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Research Article

The impact of the COVID-19 Pandemic on mental health among Marine Engineering students in Region VI, Philippines

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Abstract

The COVID-19 Pandemic has brought the world into a catastrophic situation. The Philippines is one of the nations that has been dramatically affected by this unseen and deadly virus. As early as March 2020, the country declared a nationwide lockdown that psychologically impacted the people. This descriptive-correlational study aimed at ascertaining the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students. DASS-21 was adopted to assess depression, anxiety, and stress among 185 respondents. The computer-processed statistics used were mean and frequency for descriptive analysis; t-test was used for Independent Samples, and One-way ANOVA was used for inferential analysis. The Alpha level was set at 0.5. The study found that, generally, Marine Engineering students had mild signs of depression, moderate signs of anxiety, and normal signs of stress. There was no significant difference in terms of impact of the COVID-19 Pandemic on the Marine Engineering students' mental health in terms of depression, anxiety, and stress when classified according to year level, place of birth, and location of residence. A psychological intervention program, "*bUligAn and Naapektuhan ng Pandemya:* A Psychological Intervention Program," was formulated to address the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students.

1. Introduction

The world began to stumble when the news broke over social media and other news outlets about the deadly virus popularly known as COVID-19 (Huang & Zhao, 2020). As early as December 2019, the virus started infecting people living in Wuhan, China, spreading like wildfire from country to country and becoming a pandemic (Wang et al., 2020; Gilbert et al., 2020). The World Health Organization (WHO) announced on March 11, 2020, to the public that the virus was already a global threat to health, as it causes illness, flu-like symptoms, and death. As of October 26, 2020, there were 42,745,212 confirmed cases of COVID-19, including 1,150,961 deaths (WHO, 2020).

Philippine President Rodrigo Roa Duterte briefed the Inter-Agency Task Force (IATF) on COVID-19 (PCOO, 2020). The IATF, together with the Department of Health (DOH), formed composite teams to ensure enhanced contact-tracing and containment measures in all parts of the country during this time of the COVID-19 Pandemic (Joint Resolution Nos. 11 and 12 (s. 2020)).

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According to Proclamation Nos. 929 and 922 (2020) and the Republic Act 11332, effective March 17, 2020, classes and all school activities at all levels were suspended, mass gatherings were prohibited, strict home quarantine was observed in all households, work from home arrangements were implemented, public transport facilities were suspended, and travel was restricted.

Despite the government efforts to contain the spread of COVID-19, the DOH recorded 370,028 total cases, 35,015 active cases, and 6,977 deaths as of October 25, 2020 (DOH, 2020). Still, many people ignored the government call to stay home, maintain social distancing, and avoid public places.

People stay home for their safety and to avoid the spread and infection of COVID-19 in public places. Adequate knowledge and a positive attitude on responding to the COVID-19 in this time of pandemic were observed (Galicia, 2020). However, prolonged confinement at home has a psychological effect on people in all socioeconomic aspects (Brooks et al., 2020). The latest studies revealed that the global pandemic substantially impacted every individual's psychological well-being (Sim & Chua, 2004; Wu et al., 2009).

The shift of traditional classroom setting to online instructions contributes to the students' emotional burden, especially for those who cannot afford to buy gadgets and other electronic devices, have poor connectivity or lack computer access needed for online classes (Khan & Abdou, 2020).

Thus, it is vital to assess maritime students' mental health status in the Province of Antique during the COVID-19 Pandemic in order to make a drastic intervention on the government's part through the local government unit and higher education institutions.

1.1 Theoretical framework of the study

This research is anchored on Stress theory, by Finsterbusch (1982), Learned Helplessness theory, by Seligman (1974), and Psychoanalytic theory, by Freud (2003). Stress theory (Finsterbusch, 1982) describes the process whereby environmental events or forces threaten an individual's well-being and individual response. The threatening event is the stressor, and the response is coping behavior, which, if successful, leads to adaptation and adjustment and, if unsuccessful, leads to additional coping efforts. If the stress condition continues for a long enough time without relief, it can lead to physical or mental disorders. On Learned Helplessness theory, Seligman (1974) explains depression, whereby the individual gives up trying to influence their environment because they have learned that they are helpless due to having no control over what happens to them. On the other hand, according to the Psychoanalytic theory by Freud (2003), anxiety serves as a signal when 'danger situations' tend to gravitate around the threats that arise from the prospect of being helpless and at the mercy of others: threats of losing a loved one, of losing another's love, or of being attacked. Freud claimed that these threats are manifestations of a more fundamental threat: the threat of castration**.**

Thus, Marine Engineering students should know the impact of the COVID-19 Pandemic on their mental health, in terms of depression, anxiety, and stress, and adopt strategies that improve their well-being during these trying times (**Figure 1**).

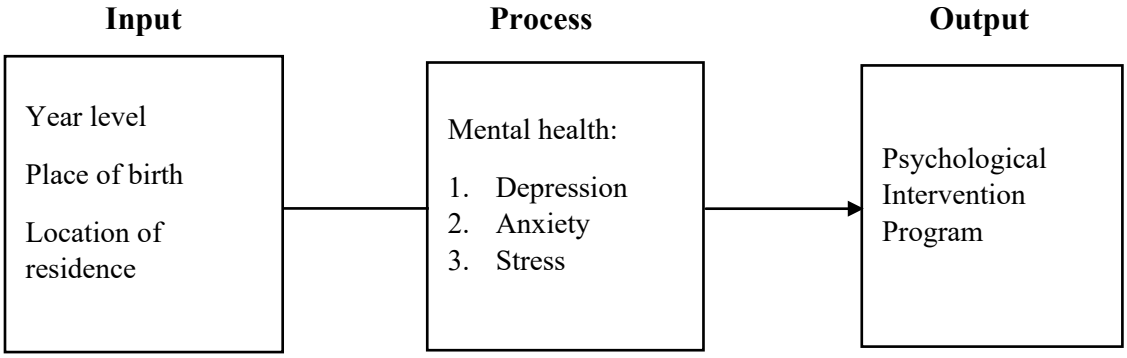

Figure 1 Illustration, in graphic form, of the paradigm of this research.

1.2 Objectives of the study

This study aims to assess Marine Engineering students' mental health, in terms of depression, anxiety, and stress during the COVID-19 Pandemic, in Region VI, located in the Western Visayas, Philippines, when taken as a whole and classified according to year level, place of birth, and location of residence. Also, it aims to determine the significant difference in their mental health impacts in terms of depression, anxiety, and stress during the COVID-19 Pandemic, classified into specific categories. Furthermore, it aims to formulate a health intervention program to combat the mental health problems encountered by Marine Engineering students during the COVID-19 Pandemic.

2. Materials and methods

2.1 Research design

The descriptive-correlational research method was employed in this investigation, since the data was collected to answer research questions concerning the impact of COVID-19 on Marine Engineering students' mental health in terms of depression, anxiety, and stress. According to Gay et al. (2018), descriptive research involves collecting data to answer questions. In descriptive research, researchers add, determine, and report how things are (Gay et al., 2018).

2.2 Participants

The participants in this study were 185 randomly-selected Bachelor of Science students of Marine Engineering (BSMarE) from the College of Maritime Studies of the University of Antique, the only State University and College (SUC) in Region VI, Philippines, offering the program; selection was done using the Raosoft sample size calculator online from the 362-total enrolled BSMarE students.

A Simple Random Sampling Technique was used to select the specified number of respondents from the Marine Engineering program. A table of random numbers was used in choosing the samples provided in the random list generated by the SPSS version 23 software.

2.3 Instrument

To assess Marine Engineering students' mental health during the COVID-19 Pandemic in the Province of Antique, the Depression Anxiety and Stress Scale (DASS-21) was adopted and administered. According to Lovibond and Lovibond (1995), DASS-21 is the most reliable tool for assessing an individual's psychological distress.

All items in the instrument had factor loads of 0.935 using the DASS-21 scale, under the valid constructs intended for the study. The instrument consisted of two parts: Part I elicited information on the Marine Engineering student's age, year of graduation, and location of residence. Part II elicited data on the DASS-21 Scale (Lovibond & Lovibond, 1995).

The score of an individual respondent on the DASS-21 needed to be multiplied by 2 to calculate the final score. The recommended cut-off scores for conventional severity labels (normal, moderate, severe) were as follows:

Table 1 The Depression, Anxiety and Stress Scale - 21 Items (DASS-21).

Criteria	Mental Health Conditions		
	Depression	**Anxiety**	**Stress**
Normal	0 - 9	0 - 7	2 - 14
Mild	10 - 13	8 - 9	15 - 18
Moderate	14 - 20	10 - 14	19 - 25
Severe	21 - 27	15 - 19	26 - 33
Extremely severe	28 +	20 +	34 +

Reference: DASS-21 (Lovibond & Lovibond, 1995)

2.4 Procedure

The researcher requested permission to administer the research instrument from the Dean of the College of Maritime Studies office at the University of Antique. Upon approval of the permit, detailed oral instructions, originally in English, were transmitted in Tagalog to ensure that the participants correctly accomplished the questionnaires. Since the University of Antique declared no face-to-face classes starting in March 2020, the questionnaires were created using Google forms and were distributed to the respondents via social media such as Facebook, e-mail, and other online platforms.

2.5 Data analysis

The completed questionnaires were scored and subjected to appropriate computer-processed statistics using the Statistical Package for the Social Sciences (SPSS) software version 23. Means and frequency were the descriptive statistical tools employed in the study. The t-test and One-Way ANOVA, set at 0.05 alpha level, were the inferential tools used.

3. Results and discussion

3.1 Descriptive data analysis

3.1.1 Impact of COVID-19 on the mental health of Marine Engineering students when taken as a whole

Table 2 presents the impact of COVID-19 on the mental health on the students when taken as a whole.

The results revealed that, generally, the Marine Engineering students in this investigation exhibited “mild” depression (M = 11.34), “moderate” anxiety (M = 10.96), and “normal” stress M = 11.87). The results revealed that the respondents had moderate signs of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effects. This might be attributed to a global lockdown of higher education institutions amid the COVID-19 Pandemic. They had mild indications of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. This might be attributed to the uncertainty of resuming face-to-face classroom instruction. They had normal signs of stress during these trying times. This

might be attributed to higher education institution academic support and national government financial assistance.

Table 2 Impact of COVID-19 on the mental health of Marine Engineering students when taken as a whole.

As A Whole	Total N (%)	Mental Health					
		Depression (Mean)	Description	Anxiety (Mean)	Description	Stress (Mean)	Description
BSMarE Program	185 (100 %)	11.34	MILD	10.96	MODERATE	11.87	NORMAL

3.1.2 Impact of COVID-19 on the mental health of Marine Engineering students when classified as to year level

Table 3 presents the impact of COVID-19 on the mental health of the students when classified as to year level.

The results revealed that, generally, the Marine Engineering students in this investigation exhibited "mild" signs of depression, with first-year (M = 11.82) and second-year (M = 10.79). They had "moderate" signs of anxiety, with first-year (M = 11.60) and second-year (M = 10.23). They had "normal" signs of stress, with first-year (M = 12.53) and second-year (M = 11.12). The results revealed that, regardless of year level, they shared moderate signs of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effects. This might be attributed to the sudden suspension of face-to-face instruction due to the COVID-19 Pandemic. They also shared mild indications of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. This might be attributed to the uncertain mode of submission of output and of completion of courses. They shared normal signs of stress during these trying times. This might be attributed to the effective use of technology in their social and academic obligations as students.

Table 3 Impact of COVID-19 on the mental health of Marine Engineering students when classified as to year level.

Year Level		Mental Health					
	N (%)	Depression (Mean)	Description	Anxiety (Mean)	Description	Stress (Mean)	Description
First Year	99 (54 %)	11.82	MILD	11.60	MODERATE	12.53	NORMAL
Second Year	86 (46 %)	10.79	MILD	10.23	MODERATE	11.12	NORMAL
Total	**185 (100 %)**	**11.34**	**MILD**	**10.96**	**MODERATE**	**11.87**	**NORMAL**

3.1.3 Impact of COVID-19 on the mental health of Marine Engineering students when classified as to place of birth

Table 4 presents the impact of COVID-19 on the mental health of students when classified as to place of birth.

The results revealed that students living outside the Province of Antique had "moderate" (M = 15.14), and those living in the northern and southern part of Antique had "mild" (M = 11.75 and M = 10.94, respectively), signs of depression. There were generally shared "moderate" signs of anxiety for those living in the northern, southern, and outside parts of Antique (M = 11.67, M = 10.44, and M = 14.57, respectively). There were also shared "normal" signs of stress for those living in the northern, southern, and outside parts of Antique (M = 11.89, M = 11.69, and M = 14.86, respectively). The results revealed that students living outside of the Province of Antique had moderate signs of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effects. A possible reason for this can be attributed to the lockdown happening in the province amid the COVID-19 Pandemic. They also shared mild indications of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. This might be attributed to the interruption of academic instruction. They shared normal signs of stress during these trying times. This might be attributed to the response of higher education of immediate suspension of classes due to the sudden surge of COVID-19.

Table 4 Impact of COVID-19 on the mental health of Marine Engineering students classified as to place of birth.

Place of Birth	Mental Health						
	N (%)	Depression (Mean)	Description	Anxiety (Mean)	Description	Stress (Mean)	Description
Northern Part of Antique	55 (30 %)	11.75	MILD	11.67	MODERATE	11.89	NORMAL
Southern Part of Antique	123 (66 %)	10.94	MILD	10.44	MODERATE	11.69	NORMAL
Outside of the Province of Antique	7 (4 %)	15.14	MODERATE	14.57	MODERATE	14.86	NORMAL
Total	**185 (100 %)**	**11.34**	**MILD**	**10.96**	**MODERATE**	**11.87**	**NORMAL**

3.1.4 Impact of COVID-19 on the mental health of Marine Engineering students when classified as to location of residence

Table 5 presents the impact of COVID-19 on the students' mental health when classified as to location of residence.

The result revealed that students residing in plain and mountainous areas had "mild" (M = 11.87 and M = 12.59, respectively), and those residing in the beach area had "normal" (M = 9.28) signs of depression. Those who resided in plain and mountainous areas had "moderate" (M = 11.51 and M = 11.30, respectively), and those residing in the beach area had "mild" (M = 9.81) signs of anxiety. They generally shared "normal" signs of stress for those residing in the plain, beach, and mountainous areas (M = 12.77, M = 10.26, and M = 12.15, respectively). The results revealed that students who resided in plain, mountainous, and beach areas had mild and normal signs of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious effects. A possible reason for this can be attributed to the lockdown happening in the province amid

the COVID-19 Pandemic. They also shared moderate and mild indications of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest/involvement, anhedonia, and inertia. This might be attributed to the interruption of academic instruction. They shared normal signs of stress during these trying times. This might be attributed to the response of higher education for the immediate suspension of classes due to the sudden surge of COVID-19.

Table 5 Impact of COVID-19 on the mental health of Marine Engineering students in terms of depression when classified as to location of residence.

Location of Residence	Mental Health						
	N (%)	Depression (Mean)	Description	Anxiety (Mean)	Description	Stress (Mean)	Description
Plain Area	78 (42 %)	11.87	MILD	11.51	MODERATE	12.77	NORMAL
Beach Area	53 (29 %)	9.28	NORMAL	9.81	MILD	10.26	NORMAL
Mountainous Area	54 (29 %)	12.59	MILD	11.30	MODERATE	12.15	NORMAL
Total	**185 (100 %)**	**11.34**	**MILD**	**10.96**	**MODERATE**	**11.87**	**NORMAL**

3.2 Inferential data analysis

3.2.1 Difference in the impact of COVID-19 on the mental health of the Marine Engineering students when classified according to year level

Table 6 presents the difference in the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students when classified according to year level.

The results showed that no significant difference existed in impact of the COVID-19 Pandemic on the mental health of the Marine Engineering students when classified according to year level in terms of depression, anxiety, and stress, with $t(183) = 0.921$, $t(183) = 1.242$, and $t(183) = 1.289$, $p > 0.5$, respectively. This result implies that personal factors, such as year level, do not influence the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students. These could be attributed to the level of maturity of college students in balancing studies through flexible learning, social interaction with family and friends through social media, and the maintaining of a healthy lifestyle while dealing with the situation.

Table 6 t-test results for difference in the impact of COVID-19 on the mental health of Marine Engineering students when classified according to year level.

Mental Health		Mean	t-value	df	2 tail Sig.
A. Depression					
	First Year	11.82			
			0.921	183	0.358
	Second Year	10.79			
B. Anxiety					
	First Year	11.60			
			1.242	183	0.216
	Second Year	10.23			
C. Stress					
	First Year	12.53			
			1.289	183	0.199
	Second Year	11.11			

3.2.2 Difference in the impact of COVID-19 on the mental health of Marine Engineering students when classified according to place of birth

Table 7 presents the difference in the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students when classified according to place of birth.

The results showed that no significant difference existed in the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students when classified according to place of birth in terms of depression, anxiety, and stress, with $F(2,182) = 1.135$, $F(2,182) = 1.378$, and $F(2,182) = 0.600$, $p > 0.05$, respectively. These results suggest that, regardless of place of birth, the COVID-19 Pandemic had similar impact on the mental health of the Marine Engineering students. This could be attributed to the positive traits of the respondents; the majority were Antiqueños, with strong family ties and faith in God, a sense of social responsibility, and resilience in dealing with a difficult situation like this pandemic.

Table 7 One-Way ANOVA results for difference in the impact of COVID-19 on the mental health of Marine Engineering students when classified as to place of birth.

Mental Health	Sum of Squares	Df	Mean Square	F	Sig.
Place of Birth (Northern, Southern, and Outside of Antique)					
A. Depression					
Between groups	129.651	2	64.825	1.135	0.324
Within groups	10393.895	182	57.109		
Total	**10523.546**	**184**			
B. Anxiety					
Between groups	152.619	2	76.310	1.378	0.255
Within groups	10080.116	182	55.385		
Total	**10232.735**	**184**			
C. Stress					
Between groups	66.424	2	33.212	0.600	0.550
Within groups	10082.463	182	55.398		
Total	**10148.886**	**184**			

3.2.3 Difference in the impact of COVID-19 on the mental health of Marine Engineering students when classified according to location of residence

Table 8 presents the difference in the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students when classified according to location of residence.

The results showed that no significant difference existed in the impact of the COVID-19 Pandemic on the mental health of the Marine Engineering students when classified according to the location of residence in terms of depression, anxiety, and stress, with $F(2,182) = 2.956$, $F(2,182) = 0.897$, and $F(2,182) = 1.866$, $p > 0.05$, respectively. These results suggest that, regardless of location of residences, the COVID-19 Pandemic had a similar impact on the mental health of the Marine Engineering students. Theis could be attributed to the unique location of respondents; the majority resided in the Province of Antique. Antique is surrounded by mountains and sea, and where all physiologic needs are available in the area.

Table 8 One-Way ANOVA results in difference in the impact of COVID-19 on the mental health of Marine Engineering students when classified as to location of residence.

Mental Health	Sum of Squares	df	Mean Square	F	Sig.
Location of Residence (Plain, Beach, and Mountainous Areas)					
A. Depression					
Between groups	331.036	2	165.518	2.956	0.055
Within groups	10192.510	182	56.003		
Total	**10523.546**	**184**			
B. Anxiety					
Between groups	99.875	2	49.938	0.897	0.410
Within groups	10132.860	182	55.675		
Total	**10232.735**	**184**			
C. Stress					
Between groups	203.924	2	101.962	1.866	0.158
Within groups	9944.963	182	54.643		
Total	**10148.886**	**184**			

3.3 Proposed psychological intervention program

"*bUligAn and Naapektuhan ng Pandemya": A Psychological Intervention Program*

This is a proposed psychological intervention program of the University of Antique - College of Maritime Studies (UA-CMS) to address the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students. It aims to provide information about the mental health problems, their causes and effects, and how to deal with these conditions amid the COVID-19 Pandemic (**Table 8**).

The results of this study revealed that no significant difference existed in the impact of the COVID-19 Pandemic on the mental health of the students in terms of depression, anxiety, and stress when classified according to year level, place of birth, and location of residence. It means, regardless of the certain categories, there was a similar impact of the COVID-19 Pandemic on the Marine Engineering students' mental health.

In the next 3 years, from 2021 to 2024, a psychological intervention program will achieve the specific objective of improving the psychological well-being of Marine Engineering students at the University of Antique.

Table 9 Presentation of proposed psychological intervention program.

Program/Components	Name of agency	Key responsibilities
"*bUligAn and Naapektuhan ng Pandemya*": A Psychological Intervention Program	College of Maritime Studies Local Government Unit through Public Health Unit (PHO) Maritime Industry Authority	Improve psychological well-being among Marine Engineering students in the University of Antique
United Nations' Sustainable Development Goals (SDGs) 2030: SDG 3 - Good Health and Well-Being	College of Maritime Studies Local Government Unit through Public Health Unit (PHO) Maritime Industry Authority National Government	United Nations' Sustainable Development Goals (SDGs) 2030: SDG 3 - Good Health and Well-Being
AmBisyon Natin 2040: Health and wellness services	College of Maritime Studies Local Government Unit through Public Health Unit (PHO) Maritime Industry Authority National Government	AmBisyon Natin 2040: Health and wellness services

4. Conclusions

The Marine Engineering students showed mild signs of dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest or involvement, anhedonia, and inertia. They showed moderate signs of autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. However, they had normal signs of relaxation, nervous arousal, being easily upset or irritated, and impatience. Those living outside the province had moderate signs of depression. No significant difference existed in the impact of the COVID-19 Pandemic on the mental health of the Marine Engineering students in terms of depression, anxiety, and stress when classified according to year level, place of birth, and location of residence. A psychological intervention program, "*bUligAn and Naapektuhan ng Pandemya:* A Psychological Intervention Program", was formulated to address the impact of the COVID-19 Pandemic on the mental health of Marine Engineering students.

5. Recommendations

The concerned agencies should provide information about mental health problems, their causes and effects, and how to deal with these conditions amid the COVID-19 Pandemic. The Maritime faculty should identify individuals suffering from mental health problems and endorse them to health practitioners. The head of the unit may invite health care professionals to evaluate the condition of individuals who suffer from mental health problems. The Public Health Unit should conduct seminars and training on mental health awareness, prevention, and control of health problems for all students. These recommendations are aligned with the United Nations' Sustainable Development Goals (SDG) 2030: SDG 3-Good health and well-being, AmBisyon Natin 2040: Health and wellness services.

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