The Impact of Hurricane Harvey on the Physical Activity Behaviors of Low Income, Ethnic Minority Adolescents

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Background

- Natural disasters are shown to be harmful to health, and those of low socioeconomic status are less likely to adequately prepare for, cope with, and recover from a natural disaster.[1,2]
- However little is known about the impact of natural disasters on daily health behaviors, such as physical activity.

Purpose

This study evaluated the impact of Hurricane Harvey on physical activity in middle and high school students throughout the hurricane's duration and 15 weeks after the disaster.

Methods

Participants

Prior to the hurricane, middle and high school students (n=177) were recruited from an independent school district in Houston, Texas to be a part of a larger study aimed at healthy eating behaviors and physical activity in physical education (PE) class.

Measures

Demographics

- Assessed two days prior to the hurricane
  - Participants reported their age, gender, and ethnicity
  - Free/reduced school meal participation was obtained from school

Physical Activity

- Assessed with the School Physical Activity and Nutrition (SPAN)[3] questionnaire two days prior to the hurricane, when students returned to school, at the end of the quarter, and at the end of the semester.
  - Moderate-Vigorous Physical Activity (MVPA): How many days per week do you spend doing 30 minutes of MVPA that makes your heart beat fast?
    Response options: 0 to 7 days per week.
  - Light Physical Activity (LPA): How many days per week do you spend doing 30 minutes of LPA?
    Response options: 0 to 7 days per week.
  - Time spent playing video games: How many hours per day do you spend playing video games?
    Response options: 0 to 6+ hours per day.

Analyses

One-way ANOVAs and T-tests were conducted to examine differences in physical activity variables at baseline by demographic characteristics. Demographic characteristics for which physical activity differed were included as covariates in separate ANCOVA models examining changes in physical activity variables over the school semester.

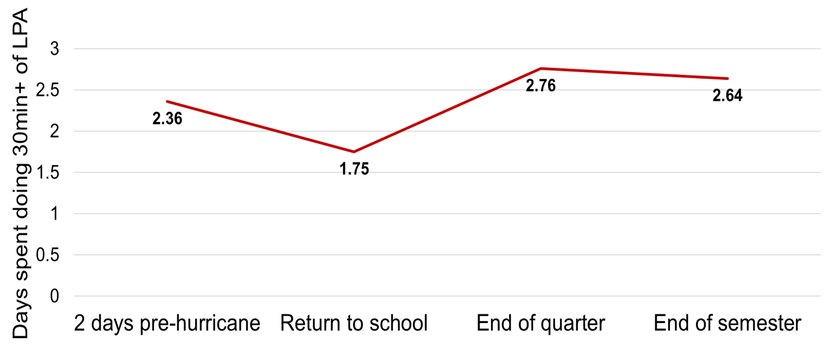
Results

Table 1. Participant characteristics

Characteristics	% or mean (SD)
Age	14.61 (1.75)
Gender	
Male	51.4
Female	48.6
Ethnicity	
African-American	16.9
Hispanic	78.0
Asian	3.4
Caucasian	0.6
Did not specify	1.1
Grade level	
Sixth	6.2
Seventh	11.9
Eighth	43.5
Ninth	0.6
Tenth	18.6
Eleventh	13.0
Twelfth	6.2
Free/reduced school meal participation	
Full price	17.5
Free reduced	82.5

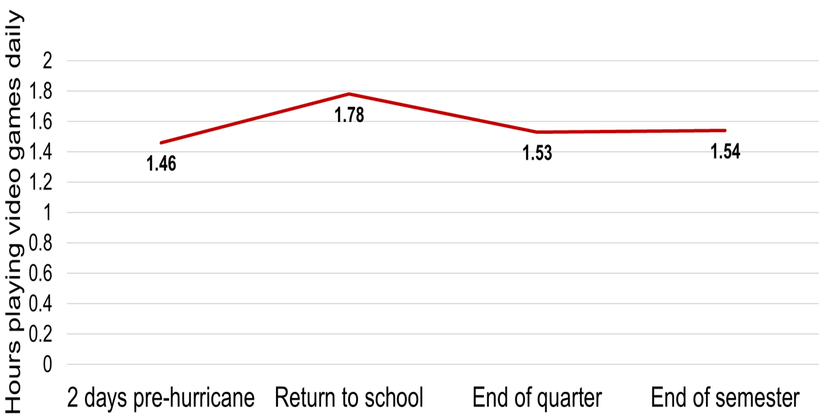
- No significant differences in MVPA were found over the semester.
- LPA was significantly lower during the hurricane than at all other time points ($F(3,177) = 11.98$, $p<0.001$).
- After adjusting for gender, time spent playing video games was significantly higher when students returned to school than prior to the hurricane and at the end of the quarter ($F(3, 176) = 3.38$, $p<0.05$).

Figure 1. Light physical activity over the semester



Significantly different from when students returned to school at **$p<0.01$ or ***$p<0.001$

Figure 2. Time playing video games over the semester



Significantly different from when students returned to school at *$p<0.05$

Conclusions

- Although there were no significant changes in MVPA, LPA decreased and time playing video games increased during the hurricane, but both had returned to pre-hurricane levels by the end of the semester.
- This indicates that returning to the regular school routine may promote increased physical activity and decreased sedentary behaviors.
- All students in this study were taking a physical education (PE) class, so results may not generalize to students not in PE. Future research could compare patterns of physical activity after a hurricane between students in a PE class and those who are not.

References

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