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The Relationship Between Physical Activity, Sleep Behaviors, and Gastrointestinal Symptoms During COVID-19

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Introduction

- The COVID-19 pandemic has created living environments that may have impacted physical activity, sleep, and gastrointestinal (GI) symptoms.

Objective

- To determine the relationship between physical activity, sleep behaviors, and GI symptoms during the current COVID-19 pandemic in college students.

Methods

- College Students (n=459; ages 18-23)
- Participants completed an online survey in April 2020 which included:
  - IPAQ-sf
  - PSQI
  - GI Symptoms Questionnaire
- Spearman rho correlation coefficients used to analyze data

Table 1. Descriptive Statistics for GI symptoms, Sleep Behaviors, and Physical Activity.

Variable	Mean (SD)
GI Total	5.62 (5.43)
Sleep Duration (hr)	7.77 (1.23)
Sleep Quality	2.71 (1.15)
Physical Activity Total Min	113.51 (81.83)
Vigorous + Moderate Min	61.22 (53.16)
Vigorous Min	31.48 (31.16)
Moderate Min	35.55 (30.85)
Walking Min	49.05 (56.96)

Table 2. Overall Sample Correlations

Variable	1	2	3	4	5	6	7	8
1. GI Total	1							
2. Sleep Duration (hr)	0.11*	1						
3. Sleep Quality	0.03	-0.07	1					
4. PA Total Min	0.01	-0.11*	-0.02	1				
5. Vigorous + Moderate Min	0.11*	-0.03	-0.03	0.83**	1			
6. Vigorous Min	0.05	-0.09	-0.07	0.63**	0.78**	1		
7. Moderate Min	0.06	0.01	0.02	0.70**	0.79**	0.34**	1	
8. Walking Min	0.02	-0.06	-0.01	0.66**	0.18**	0.11*	0.24**	1

*$p < 0.05$. **$p < 0.01$.

Results

- Higher GI scores were significantly related to higher vigorous and moderate intensity physical activity minutes in the overall sample (rs=0.11, p<0.05); and for females (rs=0.13, p<0.05).
- Higher GI scores were significantly related to longer sleep duration in the overall sample (rs=0.11, p<0.05) and for males (rs=0.26, p<0.01).
- Males exhibited longer sleep duration but lower sleep quality (rs=-0.23, p<0.05).
- Higher physical activity minutes were significantly related to shorter sleep duration in the overall sample (rs=-0.11, p<0.05) and for females (rs=-0.12, p<0.05).

Conclusion

- GI symptom occurrence may increase with greater duration of vigorous and moderate intensity activity and longer sleep duration.
- A focus on promoting **lower intensity exercise and improved sleep behaviors** is warranted to decrease GI symptoms.