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The Impact of COVID-19 Restrictions on Physical Activity and Health within United States University Population

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Statement of Problem

- This was a cross-sectional study which assessed changes in **lifestyle-related behavior** during the Covid-19 pandemic, the amount of **sedentary time** spent each week, and the **underlying reasons** behind people's decisions as to whether to engage in physical activity.

Background

- March 2020- July 2020: state of "lockdown"
  - Stay at Home order
  - Schools, gyms, retail stores, restaurants closed (AJMC Staff, 2021).
- 2020 National College Health Assessment (Bovard, 2018).
  - 37% students overweight
  - 16% students obese
- Longitudinal Study (2015-2020) on US university campus (Wilson et al., 2021)
  - Study included predominately non-Hispanic white women
  - Showed significant declines in physical activity levels
  - Showed significant increases in depressive symptoms and stress
- Similar Studies
  - New Zealand (Meiring et al., 2021) & Canada (Lesser, Neinhus, 2021)
  - Australia (Gallo et al., 2020) & Rome (Gallè et al., 2020) university students

Measures

Physical Activity as a Vital Sign (PAVS) (Greenwood, Joy & Stanford, 2010)

- Measures weekly physical activity
- "Moderate"- talk but not sing
- "Vigorous"- can no longer talk

- 1. How many **times per week** do you engage in moderate to vigorous physical activity?
- 2. How many **minutes** do you engage at this level?

Sedentary Behavior Questionnaire (SBQ) (Rosenberg et al., 2010)

- Assesses the amount of time spent during the week on various sedentary behaviors
- "None, <15 minutes, 30 minutes, 1 hour, 2 hours, 3 hours, etc."

- Watching television?
- Sitting reading?
- Driving?
- Video games?
- Paperwork/ computer work?

Behavioral Regulations in Exercise Questionnaire (BREQ-3) (Markland &Tobin, 2004; Wilson et al., 2006)

- Determines underlying reasons and motivations towards people's decisions as to whether to engage in physical activity
- 24 statements
- 0-4 scale; "not true for me", "very true for me"
- Positive change= positive score
- Negative change= negative score

- It's important to me to exercise regularly.
- Exercise is fun.
- I don't see the point in exercise.
- I get pleasure and satisfaction from exercising.

Lifestyle-related Behavioral Questionnaire (LRBQ) (Kumari et al., 2020)

- Assesses the changes in lifestyle-related behavior during the Covid-19 pandemic
- Scored on 5-point Likert scale
  - Significantly increased
  - Slightly increased
  - Grossly similar
  - Slightly decreased
  - Significantly decreased

- During COVID pandemic, how has your consumption of sweets/candies/chocolate changed?
- During COVID pandemic, how has your intake of nutrition supplements to boost immunity changed?
- During COVID pandemic, how has your participation in aerobic exercise changed?

Protocol

- IRB Approval
- Survey was distributed via email to all qualifying members of the college community
- Follow-up email sent approximately two weeks after initial survey
- Survey data was collected using QualtricsXM (Qualtrics, Provo, UT)
- Data was analyzed using IBM SPSS 25 Statistics (IBM, Armonk, NY)

Results

Mean BMI by CDC Category

- Underweight- 2.6%
- Healthy Weight- 40.9%
- Overweight- 29.5%
- Obesity- 27.0%

Mean BMI by Grouping

- Freshmen- 25.6
- Sophomore- 25.2
- Junior- 26.4
- Senior- 28.2
- Graduate Student- 27.9
- Faculty/ Admin/ Staff- 27.9

CDC (2021) BMI Formula: weight (lb) / [height (in)]^2 x 703

CDC (2021) Adult BMI Categories: Below 18.5=Underweight, 18.5-24.9=Healthy Weight, 25-29.9=Overweight, 30+=Obesity

Physical Activity as a Vital Sign (PAVS)

- An ANOVA comparing PAVS scores of the different BMI Categories revealed significant differences ($F(3, 1226) = 10.053$; $p < .001$).
- A Tamhane post hoc analysis determined differences between those with healthy weight (M=262.5) and Obesity (M=116.5). Also, those in the overweight category (M=204.4) differed significantly from Obesity (M=116.5).

Sedentary Behaviors Questionnaire (SBQ)

- An ANOVA comparing SBQ scores of the different BMI Categories revealed significant differences ($F(3, 1161) = 11.427$; $p < .001$).
- A Tamhane post hoc analysis determined differences between those with healthy weight (M=63.2) and Obesity (M=75.3). Also, those in the overweight category (M=67.4) differed significantly from Obesity (M=75.3).

Behavioral Regulations in Exercise Questionnaire (BREQ-3)

- An ANOVA comparing BREQ-3 scores of the different BMI Categories revealed significant differences ($F(3, 1187) = 40.04$; $p < .001$).
- A Bonferroni post hoc analysis determined differences between:
  - Underweight (M=5.7) and healthy weight (M=11.2)
  - Underweight (M=5.7) and Overweight (M=9.9)
  - Heathy weight (M=11.2) and Overweight (M=9.9)
  - Heathy weight (M=11.2) and Obesity (M=5.8)
  - Overweight (M=9.9) and Obesity (M=5.8)

Lifestyle-Related Behavioral Questionnaire (LRBQ)

- An ANOVA comparing LRBQ scores of the different BMI Categories revealed significant differences ($F(3, 1356) = 12.816$; $p < .001$).
- A Bonferroni post hoc analysis determined differences between:
  - Heathy weight (M=-3.8) and Obesity (M=-6.7)
  - Overweight (M=-3.6) and Obesity (M=-6.7)

Conclusion

- BMI increases with age
- Underweight and healthy weight spend most time exercising
- Underweight and obesity spend most time in sedentary behaviors
- Healthy weight has the most motivation towards healthy behaviors, overweight has more motivation than obesity and underweight
- Underweight and obesity lifestyles were impacted the most by COVID

Limitations

- BMI as the standard measure
  - Non-response
    - Weight & height
  - Variances within groups
- More analysis needed
  - Specifically using other categories
- Data is a snapshot and not longitudinal

Moving Forward

- Motivation?
  - BREQ-3 has multiple subscales which we have not yet examined.
  - Subscales may show where specific motivational challenges are
- Examining interventions addressing potential motivational issues
  - Physical Activity opportunities exist on campus as well as healthy food choices. How can we motivate college community members to engage?

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Thank You!

Questions?

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