accuracy of Friends, Family, and Colleagues on information about the coronavirus?	0.57				0.47
Q35. How much confidence do you have in the accuracy of the Internet on information about the coronavirus?	0.55				0.44
Q36. How much confidence do you have in the accuracy of Social Media Networks on information about the coronavirus?	0.57				0.46
Public precautions					
Q40. Do you agree or disagree that anyone traveling to and from infected countries should undergo mandatory screening?				0.60	0.36

(Continues)

TABLE 2 (Continued)

Item	Factor loadings 1	2	3	4	Item-total correlations
Q41. Do you agree or disagree that the Government should impose mandatory quarantine for those who could have the infection?				0.51	0.27
Q42. Do you agree or disagree that Airlines from your country should stop flying to affected countries?				0.75	0.64
Q43. Do you agree or disagree that the Government should ban any travel to and from affected countries?				0.77	0.66
Q44. Do you agree or disagree that Public Transit Systems in your country, including buses, subways, and trains, should be taking precautions to prevent the further spread of coronavirus?				0.45	0.29
Percentage of variance explained	12.04	10.92	6.45	4.98	
Cumulative percentage of variance explained	12.04	22.96	29.46	34.44	

(perceived confidence in coronavirus preparedness), individual precautions (individual precautions in coronavirus preparedness), and public precautions (public precautions in coronavirus preparedness). These name changes better reflect the construct validity of the questionnaire.

As only 27 items had factor loadings greater than 0.40, a total of 17 items with factor loadings less than 0.40 were removed.[20,21] Detailed factor loadings for each remaining item can be found in Table 2. Consequently, the exploratory factor analysis of the revised 44-item CAPS survey yielded the following results for each subscale: seven items in Threat (Factor 2), four items in Individual Precautions (Factor 3), 11 items in Confidence (Factor 1), and five items in Public Precautions (Factor 4). This reduction led to a more concise version of the CAPS, consisting of 27 items, derived from the initial 44-question survey.

3.3 | Reliability: Internal consistency and item analysis

The reliability of the CAPS and its four subscales were assessed through internal consistency, specifically using Cronbach's αs, within IBM SPSS 28.0. The Pearson correlation coefficient was employed to investigate the item-to-total correlations between each item and its respective subscale. Items with low item-to-total correlation coefficients ($r \leq 0.30$), statistical insignificance ($p > 0.05$), or those significantly diminishing Cronbach's α of the questionnaire were removed.[22] Notably, in the item analysis, two items (Q41 and Q44) exhibited correlation coefficients lower than 0.30. These items pertained to mandatory quarantine and public transportation precautions, which are pivotal aspects of public precautions during a pandemic. However, as their removal did not yield a significant improvement in the questionnaire's Cronbach's α, these two items were retained (refer to Table 1).

Although the item-to-total correlation coefficient of Q39, "Do you agree or disagree with the following: more pharmaceutical companies will soon develop vaccines or treatments for the coronavirus," was 0.30, the removal of Q39 from the "Individual Precautions" subscale led to a substantial enhancement of Cronbach's α, increasing it from 0.40 to 0.70. Given the potential confusion arising from asking such a question during the uncertain stages of a pandemic, Q39 was consequently excluded. The final iteration of the CAPS comprised 26 items distributed among the subscales as follows: Threat (Q2, Q3, Q4, Q5, Q15, Q16, Q22), Individual Precautions (Q17, Q18, Q19), Public Precautions (Q40, Q41, Q42, Q43, Q44), and Confidence (Q26–Q36).

The overall Cronbach's α for the 26-item CAPS was calculated at 0.75. Furthermore, the Cronbach's αs for the four subscales were as follows: threat: $\alpha = 0.80$; confidence: $\alpha = 0.85$; personal precaution: $\alpha = 0.72$; public precaution: $\alpha = 0.73$.

3.4 | Cutoff points

Establishing cutoff points in a survey tool lacks standardized criteria. In our study, we employed the formula mean ± 1 standard deviation (STD) to determine the cutoff points for the final 26-item CAPS. Given that the mean overall score of the CAPS was 71, ranging from a minimum of 22 to a maximum of 102, and the STD was 9, the suggested cutoff points are as follows: less prepared: <62; moderately prepared: between 62 and 80; and highly prepared: >80. Among the 1016 participants, the majority fell into the moderately prepared category (76.8%), with 10.7% classified as less prepared and 12.5% classified as highly prepared. The final 26-item CAPS, along with instructions for its use, is detailed in Table 3.

4 | DISCUSSION

The CAPS has demonstrated its internal consistency and construct validity, rendering it a reliable and valid tool for assessing early preparedness/readiness among individuals, families, and communities. Preparedness for contagious diseases is a pivotal element in safeguarding public health, and assessing early preparedness during a potential pandemic necessitates considering various factors

TABLE 3 Coronavirus Awareness and Preparedness Scale (26-item version) and its instructions.

The following questions pertain to your attitudes and feelings *toward coronavirus*. Please mark the square on the scale below that best represents your response.

Section 1

Q1. What level of threat do you think the coronavirus poses to you personally?

□ Very low □ Low □ Moderate □ High □ Very high

Q2. What level of threat do you think the coronavirus poses to your family?

□ Very low □ Low □ Moderate □ High □ Very high

Q3. What level of threat do you think the coronavirus poses to your local community?

□ Very low □ Low □ Moderate □ High □ Very high

Q4. What level of threat do you think the coronavirus poses to the world?

□ Very low □ Low □ Moderate □ High □ Very high

Q5. What level of threat do you think a social gathering of large crowds of people poses to contracting the coronavirus?

□ Very low □ Low □ Moderate □ High □ Very high

Q6. What level of threat do you think traveling by airplane poses to contracting the coronavirus?

□ Very low □ Low □ Moderate □ High □ Very high

Q7. What level of threat do you think shaking hands poses to contracting the coronavirus?

□ Very low □ Low □ Moderate □ High □ Very high

Section 2

Q8. Based on what you have seen, read, or heard, how confident are you that Healthcare Professionals in your country are prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q9. Based on what you have seen, read, or heard, how confident are you that the World Health Organization is prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q10. Based on what you have seen, read, or heard, how confident are you that Hospitals in your local area are prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q11. Based on what you have seen, read, or heard, how confident are you that the National Government is prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q12. Based on what you have seen, read, or heard, how confident are you that your Local Government is prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q13. Based on what you have seen, read, or heard, how confident are you that Airlines and Airports in your country are prepared and can effectively deal with the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q14. How much confidence do you have in the accuracy of medical professionals, such as doctors and nurses, on information about the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q15. How much confidence do you have in the accuracy of television, radio, magazines, and newspapers on information about the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q16. How much confidence do you have in the accuracy of Friends, Family, and Colleagues on information about the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q17. How much confidence do you have in the accuracy of the Internet on information about the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Q18. How much confidence do you have in the accuracy of Social Media Networks on information about the coronavirus?

□ Very unconfident □ Unconfident □ Neutral □ Confident □ Very confident

Section 3

Q19. Do you wear a face mask in daily life so as not to contract the coronavirus?

□ Yes □ No

Q20. Do you think wearing a face mask correctly can protect yourself from the coronavirus in daily activities?

□ Yes □ No

Q21. Do you think an N95 mask is more effective than a surgical mask in protecting you from the coronavirus in daily activities?

□ Yes □ No

Section 4

Q22. Do you agree or disagree that anyone traveling to and from infected countries should undergo mandatory screening?

□ Yes □ No

Q23. Do you agree or disagree that the Government should impose mandatory quarantine for those who could have the infection?

□ Yes □ No

Q24. Do you agree or disagree that Airlines from your country should stop flying to affected countries?

□ Yes □ No

Q25. Do you agree or disagree that the Government should ban any travel to and from affected countries?

(Continues)

□ Yes □ No

Q26. Do you agree or disagree that Public Transit Systems in your country, including buses, subways, and trains, should be taking precautions to prevent the further spread of coronavirus?

□ Yes □ No

Note: Scoring Instructions:The items in the 26-item Coronavirus Awareness and Preparedness Scale (CAPS) have been separated into four sections: threat (Section 1), confidence (Section 2), individual precautions (Section 3), and public precautions (Section 4). Each item in Sections 1 and 2 is rated on an ordinal scale from 1 to 5 reflecting the degree of threat or confidence from low to high. Each item in Sections 3 and 4 is rated on a dichotomous scale with "yes" or "no" options. The participant responds to each item.The scoring for responses in Section 1: 1 = *very low*, 2 = *low*, 3 = *moderate*, 4 = *high*, 5 = *very high*. The scoring for responses in Section 2: 1 = *veryunconfident*, 2 = *unconfident*, 3 = *neutral*, 4 = *confident*, 5 = *very confident*. The scoring for responses in Section 3 and Section 4: 1 = No, 2 = Yes.The suggested cutoff points are less prepared: <62; moderately prepared: between 62 and 80; highly prepared: >80.

influencing virus transmission. Government and healthcare policy-makers often assess healthcare systems, including medical resource availability, public health infrastructure, and population density, using systems such as the Early Warning and Response System developed by the World Health Organization, which evaluates indicators such as health system capacity, surveillance capacity, and risk communication.[25] Although similar systems are utilized by organizations such as the CDC, few standardized survey instruments exist for gauging people's preparedness at the early stages of a pandemic. The use of such standardized scales enables accurate assessment of a region's preparedness and facilitates proactive measures to ensure adequate readiness.

Additionally, the development and validation of the CAPS bear significant implications for COVID-19 readiness. The scale can gauge an individual's awareness and preparedness level, pinpoint areas necessitating additional education and resources, and help individuals, families, and communities enhance their preparedness by focusing on strengths and areas requiring improvement. The CAPS can be readily adapted for any novel airborne diseases or future airborne pandemics, serving as a reliable and valid measure of individual readiness. It aids in identifying strengths and areas requiring improvement, thereby contributing to better preparedness among individuals, families, and communities.

The final CAPS comprises four factors/domains: threat, confidence, individual precautions, and public precautions. These domains offer healthcare professionals valuable insights into early pandemic preparedness, potentially leading to theory development to elucidate pandemic readiness. Notably, from the Scree plot in Figure 2, threat and confidence appeared to exert the most significant impact on COVID-19 readiness among the four factors. The distinct placement of individual precautions and public precautions within different domains could be attributed to the varying voluntary or mandatory nature of these measures.

It is worth noting that the internal consistency of individual precaution and public precaution, although acceptable (>0.70),[22] is lower than 0.80. There is room for improvement by potentially changing the "yes" or "no" responses to a Likert-scale format. Additionally, it is imperative to acknowledge that CAPS was specifically developed in the context of the southern region of a state in the United States, involving participants from a university's faculty, staff, and students. Generalizing the use of this questionnaire to populations residing in different geographic regions or with distinct socioeconomic backgrounds without adaptation and testing may not be appropriate. Furthermore, CAPS should only be utilized for vulnerable community screening at an early stage of a pandemic, as the data were solely collected during this phase. In future studies, it would be advisable to assess the stability of the CAPS through test–retest reliability and enhance its content validity using the content validity index. Additionally, construct validity could be strengthened through confirmatory factor analysis.

5 | CONCLUSION

The Coronavirus Awareness and Preparedness Scale (CAPS) constitutes a reliable and valid measure of COVID-19 preparedness. It provides a comprehensive assessment of individuals' knowledge, attitudes toward the virus, and readiness for its potential consequences. The scale facilitates the identification of strengths and areas requiring improvement, enabling individuals, families, and communities to enhance their preparedness for the virus. In the context of COVID-19, preparedness is paramount for safeguarding public health, and the CAPS stands as an invaluable tool for achieving this goal.

AUTHOR CONTRIBUTIONS

Meng Zhao: Conceptualization; data curation; formal analysis; investigation; methodology; project administration; writing—original draft. **Kyoung Lee**: Conceptualization; resources; writing—review and editing. **Yuxia Huang**: Resources; software; writing—review and editing.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

TRANSPARENCY STATEMENT

The lead author Meng Zhao affirms that this manuscript is an honest, accurate, and transparent account of the study being reported; that no important aspects of the study have been omitted; and that any discrepancies from the study as planned (and, if relevant, registered) have been explained.

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How to cite this article: Zhao M, Lee K, Huang Y. Development and psychometric testing of the Coronavirus Awareness and Preparedness Scale: a cross-sectional study. *Health Sci Rep*. 2024;7:e1857. doi:10.1002/hsr2.1857