Assessment of Bulacan State University Employees Physical Activity amidst the Covid-19 Pandemic

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Abstract

The coronavirus (COVID-19) epidemic has placed unprecedented constraints on people's physical activities and habits. This research assessed Bulacan State University employees overall physical activity (PA) level amidst the Covid-19 pandemic using Global Physical Activity Questionnaire (GPAQ – Version 2). Participants were 173 employees from the different colleges, satellite campuses and offices of the university that were selected using stratified random sampling making it reliable and representative of the population. The study utilized a sequential explanatory mixed-method design where the employee participants profile and overall level of PA were quantitatively described though a pre-validated questionnaire. The challenges and best practices of the employees in engaging to moderate- to vigorous- intensity PA were described qualitatively through semi-structured questions. Personal profile of the employees which includes the age; sex; designation; tenure; and length of service; the frequency distribution and percentage count was used. Data collected from the participants about their PA status was analyzed using Mets (Metabolic Equivalents). Conceptual content analysis was used to come up with qualitative themes describing experiences in doing moderate- to vigorous- intensity PA amidst the pandemic. Data analysis of the GPAQ survey results revealed that most of the employees' overall PA is LOW as reflected on the assessed MET – minutes/week and categorized as INACTIVE. Engagement in PA logged as DAILY but does not meet the WHO recommendation of the total minutes/week. Setting-specific physical activity showed that in all three domains of PA (work-related, transportation-related, and recreational), most indicated they were not able to engage in moderate- to vigorous- intensity. Sedentary time in a day recorded 91 to 120 minutes. The mean score of the participant in the following factors: Met – minutes/week, Minutes/week of moderate- intensity PA and Minutes/week of vigorous- intensity, showed significant difference from the WHO recommendations. Age and Sex of the employees were the factors that indicated significant relationship to the overall PA level. Employees experienced difficulties in engaging with moderate- to vigorous-intensity PA during the pandemic due to the prohibitions set by the government. Participants understand the need to keep themselves physically active and they revert to doing household chores as alternative PA and using digital platform-based exercise instructional materials to do exercise during the period of the quarantine and work from home set-up. Given the opportunity, through programs spearheaded by the university, employees are willing to participate to as long as their safety is not compromised. It is recommended that studies on the development of PA level of the employees as result of the implementation of the different programs as well as a correlational study on the level of PA and employee's productivity, be conducted in the future.

Keywords: *Physical Activity, Met – minutes/week, Moderate – intensity physical activity, Vigorous – intensity physical activity, Work – related physical activity, Transportation – related physical activity, Recreational physical activity, Sedentary.*

1 Introduction

The World Health Organization (2020) defined physical activity as any bodily movement that is produced by the skeletal muscles that requires exertion of energy. It comprises movement during work, for transport to get to places and as a part of recreation. World Health Organization categorized physical activities that benefits our physical wellness into moderate- and vigorous- intensity. Activities that cause small increase in breathing and/or heart rate are categorized as moderate- intensity while activities regarded to cause a large increase in breathing and/or heart rate are vigorous- intensity. World Health Organization pointed out that people of all ages and abilities must be active as possible through engagement in different recreational activities, sports, biking, walking, and activities at work and around the home.

Covid- 19 Pandemic have been felt all around the globe (WHO, 2020). Series of lockdowns and quarantine protocols were placed for the government of each country to minimize the risk of spreading the infectious disease. The idea over this is to limit the infection to the capacity of hospital beds that their country could accommodate. In the Philippines, the Inter-Agency Task Force released recommendations for the management of the Corona Virus Disease 2019 situation that included implementation of quarantine protocols that placed restrictions on the movement of individuals to slow down the spread of the virus. This preventive measure gives way to a temporary closure of some businesses, schools, and universities, some are open and still operated, however, the Covid-19 pandemic changes the work arrangement especially to the government agencies that leads to a work from home set-up that lessens the movement of all individuals.

The result of restrictions imposed is that people's sedentary and leisure screen times increased thus leading to poor health and wellness conditions. This series of policies to mitigate the spread of the disease has resulted in a sudden change of lifestyle in the form of a significant reduction in physical activity according to the study of Srivastav, et.al., 2020. Further, their study found that professionals engaged in higher strenuous physical activity before the lockdown period (2727.3 MET-min/week) and less vigorous activity (57.3%) during the lockdown period (1165.2 MET-min/week). Moderate physical activity is similarly reduced (63.5%) during the lockdown period (728.2 MET-min/week) when compared to the pre-lockdown period (1994.3). Walking was similarly reduced (27.4%) during the lockdown period (2242.3 MET-min/week)

compared to walking before to the lockdown period (3088.2 MET-min/week). In an article published by Investing in Women (2020), they made mention that a high percentage of individuals in the Philippines reported a negative impact on their physical well-being due to the pandemic.

Ryde, et.al. (2020) stated that significant problems in the workplace arise from poor physical activity and is a leading risk factor for people to develop metabolic or cardiovascular diseases. During the pandemic, in most cases, employee's nature of work does not require high physical efforts and consists mostly of sitting. Kaur (2020) stated that Covid-19 pandemic will continue to influence how teaching and learning are experienced in schools. This is also evident to faculty members as we witness the shift from traditional face-to-face classes to the new normal modalities which are more online. The time spent by educators using gadgets to deliver learning to their students drags them to be sedentary compared to the traditional holding of classes where they need to walk to and from their classrooms.

Kohll (2019) mentioned that only one out of three adults achieve the WHO recommendations of physical activity/week during pandemic. The time for the employee to do their physical activity has become shorter because of work from home arrangement. In addition, he stated that the reason why employee's exercise is for stress reduction, social connection, health, weight management, prevention of disease through improved immune system, and increased productivity that everybody needs most especially during the pandemic. Kohll further recommended that an employee should find time to exercise.

Moreover, Maugeri, et. al., (2020) mentioned that physical activity positively affects psychological health, self-esteem, recovery from stress, reduction of depression, and anxiety. In addition, according to the study of Coulson (2008), exercising improved mood and performance leading to better concentration and resilience to stress.

Rowe (2021), established in his research work that the pandemic significantly made impact on the frequency, intensity, and types of physical activity of individuals. According to the participants' responses, PA levels were at 73.3% during the pandemic, compared to 80% before the epidemic. However, 87.2% of participants got less than 150 minutes of physical activity per week. Furthermore, 96.1% of those who engaged in PA (low-intensity, short- duration activities) did so below the WHO-recommended PA limits as the absolute minimum to offer people with

health benefits. The study also indicated that restrictions due to Covid-19 played a role in the participation level in physical activities. Participants mentioned that lack of motivation, the work from home environment that caused them to be too much busy, and the anxiety of getting inflicted with the disease were the main reasons that led to their lack of participation in physical activity.

The International Labor Organization (2021) explained that exercise and physical activity are beneficial to workers and employers in having a healthy and fit workforce are increasing like less absenteeism, more productivity, and higher morale. World Health Organization reported that the fourth leading risk factor for mortality is the lack of physical activity that leads to the prevalence of non-communicable diseases compromising the general health of the population worldwide. It is because of the fast-growing use of technology inside and out of the workplace that makes people less physically active and more sedentary as stated by Thompson (2017). Before, workers are physically active when it came to working that they left their premises to check and deliver some of the papers to different offices and other work-related activities. Sedentary lifestyle is a dangerous issue that leads to serious health consequences (Akindutire, 2017). With the restrictions imposed to address concerns over the Covid-19 pandemic, the lack of physical activity led to a serious health problem. This could be attributed to workers using computers and seated most of the day to accomplish their tasks. This includes teachers who use modalities that are suitable to minimize physical contact.

Amidst the pandemic COVID-19 pandemic, Bulacan State University wishes to continue its mandate to serve Filipino tertiary students in Bulacan and neighboring provinces. Through its employees, delivery of quality service is always expected as guided by the ISO certifications. The pandemic has brought a lot of challenges in maintaining a healthy habit through physical activity. Overall fitness and wellness of the employees plays part in this continuing quest to provide the best provision to meet these expectations.

The aim of the study was to determine the physical activity status of Bulacan State University employees during the pandemic. Further, the study investigated if there was no significant difference on the employees overall physical activity status with the recommendations of the World Health Organization. Researchers also sought to find out if there is no significant relationship across respondents' profile and their physical activity level. An exploration on the challenges and best practices in en-

gaging to physical activities was sought. Through assessment of physical activity status during transition to new normal, the researchers would use the data to formulate relevant programs that would address their needs in relevance to the results.

Objectives of the Study

The primary purpose of the study is to assess the physical activity status of Bulacan State University Employees amidst the COVID-19 pandemic. Specifically, the researchers sought answer to the following questions:

1. How may the profile of Bulacan State University Employees be described in terms of;
   1.1. Age;
   1.2. Sex;
   1.3. Designation;
   1.4. Status of Appointment;
   1.5. Length of Service?

2. What is the Level of Bulacan State University Employees Total Physical Activity across three domains in terms of;

   2.1. MET – minutes in a week;
   2.2. Total days in a week allotted for vigorous- and moderate-intensity physical activity;
   2.3. Total minutes in a week allotted for vigorous- and moderate-intensity physical activity;
   2.4. Setting-Specific Physical Activity;
   2.5. Sedentary Time?

3. Is there a significant difference between the Bulacan State University Employees Status of Physical Activity and World Health Organization recommendations?

4. Is there a significant relationship among the profile of the Bulacan State University Employees profile and their Level of Physical Activity?

5. What challenges do the employees of Bulacan State University hurdled in engaging in exercise activities during the pandemic?

6. What are the best practices Bulacan State University employees uti-

lized in maintaining an active lifestyle during the pandemic?

2 METHODS

General Background

The study used the sequential explanatory mixed-method approach, this method used the quantitative descriptive survey and qualitative phenomenology. A quantitative method is primarily concerned with the treatment of data, in terms of comparative analysis, statistical analysis, and repeatability of data collection to verify reliability. Frequency count classifies the items accordingly to a particular scheme and an arithmetical count was applied to the number of items. To analyze the significant difference, the One-Sample T-test was utilized to determine difference between Bulacan State University employee's status of physical activity and World Health Organization recommendations. On the other hand, correlation statistic that was used is Pearson-r to measure the degree of relationship between the profile of the Bulacan State University employees' profile and their level of physical activity. Meanwhile, the qualitative method used the Conceptual Content Analysis that focuses on how many times the concept occurs on the challenges hurdled by the employees when they engage in exercise activities and the best practices, they utilized in maintaining an active lifestyle during the pandemic.

Sample

Stratified random sampling was used to determine the 173, of Bulacan State University employees that participated in the study. Stratified random sampling was designed to divide the target population into sub-groups known as strata. The strata were formed based on member's shared attributes or characteristics like income or educational attainment it is also known as proportional random sampling or quota random sampling (Westfall, 2020). This method was applied to the employees of Bulacan State University, divided into the different colleges, satellite campuses and offices, in assessing the physical activity level, and their preferences indicating the challenges and best practices in engaging to moderate to vigorous physical activity.

Instrument

The study used a pre-validated instrument based on the Global Physical Activity Questionnaire (GPAQ version 2) introduced by the WHO. The questionnaire was used to assess the physical activity status of the Bulacan State University Employees amidst the pandemic. As a global instrument for measuring Physical Activity, the instrument has been tested for reliability and validity in several studies. Herrmann, et. al., (2013) utilized the GPAQ in their study and it showed acceptable evidence of short- and long-term test-retest reliability (r = 0.67 to 0.81) by activity category and modest validity (r = 0.25 to 0.63) evidence.

A semi-structured questionnaire was used to gather the essential information needed for the study. This semi-structured questionnaire consists of the following open-ended physical activity/exercise activities during the Covid-19 pandemic? (2) Amidst the Covid-19 pandemic, what were the best practices that an employee like you engage into for the aim of maintaining an active lifestyle? (3) Given the chance to further enhance your physical activities, what are the types of physical activities/exercises are you thinking to participate in when conducted in the university under the new normal?questions: (1) How would you describe the challenges for an employee like you to engage in physical activity/exercise activities during the Covid-19 pandemic? (2) Amidst the Covid-19 pandemic, what were the best practices that an employee like you engage into for the aim of maintaining an active lifestyle? (3) Given the chance to further enhance your physical activities, what are the types of physical activities/exercises are you thinking to participate in when conducted in the university under the new normal?

Data Privacy

For ethical considerations in the conduct of collecting data for this research, a confidentiality agreement, a non-disclosure agreement, to protect the privacy of the Bulacan State University employee study participants was asked to be filled by the respondents. It also aims to develop rapport and trust with the study participants thus maintaining the research process integrity. The participants are to be oriented that they are to answer the survey with all due honesty and to the best of their ability. The researcher used a variety of modalities that are fit to be utilized during the pandemic in conducting the survey. The survey instrument was presented in a Google Form format and the link was disseminated through Google Mail or Facebook Messenger of different colleges, units, and de-

partments. Data gathered is to be stored in a secured data bank and shall be destroyed 2 years after the research was published.

Data Analysis

Personal profile of the employees which includes the age; sex; designation; tenure; and length of service; the frequency distribution and percentage count was used. Data collected from the participants about their physical activity status was analyzed using Mets (Metabolic Equivalents), the ratio of a person's working metabolic rate relative to the resting metabolic rate (WHO, 2018). Standard values, determined by the World Health Organization, were used to analyze data on work, travel, and recreation. One MET is defined as 1 kcal/kg/hour and is equivalent to the energy cost of sitting quietly. A MET is also defined as oxygen uptake in ml/kg/min with one MET equal to the oxygen cost of sitting quietly, around 3.5 ml/kg/min. Statistical analysis was done using guidelines given in GPAQ analysis guide in terms of analyzing physical activity data. Conceptual Content Analysis that focuses on how many times the concept occurs on the challenges hurdled by the employees when they engage in exercise activities and the best practices, they utilized in maintaining an active lifestyle during the pandemic was used to come up with themes describing their experiences in doing moderate- to vigorous- intensity physical activity amidst the pandemic.

3 RESULTS

Employees Profile

Bulacan State University employees that participated in the study came from the different colleges, offices, and satellite campuses. A total of n=173 participants responded to the GPAQ questionnaire and open-ended questions.

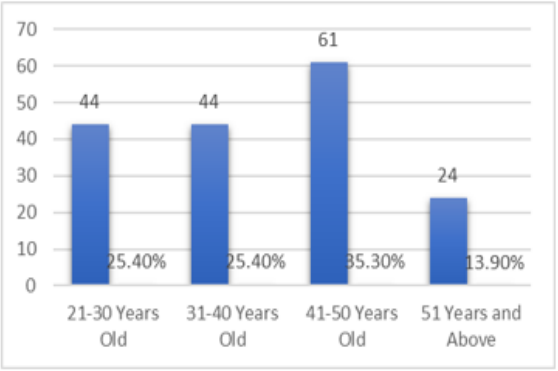

Figure 1: Frequency and Percentage Distribution of Bulacan State University Employees Age (n=173)

The study participants came from different age groups where most of them, 61 employees (35.3%), belonged to the 41 to 50 years old bracket. Both 21 to 30 years old and 31 to 40 years old age bracket registered 44 employees (25.4%). The least number of study participants were aged 51 years, and above which is 24 (13.9%)

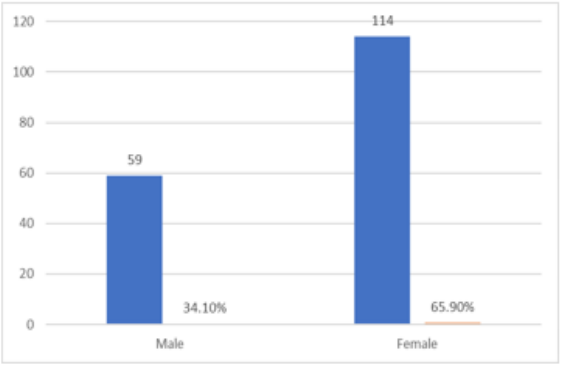

Figure 2: Frequency and Percentage Distribution of Bulacan State University Employees Sex (n=173)

Observably, 114 (65.9%) of the participants who responded to the study were female and 59 (34.1%) are male.

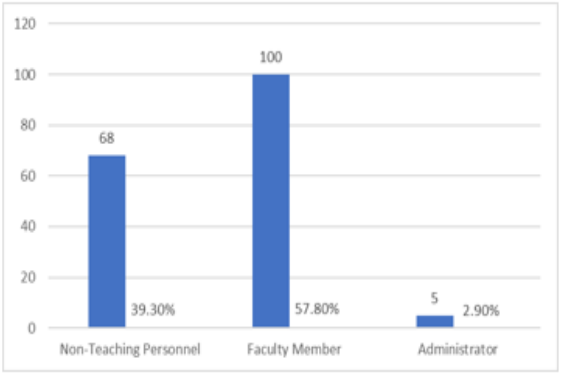

Figure 3: Frequency and Percentage Distribution of Bulacan State University Employees Designation (n=173)

Being an academic institution, in terms of designation, 100 (57.8%) were faculty members, Non-Teaching Personnel were 68 (39.3%), and only 5 (2.9%) were administrators of the university.

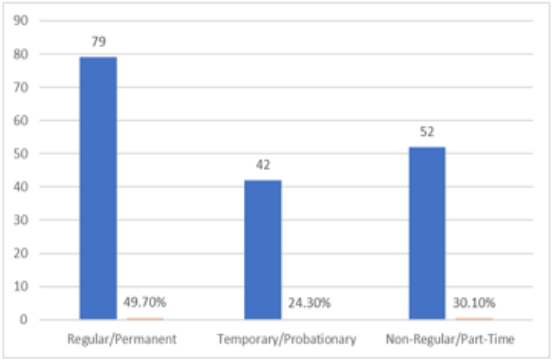

Figure 4: Frequency and Percentage Distribution of Bulacan State University Employees Status of Appointment (n=173)

Considering their status of appointment, Regular or Permanent employees were 79 (49.7%), Temporary or Probationary were 42 (24.3%), and Non-Regular or Part-Time employees were 52 (30.1%).

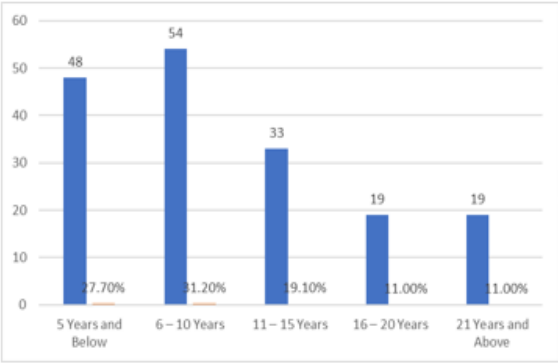

Figure 5: Frequency and Percentage Distribution of Bulacan State University Employees Length of Service (n=173)

Study participants number of years serving the institution were from 6 to 10 years which is 54 (31.2%), 5 years and below were 48 (27.7%), 11 to 15 years were 33 (19.1%), and both 16 to 20 years and 21 years and above each recorded 19 (11.0%).

Level of Employees Total Physical Activity

Bulacan State University employees' level of total physical activity was assessed using the GPAQ. MET – minutes in a week, total days and minutes allotted for vigorous- and moderate-intensity physical activity were evaluated across three domains, work, travel, and recreational physical activity to come up with the overall level of physical activity of the study participants.

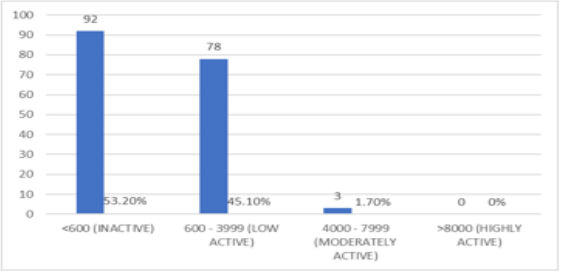

Figure 6: Frequency and Percentage Distribution of Bulacan State University Employees MET – Minutes/Week (n=173)

Figure 6 shows the MET – minutes in a week of the study participants. In the study of Lim, Vos, and Flaxman (2010), they categorized individuals MET – minutes achieved in a week as INACTIVE (¡600), LOW ACTIVE (600 – 3999), MODERATELY ACTIVE (4000 – 7999), and HIGHLY ACTIVE (¿8000). Among the employees of Bulacan State University that were part of the study, 92 (53.2%) were considered inactive, 78 (45.1%) were low active and only 3 (1.7%) participants obtained a status of moderately active in reference to MET – minutes achieved in a week.

World Health Organization (2020) recommended a minimum of above 600 MET – minutes in a week to optimize health and wellness. Apparently, during the Covid-19 pandemic, 92 (53.2%) Bulacan State University Employees did not meet the minimum WHO recommendations and 81 (46.8%) were able to obtain the standards.

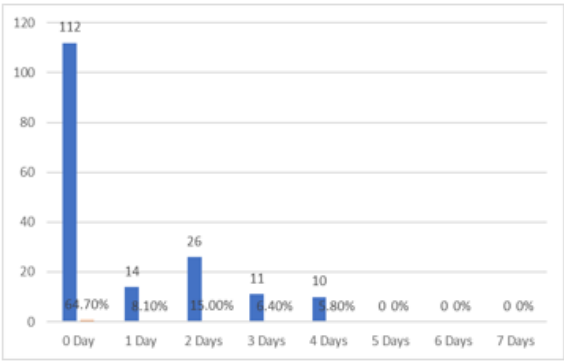

Figure 7: Frequency and Percentage Distribution of Bulacan State University Employees' Days Allotted for Vigorous – Intensity Physical Activity (n=173)

Most of the study participants, which numbered to 112 (64.7%) recorded 0 days spent for vigorous – intensity physical activity. There were 26 (15.0%) others that do 2 days of this exercise intensity in a week. Some of the employees enjoys doing this physical activity intensity on at least once, 14 (8.1%), and thrice, 11 (6.4%) a week. The greatest number of

days that the employees of Bulacan State University allot for vigorous – intensity physical activity is 4 days with 10 (5.8%) participants.

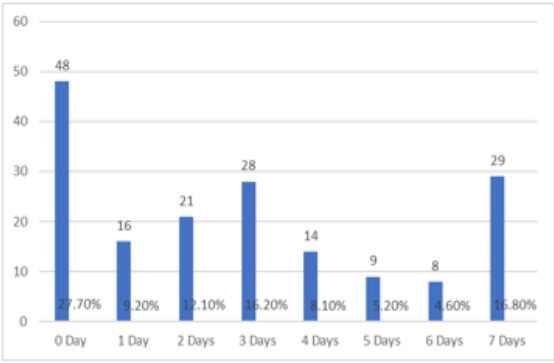

Figure 8: Frequency and Percentage Distribution of Bulacan State University Employees' Days Allotted for Moderate – Intensity Physical Activity (n=173)

In relation to moderate – intensity physical activity done by Bulacan State University employees who participated in the study, 48 (27.7%) specified that they are not spending any day in a week for any physical activity with this intensity. There were 29 (16.8%), on the other hand, that do moderate – intensity physical activity on a daily basis. Other participants logged 1 day, 16 (9.2%), 2 days, 21 (12.1%), 3 days, 28 (16.2%), 4 days, 14 (8.1%), 5 days, 9 (5.2%), and 6 days, 8 (4.6%) allocation in a week for this physical activity intensity.

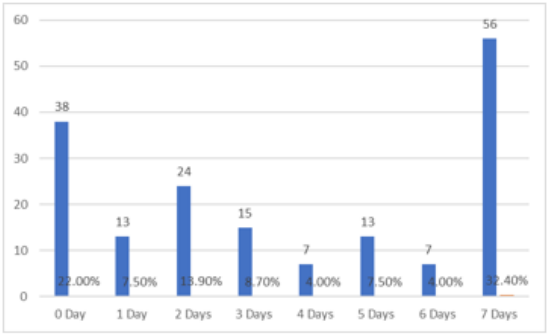

Figure 9: Frequency and Percentage Distribution of Bulacan State University Employees' Total Days Allotted for Moderate – to Vigorous Intensity Physical Activity (n=173)

For the total number of days that the employee participants spend for moderate – to vigorous – intensity physical activity in a week, a number of 56 (32.4%) listed that they are engaging 7 days to keep themselves physically active. Still, a large number of the Bulacan State University employee participants, with 38 (22.0%), were not able to devote a day to be physically active. Further, other participants number of days to do physical activity were 1 day, 13 (7.5%), 2 days, 24 (13.9%), 3 days, 15 (8.7%), 4 days, 7 (4.0%), 5 days, 13 (7.5%), and 6 days, 7 (4.0%).

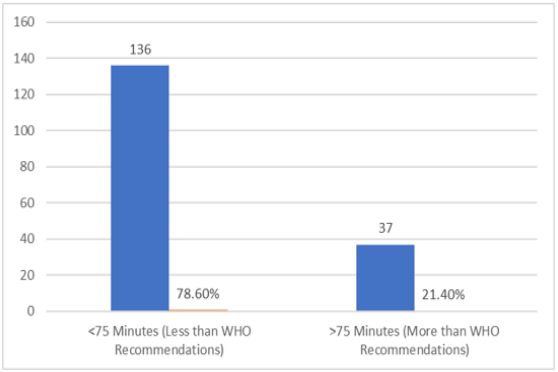

Figure 10: Frequency and Percentage Distribution of Bulacan State University Employees' Total Minutes in a Week Engaging in Vigorous – Intensity Physical Activity (n=173)

The World Health Organization (2018) recommends at least 75 minutes of vigorous- intensity PA a week to be able to maintain optimal health. Figure 10 revealed that most of study participants, 136 (78%), were not able to meet the recommendation. There were only 37 (21.4%) study participant that recorded number of minutes allotted for vigorous – intensity physical activity that met the WHO recommendation.

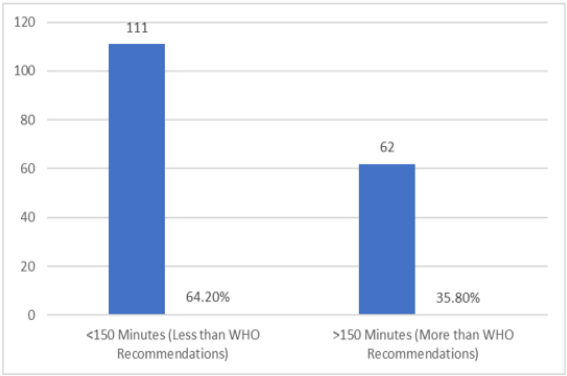

Figure 11: Frequency and Percentage Distribution of Bulacan State University Employees' Total Minutes in a Week Engaging in Moderate – Intensity Physical Activity (n=173)

In accordance with World Health Organization recommendations, moderate-intensity PA should be a minimum of 150 minutes/week. As indicated on Figure 11, 111 (64.2%) of the study participants recorded less than WHO proposed as only 62 (35.8%) indicated enough to more than what was mentioned by the international body.

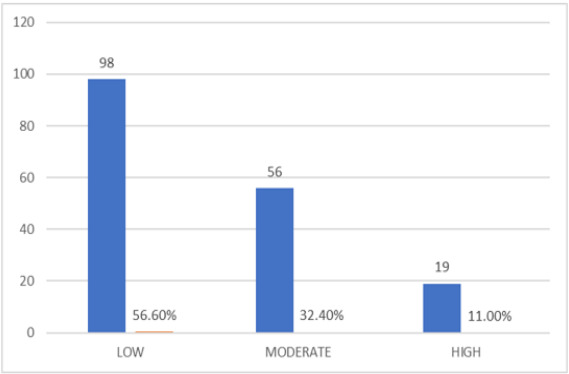

Figure 12: Frequency and Percentage Distribution of Bulacan State University Employees' Level of Physical Activity (n=173)

Based on the WHO (2018) GPAQ Assessment guide, where the MET – minutes, total number of days physically active and the minutes per

week of physical activity, Bulacan State University employees' level of physical activity were categorized. As indicated in Figure 12, 98 (56.6%) of the study participants were assessed as LOW active individuals. MODERATELY active individuals indicated a frequency of 56 (32.4%) and there were 19 (11.0%) participants that are active.

Setting-Specific Physical Activity

The GPAQ measures physical activity level in three domains: work-related, transportation- related and recreational activity. Bulacan State University employees were assessed on the duration of time, in minutes, in a week that they apply in physical activity on each domain. The average minutes in a day that they remain active in each domain was also evaluated.

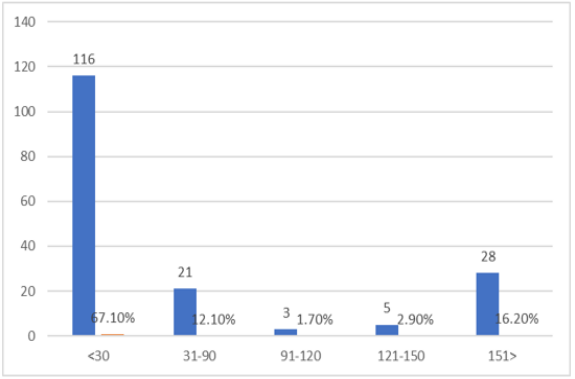

Figure 13: Frequency and Percentage Distribution of Bulacan State University Employees' Minutes in a Week of Work-Related Physical Activity (n=173)

As indicated in Table 10, work related physical activity of most Bulacan State University employees is limited. Study showed that 116 (67.1%) employees engage in less than 30 minutes of physical activity at work. Then again, a number of 28 (16.2%) study participants stated that they were engaged in more than 151 minutes of physical activity in a week. Other employees indicated 31 to 90 minutes, 21 (12.1%), 91 to 120 minutes, 3 (1.7%), and 121 to 150 minutes, 5 (2.9%) of physical activity at work in a week.

On the daily average, a lot of study participants, 143 (82.7%) listed

less than 20 minutes of work-related physical activity. There were 21 (12.1%) who experienced 21 to 40 minutes of physical activity at work. The rest of the employees which numbered to 7 (4.0%) and 2 (1.2%) showed that they do 41 to 60 minutes and above 80 minutes of work-related physical activity respectively.

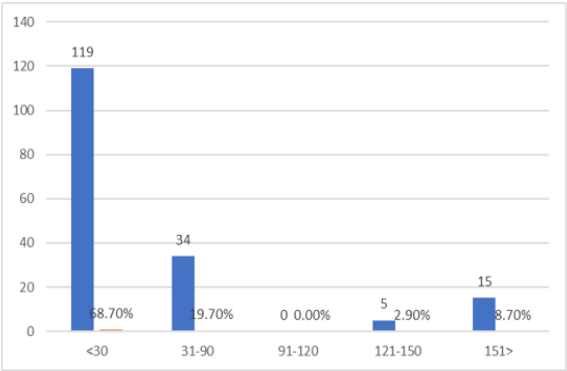

Figure 14: Frequency and Percentage Distribution of Bulacan State University Employees' Minutes in a Week of Transportation-Related Physical Activity (n=173)

As transporting from one place to another could be a good means of doing extra moderate- to vigorous – intensity physical activity it was revealed on Figure 14 that 119 (68.7%) of the employees of Bulacan State University that was part of the study obtained less than 30 minutes in a week to walk or ride a bicycle as a means of mobility. There were also 34 (19.7%) participants who did 31 to 90 minutes, 5 (2.9%) on 121 to 150 minutes, and 15 that spend above 151 minutes of transportation – related physical activity in a week.

Typically, on a single day, majority of study participants, 153 (88.4%) devote less than 20 minutes to walk or ride a bicycle in going to different places. 16 (9.2%) employees quantified that they were able to draw their efforts in doing 21 to 40 minutes of transportation related physical activity while 2 (1.2%) others made 41 to 60 minutes. There was an indication that only 2 (1.2%) employees were able to devote more time in walking of riding a bike to places by averaging more than 81 minutes in a day.

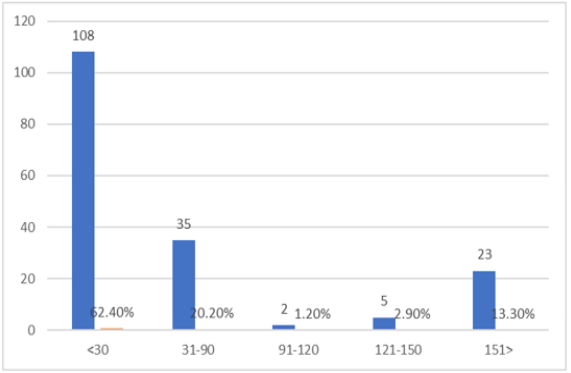

Figure 15: Frequency and Percentage Distribution of Bulacan State University Employees' Minutes in a Week of Recreational Physical Activity (n=173)

Active recreational activity plays part in maintaining a balance in employees' work and daily lives. Table 12 displays details on the duration in minutes used up for active recreational activities. As shown, 108 (62.4%) of the participants spend less than 30 minutes for active recreational activity and there were a mere 23 (13.3%) of employees who managed to engage more than 151 minutes in active recreation. There were also 35 (20.2%) dedicated 31 to 90 minutes, 2 (1.2%) gave 91 to 120 minutes, and 5 (2.9%) that spent 121 to 150 minutes of recreational activity that involves movement.

No Physical Activity by Setting

It is important to know where the employees of Bulacan State University are weak when it comes to engaging in physical activity that would allow them to reach recommendations by the WHO. Identifying the specific setting where they are lacking the adequate vigorous – to moderate – intensity physical activity would provide baseline information for future intervention programs. Participants classified as doing no work- transport- or recreational-related physical activity of the study participants were assessed.

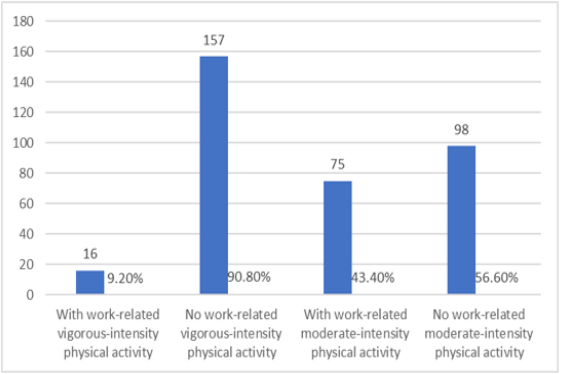

Figure 16: Frequency and Percentage Distribution of Bulacan State University Employees with No Work-Related Physical Activity (n=173)

Figure 16 indicates the number of employees that experiences work-related physical activity and those who do not consider that they are able to exert much physical effort performing their jobs. As indicated, there were 157 (90.8%) participants that were categorized as no work-related vigorous intensity physical activity. Only 16 (9.2%) consider their university work as capable of providing them work-related vigorous physical activity. In relation to moderate-intensity physical activity at work, 98 (56.6%) well-thought-out that they do not have work-related physical activity at this intensity. Closely, there were 75 (43.4%) considered their designated assignment in the university to have them do moderate- intensity physical activity.

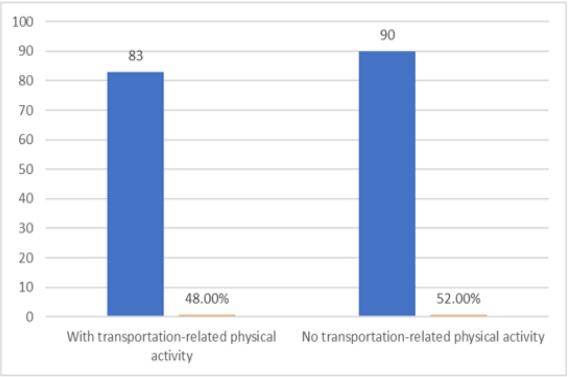

Figure 17: Frequency and Percentage Distribution of Bulacan State University Employees with No Transportation-Related Physical Activity (n=173)

Employees with transportation-related physical activity registered a total of 83 (48.0%) while the participants that were assessed to have neither no walking nor bike ride as a means of travelling to places were 90 (52.0%).

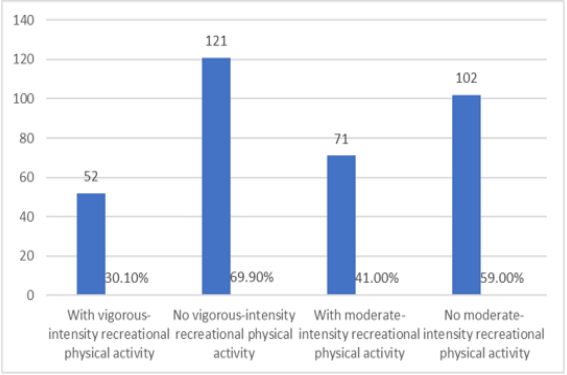

Figure 18: Frequency and Percentage Distribution of Bulacan State University Employees with No Recreational Physical Activity (n=173)

As shown, 121 (69.9%) of the employee participants do not have vigorous-intensity recreational physical activity. A number of participants totaling to 52 (30.1%) were determined to participate in vigorous-intensity active recreation. On the terms of engaging in moderate-intensity recreational physical activity, 102 (59.0%) of the employee participants have not participated in this any type. There were 71 (41.0%) who were actively doing recreational activities with moderate – intensity.

Sedentary Time

Sedentary behavior drastically increases the risk of cardiovascular diseases that could lead to mortality. Sedentary behavior is described by Mir (2021) as an occurrence in which an individual does not engage in any of the prescribed moderate-to-vigorous physical exercise.

Bulacan State University employees time spent in a day sitting during

the pandemic was assessed.

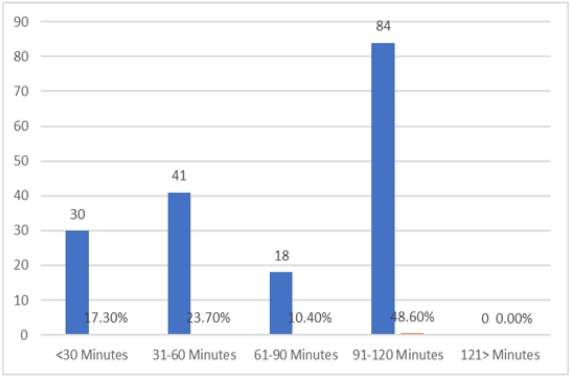

Figure 19: Frequency and Percentage Distribution of Bulacan State University Employees Total Time Spent in Sedentary Activities in a Day (n=173)

As indicated on Figure 19, there were 84 (48.6%) study participants who are sedentary for 91 to 120 minutes in a day. On a weekly basis, this could result to 10 to 14 hours of stagnation from moderate – to vigorous – intensity physical activity. The remaining employees indicated that they expended less than 30 minutes in a day, 30 (17.3%), 31 to 60 minutes in a day, 41 (23.7%), and 61 to 120 minutes, 18 (10.4%).

Significant Difference of Bulacan State University Employees Physical Activity Levels from World Health Organization Recommendations

The World Health Organization (2020) specified recommendations on MET – minutes and minutes for vigorous – and moderate – intensity physical activity in a week in the objective of optimizing health. A MET – minute/week equivalent to ¿600 is enough to keep a person physically fit. WHO recommends at least 150 minutes of moderate-intensity physical activity per week and 75 minutes of vigorous-intensity physical activity per week.

The mean score of Bulacan State University employees on the above-mentioned criteria set by WHO was assessed through one sample t-test to determine if there is statistically supported difference from the standards.

	t-value	*df*	*p - value*
MET – Minutes	3.030	172	0.003
Minutes per week of Vigorous-Intensity Physical Activity	-4.458	172	0.000
Minutes per week of Moderate-Intensity Physical Activity	-5.141	172	0.000

Table 1: Significant Difference of Bulacan State University Employees Met – Minutes, Vigorous-Intensity and Moderate-Intensity Physical Activity Minutes in A Week to Who Recommendation

The computed t-value of 3.030 and p-value of 0.003 indicated that employee participants MET - minutes in a week exhibited a significant difference. This is evident as the Bulacan State University employees mean score on MET – minutes in a week were able to meet the minimum of ¡600 in a week. On the other hand, mean score of minutes per week of vigorous-intensity physical activity also showed significant difference with a t-value of - 4.458 and a p-value of 0.000. This is an indication that the employees time spent to do vigorous – intensity physical activity in a week does not meet the minimum 75 minutes/week set by the WHO. Similarly, the minutes per week of moderate-intensity physical activity of the participants exhibited significant difference as manifested by -5.141 t-value and 0.000 p- value. It is also an indication that the employees mean score bases on the minutes allotted for such physical activity does not meet the 150 minutes recommendation by the WHO. With these results, the null hypothesis is rejected.

Significant Relationship Between Bulacan State University Employees Profile and Level of Total Physical Activity

Bulacan State University employees' level of physical activity varied across their profile. Significant relationship of their profile to the level of physical activity was assessed to determine which factor could have been the cause of the status of their physical activity.

Variables Correlated	Correlation Coefficient (Computed r)	*p - value*
Age	0.178*	0.019
Sex	0.159*	0.036
Designation/Position	-0.098	0.200
Tenure	-0.095	0.211
Length of Service	0.107	0.160

Table 2: Significant Relationship Between Bulacan State University Employees Profile and Level of Total Physical Activity

Among the variables that were correlated, profile of the study participants, age and sex were the factors that directed statistical significance as shown by the 0.178 correlation coefficient and p-value of 0.019, and 0.159 correlation coefficient and p-value of 0.036 correspondingly. This could be an indication that younger employees tend to do vigorous – to moderate – intensity physical activity in a week and reached higher MET – minutes equivalent in a week as compared to older employees. Sex of the employees could also factor how they do physical activities during the pandemic as it could affect the volume and intensity that is dependent on their capacity pertaining to their sexual orientation. In reference to the results, the null hypothesis for age and sex is rejected and accepted for designation/position, tenure and length of service.

Impacts of COVID-19 Pandemic to Bulacan State University Employees Physical Activity

Written interview questions were asked to purposedly selected employees with high (N=7), moderate (N=7) and low (N=7) levels of physical activity amidst the pandemic. Participants answered the following questions: (1) How would you describe the challenges for an employee like you to engage in physical activity/exercise activities during the Covid-19 pandemic? (2) Amidst the Covid-19 pandemic, what were the best practices that an employee like you engage into for the aim of maintaining an active lifestyle? (3) Given the chance to further enhance your physical activities, what are the types of physical activities/exercises are you thinking to participate in when conducted in the university under the new

normal?

Employee participants mentioned that participating in moderate- to vigorous- intensity physical activity during the pandemic is quite difficult. Study participants detailed that engaging in physical activity is very limited due to the prohibitions that were being imposed that aims to set boundaries on the movement of individuals, as set by the Inter Agency Task Force (IATF) for Health protocols, specifically outside of their homes. Workers access to facilities, like gyms, swimming pools and track ovals, was also a problem resulting to poor exercise participation leading to the decline of time for physical activity. Several employees in the study also pointed out that lack of motivation has set in due to the amount of workload that they do as they were tasked to revert to new modalities to accomplish their task as workers, faculty members and administrators. There were participants that were unwilling to do physical activities as they were left anxious for their safety concerns regarding chances of getting infected with Covid-19 if they are to do physical activities outdoors.

Understanding the need to keep themselves active, Bulacan State University employees continue to do active recreation to boost their physical activity level. This is in the form of non-contact sports, allowed by the policies of the Government through the IATF, and regular home exercises. Since not every employee's part of the study have adequate space to move and do more moderate- to vigorous intensity physical activity, they have resorted into alternative physical activities. This includes doing household chores that makes them exert an amount of workload, energy, and effort. Brisk walking and climbing up and down the stairs were another viable option for them to level up their physical activity. Since there was a boost in the use of digital platform, other employees were able to maximize its utilization and apply it in the manner of doing exercises through watching workout instructional videos in YouTube, Facebook Videos and TikTok. The best practice that the employees pointed out is keeping themselves disciplined in terms of adjusting their lifestyles in reference to the trends that were happening in our surrounding as part of being resilient in the battle against the pandemic.

Given a chance that the University introduces programs that has the objective of making the employee participants physically active, the participants all agree that they are willing to participate as long as their safety is not compromised. Employees defined that they prefer engaging in sports related activities in the form of individual non-contact sports

and team non-contact sports. Cardio exercises were also mentioned by the participants as an option in the likes of brisk walking, running and cycling. Several workers of the Bulacan State University cited that engaging in strength exercises, in the form of core strength workout, and dance fitness would be appealing. Yet of course, they specified that it would be better that these physical activities be done through digital platform to ensure everybody's safety.

4 DISCUSSIONS

The levels of total physical activity of Bulacan State University employee were assessed using the GPAQ. MET - minutes/week, days of moderate - to vigorous - intensity physical activity, minutes in a week of moderate - to vigorous - intensity physical activity, setting - specific physical activity, and sedentary time were among the aspects examined in this study during the Covid-19 pandemic.

The Metabolic Equivalent Task (MET) is a physiological metric that expresses the energy cost of any physical activity. It is defined as the ratio of metabolic rate when executing a certain physical activity (Ashok P. et al., 2016). The term MET is frequently used to define the intensity of an exercise or activity. In this study, most participants, 92 (53.2registered ¡600 Met – minutes in a week in which falls on the category of INACTIVE. There were 81 (46.8%) that were able to attain or go beyond the minimum, yet they are still categorized as LOW to MODERATELY ACTIVE. The reason might be associated with the restrictions in movement as implemented by the authorities assigned by the Government to prevent the spread of the Covid-19 pandemic thus reducing the volume of physical activities that would increase the number of employees that would meet the recommendations of the WHO of ¡600 MET – minutes/week. The Tan, et al. (2021) study claims that. The WHO recommendation of moderate-to-vigorous activity, which may have boosted the MET - minutes/week, has been further hindered by the temporary closure of educational institutions and fitness centers.

Employees combined days of engagement in moderate – to vigorous – intensity physical activity logged 56 (32.4basis in a week. It is also observable that 38 (22.0days allotted for moderate – to vigorous – intensity physical activity while the remaining employees does physical activities ranging from 1 day to 6 days in a week. According to Yang's (2019) study,

adults should engage in 150–300 minutes per week of moderate- intensity aerobic exercise and two to three times per week of muscle-strengthening activity to reduce their chance of acquiring chronic diseases and improve their overall health. As established by the study, majority of the Bulacan State University employees was able to meet the recommendations of engaging to moderate – vigorous physical activities in significance to the number of days that they spend active.

The World Health Organization advises adults to accrue at least 150 minutes of moderate-intensity or 75 minutes of vigorous-intensity physical activity during the week (WHO, 2010). The findings of the study revealed that among Bulacan State University employee participants, 136 (78.6%), were not able to meet the WHO recommendations and only 37 (21.4%) were able to meet or go beyond the endorsement for vigorous – intensity physical activity in a week. On the other side, there were 111 (64.2%) employee participants who do not meet WHO recommendations for moderate – intensity physical activity in a week, and 62 (35.8%) who were listed to meet or go beyond what was suggested. The prevalence of physical inactivity found in this study is in line with WHO (2018) data, which showed that 23% of adults worldwide do not fulfill the guidelines for physical exercise.

Overall level of physical activity of Bulacan State University study participants amidst the pandemic, in reference to GPAQ assessment guide, were mostly categorized as individuals with LOW level of physical activity numbering to 98 (56.6mean that the participants were not able to achieve recommended MET – minutes, be active for more at least 2 to 3 days, or achieve the suggested minutes for moderate – to vigorous – intensity physical activity in a week. These assessed low levels of physical activity among Bulacan State University employees could have been a result of the restrictions imposed by the government to control the spread of the disease. This presumption is in line with the research of Puccinelli et al. et al. (2021), where the primary conclusions of the study indicated that levels of physical activity adopted throughout the period of social distance were noticeably lower.

Identifying the setting-specific levels, work-related, transportation-related, and recreational activity, serves as an important determinant on the points where they can improve their overall physical activity level. Employee participants work-related physical activity revealed that 116 (67.1less than 30 minutes in a week. On the daily average, 143 (82.7manage to experience less than 20 minutes of moderate- to vigorous- intensity

physical activity. Employees who reported that they do not have work-related vigorous intensity exercise totaled to 157 (90.8) while for moderate – intensity there were 98 (56.6number of workers who were assessed to have low levels of physical activity at work could have found themselves coping with the new professional scopes where they need to sit for long hours in front of a desk working on their computers for the work task they were assigned (Zhang, et.al., 2020).

Similarly, the transportation-related physical activity of Bulacan State University employees showed 119 (68.7%) who does walk or riding a bike in a week, and a daily average of 153 (88.4%) of less than 20 minutes. Workers of Bulacan State University with no transportation-related physical activity were 90 (52.0%). Abdullah, et. al. (2020), in their study, indicated that the overall impact of the pandemic was greatly influenced as most of the respondents declared that they do not go to their offices or school and work from or study at home.

Active recreational activities are meant to give individuals additional source of physical activities to boost health and fitness. The result of the study showed 108 (62.4%) of the participants to spend less than 30 minutes in a week of recreational activities that promotes bodily movements. On the average daily basis, there were 97 (56.1%) employees who could only allot less than 20 minutes of active recreational activities in a day. Study participants with no vigorous-intensity recreational physical activity reached a total of 121 (69.9%) and those who reported as to not having moderate intensity were 102 (59.0most employee's active recreation leads them to playing different sports activities, brisk walking, running and bicycle riding, doing such in this time makes them highly susceptible to infection. Thus, doing outdoor active recreational physical activities require individuals to wear mask during moderate- to vigorous- intensity during the Covid-19 pandemic (Lim, et. al., 2021). Doing such compromises breathing and oxygen intake which is not recommended during this time consequently making participation in active recreational activities uncomfortable.

Restrictions that placed limitation of employee's movement caused to develop more sedentary behavior. The research of Zheng et al. et al. (2020) found that following the COVID-19 outbreak, time spent engaging in all physical activity activities considerably decreased, whereas time spent engaging in sedentary behavior and sleep length significantly rose. This research is in cognizant of this finding as 84 (48.6%) study participants revealed that they spend around 90 – 120 minutes of sedentary time

in a day during the pandemic.

Compared to the recommendations set by the WHO, the factors for overall level of physical activity of Bulacan State University employees was found to have significant difference. The MET – minutes/week were able to surpass the minimum but for minutes per week of moderate- to vigorous- intensity it was found to be below what was recommended.

Among Bulacan State University employee's profile, Age and Sex was found to have significant influence on the overall physical activity level. These results correspondingly suggestion at the need for more age and gender-oriented designing of the activities or programs to improve the physical activity participation and activity levels of the employees.

5 CONCLUSIONS

The research showed clear details on the assessed status of Bulacan State University employees physical activity level amidst the pandemic. The study looked at the MET - minutes/week, days of moderate to vigorous physical activity in a week, minutes in a week of moderate to vigorous physical activity, and their sedentary time - through the use of the GPAQ. The factors assessed clearly indicated that most of the employee participants level of physical activity is at the LOW level. This could be due to several factors mainly associated with the effects of the restrictions imposed by the government as part of the programs that aim to reduce the transmission of the Covid-19 virus. Even though the total MET – minutes of the employees were able to obtain the minimum recommendation of the WHO, mostly was categorized as INNACTIVE to LOW ACTIVE. Across the three domains, a high percentage of the participants indicated that they spend little amount of time for moderate- to vigorous- intensity physical activities. With the consequent results of the level of physical activity, the research also showed that sedentary time among the participants is HIGH as most of the employees spend 91 to 120 minutes doing nothing in typical day.

Employees, through open ended questions, cited that they experienced difficulties in engaging with moderate- to vigorous- intensity physical activities during the pandemic mainly due to the prohibitions of imposed that limited access to spaces that are relevant to physical activities. That also led to the decline of the motivation to participate in exercises that would increase physical activity levels among the employees. Still, they

understand the need to keep themselves physically active and the participants revert to doing household chores to elevate their physical activity level. The use of digital platform-based exercise instructional materials was also mentioned by the employees as a means for them to do exercises during the period of quarantine and work from home set-up.

6 RECOMMENDATIONS

Since the level of physical activity among Bulacan State University employees was identified, programs that are based on the study's findings intended to raise the level of physical activity are recommended. This research can aid as a foundation for conducting employees physical activity enhancement programs. Follow-up studies on the development of physical activity level of the employees as the result of the implementation of the different programs as well as a correlational study on the level of physical activity and employee's productivity are recommended.

7 ACKNOWLEDGMENTS

The authors would like to express their deepest gratitude to all those who have contributed to the successful completion of this research work.

First and foremost, we would like to lift all the glory and honor to God almighty for the guidance and strength that he has provided us.

To the Bulacan State University Administration for their unwavering support and the financial assistance throughout the entire research process that made this possible.

To the research participants who generously shared their time and insights, without whom this study would not have been feasible.

Finally, we would like to express our heartfelt appreciation to our family and friends for their encouragement and support throughout this endeavor.

Thank you all for your contributions, both large and small. Your collective efforts have been instrumental in the successful completion of this research work.

8 CONFLICT OF INTEREST

The authors declare no conflict of interest.

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