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PHQ-15 Somatic symptoms and resilience among a group of Vietnamese: A lesson learned from the COVID-19 pandemic

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ABSTRACT

Background: This study aims to investigate the relationships between PHQ15-somatic symptoms and resilience, and to explore components of resilience among Vietnamese during the first wave of COVID-19.

Results: The bivariate statistic showed that there was a significant negative correlation between PHQ-15 somatic symptoms and total scores of Resilience, and its four subscales (e.g.,Self-Efficacy, Purpose in Life, Adaptation, Resources). The result of linear regression also showed that PHQ somatic symptoms predicted the four subscales of resilience with a statistically significant p-value (<.001). Conversely, only Self-Efficacy and Resources were significant predictors ($p < .05$). On exploring the components of resilience, the descriptive statistical analysis showed resources (54.5%), receiving care and support from others (20%), finding meaning in life (19.7%), finding resources from Nature and the Creator (5.8%).

Conclusions: The findings suggest a strong significant negative association between PHQ-15 somatic symptoms and total scores of resilience, and resilience's four subscales in which self-efficacy is highest. Also, the Cronbach alpha showed high reliability of these four components of the Resilience scale in a group of Vietnamese. This means resilience does exist in Vietnam and is manifested in four components which may indicate protective factors against somatic symptoms.

Methods: Willing participants completed an online survey posted on the Vietnam University of Social Sciences and Humanity websites in August 2021. Bivariate analysis examined demographics, somatic symptoms, and resilience variables.

Keywords: PHQ-15 Somatic symptoms, Resilience, COVID-19 pandemic

INTRODUCTION

As of February 8, 2024, Vietnam reported 11,624,114 coronavirus cases, including 43,206 deaths and 10,640,971 recoveries [1]. Vargas, Muench, Grandner, Irwin, and Perlis 3 (2023) reported that somatic symptoms, such as fatigue, insomnia, headache, dizziness, digestive symptoms, stomach pain, and muscle pain were also found in COVID-19 patients [2]. Furthermore, it has been found that insomnia is a predictor of prolonged COVID-19 symptom duration [2]. Individuals affected by COVID-19 may experience fatigue, low energy, insomnia, digestive and respiratory symptoms [3]. The study also discovered that the sudden loss of loved ones during the Pandemic can leave individuals feeling incapable of expressing themselves verbally. As a result, researchers found that some Vietnamese often describe their psychological issues in the form of somatic complaints such as insomnia, low energy, and fatigue (See Table 1) because the cultural setting on mental health problems does not support them to express their vulnerability [4], [5]. The current researchers wonder whether mental issues are not accepted, which would lead individuals to express psychological problems through somatic symptoms [6]. Somatic symptoms are considered a means of communication during loss and grief [6]. On the one hand, mental illness is heavily stigmatized in Vietnamese culture, possibly leading ones to somaticize their feelings issues [5]. On the other hand, it has been also informed that Vietnamese culture values harmony in relationships and community cohesion. This includes a strong sense of duty and moral integrity [7]. In the midst of

this, it has been found that somatic symptoms (PHQ-15) in response to the psychological stress of Vietnamese were found relevant in the study of Dreher et al (2017) [8]. Despite the existence of the above symptoms in such a stressful situation, some people strove to seek meaning in life, they somehow walked through adversity with extraordinary resilience [9]. The following section will discuss somatization.

Somatic symptoms

Somatic symptoms, according to DSM–5, have been characterized by one or more significant somatic symptoms (e.g., pain) that cause distress, and impairment daily. Functioning, and by excessive, maladaptive thoughts (preoccupation) or excessive worry about symptoms, with or without the presence of a medical condition to explain the symptoms proof. Researchers reported that 15 somatic symptoms in response to the 4 psychological stress of Vietnamese found relevant in the study of Dreher et al (2017) [8], and that may include: pain (the most commonly reported symptom), fatigue or weakness, and shortness of breath (dyspnea) [10]. Yet, expressing suffering and soma symptoms can vary depending on culture. In some cultures that stigmatize mental health problems, psychological symptoms are manifested in the form of physical complaints such as insomnia, fatigue, chest pain, or heart pain [11]. In the context of the COVID-19 crisis, with its suddenness beyond human expectations, has increased not only anxiety disorders, depression, and suicidal thoughts, but also increased somatoform disorders. These include (1) Stomach pain, (2) Back pain, (3) Pain in arms, legs, and joints, (4) Menstrual disorders, dysmenorrhea (for women), (5) Headache, (6) Chest pain, (7) Dizziness/lightheadedness, (8) Fainting, (9) Heart palpitations, (10) Difficulty breathing, (11) Sexual dysfunction, (12) Constipation or diarrhea, (13) Nausea, belching, indigestion, (14) Fatigue, lack of energy, (15) Insomnia. Researchers have also suggested that long COVID-19 syndrome shares similarities with somatic syndromes characterized by persistent somatic symptoms of unclear etiology [12].

To measure the above somatic symptoms, each item on the PHQ-15 is rated on a 3-point scale (0 = not bothered at all; 1 = bothered a little; 2 = bothered a lot). The total score can range from 0 to 30, with higher scores indicating greater severity of somatic symptoms. It is instructed that the clinician is asked to review the score of each item on the measure during the clinical interview and indicate the raw score for each item in the section provided for "Clinician Use." The raw scores on the 15 items should be summed to obtain a total raw score and interpreted using the Interpretation Table for the PHQ-15 Somatic Symptom Severity scale as follows: Interpretation Table for the PHQ-15 Somatic Symptom Severity scale Levels of Somatic Symptom Severity PHQ-15 Score Minimal 0- 4; Low 5-9; Medium 10-14; High 15-30 [13]. Regardless of such somatic complaints, in our national survey of 1252 participants in August 2021, there were 48 people (0.04%) who had thoughts about death. The question for the remaining majority (99.06%) of those who have no thoughts of death is, does the pandemic not affect them? [14] Therefore, this study aims to identify resilience as a protective factor against such symptoms [15]. The next section will discuss the concept of resilience.

The concept of resilience

Resilience, first of all, is defined as the meaning of “springing/bouncing back/ leaping back” and a state of adaptation that integrates reconstruction, existential dynamics, a new life project or a life changed and transformed after a crisis [16], [17]. According to Rockström et al., (2023) that involves the capacity to walk through adversity, absorb shocks, avoid tipping points, navigate surprises, and keep options alive, and the ability to innovate and transform in the face of crises and traps [18]. Therefore, Connor-Davidson (2003) integrated self-efficacy as one of the components of resilience [16].

A strong sense of efficacy enhances human accomplishment and personal well-being in many ways. People with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. Such an efficacious outlook fosters intrinsic interest and deep engrossment in activities. They set themselves challenging goals and maintain a strong commitment to them. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They attribute failure to insufficient effort or deficient knowledge and skills which are acquirable. They approach threatening situations with assurance that they can exercise control over them. Such an efficacious outlook produces personal accomplishments, reduces stress and lowers vulnerability to depression. (Bandura, 1999, p.1) [19]

Secondly, resilience is also considered as the process and outcome of successfully adapting to challenging life experiences, especially through mental, emotional, and behavioural flexibility and adjustment to external and internal

demands [16]. Researchers reported that resilient factors contribute to how well people adapt to adversities: 1) how individuals view and engage with the world, 2) the availability and quality of social resources, and 3) specific coping strategies [6]. According to Connor-Davidson, resilience encompasses the components of self-efficacy/ hardiness, adaptation, and Purpose in life. Resilience is an ability to bounce back, adapt to reality, and find meaning in life [6], a dynamic, modifiable process [20]. Then it would be consistent when researchers found that resilience from the disruption/crisis would allow an individual to tap into growth [21] Thirdly, it is reported that resilient people who have high scores on self-efficacy would have a realistic understanding of life circumstances and what they can influence, have an awareness and tolerance of feelings, both their own and that of others, and have a strong belief in the future [22]. On one hand, it is to be found in a motivational force within individuals and groups and the creation of experiences, which motivates action and the use of life-giving [23]. On the other hand, resilience is considered the result of being able to negotiate risk through protective factors in the environment and the individual, thus contributing to the enhancement of health [24], [25]. Finally, according to Connor-Davidson (2003), those who have a high level of resilience are capable of adaptation that would integrate existential dynamics, a new life project or a life changed and transformed after the crisis [16]. Taking the diverse studies on resilience into consideration, in the present study, we focus on resilience as a combination of four components: (1) self-efficacy/hardiness (2) adaptation/optimism; (3) resourcefulness/spirituality; and (4) purpose [16], [26]. The next session will discuss relationships between somatic symptoms and resilience.

The relationships between PHQ-15 somatic symptoms and resilience

Studying somatic symptoms and resilience, Nishimi and colleagues (2023) found that lower levels of somatic symptoms were associated with higher levels of resilience during the pandemic, adjusting for COVID-19 infection and long COVID status [27]. Resilience found to reduce the adverse effects of stressors on immunity and immune processes also influences resilience [28]. On one hand, studies have shown that when faced with stressors due to the COVID-19 pandemic, people with poor adaptation, sensitivity, and lack of control are at higher risk of health problems. Mental health such as anxiety and depression, can also affect physical health and reveal physical symptoms. Killgore and colleagues (2020) and Nguyen (2023) found that resilience was higher in people who tended to exercise, pray regularly, and sleep well [28], [14]. Another study found a strong association between somatically ill and resilience [29]. Grigaitytė & Söderberg's (2021) study on the emergence of COVID-19 has reported an association between COVID-19 anxiety, physical symptoms and resilience [30]; researchers also reported that somatic symptoms found to be severity associated with the ability to sustain healthcare in surgical inpatients with an episode of abdominal pain [31]. Furthermore, somatic symptoms have been found as predictive factors of perceived social support, and emotional self-efficacy [30]. Also, in a study on the role of psychological resources in reducing the burden of somatic symptoms, the researchers found that lower somatic burdens during the COVID-19 Pandemic were found to be predictive factors of optimism, resilience, and general self-efficacy [31]. A cross-sectional study in India where researchers reported that there is an association between somatic symptom severity including unexplained physical symptoms and resources on sociodemographic [32]. In sum, it has been reported that the pandemic COVID-19 occurred that forced people to be isolated from each other. The unpredictable transmission and its dangerous spread Have shaken the secure base of human psychology [33]. As a result, it has been reported that somatic symptoms, such as loss of sleep, and stomachache were found in the survivors of the COVID-19 epidemic [34]. On one hand, its dangerous transmission seems unpredictable and that has shaken people's belief in what they can control, eg., plans, relationships, emotions, cognition, behaviour, finances, etc. On the other hand, when surveying 1252 people on socio-demographic information on what made them remain strong in the challenging times, there were 1252 responses, spanning 3 regions of Vietnam: North - Central - South, ages 14-85 years old, including 323 men (24.14%), of 1011 females (75.56%), 4 other genders (0.3%), our survey was in August 2021, there are 48 people (0.04%) who thought of death. Based on this result, the question of the remaining majority (99.06%) of people who have no thoughts of death, is whether the pandemic does not affect them. This research explores somatic symptoms in association with resilience and explores participants' descriptions of resilience. The next section on methods will be discussed.

METHODOLOGY

After being approved by the ethical Board, an online survey on social demographic information, somatic symptoms (Robert, Spitzer, Janet, Williams, Kurt, 2005) and resilience were administered. The research was divided into 3 stages

with 3survey: Survey 1:a quantitative research (N = 1338 (323 males, 1011 females, aged: 14-85) that focused on somatic symptoms (PHQ 15); and resilience (Davidson-Connor, 2010). 2) Survey 2: a descriptive study (N = 103: 23 males, 80 females, aged 18-52) on somatic symptoms and resilience. 3) Survey 3 on Yoga and mindfulness (N= 53: 11 males and 26 females, aged: 20-49) in September 2021. This current research report focuses on the quantitative results of survey one. SPSS-26 was utilized for data analysis on correlation. The survey one was conducted on August 9, 2021. where 0 is "not bothered at all," 1 is "bothered a little," and 2 is "bothered a lot." The total score ranges from 0 to 30, with higher scores indicating more severe somatic symptoms.

Connor-Davidson Resilience Scale (CD RISC)

CD-RISC is a scale to assess resilience that consists of 25 items. We chose to use and adapt this scale because currently in Vietnam, Minh-Uyen and Im's (2019) study uses a shortened 10-item version of the Mental Resilience Scale, which does not fully assess it. The scale was used to see if the structure of mental resilience has been studied in Westerners (Connor & Davidson, 2003), and in Vietnamese in Canada (Nguyen, 2014) acquired from four subcomponents: self-efficacy, adaptability, resource mobilization, and life purpose. The study standardized resilience test, retest was conducted a year later (August 2022). Participants were asked to respond on a five-point Likert scale on how true each item was for them during the last month. Scores range from 1-100 and are obtained by considering higher scores as indicating higher resilience [2]. For instance, the Item: "Tend to bounce back after illness, injury or hardship," measures the person's ability to cope with adversity. Respondents rate items on a scale ranging from "not true at all" (0) to "nearly true all the time" (4). The score obtained in this manner has been proven valid and reliable, with Cronbach alpha of 0.89 and test-retest correlation of 0.87 in American participants [2]; The reliability of the coefficient of the Chinese version of CD–RISC was 0.91 [34]. Yet, in our study, the results showed a Cronbach's alpha of the four subscales of $.755 \leq \alpha \leq .885$, which measured good reliability (See Table 4). The adaptation subscale consisted of 7 items ($\alpha = .863$), the resource subscale consisted of 6 items ($\alpha = .721$), the efficacy subscale consisted of 7 items ($\alpha = .885$) and the subscale consisted of 5 items ($\alpha = .864$).

Analytic methods

SPSS V.26 was employed as the analytical tool for this quantitative research. Frequency and descriptive analyses were conducted to examine social demographic information. Cronbach's alpha coefficients were utilized to test the internal consistency and reliability of the scales and items under consideration. Following the verification of distribution assumptions, correlation analyses were executed concerning the criterion of the outcome variables. Finally, per Tabachnick and Fidell's (2001) assertion, correlation was utilized as a metric to estimate the interdependence between variables [35].

RESULTS

Table 1 shows participants' socio-demographic characteristics and their descriptive information: N = 1252, 314 males (25.1%), 934 females (74.6%), and others, aged 18-85, somatic symptoms: (79%, 989); headache: (57.4%, 568); insomnia: (56.5%, 559); fatigue/low energy: (60.5%, 598). Particularly, (99.8%, of 1250) participants reported having self-efficacy even in the adversity of the Pandemic.

Table 2 shows participants' descriptive analysis results on personal strength (675, 53.9%), then the community (255, 20.4%), purpose in life (249, 19.9%), and lastly Creator and nature (73, 5.8%).

Table 3, in this study, presents PHQ-15 somatic symptoms' Cronbach Alpha was $\alpha = .86$.

Table 4 on the Resilience scale showed a significant Pearson's reliability since Cronbach's alpha of the four-factor groups was $.76 \leq \alpha \leq .89$ (See Table 4). The Adaptation subscale consisted of 8 items ($\alpha = .85$), the Resource subscale consisted of 5 items ($\alpha = .70$), the Efficacy subscale consisted of 7 items ($\alpha = .89$) and the subscale of Purpose in life consisted of 5 items ($\alpha = .87$).

Using Pearson correlation analysis, the result shows a negative correlation between PHQ-15 and the Resilience scale, which means higher PHQ-15 scores were associated with reduced
Resilience ($r = -.19$, $p < .01$) (See Table 5).

Table 6 revealed that higher levels of PHQ-15 somatic symptoms are significantly associated with low levels of four Resilience Subscales, and vice versa. Pearson correlation was used to measure their relationship. The results demonstrated a strong negative significant association between PHQ-15 somatic symptoms and Resilience with its four subscales.

For instance, PHQ-15 with Self-Efficacy: r = - .219**, Adaptation: r = -.172 **; Resources: r = - .85 ** and Purpose in Life: r = -.181**. Unexpectedly, the results show the highest significant relationship between PHQ and Self-Efficacy subscale (r = - .219**, p < .01) (**See Table 6**).

Further exploration: Linear Regression Analysis
Based on the significant negative correlation between the PHQ Scale and the subscales of Resilience, further linear regression analysis was conducted to determine the possibility of prediction from one group to the other and vice versa. Using a linear regression model, the results showed the prediction from the PHQ Scale to all four subscales of Resilience (See **Table 7**), with coefficients as follows:

Self-Efficacy: $F(1, 1250) = 63.186$, $p < .001$, $R^2 = .048$
Purpose in Life: $F(1, 1250) = 42.565$, $p < .001$, $R^2 = .033$
Adaptation: $F(1, 1250) = 37.993$, $p < .001$, $R^2 = .029$
Resources: $F(1, 1250) = 9.032$, $p < .001$, $R^2 = .007$

Table 8 shows the ANOVA results between Adaptation and PHQ Scale; Table 9 shows the ANOVA result between Resources and PHQ Scale; Table 10 shows the ANOVA result between Efficacy and PHQ Scale; and Table 11 shows the ANOVA result between Purpose in life and PHQ Scale.

In the reverse direction, predicting the PHQ Scale from the four subscales of resilience was tested (See Table 12, 13). The analysis revealed that the combination of the four subscales impacted the variance in the PHQ Scale, $R^2 = .054$, $F(4, 1247) = 17.708$, $p < .001$. Within this model, scores of Self-Efficacy and Resources were significant predictors of the PHQ
Scale:
Self-Efficacy: $\beta = -0.278$, $t = -4.516$, $p = 0.000$ (< .05)
Resources: $\beta = 0.088$, $t = 2.295$, $p = .022$ (< .05)
At the same time, scores of Adaptation and Purpose in Life were not significant predictors:

Adaptation: $\beta = 0.027$, $t = 0.573$, $p = .567$ (> .05)
Purpose in Life: $\beta = -0.040$, $t = -0.714$, $p = .475$ (> .05)
This indicates that the PHQ Scale barely changes for each score of Adaptation and Purpose in Life an individual gets.

DISCUSSION

The purpose of the current study (N=1,252 participants) is to examine the relationship between somatic symptoms and resilience, especially within the Vietnamese community, which can provide important insights into mental and physical health dynamics. The study's results indicate a significant negative correlation ($r = -0.19$, $p < 0.01$) between PHQ-15 somatic symptoms and resilience among the Vietnamese population. This suggests that Individuals with lower levels of resilience tend to report higher somatic symptoms, which include insomnia, fatigue, and other physical complaints. Understanding these correlations is essential for addressing mental and physical health issues within this community, especially in light of the stressors brought on by the COVID-19 pandemic. The key findings from this study are further discussed as follows:

1. Somatic Symptoms and Psychological Stress: The study corroborates the findings of Dreher et al. (2017), demonstrating a significant presence of 15 somatic symptoms related to psychological stress among the Vietnamese cohort during the pandemic. The PHQ-15 demonstrated high reliability with a Cronbach's alpha of 0.86, indicating that somatic complaints, such as insomnia, low energy, and fatigue, were prevalent in over 40% of participants. This highlights the need for mental health professionals to consider somatic dimensions when working with Vietnamese clients. [8].
2. Reliability of CD-RISC and Resilience: The Connor-Davidson Resilience Scale (CD-RISC) showed a reliability range of .755 to .885 across its subscales, confirming its suitability for measuring resilience in this population. A significant negative correlation ($r = -0.19$, $p < 0.01$) between resilience and PHQ-15 somatic symptoms was identified, suggesting that lower resilience, particularly low self-efficacy, is linked to higher levels of somatic complaints. This indicates that enhancing resilience could help mitigate these symptoms.
3. Self-Efficacy as a Protective Factor: The two-tailed correlation analysis revealed a significant negative correlation between PHQ-15 somatic symptoms and self-efficacy ($r(1250) = -0.219$, $p = .000$). This aligns with previous research by Winblad, Changaris, & Stein, indicating that higher self-efficacy is associated with decreased somatic symptoms and improved well-being. The findings suggest that self-efficacy may serve as a protective factor against the development of somatic complaints, emphasizing the importance of fostering self-efficacy in clinical practice.
4. Components of Resilience: Descriptive analysis revealed that over half (53.9%) of participants relied on their strengths during the pandemic. This finding was unexpected, given the Vietnamese cultural emphasis on community harmony. The results may reflect the isolation experienced during quarantine, leading individuals to turn inward and rely on personal resources. This shift raises questions about how the pandemic may have altered relational dynamics within the community.
5. Limitations and Recommendations for Future Research: A notable limitation of the study is the potential bias related to contextual differences among participants concerning somatic symptoms and resilience. Future research should focus on refining exclusion criteria and exploring the variables in greater depth to better understand the nuances of resilience and somatic symptoms in various contexts.

Implications of the Findings

1. Resilience as a Buffer Against Somatic Symptoms: The negative correlation between resilience and somatic symptoms reinforces the concept that resilience can serve as a protective factor against the manifestation of physical complaints related to emotional distress. In the context of the Vietnamese community, cultural factors like strong family ties and community support likely contribute to resilience. High resilience may empower individuals to cope better with stress, thereby reducing the likelihood of somatic symptoms manifesting. Encouraging resilience-building measures in this community could provide significant public health benefits.
2. Cultural Context and Its Impact: The cultural context in Vietnam plays a crucial role in how resilience is expressed and developed. Family and community are significant sources of support, which may enhance resilience during stressful times, including the pandemic. Understanding how cultural values influence both resilience and the experience of somatic symptoms can inform targeted interventions that align with Local beliefs and practices.

Lessons from the COVID-19 Pandemic

1. Mental Health Awareness: The pandemic has highlighted the interconnectedness of mental and physical health. Increased somatic symptoms during this period can be partly attributed to heightened anxiety and stress. The findings underscore the need for mental health awareness programs that educate individuals about the psychological and physical health connection. Effective communication during health crises can mitigate anxiety, thus reducing somatic symptoms.
2. Enhanced Social Support Systems: The pandemic emphasized the importance of social support in fostering resilience. The Vietnamese community often relies on family and friends for emotional support, which can buffer against stress and its physical manifestations. Initiatives aimed at strengthening social networks, especially during crises, can enhance community resilience. Providing platforms for virtual engagement during lockdowns proved essential for maintaining these connections.
3. Targeted Interventions: Insights from the correlation findings suggest that mental health interventions should prioritize building resilience. Programs that focus on coping strategies, stress management, and developing self-efficacy can empower individuals to handle stress more effectively. Interventions designed to improve resilience should consider the

context of ongoing or future crises, such as public health emergencies, which have a long-lasting impact on mental health.

4. Integration of Mental and Physical Health Services: The significant presence of somatic symptoms highlights the need for an integrated approach to health care—one that recognizes the relationship between physical and mental health. Health practitioners should be trained to recognize the signs ofsomatic symptoms in patients and consider underlying psychological factors. Holistic healthcare models that Incorporate both mental health services and physical symptom management are essential, particularly in societies where stigma around mental health may deter individuals from seeking help.

CONCLUSION

Overall, the findings underscore the complex interplay between somatic symptoms and resilience in the Vietnamese community, particularly during the COVID-19 pandemic. The study highlights the importance of addressing both somatic issues for culturally sensitive interventions that promote resilience and self-efficacy. By leveraging these findings, health professionals can design effective interventions that promote resilience, enhance cultural support, and holistically address health concerns. As the community continues to navigate post-pandemic challenges, prioritizing mental health and resilience will be essential for improving overall well-being and reducing the burden of somatic symptoms. Further research is warranted to explore these relationships in greater detail and to consider the evolving nature of community dynamics in response to significant stressors like the pandemic.

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Table 1: *Participants' Descriptive Analysis Report*

Category	Frequency	Percentage
Sexes		
Female	934	74.6%
Male	314	25.1%
Others	4	0.3%
Somatic symptoms	Total PHQ Scale ≥ 1	996 (79.6%)
Stomach pain	230	18.4%
Back pain	522	41.7%
Pain in arms, legs, or joints (knees, hips, etc.)	377	30.1%
Menstrual cramps or other problems with periods [Women only]	460	36.7%
Headaches	577	46.1%
Chest pain	217	17.3%
Dizziness	349	27.9%
Fainting spells	39	3.1%
Feeling heart pound or race	150	12%
Shortness of breath	137	10.9%
Pain or problems during sexual intercourse	66	5.3%
Constipation, loose bowels, or diarrhea	280	22.4%
Nausea, gas, or indigestion	242	19.3%
Feeling tired or having low energy	614	49%
Trouble sleeping	568	45.4%
Resilience score		
Adaptation ≥ 2	1251	99.9%
Resources ≥ 1	1251	99.9%
Efficacy ≥ 1	1251	99.9%
Purpose in life ≥ 1	1249	99.8%
N = 1252		

Table 2. *Descriptive analysis results on the question "What makes you remain strong during the pandemic?"*

Resources	N (%)
Inner resources	675 (53.9%)
Community	255 (20.4%)
Creator and nature	73 (5.8%)
Purpose in life	249 (19.9%)
Note: N = 1252	

Reliability Statistics of the 2 Scales

Table 3. *Reliability Statistics of the PHQ-15 Scale*

N of Items	Corrected Item-Total Correlation	Cronbach's Alpha
15	From .240 to .639	0.856

Table 4. *Reliability Statistics of the CD-RISC Scale*

Subscale	N of Items	Corrected Item-Total Correlation	Cronbach's Alpha
Adaptation	8	From .428 to .699	0.848
Resources	5	From .305 to .536	0.701
Efficacy	7	From .623 to .752	0.885
Purpose in life	5	From .633 to .736	0.868

Correlations between PHQ Scale and Resilience

Table 5. *Significant correlations between PHQ Scale and Resilience Scale*

	PHQ Scale	Resilience
PHQ Scale	_	
Resilience	-.189**	_

** *p < 0.01, two-tailed; N = 1252*

Correlations between PHQ Scale and four Resilience Subscales

Table 6. *Significant correlations between PHQ Scale and four subscales of Resilience*

	1	2	3	4	5
PHQ Scale	_				
Adaptation	-.172**	_			
Resources	-.085**	.704**	_		
Efficacy	**-.219****	.854**	.681**	_	
Purpose in life	**-.181****	.767**	.571**	.807**	_

** *p < 0.01, two-tailed; N = 1252*

Linear regression from PHQ Scale to four subscales of Resilience

Table 7. *Regression Coefficients for Predicting Resilience Subscales, with PHQ Scale as the independent variable*

Independent Variable	Dependent Variable	R Square	B	95% CI	β	t	p
PHQ Scale	Adaptation	0.029	-0.223	-.294, -.152	-0.172	-6.164	0.000
PHQ Scale	Resources	0.007	-0.070	-0.116, -0.024	-0.085	-3.005	0.003
PHQ Scale	Efficacy	0.048	-0.271	-0.338, -0.204	-0.219	-7.949	0.000
PHQ Scale	Purpose in life	0.033	-0.157	-0.204, -0.11	-0.181	-6.524	0.000

(N = 1252, p = .000), CI = confidence interval for B

Table 8. *ANOVA result between Adaptation and PHQ Scale*

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1289.200	1	1289.2000	37.9930	**.000b**
Residual	42415.765	1250	33.9330		
Total	43704.965	1251			

Dependent Variable: Adaptation

Predictors: (Constant), PHQ Scale

Table 9. *ANOVA results to determine if there is a difference in mean between Resources and PHQ Scale*

	Sum of Squares	df	Mean Square	F	Sig.
Regression	127.875	1	127.875	9.032	**.003b**
Residual	17696.959	1250	14.158		
Total	17824.834	1251			

**N= 1251, Dependent Variable: Resources*

Predictors: (Constant), PHQ Scale

Table 10. *ANOVA result to determine if there is a difference in mean between Efficacy and PHQ Scale*

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1898.859	1	1898.859	63.186	**.000b**
Residual	37564.881	1250	30.052		
Total	39463.740	1251			

***N= 1251, Dependent Variable: Efficacy*

Predictors: (Constant), PHQ Scale

Table 11. *ANOVA result to determine if there is a difference in mean between Purpose in life and PHQ Scale*

	Sum of Squares	df	Mean Square	F	Sig.
Regression	637.807	1	637.807	42.565	**.000b**
Residual	18730.308	1250	14.984		
Total	19368.115	1251			

Dependent Variable: Purpose in life

Predictors: (Constant), PHQ Scale

Linear regression from four subscales of Resilience to PHQ Scale

Table 12. *Regression Coefficients for Predicting PHQ Scale*

Predictor	B	95% CI	β	t	p
Adaptation	0.027	-0.065, 0.118	0.035	0.573	0.567
Resources	0.106	0.015, 0.197	0.088	2.295	0.022
Efficacy	-0.225	-0.323, -0.12	-0.278	-4.516	0.000
Purpose in life	-0.040	-0.149, 0.069	-0.034	-0.714	0.475

***N= 1251, R Squared = .054 (N = 1252, p = .000), CI = confidence interval for B*

Table 13. *ANOVA results to determine if there is a difference in mean betweenthe PHQ Scale and four Resilience Subscales*

	Sum of Squares	df	Mean Square	F	Sig.
Regression	1390.636	4	347.659	17.708	**.000b**
Residual	24481.616	1247	19.632		
Total	25872.252	1251			

***N= 1251, Dependent Variable: PHQ Scale*