A Cross-Sectional Study: The Effect of Enhanced Virtual Mode on the Self-Perceived Physical Activity of Third Year Medical Technology Students from a University in Manila, Philippines

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Abstract: - The COVID-19 pandemic has disrupted several aspects of daily life, as governments around the world subjected their citizens to extended quarantine times to slow the spread of the dreaded virus. Among the affected institutions are schools, which have been forced to shift from face-to-face and consider online-based modes of delivery of learning. Given the novelty of this transition, the researchers conducted an online cross-sectional survey to determine the self-perceived general state of health and physical activity during face-to-face classes and during Enhanced Virtual Mode of instruction, which is conducted largely online, of third-year Medical Technology students in a university in Manila. As validated by the Wilcoxon Signed Rank Test, the results revealed that these two variables were significantly decreased during the course and conduct of online learning. Additionally, the researchers correlated the possible long-term health consequences of Enhanced Virtual Mode to the decreased physical activity third-year Medical Technology students currently engage in. Furthermore, the researchers also examined the coping mechanisms that the respondents utilized during the implementation of the Enhanced Virtual Mode of instruction. It was found that most third-year Medical Technology students resorted to using self-distraction/self-diversion as their coping mechanism. Conversely, substance abuse and denial turned out to be the least used adaptive strategy. However, varied responses were also found among the population.

Key Words: — ***COVID-19, Enhanced virtual mode, Physical activity, Coping, Health.***

I. INTRODUCTION

The Coronavirus disease (COVID-19) has forced different industries around the world to undergo drastic changes and implement new protocols. The long-term economic, cultural, and behavioral effects of the rapid digital migration resulting from the pandemic are uncertain at present. With this, various universities and colleges have shifted to distance education modalities. A university in Manila decided to implement the Enhanced Virtual Mode (EVM) of instruction as the method of delivery by utilizing both online and offline strategies for academic year (AY) 2020-2021.

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The shift to the EVM because of the current pandemic has provided undergraduate students with decreased opportunities to stay physically involved. Due to the amount of workload and time spent studying which undergraduate students deal with daily, it is not unlikely for them to develop a high risk of harmful effects on health and wellbeing, including depression, metabolic diseases such as cardiovascular disease, and cancer.

In line with these statements, the researchers took an interest to describe, identify, compare, and assess the changes in physical activity and coping mechanisms of third year Medical Technology students during the implementation of Enhanced Virtual Mode as compared to when they were participating in face-to-face classes. Additionally, the researchers correlated the possible long term health consequences of Enhanced Virtual Mode to the amount of physical activity third-year Medical Technology students currently have.

II. LITERATURE REVIEW

2.1 Education amidst COVID-19

The COVID-19 pandemic, which was designated a global pandemic in March 2020, had a severe impact on world's human health and subsistence. The closure of public and private institutions, government offices, schools, public transportation, and mandatory closures of private companies and businesses are some of the preventive measures to cease the spreading of the virus. Moreover, strict stay-at-home orders, social distancing of at least 6-feet in public are implemented by the government. The closure of thousands of schools and universities are due to the susceptibility of the school environment to COVID-19. The same situation occurred during the Severe Acute Respiratory Syndrome (SARS) epidemic in China in 2003, wherein school and university closures were enforced. In line with this, the Department of Education (DepEd) and Commission on Higher Education (CHED) opted to carry out online learning due to the rising cases of COVID-19 in the Philippines. The DepEd and CHED developed plans to maintain the continuity of the academic year, which includes the utilization of online platforms to sustain the deliverance of education in both the public and private secondary and higher education institutions. Higher educational institutions that have shifted to an online mode of teaching have used distance learning approaches to make learning more accessible despite geographic constraints.

2.2 Enhanced Virtual Mode

Enriched Virtual Mode (EVM), also known as online learning services, uses web applications to offer, record, and monitor lessons via the internet. It entails using technological advancements to direct, plan, and execute the quality of learning while also encouraging two-way communication between students and faculty. There are two modes in providing online content in an online learning system, according to Shahabadi and Uplane (2015). These are synchronous e-learning and asynchronous e-learning. Synchronous e-learning is facilitated by instructors and is defined as real-time or live learning-oriented engagement that is usually scheduled. The commonly used applications for video conferences are Google Meet, Microsoft Teams, Zoom, etc. On the other hand, asynchronous e-learning, as defined by Mayadas (1997), is a collaborative learning environment that is not constrained by time, place, or the confines of a classroom. It utilizes tools that enable the exchange of knowledge, independent of the time and location limitations of a network of individuals. The full online modality of the learning approach during the post-COVID-19 period may be achievable. However, considering that the Philippines is a less economically developed country, the educational system is still struggling to cope with the new normal education and face these academic challenges to continue through this COVID-19 pandemic. Moreover, due to a sudden shift from traditional to online learning, many higher education institutions, colleges, and universities in the Philippines struggled to implement online learning. Consequential learning is not fast and simple, and the present conditions have turned the people into new learners, as students or instructors have adapted to new ways of educating and surviving throughout the worldwide crisis.

2.3 Enhanced Virtual Mode and Face-to-Face classes

Due to the COVID-19 pandemic, schools and higher institutions had to make drastic changes on their teaching approach and to conduct online classes for their students. The face-to-face learning environment that we have grown accustomed to has been replaced by online classes. Despite having access from the internet, some students prefer engaging themselves in classroom discussions, be a part of cooperative learning, and have an organic student-teacher bonding. A traditional learning setting provides students the best tools to maximize their learning. Online classes limit this to electronic correspondence, and instructors may not be able to know what a student needs unless they ask for help. One concern regarding online classes is that the organic classroom interaction between professors and students, which is a vital learning process, cannot be fully replicated.

It is solely focused on more student-centered learning, where the lecturer encourages or oversees student learning, rather than merely distributing knowledge. The students are expected to have the initiative for their own education and to take charge in their learning process. Most students would end up self-studying, but not all students can adapt to that style of studying. There are limitations to ease of access in online learning, such as technical and hardware problems that ultimately fall on the students or instructors. It is heavily dependent on having an internet connection, and if circumstances arise that would impede a smooth connection, students and instructors alike would have difficulty being able to access their materials, which in turn would lead to frustration and discouragement.

2.4 Physical Inactivity

Two of the major concerns regarding academic achievement of students are Test Scores and Time on Task (TOT). According to Chomitz et al. (2009), test scores are used to determine whether a university is reaching academic achievements criteria when it comes to measuring academic altitudes. On the other hand, Time on Task (TOT) pertains to the learning abilities, student discipline and their study habits.

*Test Scores***.** Chomitz et al. (2009) stated that test scores are highly impacted by increasing physical activity.

*Time on Task***.** There is a strong correlate on between the neurologic framework and the frequency of physical activity. "We have discovered that exercise is strongly correlated with increased brain mass, better cognition, mood regulation, and new cell growth".

Two highly recommended approaches were utilized in determining the relationship of increased physical activity and academic achievement. These approaches are the measurements of physical fitness and the observation of students in the classroom setting.

Physical Fitness and Health. A study of McAuley and Rudolph (1995) linked physical activity to academic success by examining students' self-esteem, self-perception, and self-confidence.

Classroom Interventions. The study of Grieco, Jowers, Errisuriz, and Bartholomew (2009) made use of movement-based games as their examination strategy which led to positive results in the ability of students to accomplish tasks on time.

2.5 Theoretical Study

Social Cognitive Theory is a psychological view of human function that stresses the vital role fulfilled by motivation, learning, and self-regulation in the social environment. Due to different social cognitive approaches that have been developed over time, this study will be limited to the perspective proposed by Albert Bandura.

A study conducted by Naami, Reisi, Tahmasebi, & Javadzade (2020) has proven that Social Cognitive Theory has been useful in addressing health habits, such as physical exercise, and determined that social and psychological determinants affect behavior. Furthermore, Social Cognitive Theory indicates that self-efficacy, perceptions of performance, and perceived obstacles to physical activity directly and indirectly impact physical activity behavior through attempts to participate in physical activity and goal setting (Curtis, & et.al., 2018; Ghoreishi, Vahedian-shahroodi, Jafari, & Tehranid, 2019). However, to date, there is minimal current research on university students exploring the capacity of social cognitive models regarding the purpose and actions of physical activity.

III. METHODOLOGY

3.1 Research Design

This study utilized the cross-sectional research design to examine the existing dissimilarities on Enhanced Virtual Mode and face-to-face classes and its effect on the physical activity of third-year Medical Technology students. The cross-sectional approach allowed the researchers to study and draw deductions from prevailing variations between individuals, subjects, and circumstances. It is focused on the existing differences instead of the shift following an intervention. This includes, at a particular point in time, the effect of the implementation of the enhanced virtual mode on student physical activity.

3.2 Subject and Study Site

The participants were selected using the random sampling method, which is a non-probability survey technique, to represent the entire population of the third-year Medical Technology students. The survey was conducted online through Google Forms, due to the pandemic and community lockdown. The participants, to be selected, should be third-year Medical Technology students currently enrolled in Academic Year 2020-2021, within the age group of 19 to 22 years old, and taking online classes through the Enhanced Virtual Mode. Additionally, this study focused on students who are under Category 2 that is defined as having a combination of non-wired/offline and asynchronous online activities or Category 3 which encompass those students who have strong internet connectivity and can synchronously join online activities based on the internet connectivity classification of the University.

To get the sample size, Slovin's formula was used. The formula is:

$$n = \frac{N}{1 + Ne^2}$$

where n is the sample size
N is the total population
e is the margin of error

In this study, the margin of error used was 3% or 0.03, and the total population of the third year Medical Technology students is 932. Substituting all the given data:

$$n = \frac{932}{1 + (932)(0.03)^2}$$

n =506.85
n =507

The sample size used to represent the entire population of the third year Medical Technology Students was 507 students. Since there are 22 sections in the third-year level, there were at least 23 participants per section to achieve the desired sample size. The researchers were able to surpass the minimum target sample size by communicating with the presidents per section to access their respective class directories. After randomly selecting 23 respondents to participate in the study, the survey questionnaire was disseminated to the participants via their email addresses. By requesting the class presidents to remind the selected participants to answer the survey questionnaire, the researchers were able to collect responses from a total of 525 third-year Medical Technology students in a University in Manila.

3.3 Data Measure/Instrumentation

An adopted survey questionnaire that has been validated was used for gathering data in determining the effect of Enhanced Virtual Mode on the physical activity of third-year Medical Technology students. Cronbach's alpha was performed to determine the reliability of the questionnaire and had a resulting value of 0.82 which was above the minimum accepted value of 0.70. Moreover, quantifying physical activity in daily life using questionnaires has the advantage of being affordable and easy to employ. However, these methods are considered to rely heavily on the following factors: (a) the accuracy of the subjects' awareness and recall of information; (b) the design of the questionnaires; (c) the demographic profile of the subject; and (d) the cost of energy of the various activities. These factors may lead to uncertainty or bias in the assessment.

The questionnaire is divided into four major parts: student's demographic profile; student's physical activity during face-to-face classes (On-campus); student's physical activity during Enhanced Virtual Mode (EVM); and student's coping mechanism. The first part focused on the socio-demographic profile of the students which also included their internet connectivity classification. Moreover, the second and third parts of the questionnaire assessed and distinguished the changes in the student's physical activity before and after Enhanced Virtual Mode was implemented. The final part of the questionnaire aided in identifying the different kinds of coping mechanisms used by the students to adapt to the changes in their everyday physical activities.

3.4 Data Gathering Procedure

This study utilized a survey containing selected and collated questions from validated questionnaires. Considering the situation in this pandemic, an online tool, which is the Google Forms, was utilized to conduct the survey and that also automatically collated and tallied the responses in each question from the survey in graphical form or tabular form. The data gathering process was conducted for four (4) weeks from March to April 2021. The data gathered was treated using descriptive statistics then validated by the inferential statistics. Statistical analysis was performed using SPSS (Statistical Software for the Social Sciences) while charts and graphs were obtained using Microsoft Office Excel.

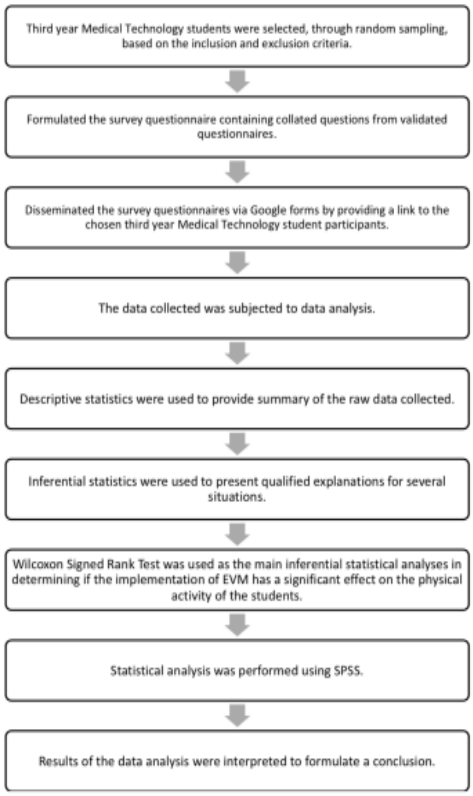

Fig.1. Diagrammatic Flowchart

3.5 Ethical Considerations

The five main ethical principles of research: minimizing the risk of any harm, informed consent, anonymity & confidentiality, desisting from deceptive practices, and the right to withdraw shall be respected and observed in this study. The respondents were informed of the objectives and nature of study, the manner of data collection, and the utilization of results prior to answering the questionnaire. The survey form and informed consent form was translated in both English and Filipino, whichever language the respondent was most comfortable with.

3.6 Data Analysis

Descriptive Statistics refers to the overall description and summary of raw data gathered that potentially lead to the formation of new patterns that provide support, structure, and solutions to the study. However, this tool does not grant the researchers concrete conclusions to the hypotheses.

*Frequency distribution and percentages***.** This tool utilizes several tables of frequency distributions that display classes and intervals of data with a count of the number in each category. Mean and standard deviation for approximately normally distributed variables, otherwise median and interquartile will be used to describe the data.

Exploratory data analysis. EDA investigates the quality of data produced in terms of being able to meet the expectations of the researchers or not by the application of plots, charts and graphs to see patterns or trends, as well as possible outliers on the data.

Inferential Statistics aids in presenting qualified explanations beyond the given data for several situations and phenomena. It allowed the researchers to formulate a conclusion based on small or few samples.

Wilcoxon Signed Rank Test (Wilcoxon T test). This analysis technique is used when the observations are dependent either in pairs or matched cases, and the data is not normally distributed which is the case for ordinal responses (Heiman, 2011). In this study, Wilcoxon Signed Rank Test was used to determine if the implementation of Enhanced Virtual Mode had a significant effect on the physical activity of the students.

Using Statistical Software for the Social Sciences or SPSS, statistical analyses were run while Microsoft Office Excel was employed to obtain charts and graphs. A standard level of significance of $\alpha = 0.05$ was set for the testing of hypotheses. Outputs of the SPSS will show if there is significant evidence to reject the null or research hypothesis.

IV. RESULTS

4.1 Demographic Profile of Third Year Medical Technology Students

Table 1 presents an overview of the social demographic characteristics, such as students' gender, age and internet connectivity classification, of the sample. Among the five hundred twenty five (525) respondents, 69.7% are female, 62.3% are 21-years old and six out of ten students were classified as having Category 2 Internet Connectivity Classification.

Table.1. Sociodemographic Characteristics of Third Year Medical Technology Students

	Frequency	Percent
Gender		
Male	159	30.3
Female	366	69.7
Age		
19	11	2.1
20	156	29.7
21	327	62.3
22	31	5.9
Internet Connectivity Classification		
Category 1	3	.6
Category 2	317	60.4
Category 3	205	39.0
Total	525	100.0

4.1.1 Perceived State of Health of Third Year Medical Technology Students Before and During the Implementation of Enhanced Virtual Mode

Table 2 demonstrates the changes in the percentage of students who perceived themselves as having a poor, fair, good, very good, or excellent state of health before and during the implementation of the Enhanced Virtual Mode of Learning. Increases in number were seen in students who had a self-perceived poor state of health (from 0.76% to 9.33%) and in fair and good states of health (7.81%-27.24%). Decreases in number were observed in the number of students who had a very good state of health (44.38%) and an excellent state of health (8.57%). These declines may be attributed to several factors such as hectic class schedules, increased workload, social isolation, increased anxiety, and health concerns.

Table.2. Comparison of the Perceived State of Health during Face-to-Face Classes and During Enhanced Virtual Mode

	During face-to-face classes	During Enhanced Virtual Mode
Poor	4 (0.76%)	49 (9.33%)
Fair	41 (7.81%)	143 (27.24%)
Good	180 (34.29%)	205 (39.05%)
Very Good	233 (44.38%)	106 (20.19%)
Excellent	64 (12.19%)	19 (3.62%)
Missing	3 (0.57%)	3 (0.57%)
Total	525	525

A Wilcoxon Signed Rank Test was conducted to determine notable variations between the students' self-perceived states of health during the Enhanced Virtual Mode of Learning and face-to-face classes. The statistical results revealed a negative rank of Z = -13.114, indicating that the state of health of the respondents was better during face-to-faces classes compared to the Enhanced Virtual Mode of Learning ($p < 0.001$). More negative ranks (320) than positive ranks (53) in Table 3 implied a decline in the self-perceived state of health during the Enhanced Virtual Mode of Learning.

Table.3. Wilcoxon Signed-ranks Test (Ranks) of the Perceived State of Health During Face-to-face Classes and During Enhanced Virtual Mode

Ranks

		N	Mean Rank	Sum of Ranks
Perceived State of Health During Face-to-face Classes and During Enhanced Virtual Mode	Negative Ranks	320[a]	191.31	61220.00
	Positive Ranks	53[b]	160.96	8531.00
	Ties	152[c]		
	Total	525		

a. 1. Compared to the time face-to-face classes were conducted, how would you rate your health in general now? < How would you rate your health in general back when face-to-face classes were still possible?

b. 1. Compared to the time face-to-face classes were conducted, how would you rate your health in general now? > How would you rate your health in general back when face-to-face classes were still possible?

c. 1. Compared to the time face-to-face classes were conducted, how would you rate your health in general now? = How would you rate your health in general back when face-to-face classes were still possible?

Table.4. Wilcoxon Signed-ranks Test (Test Statistics) of the Perceived State of Health During Face-to-face Classes and During Enhanced Virtual Mode

Test Statistics[b]

	Perceived State of Health During face-to-face Classes and During Enhanced Virtual Mode
Z	-13.114[a]
Asymp. Sig. (2-tailed)	.000

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

4.1.2 Physical Activity of Third-Year Medical Technology Students during Face-to-Face Classes and During Enhanced Virtual Mode

Table 5 presents the frequency and fluctuation of intentional exercise performed by third year Medical Technology students during face-to-face classes and during Enhanced Virtual Mode. Declines were observed in students who had daily intentional exercise (from 8.46% to 7.31%), in students who exercised around 3 times a week (from 20.77% to 19.81%), and in those who exercised irregularly (from 55.19% to 45.19%). An increase was observed in those who had no intentional exercise (from 15.58% to 27.69%). Inaccessibility to fitness centers, increased academic workload, anxiety, and loss of motivation may have contributed to the decline the students have experienced.

Table.5. Comparison of Frequency of Intentional Exercise Performed by Respondents during Face-to-Face Classes and During Enhanced Virtual Mode

	During face-to-face classes	During Enhanced Virtual Mode
Daily	44 (8.46%)	38 (7.31%)
Around 3 times a week	108 (20.77%)	103 (19.81%)
Irregular	287 (55.19%)	235 (45.19%)
None	81 (15.58%)	144 (27.69%)
Total	520	520

A negative rank of Z = -2.8714 conveyed the effect of remote learning on the frequency of intentional exercises performed by the students during face-to-face classes in comparison with the Enhanced Virtual Mode ($p < 0.004$). More negative ranks (186) than positive ranks (127) in Table 6 implied a decline in the physical activity of students during the Enhanced Virtual Mode.

Table.6. Wilcoxon Signed-ranks Test (Ranks) of Intentional Exercise Before and During Implementation of Enhanced Virtual Mode

Ranks

		N	Mean Rank	Sum of Ranks
Frequency of Intentional Exercise During Face-to-face Classes and During Enhanced Virtual Mode	Negative Ranks	186[a]	155.75	28969.00
	Positive Ranks	127[b]	158.83	20172.00
	Ties	207[c]		
	Total	520		

a. How much intentional exercise do you usually get in a week back when face-to-face classes were still possible? < How much intentional exercise do you usually get in a week (Enhanced Virtual Mode)?

b. How much intentional exercise do you usually get in a week back when face-to-face classes were still possible? > How much intentional exercise do you usually get in a week (Enhanced Virtual Mode)?

c. How much intentional exercise do you usually get in a week back when face-to-face classes were still possible? = How much intentional exercise do you usually get in a week (Enhanced Virtual Mode)?

Table.7. Wilcoxon Signed-ranks Test (Test Statistics) of Intentional Exercise Before and During Implementation of Enhanced Virtual Mode

Test Statistics[b]

	Frequency of Intentional Exercise During Face-to-face Classes and During Enhanced Virtual Mode
Z	-2.8714[a]
Asymp. Sig. (2-tailed)	.004

a. Based on positive ranks.

b. Wilcoxon Signed Ranks Test

4.2 Physical Activity during Face-to-Face Classes

Table 8 displays the various levels of physical activities of students involved in extracurricular activities during face-to-face classes such as heavy activities, moderate activities, slight activities, and sedentary. The majority of respondents had slight to moderate activities (82.7%). 7.0% had heavy activities and 9.7% had a sedentary lifestyle. The three (3) missing respondents represent those who are under Category 1 of the Internet Connectivity Classification whose responses were excluded.

Table.8. Levels of Physical Activities of Students with Extracurricular Activities during Face-to-Face Classes

	Frequency	Percent
Heavy Activity	37	7.0
Moderate Activity	231	44.0
Slight Activity	203	38.7
Sedentary	51	9.7
Missing	3	.6
Total	525	100.0

In Table 9, seven out of ten students were observed to participate in extracurricular activities (70.5%), while 26.5% participated in 3 to 5 hours of extracurricular activities and only 2.5% participated in extracurricular activities for more than 5 hours.

Table 9. Average Hours per Day Spent on Extracurricular Activities during Face-to-Face Classes

	Frequency	Percent
1-2 hours	370	70.5
3-5 hours	139	26.5
More than 5 hours	13	2.5
Missing	3	.6
Total	525	100.0

4.3 Physical Activity during Enhanced Virtual Mode

Table 10 displays the summary of statistics of the students' physical activities over the past seven days prior to answering the survey. Students spent less than one day engaging in vigorous activities (M = 0.86 day), fewer than two days of having engaged in moderate activities (M = 1.57 days), and just over two days walking for at least 10 minutes at a time during the past seven days (M = 2.02 days).

Table.10. Descriptive Statistics on the Physical Activity of Third Year Medical Technology Students during Enhanced Virtual Mode

Descriptive Statistics

Amount of Time Spent on Different Physical Activities	N	Minimum	Maximum	Mean	Std. Deviation
During the last 7 days, on how many days did you do VIGOROUS physical activities?	459	.00	7.00	.8584	1.62392
During the last 7 days, on how many days did you do MODERATE physical activities?	360	.00	7.00	1.5722	2.02362
During the last 7 days, on how many days did you WALK for at least 10 minutes at a time?	362	.00	7.00	2.0249	2.56698

Table 11 presents the descriptive statistics of the mean time spent on physical activity seven (7) days prior to answering the survey. The mean time spent on vigorous activities is over one hour is 76.23 minutes, a mean weekly total of 238.19 minutes, a mean time of 69.34 minutes for students with moderate physical activities, a total time spent for the previous seven days is 246.17 minutes, a daily walking time of 42.37 minutes, and a total walking time of 177.21 minutes.

Table.11. Descriptive Statistics on Mean Time Spent on Physical Activity by Third Year Medical Technology Students during Enhanced Virtual Mode

Amount of Time Spent on Different Levels of Physical Activities	N	Minimum	Maximum	Mean	Std. Deviation
How much time do you usually spend doing VIGOROUS physical activities ON ONE OF THOSE DAYS? (minutes)	120	15.00	360.00	76.2333	53.65243
How much time IN TOTAL did you spend over the last 7 days doing VIGOROUS physical activities?	112	30.00	1200.00	238.19	201.59032
How much time did you usually spend doing (minutes) MODERATE physical activities ON ONE OF THOSE DAYS? (minutes)	163	2.00	360.00	69.3436	60.64411
How much time IN TOTAL did you spend over the last 7 days doing MODERATE physical activities?	154	15.00	2520.00	246.17	297.83357
How much time did you usually spend WALKING on ONE OF THOSE DAYS? (minutes)	171	5.00	480.00	42.3684	55.24160
What is the TOTAL amount of time you spent WALKING over the last 7 days? (minutes)	70	10.00	1800.00	177.21	236.70387
During the last 7 days, how much time did you usually spend sitting on a weekday? (in hours)	327	3.00	18.00	9.98	3.413377

4.4 Coping Mechanisms of Third Year Medical Technology Students

The gathered data on Table 12 showed the ranking of most sought after adaptive strategies. First was self-distraction/self- diversion, followed by acceptance, and planning, while the least commonly utilized adaptive strategies were substance abuse, and denial. The adaptive strategies that received the most varied responses from the students are humor, self-blame, religion, using instrumental support, and venting.

Table.12. Coping Mechanisms Utilized by Third Year Medical Technology Students

	N	Minimum	Maximum	Mean	Deviation
Active Coping	522	1.00	4.00	2.8238	.70068
Planning	522	1.00	4.00	2.9713	.72727
Positive Reframing	522	1.00	4.00	2.8036	.82152
Acceptance	522	1.00	4.00	3.0805	.71537
Humor	522	1.00	4.00	2.1293	1.01337
Religion	522	1.00	4.00	2.3563	.96107
Using Emotional Support	522	1.00	4.00	2.8285	.87282
Using Instrumental Support	522	1.00	4.00	2.5287	.95339
Self-Distraction/Self-Diversion	522	1.00	4.00	3.2452	.66386
Denial	522	1.00	4.00	1.3937	.69596
Venting	522	1.00	4.00	1.9847	.93951
Substance Abuse	522	1.00	4.00	1.2299	.59816
Behavioral Disengagement	522	1.00	4.00	1.7098	.84019
Self-Blame	522	1.00	4.00	2.2625	.97919

V. Discussion

Since the COVID-19 pandemic compelled public health administrators to implement lockdown measures as prevention, the adaptation of online distance learning settings has become critical in maintaining teaching and learning in all levels of education (Martnez-de-Quel et al, 2021; Tang et al, 2020).

5.1 General State of Health of the Third Year Medical Technology Students

The perceived state of health of the Third-year Medical Technology students declined due to the hectic schedules, increased workload, social isolation, anxiety from economic uncertainty, and stress. The findings suggest that the congested class schedules brought about in the implementation of Enhanced Virtual Mode are one of the factors that contribute to the irregular sleeping patterns of the students. Moreover, stress caused by longer quarantine periods greatly affected the state of health of the students due to factors like illness concerns, insufficient resources, and lack of support (Rogowska et al, 2020). Overall, students believed that online learning was starting to affect their health by causing phobias about losing internet connectivity, overuse of digital devices, having too much screen time, and online tests cause more anxiety than traditional examinations (Chakraborty et al, 2020).

5.2 Physical Activity during Face-to-Face Classes and During Enhanced Virtual Mode

Medical students participate in a wide range of extracurricular activities. This study revealed that there was a significant decrease in the frequency of intentional exercises and physical activities among third year Medical Technology students before and during the implementation of the Enhanced Virtual Mode of Learning. Inaccessibility to fitness facilities, inconducive learning environments, increased academic workload, motivation loss, and anxiety may have contributed to the decline in intentional exercise. Calestine et al. (2017) stated that academic activities, time management, and among others, can influence health behaviors. In a study conducted by Rahman et al (2020), students were more inactive throughout remote learning as loss of motivation became the major cause of this lifestyle. Lumley et al (2015) found that during face-to-face classes, most of the students were highly participative in several activities. The data also showed that there was a decrease in the physical activity of students during the Enhanced Virtual Mode. According to the World Health Organization, physical inactivity is the fourth most common cause of death worldwide. Around 30% of adolescents from 26 Asia-Pacific nations had high levels of sedentary behavior. It is recommended to engage in 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity per week. However, because Enhanced Virtual Mode has restricted students from staying physically active, the respondents did not satisfy the criteria which places them in danger of possible health complications in the future.

5.3 Coping Mechanisms of Third Year Medical Technology Students

The students' confinement due to COVID 19 changed their learning strategies into a steadier habit, hence improving their efficiency. Self-distraction/self-diversion was found to be the most prevalent adaptive strategy, followed by acceptance, planning, humor, self-blame, religion, instrumental support, and venting as the other coping mechanisms used by the participants. The least common adaptive strategies were substance abuse and denial. Social support can be done through seeking support from family and friends, while dysfunctional coping methods may include venting emotions, behavioral and mental disengagement.

VI. Conclusion And Recommendation

While remote learning is not considered as a conventional approach for the academe, a main concern of long-term online education is the increased probability of subjecting students' lives to chronic diseases. Through the

results and discussion, the study was able to prove that there was a notable decrease in the number of Third Year Medical Technology students who perceived themselves as physically active, healthy and more adept in scheduling ample time for leisure and recreational activities during the implementation of the Enhanced Virtual Mode, as an effect of quarantine restrictions, in contrast to the setting of face-to-face classes. Furthermore, the findings demonstrated that student welfare during the pandemic is not a priority, but rather, that student welfare has received the least attention from high-level authorities, resulting in third-year Medical Technology students experiencing worsened effects of a fragile health status.

As with most studies, the design of the current study is subject to limitations. There are some limitations in this study that could be addressed further by future research including a consideration of including more students from various colleges and faculties of the same university to further assess and compare the effects of Enhanced Virtual Mode. A conduction of a longitudinal study within the same university is likely to assess if changes over time can be discerned as well as an in-depth study regarding the physical activity and health of female and male participants, and a comparison of the self-perceived effects of Enhanced Virtual Mode on the physical activity of Medical Technology students who are exposed to COVID-19 from those who are not exposed to COVID-19.

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