

Physical Activity Level among Physicians of the Philippine General Hospital during the COVID-19 Pandemic Crisis: A Cross-sectional Study

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ABSTRACT

Introduction. COVID-19 is a pandemic that shut down businesses and industries worldwide. The spread of the disease changed social behavior as residents around the world were obliged to endure lockdown and quarantine measures, reducing their physical activity.

Objective. To determine the level of physical activity before and during the pandemic among physicians.

Methods. A cross-sectional study was carried out on 422 qualified physicians of the Philippine General Hospital, University of the Philippines Manila. The data was obtained from a self-administered questionnaire.

Results. Results of the study revealed a shift of lifestyle from physically active to sedentary in 42.4-57.11% of the respondents during the pandemic. There was no change between the activity levels at work before and during COVID while there was a change in the travel and recreational activities. The results also showed that significant factors including lack of energy, fear of injury, lack of skill, resources, social influences, support seeking activities, and positive alternatives affected their activity levels.

Conclusion. During the pandemic, overall physical activity level decreased. Similarly, factors that motivate health workers to be physically active or sedentary during the COVID-19 pandemic can affect their physical activity levels. Based on this study, the hospital can create guidelines to ensure physical activity among its doctors, especially during a pandemic.

Keywords: COVID-19, physical activity, factors

INTRODUCTION

Initially reported as a cluster of pneumonia cases in Wuhan, Hubei Province, China in December 2019, the novel coronavirus (SARS-CoV-2) disease called COVID-19 was declared a global pandemic in March 2020, challenging health-care systems worldwide.¹⁻³ The surge in cases overwhelmed the Philippine healthcare system, including the workers which was also seen among Malaysian population.^{4,5}

Before the pandemic, 6 out of 10 Filipinos aged 25-60 years of age do not engage in regular physical activity.⁶⁻⁸ The top impediments to regular physical activity identified were lack of time due to work; lack of personal motivation and distractions of modern life, cost; and lack of accessible venues to engage in sports and recreation.⁹ The imposed lockdowns and restrictions to control the spread COVID-19 caused decrease mobility and could have affected physical activity of individuals.^{10,11}



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According to available literature, almost half of healthcare workers are classified as physically inactive. In a study done in Malaysia, 45% were inactive, with a median of five hours spent on sedentary behavior daily.⁵⁻⁷

Amidst growing recognition of the health risks associated with physical inactivity, particularly concerning obesity and cardiovascular diseases, there remains a notable gap in literature concerning the impact of COVID-19 quarantine measures on individuals' physical activity levels. This study aimed to address this gap by focusing on healthcare workers, specifically physicians at the Philippine General Hospital. The primary objective of the study was to evaluate the evolution of physical activity levels among these physicians before and during the pandemic. This investigation was guided by two secondary objectives: firstly, to uncover the extrinsic factors such as living situation, mode of transportation, and COVID-19 exposure, alongside intrinsic factors like time constraints, energy levels, skills, and resource availability, all of which could potentially influence physicians' wellness and physical activity habits. Secondly, the study aimed to delve into the motivational and deterrent factors that impact physicians' engagement in physical activity, including personal motivations, perceived barriers, and social support networks. By exploring these dimensions, the study sought to offer insights into the complex interplay of factors affecting physicians' physical activity levels, thereby providing a foundation for tailored interventions to support their well-being, particularly amidst the challenges posed by the pandemic.

METHODS

A cross-sectional research design was used in this study which included physicians with plantilla positions (medical specialists, residents, and fellows) of the Philippine General Hospital, 25-65 years of age, who could understand both English and Filipino languages including those working at home. The participants were given the option to withdraw at any time from the study.

The study ran for 11 months from ethical approval to completion of manuscript. Collection of data was done electronically due to observance of safety protocols from April 2021 to November 2021. Data was gathered via Google forms which took approximately 20–30 minutes to be completed.

A written letter of invitation to participate in the study was sent to all hospital departments. Potential respondents' email addresses and contact numbers were requested. Informed consent was obtained electronically from participants of the study and they were assigned with a study ID for purposes of confidentiality. The questionnaires were sent and responses were collected electronically. Upon completion of all questionnaires, all data was stored in an encrypted device.

The questionnaire used in this study consisted of three (3) main sections. Section 1 gathered the demographic profile of the respondents included age, gender, location of residence, duration of employment and position in the

hospital, Section 2 consisted of (a) Insel and Roth Wellness Worksheet, which assessed the factors impacting physical inactivity; and (b) Saunders et al. Comprehensive Physical Activity Questionnaire, taken from the Theory of Planned Action and Social Cognitive Theory was used. This is a 4-point Likert scale which consisted of domains on Self-Efficacy, Social Influence and Benefits that influence physical activity (Appendix F) while section 3 consisted of (a) Global Physical Activity Questionnaire (GPAQ) that measured the physicians' level of physical activity (Appendix G) was used. Stratified random sampling was used.

These tools aimed to gather insights into both intrinsic and extrinsic factors influencing physicians' physical activity behaviors. Finally, the third section involved the Global Physical Activity Questionnaire (GPAQ), which measured participants' level of physical activity across various domains, including work-related, transportation, and leisure-time activities. Unlike the previous tools, GPAQ provided a quantitative assessment of participants' actual physical activity levels, encompassing both structured exercise programs and other daily activities. The "Physical Activity Outlook" (Table 2) presents data derived from the Insel and Roth Wellness Worksheet and the Saunders et al. Comprehensive Physical Activity Questionnaire, focusing on participants' attitudes, beliefs, and perceived barriers towards physical activity. In contrast, the "Global Physical Activity Questionnaire" (Table 5) provides quantitative data specifically from GPAQ, offering insights into participants' actual physical activity engagement. These comprehensive assessments shed light on the multifaceted factors influencing physicians' physical activity levels, thereby informing interventions to support their well-being, particularly amidst the challenges posed by the COVID-19 pandemic.

Data Management and Analysis

Stratified sampling was used. The sample size of the respondents was calculated using the sample size calculator <http://www.raosoft.com/samplesize.html>. The following assumptions were followed: margin of error = 5%, confidence level = 95%, population size = 1,076 (comprising of 619 residents, 311 fellows and 146 medical specialists), response distribution = 50%. Hence, the minimum required sample size should be 517.

Descriptive and analytical statistics were utilized. Descriptive statistics, including frequencies and percentages, were used for nominal variables. Paired t-test was used to compare the means before and during COVID, and to identify significant differences. Pearson correlation was used to identify correlation between behavior and activities of the respondents.

RESULTS

As shown in Table 1, 422 physicians participated in the study. The preponderance of responders are residents, followed

Table 1. Demographic profile of participants included in the study

	Actual Number of Respondents (N=422)		
	Fellow, n (%)*	Resident, n (%)*	Medical Specialist, n (%)*
Age			
<25	-	4 (0.95%)	-
25 - 34	66 (15.64%)	282 (66.82%)	9 (2.13%)
35 - 44	26 (6.16%)	8 (1.90%)	11 (2.61%)
45 - 54	-	-	13 (3.08%)
55 - 65	-	-	3 (0.71%)
Gender			
Male	38 (9%)	126 (29.86%)	14 (3.32%)
Female	54 (12.80%)	168 (12.80%)	22 (5.21%)
Current Living Situation			
Lives alone	42 (9.95%)	141 (33.41%)	11 (2.61%)
Lives with others	50 (11.82%)	153 (36.26%)	25 (5.92%)
Civil Status			
Single	67 (15.88%)	270 (63.98%)	17 (4.03%)
Married	24 (5.69%)	24 (5.69%)	16 (3.79%)
Separated / Divorced	-	-	3 (0.71%)
Widowed	1 (0.237)	-	-
Transportation			
Walking	68 (16.11%)	226 (53.55%)	9 (2.13%)
Private Transportation	22 (5.21%)	50 (11.85%)	24 (5.69%)
Bicycle	-	2 (0.47%)	-
PGH Shuttle	1 (0.24%)	1 (0.24%)	-
Others	1 (0.24%)	15 (3.55%)	3 (0.71%)
COVID Exposure			
Low Risk	64 (15.17%)	198 (46.92%)	22 (5.21%)
High Risk	28 (6.64%)	97 (22.99%)	13 (3.08%)
Comorbidities			
Bronchial Asthma	13	47	2
Dyslipidemia	2	2	1
Hypertension	12	15	8
None	60	185	20
Obesity	1	4	-
Polycystic Ovarian Syndrome	2	6	-
Other Conditions			

*Data is presented in frequency and percentage.

Table 2. Physical Activity Outlook among physicians of PGH

		Before	During	Difference
Fellow	Sedentary	35 (8.29%)	51 (12.09%)	16 (3.8%)
	Moderate	47 (11.14%)	35 (8.29%)	-12 (-2.85%)
	Active	10 (2.37%)	7 (1.66%)	-3 (-0.71%)
Residents	Sedentary	133 (31.52%)	177 (41.94%)	44 (10.42%)
	Moderate	128 (30.33%)	100 (23.70%)	-28 (-6.63%)
	Active	33 (7.82%)	16 (3.79%)	- 17 (-4.03%)
Medical Specialists	Sedentary	11 (2.61%)	13 (3.08%)	2 (0.47%)
	Moderate	18 (4.27%)	20 (4.74%)	2 (0.47%)
	Active	7 (1.66%)	3 (0.71%)	-4 (-0.95%)
Total difference between before and during COVID			Sedentary	14.69%
			Moderate	-9.01%
			Active	-5.69%

Table 3. Wellness Checklist Results

Wellness	Mean Score Before COVID	Mean Score During COVID	Difference Before and During COVID	P value
Lack of Time	2.74	2.76	0.018	0.52
Social Influence	2.32	2.34	0.016	0.54
Lack of Energy	2.96	2.88	-0.077	0.00587
Lack of Willpower	2.86	2.90	0.039	0.13
Fear of Injury	1.52	1.63	0.11	0.00000010
Lack of Skill	1.71	1.78	0.065	0.0025
Lack of Resources	2.33	2.47	0.14	0.000000096

Table 4. Physical Activity Questionnaire on Motivations

Motivations	Mean Score Before COVID	Mean Score During COVID	Difference Before and During COVID	P value
Social Influences	2.44	2.36	-0.08	0.0000021
Self-efficacy (Support-seeking)	2.51	2.44	-0.078	0.0000098
Self-efficacy (Barriers)	2.45	2.46	0.011	0.64
Self-efficacy (Positive Alternatives)	2.83	2.78	-0.051	0.0076
Beliefs (Physical Outcomes)	2.74	2.72	-0.021	0.070
Beliefs (Social Outcomes)	2.84	2.81	-0.03	0.053

Table 5. Global Physical Activity Questionnaire

Physical Activity	Mean (hours/week)	Pearson Correlation	P-Value
Activity-at-Work	9.11	-0.032	0.51
Travel to and from Places	3.67	-0.028	0.00045
Recreational Activities	2.84	-0.011	0.00008
Total	15.62	-0.038	0.024
Physical Inactivity	-	-	-
Sedentary Behavior	10.52	-	-

by fellows and medical specialists with the smallest number of responses. The proportion of respondents were between the ages of 25 and 34, with women predominating. Many residents live alone and use walking as their primary method of transportation. From the study we can also see that most of the participants (n=265) have no outlying medical conditions nor comorbidities. 265 of the respondents or 62.79% of the respondents say that they have no comorbidities, while 14.69% of the respondents have Bronchial Asthma which represents the highest number of medical condition present among the participants.

Regarding the Physical activity outlook of the participants, the number of sedentary participants increased by 14.6% from pre-COVID to pandemic, whereas the number of participants in the moderate and active categories decreased by 9.01 and 5.69 percent, respectively (Table 2).

Paired t-test was used to determine if there is a significant difference on the factors that impact the level of physical activity before and during COVID using the modified wellness checklist of Insel & Roth questionnaire

(Table 3) Lack of Energy, Fear of Injury, Lack of Skill and Lack of Resources had significant differences with a p value <0.05.

The Comprehensive Physical Activity Questionnaire (Table 4) revealed the motivational elements that influenced the Physical Activity behavior of respondents. Before and throughout COVID, Social Influences, Self-efficacy (Support-seeking), and Self-efficacy (Positive Alternatives) exhibited significant differences. In contrast, no significant changes were observed in Self-efficacy (Barriers), Beliefs (Physical Outcomes), or Beliefs (Social Outcomes).

According to the data gathered from the Global Physical Activity Questionnaire (GPAQ) (Table 5), which measured the overall physical activity of respondents before and during the pandemic, there was a significant correlation between sedentary behavior and the domains of travel to different places and respondents' recreational activities.

DISCUSSION

Healthcare providers, particularly those in primary care services such as those working in government clinics or hospitals, are required to have knowledge of healthy lifestyles and be a leader in educating the public about the negative effects of physical inactivity. Unfortunately, there are relatively few up-to-date research on the physical activity levels of healthcare personnel. Nevertheless, based on the current literature and previous studies, it has been shown that there is a high prevalence of physical inactivity among healthcare workers worldwide, with obese healthcare workers having a higher likelihood of physical inactivity, and that there is a correlation between the demographic profile of these workers,

including age, marital status, occupational level and income, and the level of physical activity.¹²⁻¹⁴

The study provided an overview of the physical activity levels of PGH physicians across the indicated demographics. In general, respondents perceived themselves to be less physically active during COVID compared to prior periods. This was based on their wellness viewpoint, which revealed an increase in the proportion of respondents who viewed themselves as more sedentary and less active during COVID compared to previously.

The World Health Organization (WHO) created the Global Physical Activity Questionnaire (GPAQ) in 2002 as part of the WHO STEPwise Approach to Chronic Disease Risk Factor Surveillance for physical activity observation. The instrument examined the physical activity level in three domains (work, transportation, and leisure time) and estimated the time spent in sedentary behavior. According to the findings, the respondents' level of physical activity was not closely associated to their day-to-day activities, as contrasted to their daily commute, travel, and other recreational activities.

It was identified that increased fear of injury, lack of skill and resources during the pandemic were the factors which influenced the wellness level of the respondents. These may be brought about by the restrictions during the COVID lockdown. Increased fear could have been influenced by amplified risk of contracting the virus.⁶ Meanwhile, lack of time, social influence, and willpower did not change significantly before and during the pandemic which may be due to the increased workload and demands from the health sector.

Saunders identified psychosocial determinants of physical activity. Among the domains that changed significantly were social influences, support seeking self-efficacy, and positive alternatives self-efficacy.^{15,16} Social influences include having a strong support system and people who motivate them to be more active. Self-efficacy was defined as having confidence in overcoming barriers to physical activity. Support-seeking behavior include ability to ask family and peers to join and encourage them in engaging in physical activities. Lastly, positive alternatives include questions where the participant will choose to be physically active in situations where he can be sedentary.⁷

Based on our findings, hospitals and healthcare institutions can enhance wellness programs by implementing several key strategies. Firstly, organizing group exercise classes tailored to diverse interests and accommodating shift schedules can encourage greater participation. Secondly, providing certified instructors to teach proper exercise techniques fosters confidence and reduces injury risk. Additionally, increasing accessibility to recreational venues through discounted memberships or partnerships with local facilities promotes physical activity during leisure time. Flexible initiatives, such as at-home workout resources and peer support groups, cater to individual preferences and promote social interaction. Integrating physical activity promotion into broader wellness

policies, offering ergonomic workstations, and encouraging active transportation further support a culture of movement within the institution. Regular evaluation and feedback ensure programs remain effective and responsive to healthcare workers' needs.

CONCLUSION

In conclusion, the study revealed that the physical activity level of PGH physicians decreased during the pandemic, becoming less active and more sedentary. Similarly, the pandemic altered previously identified factors and psychosocial determinants of physical activity. Then, these factors and obstacles can be targeted to encourage health workers to adopt a physically active lifestyle even after the pandemic has passed. Based on this study, the hospital can develop guidelines to ensure that its physicians are always physically active, particularly during pandemics.

Limitations of the Study

The study was limited to only 422 respondents due to time constraints and the possibility of burn out from answering online surveys. This was 18% less than the minimum sampling size in the target sample of respondents. Only physicians were included in the study. In a hospital setting, there are also other personnel who are part of the workforce who provide service to its stakeholders; hence their physical activity should also be determined.

Recommendations

It is recommended that further studies should be done to have a clearer picture of the situation on the effects to the physical activity level of physicians of the Philippine General Hospital during the COVID-19 pandemic and the new normal. Expanding the study to the rest of the workforce of the Philippine General Hospital would have exponentially improved the outcome and result of the study to have a much broader and general target population.

Statement of Authorship

Both authors certified fulfillment of ICMJE authorship criteria.

Author Disclosure

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