



Covid-19 pandemic anxiety, academic stress, and quality of life among college students in the Philippines: A mediation study

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ABSTRACT

Students' lives can be impacted by the Coronavirus Disease 2019 (COVID-19) pandemic. This study investigates the relationship between COVID-19 pandemic anxiety and the quality of life of Filipino college students and examines the mediating role of academic stress in this relationship. A total of 1,024 students enrolled in Philippine universities and colleges participated in this cross-sectional analytical study. Findings suggest that pandemic anxiety positively correlates with the quality of life ($c=.399$, $p=0.002$). When academic stress is added as a mediator, pandemic anxiety has a negative indirect effect on the quality of life ($ab=-.410$, $p<.001$), and maintains a positive direct effect on the quality of life ($c'=.809$, $p<.001$), yielding an inconsistent mediation model among the three variables. In short, the COVID-19 pandemic anxiety has a double-edged effect on the quality of life, with its negative effect explained through academic stress. Stakeholders in college education are suggested to employ interventions to address academic stress among students.

Keywords: Covid-19, pandemic anxiety, academic stress, quality of life, college students

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INTRODUCTION

Since its initial discovery in China in December 2019, the unprecedented global spread of Coronavirus Disease 2019 (COVID-19) has challenged governments, impacted economies, and claimed lives (Lin et al., 2021). By the end of January 2022, there had been more than 350 million confirmed cases of COVID-19 and over 5.5 million related deaths (World Health Organization (WHO), 2022).

More than two years after the first suspected case in the Philippines, the country had more than 3.4 million confirmed cases and over 53,000 deaths due to the disease, making it the worst-affected country in the Western Pacific Region and the second in Southeast Asia based on the total number of COVID-19 cases (Miranda et al., 2021; World Health Organization (WHO), 2022). In the middle of January 2022, the number of COVID-19 reported cases reached over 38,000 a day—the highest number of confirmed cases per day in the country (World Health Organization (WHO), 2022). After two years of lockdown, the government heightened and performed restrictive community quarantine measures in the country to deter its spread (Barcelon, 2021).

Education is one of the social institutions that is greatly affected by the COVID-19 pandemic (Nicola et al., 2020). Like in other parts of the world, campuses have been closed, terms cut short, and classes converted to online mode in the Philippines, to support the social distancing measures promoted by the government (Toquero, 2020). This abrupt change in the educational

landscape, the public health emergency and the societal impacts caused by COVID-19, can be a significant source of stress among students (Cao et al., 2020). Since the first introduction of the lockdown, online and distance learning has continued for two years, especially in the reinstatement of expanded community quarantine (Barcelon, 2021). Health experts have advised about the potential mental health challenges that can arise during this pandemic (Sahu, 2020; Toquero, 2020).

One of the psychological concerns that arose during the COVID-19 pandemic period is anxiety (Baloran, 2020; Cao et al., 2020; J. V. Cleofas & Rocha, 2021; Qiu et al., 2020). A longitudinal study in a school setting has demonstrated that the student's anxiety levels have worsened during this period compared to their pre-pandemic state (Maia & Dias, 2020). Like other mental health problems, anxiety has a negative impact on the quality of life among students (Ribeiro et al., 2018).

Guided by the theory of quality of life by Schalock et al. (2016) on the associations of emotional well-being and subjective personal health status and quality of life, this introduction presents previous studies correlating pandemic anxiety to quality of life, pandemic anxiety to academic stress, and academic stress and quality of life, in the context of the COVID-19 pandemic and the student population, within and outside the Philippines.

Various studies have established the relationship between anxiety and quality of life in the student population. Gan & Yuen Ling (2019) suggest that health science students in Malaysia who exhibited anxiety scored lower in quality of life, specifically in the psychological, social and environmental domains. In the same vein, a longitudinal study among Brazilian medical students has shown the negative impact of anxiety on quality of life, among other psychological outcomes (Solis & Lotufo-Neto, 2019). In addition, a study in a Filipino sample of undergraduate students has suggested that psychological distress, including anxiety, has a negative relationship with student quality of life (J. V. Cleofas, 2020).

In the context of the COVID-19, the relationship between anxiety induced by the pandemic, and quality of life has also been recently studied. The psychometric study of Satici et al. (2021) demonstrated that the fear of COVID-19 was negatively correlated with life satisfaction in the general adult Turkish population. In addition, a global study by the TMGH-Global COVID-19 Collaborative (2021) added that the pandemic has significantly affected several individuals psychologically.

As for studies conducted in the student population, Kant (2021) conducted a cross-sectional study in India to investigate the psychological, social, and emotional aspects of university students during the COVID-19 pandemic. The study shows that half of the respondents reported emotional instability during this period due to their anxiety about the disease. This has also influenced other aspects of their lives.

A recent local study was conducted in the Philippines in relation to the coping patterns of college students during the COVID-19 pandemic when campuses were closed, and schooling was shifted online due to community quarantine (Baloran, 2020). Most of the students reported feeling anxious. They were worried about the potential effects of the pandemic on certain aspects of their lives, like access to food and financial resources. This is confirmed by the narrative studies of Cleofas (2021) and Cedeño et al. (2021), which demonstrated how the pandemic had disrupted the present and future perspectives of their lives.

Previous research has suggested a positive relationship between worry regarding catastrophic events and psychological distress in life-threatening situations such as hurricanes (Hudson et al., 2020). Recent studies on COVID-19 show that anxiety due to this pandemic is related to some form of stress. Fear of COVID-19 correlates positively with stress in the general adult population (Satici et al., 2021). Evidence also suggests that COVID-19 pandemic anxiety influences stress that is academic in nature. For instance, through a survey done among university students in Wuhan, China, Wang & Zhao (2020) demonstrated that one of the common worries of the students in relation to COVID-19 was classes, especially online classes. Another Chinese study showed that one of the academic-related worries that students had was their future careers when they graduate (Li et al., 2021). In India, it was found that due to the pandemic, majority of the students reported experiencing various forms of stressful study situations, such as lack of

access to study materials, lesser concentration and time spent studying because of their worries about their health and safety (Kant, 2021).

In the Philippines, a study qualitatively illustrated the connection between COVID-19 pandemic anxiety and academic stress. Cahapay (2020) conducted phenomenological research to examine students' experiences of being stranded because of the community quarantine. Findings suggest that the anxieties experienced by the stranded students were related to unfinished school requirements.

The effects of stress among students on their quality of life has been well-studied. Perceived stress has a direct negative effect in quality of life in a sample of university students in Korea (Seo et al., 2018). Likewise, medical students who have higher stress levels were observed to have lower quality of life scores based on studies conducted in Iran (Forouzandeh et al., 2016) and Brazil (Moutinho et al., 2019). In a cross-sectional study among undergraduate students in the United States, academic stress became one of the factors associated with life satisfaction, for both American and international students (Karaman & Watson, 2017).

Systematic literature reviews of academic stress and quality of life studies among students have provided deeper insights on the relationships between the two variables. Ribeiro et al. (2018) concludes that quality of life is deteriorated by high stress, and other related factors including insomnia and burnout. Also, the review of Solis & Lotufo-Neto (2019) demonstrates that stress negatively affects quality of life, and positive academic outcomes including positive perception of educational environment, academic efficacy and sense of accomplishments improve students' quality of life.

The proposed model to be tested in the study is the Individual Quality of Life Theory by Schalock et al. (2016). This theory argues that quality of life is comprised of domains, which are main factors that contribute to overall quality of life. In addition, moderating and mediating factors that influence the relationship of these domains to quality of life have been identified by this theory. This present study specifically focuses on the emotional wellbeing as the main factor affecting the quality of life among the students, and personal subjective health status as the mediating factor.

In this study, the independent variable is emotional wellbeing, which is operationalized as pandemic anxiety. The pandemic anxiety described in this study is not the clinical form of anxiety; but the sense of worry and concern that the students have in relation to COVID-19, as defined by McElroy et al. (2020). The mediating variable is personal subjective health status, which is defined as perceived academic stress. It fitted to contextualize health status to academic stress due to the nature of the respondents who are undergraduate students. The dependent variable is quality of life.

Evidence suggests that the students' quality of life is negatively correlated with anxiety (J. V. Cleofas, 2020; Gan & Yuen Ling, 2019; Solis & Lotufo-Neto, 2019). Also, studies have established this relationship in the context of the COVID-19 pandemic (Baloran, 2020; Kant, 2021; Satici et al., 2021). The hypothesis of this present research is that this negative correlation between pandemic anxiety and quality of life will be demonstrated by the researchers' sample of Filipino college students (H_1).

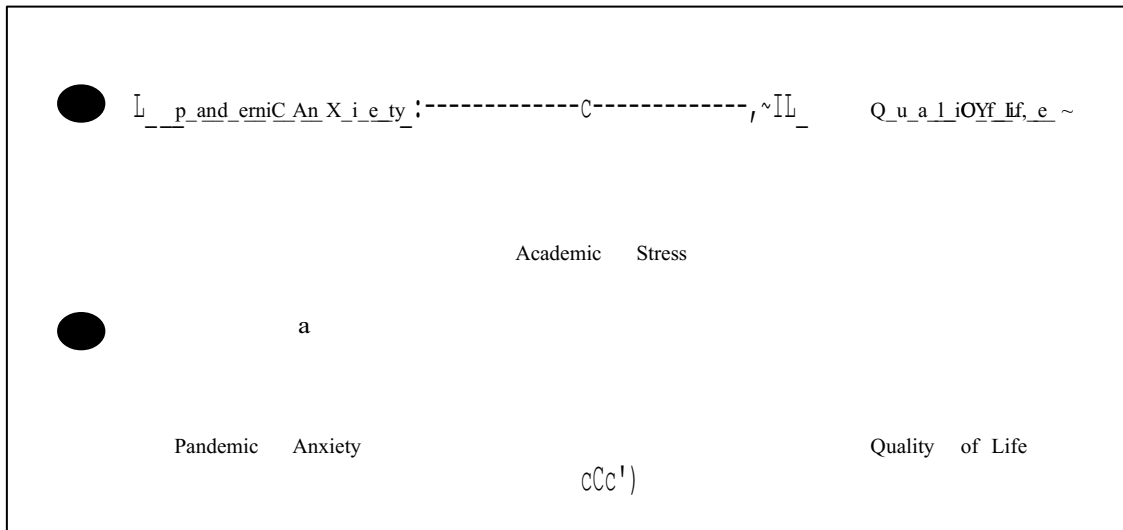
H_1 : Pandemic anxiety will have a negative relationship with quality of life.

However, the mechanism to which pandemic anxiety influences quality of life remains unexplored. In this present study, the researchers also hypothesize that this relationship is mediated by academic stress among college students (H_2). This assumption is supported by studies demonstrating the relationships between pandemic anxiety and academic stress (Cahapay, 2020; Kant, 2021; Li et al., 2021; Satici et al., 2021; Wang & Zhao, 2020), and academic stress and quality of life among students (Forouzandeh et al., 2016; Karaman & Watson, 2017; Moutinho et al., 2019; Ribeiro et al., 2018; Seo et al., 2018; Solis & Lotufo-Neto, 2019).

H_2 : Academic stress mediates the relationship between pandemic anxiety and quality of life. Pandemic anxiety increases academic stress, which will in turn decrease quality of life

The researchers argue that the mechanism to which anxiety due to COVID-19 could decrease quality of life among college students would be different from the rest of the adult population. The impact that pandemic induced anxiety can have on students' quality of life is contextualized in their social status and roles as formal learners. In this present study, the extent to which academic stress mediates the effect of pandemic anxiety on quality of life among Filipino college students is examined.

The aim of this study is to determine the relationship between pandemic anxiety and quality of life among students and investigate the role of academic stress in mediating that relationship among students. The diagram to visually summarize the two hypotheses is presented in Figure 1.



Note: model 1 shows the hypothesized relationship between pandemic anxiety and quality of life, while model 2 shows the hypothesized model where academic stress mediates the relationship between pandemic anxiety and quality of life

Figure 1. Graphic Representation of Fatigue Mediating the Relationship between Pandemic Anxiety and Quality of Life

METHOD

Design and sampling

This quantitative study is cross-sectional and analytical in nature. A total of conveniently sampled 1,024 college students enrolled in undergraduate degree programs in the Philippines colleges and universities participated in the study. The data collection procedure was adherent to the ethical standards indicated in the Philippine National Ethical Guidelines for Health and Health Related Research (Philippine Health Research Ethics Board, 2017) and the Data Privacy Act of the Philippines (Official Gazette of the Republic of the Philippines, 2012).

Profile of the student respondents are presented in Table 1. Majority of the college student respondents were 19 years old ($f=351, 34.3\%$; $\mu=19.9\pm 2.00$), females ($f=799, 78\%$), first year students ($f=502, 49\%$), enrolled in a private higher educational institution ($f=581, 56.7\%$) and living with family ($f=877, 85.6\%$).

Instrumentation

Pandemic anxiety was assessed using the Pandemic Anxiety Scale (PAS) by McElroy et al. (2020). The PAS is a 5-point Likert scale, composed of seven items that are contextualized in the COVID-19 pandemic. The highest possible score for PAS is 36. Statements cover both disease anxiety (e.g., "I'm worried that I will catch COVID-19), and consequence anxiety (e.g., "I'm worried about missing school/work). The scale has an acceptable Cronbach's alpha value ($\alpha=0.70$ for adolescents; $\alpha=0.74$ for adults) and has good convergent validity with other anxiety scales (McElroy et al., 2020).

Quality of life was measured using the Brunnsvikien Brief Quality of Life Scale (BBQ) by Lindner et al. (2016). The BBQ is a 5-point Likert scale, composed of 12 items. This scale

considers both extent of satisfaction (e.g., “I am satisfied with my leisure time: I have the opportunity to do what I want in order to relax and enjoy myself”) and extent of importance (e.g., “My leisure time is important for my quality of life”) of six areas of quality of life. BBQ has an acceptable Cronbach’s alpha value of 0.76, and high test-retest reliability score of .82 (95% CI: .75–.89) (Lindner et al., 2016).

Academic stress was assessed using the Perception of Academic Stress Scale (PASS) by Bedewy & Gabriel (2015). The PASS is a 5-point Likert scale, composed of 18 items. This scale includes positively framed (e.g., “I am confident that I will be a successful student”) and negatively framed (e.g., “My teachers are critical of my academic performance”) statements. This scale has an acceptable Cronbach’s alpha value of 0.70, and an 89% agreement among expert validators (Bedewy & Gabriel, 2015). To address common method bias, psychological separation strategy was used (Podsakoff et al., 2012). Each scale was provided its own page in the online survey form.

Table 1. Demographic profile of the participants

Variable	Levels	n	%
Age (in years) <i>Mean = 19.9</i> <i>SD = 2.00</i> <i>Range = 18 - 35</i>	18	171	16.7
	19	351	34.3
	20	284	27.7
	21	104	10.2
	22	42	4.1
	23	17	1.7
	24	23	2.2
	25 and above	32	3.10
Sex	Male	225	22.0
	Female	799	78.0
Year Level	1st Year	502	49.0
	2nd Year	347	33.9
	3rd Year	57	5.6
	4th Year	58	5.7
	5th Year	60	5.9
Type of Institution	Private University/College	581	56.7
	Public University/College	443	43.3
Living Arrangement	Living with Family	877	85.6
	Living with Friends/Dormmates	104	10.2
	Living Alone	43	4.2

Note: n=1,024

Data collection procedures

The data were collected through an open online survey using Google Forms. After receiving ethical clearance, the links of the survey in Facebook and Twitter were publicly posted for whole of April 2020. The link was equipped with a caption of the invitation briefly explaining the purpose of the study, procedure of the survey and eligibility criteria of prospective respondents. The recruitment post was boosted to gain a more widespread reach. Also, informed consent to participate was sought through the online form. The informed consent form is the first

page of the survey. Data privacy and confidentiality were protected. Only the researchers and the statistical consultant had access to the data.

Data analysis

After clearing the data of duplicate entries, responses from international students, and removing outliers, the correlation among the three variables of the study was tested using Pearson R moment correlation. When significant correlations were established, a simple mediation analysis with bootstrapping (n=5000) was conducted to address possible non-normality (Alfons et al., 2022), with pandemic anxiety as the independent variable, quality of life as the dependent variable, and academic stress as the mediating variable. The simple correlation and mediation analysis were computed using the regression, and medmod modules of JAMOMI version 0.9 respectively (The jamovi project, 2019).

FINDING AND DISCUSSION

Finding

Correlation among variables

The results of correlation tests are presented in Table 2. Findings suggest that all variables are significantly correlated with each other. Results reveal that pandemic anxiety is positively correlated with academic stress (r=.284, p<.001) and quality of life (r=.106, p<.001), and academic stress is negatively correlated with quality of life (r=-.322, p<.001).

Table 2. Pearson’s correlation coefficients of the study variables

Study Variables	[1]	[2]	[3]
[1] Pandemic Anxiety (PAS)	-	-	-
[2] Academic Stress (PASS)	0.284***	-	-
[3] Quality of Life (BBQ)	0.106***	-0.322***	-

Note: *** Correlation is significant at the .001 level

Mediating effects of academic stress on the relationship between pandemic anxiety and quality of life

The results of the simple mediation analysis show that without accounting for academic stress, the total effect of pandemic anxiety to quality of life is statistically significant and positive in nature (c=.399, p=.002, 95%CI [0.140 – 0.659]).

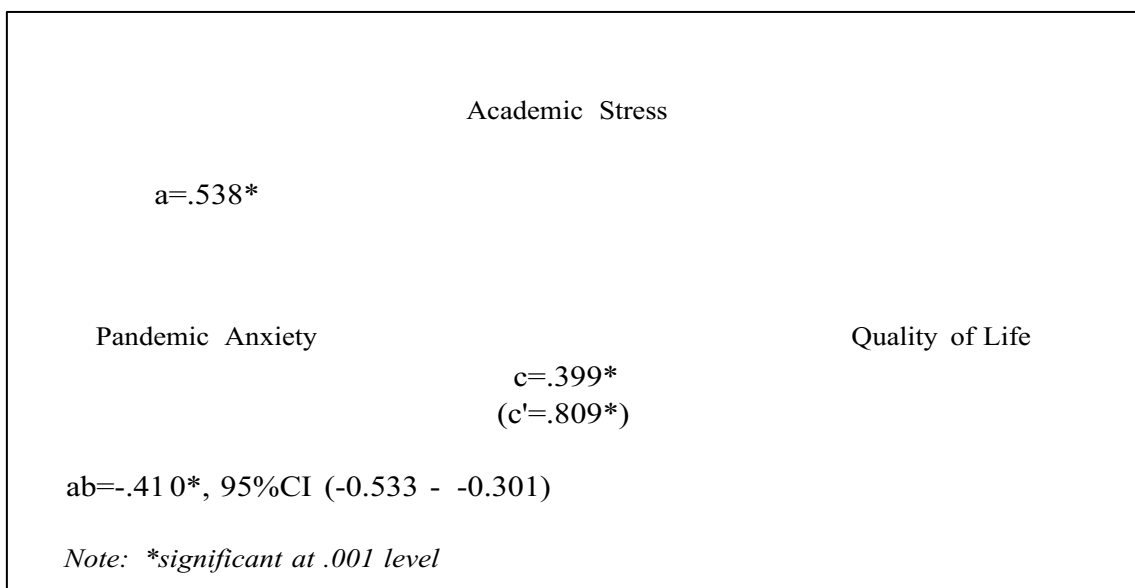


Figure 2. Graphic Representation Showing the Mediated Model of the Statistically Significant Path Estimates

When added academic stress is added as a mediating variable, the results reveal that the indirect effect of pandemic anxiety to quality of life is statistically significant and negative in nature ($ab = -.410, p < .001, 95\% \text{ CI } [-0.533 - -0.301]$). Path estimates suggest that pandemic anxiety has a significant positive effect on academic stress ($a = .538, p < .001, 95\% \text{ CI } [0.422 - 0.659]$), and academic stress has a significant negative effect on quality of life ($b = -.762, p < .001, 95\% \text{ CI } [-0.881 - -0.645]$). Moreover, pandemic anxiety still has a positive influence on quality of life as evidenced by a significant residual effect score ($c' = .809, p < .001, 95\% \text{ CI } [0.580 - 1.046]$) even after accounting for academic stress as a mediator in the analysis. Based on the results that yielded opposing signs in the direct and indirect effects, the mediation model suggests an **inconsistent mediation**. Figure 2, the model suggests an inconsistent mediation as demonstrated by opposing signs of the total effect estimate and indirect effect estimate.

Discussion

The goal of this present study is to investigate the influence of COVID-19 pandemic anxiety and quality of life among Filipino college students and test whether this relationship is mediated by academic stress. This is the first large scale study conducted in the Philippines among students using all these three variables in the context of the COVID-19 pandemic.

Surprisingly, the first hypothesis on the negative relationship between pandemic anxiety and quality of life is inconsistent with the result of the unmediated model. The findings from both the correlational and simple mediation analysis demonstrate that higher pandemic anxiety scores predicted high levels of quality of life without accounting for academic stress. This contradicts the results of previous studies both in the general adult and student population.

A possible explanation for this unique finding, which is the significant positive relationship of pandemic anxiety to quality of life, could be attributed to evolutionary approaches to anxiety. This approach suggests that anxiety symptoms may have functional significance in the defense against potential threats. Anxiety can induce an individual to identify threats more quickly, be constantly alert and prepared to act, and avoid threatening situations (Bateson et al., 2011). These positive behaviors could possibly contribute to positive life outcomes during a time where the imminent threat of COVID-19 contagion is present.

This finding could also be explained using a cultural lens. First, Filipinos are known to be a family-oriented society. Also, one important factor for individual wellbeing (*kaginhawaan*) is the state of one's family (Samaco-Zamora & Fernandez, 2016). The compulsory stay-at-home measures implemented during the enhanced community quarantine period when the survey was conducted indicated that students spend more time with their families and loved ones, especially most of the respondents who lived with relatives. Second, one of the Philippines' pride values include resilience, which pertains to strive and adapt when being faced with adversity (Fallaria et al., 2019). A study on the experience of stranded Filipino students due to quarantine restrictions related to COVID-19 qualitatively illustrates how their worries about the pandemic and lockdown could be coped with positively, like learning new skills and adopting new lifestyles (Cahapay, 2020). Similarly, Cedeño et al. (2021) state that the pandemic has enabled creativity, innovation, and adaptability among students. Also, Cleofas (2021) demonstrates that some college students engage in prosocial behaviors during the pandemic time. These may contribute to the positive outcomes of quality of life despite pandemic anxiety.

The second hypothesis was supported by this study result: academic stress significantly mediates the relationship between pandemic anxiety and quality of life among college students. When academic stress is accounted for, pandemic anxiety has a negative significant indirect effect on quality of life. Moreover, the specific paths from pandemic anxiety to quality of life through academic stress are consistent with previous studies: anxiety triggers academic stress (Basith et al., 2021; Cahapay, 2020; Kant, 2021; Kaya-Uyanik et al., 2019; Wang & Zhao, 2020) and consequently, academic stress decreases quality of life (Muchsin & Siswandari, 2020; Ribeiro et al., 2018; Solis & Lotufo-Neto, 2019) among students.

Moreover, the addition of academic stress as a mediating variable in the study do not cancel out the positive direct effect of pandemic anxiety and quality of life. This type of mediation when the indirect effect (-) has an opposing sign from the direct effect (+) in the model is called an

inconsistent mediation (MacKinnon et al., 2007). It implies that pandemic anxiety has a double-edged (positive and negative) effect on students quality of life, and the negative effect can be explained through academic stress. Future studies may explore the possible mechanisms that can explain the positive relationship of pandemic anxiety and quality of life among students (e.g., family relationships, resilience, prosocial behaviors).

CONCLUSION

Based on the findings, COVID-19 pandemic anxiety has a significant relationship with quality of life among Filipino college students. The mediation results show that this relationship is both positive and negative in nature. Without accounting for academic stress, this relationship is positive in nature. Higher levels of pandemic anxiety can possibly increase students' quality of life.

When academic stress is included in the model as a mediator, the indirect effect of pandemic anxiety become negative in nature. High levels of pandemic anxiety may tend to increase academic stress, which in turn decreases quality of life among college students. The inconsistent mediation reveals that the relationship between COVID-19 and quality of life is double edged.

This study demonstrates that COVID-19 pandemic anxiety has a possible positive influence on quality of life. This means that information dissemination about the negative aspects of this novel disease, however worrisome, can still have a potentially beneficial effect on the student's life. Schools can adopt strategies that make use of this increased attention and anxiety towards the disease and the pandemic to transform these to meaningful classwork and projects to improve their lives and members of their families and communities. School health administrators and staffs can also make use of negative framing in their health education and COVID-19 prevention information education communication tools (IEC) that are carefully negative frame health messages, maintaining a healthy level of concern to elicit protective behaviors for students and the rest of the school community.

This study also demonstrates that pandemic anxiety can decrease quality of life by increasing academic stress. We recommend that schools must consider the amount of school-related stress that has been brought about by societal changes due to the pandemic (e.g., transition to full online classes, lack of resources and reimagining homes as formal learning spaces) in planning how to deliver education under the "new normal" society, and determine ways to mitigate, or at least not amplify these stressors, to soften the blow of COVID-19 on the students' life. Online mental health services must be readily available for students who might need them.

More evidence is needed to explain the positive relationship of pandemic anxiety to quality of life in the student population. Future researchers can identify possible mediators that can explain the positive side of this double-edged relationship.

The results of this study must be viewed in the light of its limitations. First, this study, despite its large sample size, assumes a cross-sectional design. Therefore, the certainty of the causal nature of the relationships could not be inferred as one would in a longitudinal study. Second, the present study only considers a simple mediation analysis. Future studies could look into testing more complex models using a more robust analytical framework to gain deeper insight on the phenomenon at hand. Thirdly, data on institutional affiliation and geographical locations of the students cannot be collected, as these are considered as private and personal information in the provisions of Data Privacy Act. Therefore, insights related to these variables cannot be gleaned from the current data. Lastly, the recruitment of this study was restricted to our personal social media networks, so full representativeness of the sample could not be guaranteed.

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