Does the Andersen Behavioral Model for Health Services Use Predict How Health Impacts College Students' Academic Performance?

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ABSTRACT: College is a critical time in a person's life. Young adults experience transitional changes in their independence, physical and mental health, and utilization of health care. The purpose of this research study is to examine the use of the Andersen Behavioral Model of Health Services Use in predicting how health impacts the academic performance of college students through predisposing, enabling, and need factors. Data was collected from 438 college students attending a large university in the Southeast. Students answered questions about their demographic characteristics, health, healthcare use, and academics using a survey adapted from the 2018 National College Health Assessment (NCHA) II conducted by the American College Health Association (ACHA). Bivariate and multivariate statistical analyses were run on the data and summarized. Results indicate that the Andersen Model is a useful model for framing the relationship between health and academic performance among college students. Enabling factors were more likely to predict health impact on academic performance while predisposing factors were least likely to predict these impacts. University administrators and government personnel can use these findings to explore the health-related needs of college students and implement services to accommodate these needs.

KEYWORDS: health; college students; academic performance; healthcare use; National College Health Assessment; Andersen Behavioral Model for Health Services Use

INTRODUCTION

Background

It is estimated that over 18 million students are currently enrolled in a higher education institution in the United States (United States Census Bureau, 2017). College typically serves as a stage for many young people transitioning from childhood to adulthood. During this time of life, many young adults shift to independent living, practice autonomy, develop new lifestyle behaviors, and go through changes to their physical, mental, and emotional health (Rodgers & Tennison, 2009; Wingo et al., 2013). The lifestyle habits developed at this stage can impact academic performance and have lifelong implications (Lambert & Donovan, 2016). The health behaviors of students during this time may also play a role in their academic performance. Studies indicate that college students are less likely than other age groups to utilize the type of health care that is most associated with positive health and academic outcomes, a usual source of care (Henry et al., 2018). Previous studies have addressed the link between health, healthcare factors and academic achievement, as well as demographic characteristics and academic performance (Deliens et al., 2013; Meyer & Larson, 2018; Ruthig et al., 2011; Sommerville & Singaram, 2018). For example, we know that when college students are in poorer health or engage in poor lifestyle behaviors, they tend to do worse on academic measures (Ruthig et al., 2011; Upright et al., 2014). However, less research has explored how student health and usual source of healthcare affect academic performance. This study seeks to address the gap in literature and examines the relationship between self-reports of health interfering with academic performance and healthcare use controlling for population characteristics, health, and other enabling factors among college students at a large Southeastern university.

Literature Review

College Students, Health, Healthcare, and Academics

College students are a unique population with specific health care needs related to sexual, social, physical, and mental health (Lechner et al., 2013; Oakes & Thorpe, 2019; Frost et al., 2020; Johnson, Brookover, & Bradbrook, 2020; Pauline, 2013). Traditionally-aged students are typically emerging adults no longer needing pediatric care, and many have the need to transition from pediatric to adult health care systems (Montano

& Young, 2012; Wiener et al., 2011). This transition may leave them without a usual source of care (USC). A USC is defined as a health setting where an individual usually seeks care, can receive routine or preventive care, and can receive advice on their condition (Newacheck et al., 2000). Many college students lack a source of health insurance coverage and are more likely to be uninsured compared to other age groups (Jung et al., 2013; Mount, 2015; Freudenberg et al., 2013). Those without health insurance often do not have a usual source of care (USC) which results in the underutilization of medical services when needed (Wong et al., 2015; Berk & Schur, 1998). Aside from lack of health insurance, college students may lack a USC because of high expenditures or they may be transitioning from pediatric care to adult care at a time when they are away from home (Lau et al., 2014; Montano & Young, 2012; Wiener et al., 2011). Without a USC, young adults can overlook critical years of disease screening and prevention (Freudenberg et al., 2013). Common USCs for young adults regardless of health insurance status include primary care offices, emergency rooms, outpatient services at hospitals, and on-campus clinics and health centers (Cullen, 2010; Lambert & Donovan, 2016; Wong et al., 2015). On-campus health services are designed to provide primary and preventive healthcare for students in these situations no matter their health insurance status at little to no cost; however, this option is not available at all colleges (Burkhart & Moreno, 2019).

The Affordable Care Act's (ACA) primary focus is to reduce the number of uninsured people in the United States by offering coverage through a series of insurance plans and health coverage expansions (Wong et al., 2015). On September 23, 2010, the ACA underwent an expansion that required all insurance plans that offered dependent coverage to extend coverage to young adults until age 26 (Wong et al., 2015; Barbaresco, Courtmanche, & Qi, 2015; Jung, Hall, Rhoads, 2013). Even after the Affordable Care Act's expansion, young adults and college students were still more likely to utilize emergency rooms as their usual source of care versus offices (Cullen, 2010; Chwastiak, Tsai, & Rosenheck, 2012; Lau, Adams, Boscardin, & Irwin Jr., 2014; Janke et al., 2015).

When predicting health care utilization within a population, such as a usual source of care among college students, the Andersen Behavioral Model of Health Services Utilization can be a useful framework to guide our understanding (Andersen & Newman, 1973). This model

describes healthcare access as a determinant of individual and social factors. These factors are organized into three categories: predisposing, enabling, and need factors. The Andersen model argues that there are predisposing characteristics of individuals that can be used to predict how health care is used among different groups. In the United States, these predisposing characteristics are well known structural factors such as race/ethnicity, poverty level, sex, and age that can predict a person's usual source of care and use of healthcare services. Enabling factors are defined as resources that provide access to care and can assist with engaging with a usual source of care. These supportive enabling factors include social support, having health insurance, ease of obtaining care, or having good health literacy or information about health care services. Need factors are defined as perceived demands for care that can be used to predict the type of care an individual seeks when sick. Some examples of need factors include measures of perceived health such as symptoms, severity, general health or well-being sick days, and individual experiences.

Predisposing characteristics such as race, sex, and age are known to impact the health of college students (Egli et al., 2011; Henry, 2018). In the United States, Black and Latinx individuals bear a disproportionate burden of chronic health conditions compared to their white counterparts, which would extend itself into the college experience (Oleckno & Blacconiere, 1990; Oliver II et al., 2019; Hu et al., 2011). Women and men differ in their utilization of health care; women are more likely to have health insurance, utilize health care, and have access to primary care (Upright et al., 2014; Barbaresco et al., 2015). While younger people tend to be healthier, college students that do not seek routine or primary care are at risk of exacerbating conditions or missing essential symptoms that can lead to health problems later in life (Liu et al., 2012; Zheng et al., 2017).

The role of enabling characteristics such as receipt of health information, distance from care, wait times, and social support to the health of college students has been examined in some previous studies. Students typically use the internet for knowledge on health topics to create healthy lifestyles and as a preventive measure against chronic diseases (Rennis et al., 2015). In a study on outpatient clinics, students typically waited an average of 28 days before getting an appointment and had to wait 1 hour or more after their appointment time to be seen and longer wait times negatively correlated with quality care (McCarthy, K., McGee, H.M., & O'Boyle, C.A., 2000).

Much of the literature on the geographical distance to health care facilities have been mixed. Some studies found that time and proximity to health facilities were not significant determinants of health service utilization and health outcomes (Thomson et al., 1980; Celaya et al., 2010; Henry et al., 2013). Other studies suggest that shorter distances to facilities increase access to care and service utilization (Hadley & Cunningham, 2004; Allard et al., 2003; Jones et al., 2010). Having a social support network, such as a mother or father, has been shown to improve the quality of life and mental health of college students (Alsubaie et al., 2019). Students with such support that utilize on-campus counseling centers and health centers have been linked to better academic achievement (Seon et al., 2019).

Literature has shown the relationship between need factors, such as general health and mental health, and academic performance. Students have reported that factors such as stress, anxiety, respiratory symptoms, and depression have had a negative impact on their academic achievement (Upright et al., 2014; Mounsey et al., 2013; Wyatt et al., 2017). Those that were physically active were more likely to report reduced stress and better academic performance (Meyer & Larson, 2018). Students presenting or at risk for sleep disorders were also at risk for academic failures (Gaultney, 2010).

There is a positive association between health and academic achievement in higher education (Upright et al., 2014; Ruthing et al., 2011; Larson et al., 2016). Students who adhered to the physical health recommendations of the American College of Sports Medicine/American Health Association (ACSM/AHA) had higher grade averages (Wald et al., 2014). Stress and high-risk behaviors, like drinking, smoking, risky sexual behaviors, were found to be the top factors that negatively impacted academics (Upright et al., 2014; Meyer & Larson, 2018). Students have reported that high-risk behaviors resulted in absenteeism from school, lower class performance, and a lower grade point average (Ruthing et al., 2011; Larson et al., 2016). Students in poorer health frequently missed days of school, which has been linked to a reduction in achievement (Dudovitz et al., 2016). Gender also serves as a significant determinant of academic achievement. Females tend to produce higher grades than their male counterparts (Hall et al., 2006; Lawrence et al., 2006; Sommerville & Singaram, 2018). Previous studies have indicated that males and females perform successfully in different academic areas. A 3-year longitudinal college study found that males performed better in mathematics

and science, while females performed better in reading comprehension, writing, and critical thinking (Whitt et al., 2003).

In this study, components of the Andersen Behavioral Model framework are used to understand the relationship between self-reported health interference with academic performance and a usual source of care. Specifically, predisposing, enabling, and need factors will be used to predict the odds of student health impacting academic performance.

METHODS

Study Design

This study used a descriptive, cross-sectional design to examine the relationship between predisposing, enabling, and need factors and health and educational outcomes. Data were collected through an online surveying system called Qualtrics. After consenting to participate in the study, students were asked questions about their health, healthcare, academics, and demographics. The questions on impediments to academic performance and demographics in this study were modeled after the 2018 National College Health Assessment (NCHA) II conducted by the American College Health Association (ACHA, 2019).

Participants

Study participants were recruited from a large, urban university in the southeastern United States via social media postings and through on-campus recruitment. Eight undergraduate research assistants were trained on using an intercept survey methodology to approach students on campus at different times of the day to collect surveys on iPads. Participants of this study included 438 college students (279 females and 159 males) ranging from 18 to 50 years of age.

Measures

Independent Variables

Predisposing characteristics

Variables indicating predisposing characteristics included age (in years), race and ethnicity, gender, transgender, class status, and enrollment status. Race and ethnicity, gender, transgender, and enrollment status were

measured on a nominal scale, with class status measured on an ordinal scale and age measured on an interval scale. The race and ethnicity variables were coded as White, Black, Hispanic or Latino/a, Asian or Pacific Islander, American Indian/Alaskan Native/Native Hawaiian, Biracial/Multiracial, and Other. Gender was coded as male, female, transwoman, transman, genderqueer, and another identity. Participants also reported whether they were transgender or not. Class status was coded as 1st-year undergraduate, 2nd-year undergraduate, 3rd-year undergraduate, 4th-year undergraduate, 5th-year undergraduate, Graduate/Professional, Non-degree seeking, and Other. Enrollment status was coded as full-time, part-time, and Other. Due to their small sample sizes, some categories from the dataset were collapsed into larger categories to run the necessary statistical tests. American Indian/Alaskan Native/Native Hawaiian, Biracial/Multiracial, and Other were collapsed into one category. 5th-year undergraduate, Graduate/Professional, and Others were also collapsed into one category. Additional variables were omitted due to their small sample size (transgender, n=3). Participants who answered "other" when identifying their enrollment status were also omitted.

Enabling characteristics

Participants reported their insurance status, type of insurance, insurance plan (public or private), whether they received health or mental health information from the university and how they received it, usual source of care, distance to care, effects in choosing a usual source of care, who usually set the appointments, and time in waiting area. Type of insurance was coded as followed: university-sponsored plan, parents' plan, Medicare, Medicaid, Tricare, and Veteran's Affairs. How participants received health information from the university included social media, health center, weekly emails, health-focused events on campus, not receiving information, and Other. Usual source of care was measured as private doctor's office, outpatient clinic, health center, emergency room, and urgent care clinic. Effects in choosing usual source of care included out-of-pocket cost, services offered, insurance, quality of care, and being seen quickly from the time participant enters the waiting area. Participants reported who set their appointments as followed: themselves, their parents, or someone else. All variables were measured on a nominal scale except distance to care and time in waiting area which were measured on an ordinal scale.

Need characteristics

The following need variables were measured: general health and poor mental health. General health was measured on a 5-point ordinal scale (from excellent to poor) and then consolidated into four categories with fair and poor health being combined into one category to be statistically analyzed due to their small sample size. Mental health was measured in total days within the last 30 days on an interval scale.

Dependent Variables

Participants were asked, *"Within the last 12 months, have any of the following affected your academic performance?"*. Participants reported whether specific health conditions impacted their academic performance. Academic performance variables were coded into two categories (did not happen and happened). Did not happen variables included those who were unaffected and those who experienced issues, but their academics were not affected. The other category included receiving a lower grade on an exam/important project, receiving a lower grade in course, receiving an incomplete, or dropping the course.

The health conditions of this study were classified into two categories, physical health and mental health, using the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Clinical Modification (ICD-10-CM) codes. The ICD-10-CM is a classification system used for morbidity coding (Centers for Disease Control and Prevention, 2019). This diagnosis coding system was used in this study to be consistent with the identification of health conditions globally. Using the ICD-10-CM, physical health conditions in this study were identified as allergies, cold/flu/sore throat, chronic health problems or serious illnesses, chronic pain, pregnancy, sexually transmitted disease/infection (STD/STI), sinus infection/ear infection/bronchitis, strep throat, and sleep difficulties. Mental health conditions were identified as anxiety, attention deficit and hyperactivity disorder (ADHD), depression, eating disorder or problem, learning disability, and stress.

All physical health conditions that impeded academics were coded into one category, while all physical health conditions that did not impede academics were coded into a second category. This method was also used for mental health conditions.

Analytic Strategy

Univariate descriptive statistics were calculated for our dependent and independent variables. A two-sample t-test was used to compare the differences between age and the dependent variables. A chi-square bivariate test was run to identify the differences in the significance of predisposing, enabling, and need characteristics to academic performance. A final set of logistic regression models were run to understand the relationship between all variables. All statistical analyses were performed using STATA.

RESULTS

Predisposing Factors

Table 1 displays the demographic characteristics of the analytic sample of students. A high percentage of respondents were white (44.3%) and female (63.7%) participants with an average age of 20.9 years (SD = 3.1; range = 18-50). Students pursuing either undergraduate or post-undergraduate education participated in the study, with students in their 2nd year (26.9%) and their 3rd year (25.7%) of undergraduate study responding more frequently. Finally, a majority of students were enrolled in classes full-time (90.1%).

Enabling Factors

Approximately 87.5% of respondents were insured. Over half of the respondents (58.9%) indicated that they did not receive health information from the university. In terms of a usual source of care, fewer students visited outpatient clinics (3%), emergency rooms (2.5%), or other facilities (2.5%) for care. Most students traveled between 5-10 miles to their usual source of care (32.1%) and waited between 10-15 minutes before being seen (33.8%). Almost three-fourths of respondents stated that they set their appointments by themselves (73.8%) as opposed to their parents (26.2%).

Need Factors

Table 1 shows the need variables for the analytic sample. Need characteristics are factors thought to affect a student's access to health care. Most students self-reported that they were in good (34.1%) or very good (38.9%) health.

Descriptive Characteristics	Number (n)	Percent (%)
Predisposing Variables		
	Mean	Standard Deviation
Age (18-50 years)	20.9	3.1
Race and Ethnicity		
White	195	44.3
Black/African American	39	8.9
Hispanic or Latino(a)	121	27.5
Asian or Pacific Islander	53	12.1
Other/Multiracial	32	7.3
Gender		
Male	159	36.3
Female	279	63.7
Class Status		
1st-year undergraduate	91	20.7
2nd-year undergraduate	118	26.9
3rd-year undergraduate	113	25.7
4th-year undergraduate	73	16.6
5th-year undergraduate/graduate/professional	44	10
Enrollment Status		
Full-time	390	90.1
Part-time	43	9.9
Enabling Variables		
Insurance Status		
Yes	385	87.5
No	55	12.5
Received Health Information from the University		
Yes	181	41.1
No	259	58.9
Usual Source of Care		
Private Doctor's Office	182	41.9

Table 1. Demographic Characteristics: Predisposing, Enabling, and Need Factors

Outpatient Clinic	12	3
Health Center	127	29.3
Emergency Room	11	2.5
Urgent Care Clinic	90	20.7
Other	11	2.5
Distance to Source of Care		
0-5 miles	131	29.8
5-10 miles	141	32.1
10-15 miles	55	12.5
more than 15 miles/outside of city	112	25.5
Who sets appointments for student		
Student	321	73.8
Parent	114	26.2
Wait Time		
0-5 minutes	18	4.1
5-10 minutes	122	27.9
10-15 minutes	148	33.8
15-20 minutes	73	16.7
more than 20 minutes	77	17.6
Need Variables		
General Health		
Fair/Poor	55	12.5
Good	150	34.1
Very Good	171	38.9
Excellent	64	14.6
Health Impacting Academic Performance		
Physical Health		
Impedes Academics	206	46.1
Does Not Impede Academics	241	53.9
Mental Health		
Impedes Academics	245	45.2
Does Not Impedes Academics	202	54.8

Table 1 continued. Demographic Characteristics: Predisposing, Enabling, and Need Factors

Effect on Academic Performance

To examine the difference between predisposing, enabling, and need characteristics on academic performance, a multivariate logistic analysis was run (see Table 2). Results from Model 1 indicate that race changes the odds of physical health impacting academics. Black and African American students were 0.45 times less likely than White students to report that their physical health impacts their academics (OR = 0.45, CI [0.21, 0.998]). The remaining predisposing variables (age, gender, class status, and school enrollment status) did not predict the odds of physical health impacting academics.

Usual source of care, who set the appointments for students, and office wait time all significantly predicted the odds of physical health impacting academics. Compared to students who reported a private doctor's office as their usual source of care, students using outpatient clinics were almost 7 times more likely to say their physical health impacts their academics and students using urgent care clinics were about 2 times more likely to say that their physical health impacts their academics (OR = 6.69, CI [1.55, 28.91]; OR = 1.97, CI [1.12, 3.48]). Students whose parents set their health care appointments were 0.6 times less likely to report that their physical health impacts their academic performance compared to students who make their own appointments (OR = 0.6, CI [0.37, 0.99]). The odds of students reporting that their physical health impacted their academics was 1.25 times higher with each unit increase in office-wait time (OR = 1.25, CI [1.04, 1.51]).

A person's self-rated health predicted the odds of their physical health impacting their academics. Compared to students in fair/poor health, students in excellent health and students in very good health were 0.29 times and 0.46 times less likely, respectively, to report that their physical health impacts their academics.

Model 2 indicates the significance of predisposing and enabling factors on the impact of mental health on educational outcomes. Race and gender predicted the odds of mental health impacting academic performance. Students who were Black or African American were 0.33 times less likely to report their mental health impacting their academics (OR = 0.33, CI [0.15, 0.73]). As with their physical health, females were almost 2 times more likely to report their mental health impacting their academics (OR = 1.66, CI [1.07, 2.57]). Compared to students using a private doctor's office as their usual

source of care, students using outpatient clinics were 6.4 times more likely to have their mental health impact their academic performance (OR = 6.4, CI [1.18, 34.72]). Having excellent health decreased the odds of students' mental health affecting their academics (OR = 0.038, CI [0.16, 0.85]).

DISCUSSION

The focus of this study was to identify the Andersen Behavioral Model of Health Services Use as a potentially useful framework in predicting the health impacts on academics among a sample of college students. Findings indicate that predisposing, enabling, and need factors all contribute to predicting the likelihood of college students reporting that their health impairs their academic performance. Enabling factors, such as a usual source of care, parental support for office scheduling, and clinic wait times, however, were the strongest predictors. Students who used outpatient clinics or urgent care clinics as their usual source of care compared to private practice clinics were more likely to report health impacting academics. This finding differed from that of the literature, which indicated that students were more likely to use emergency rooms as their usual source of care (Cullen, 2010). Outpatient clinics do not require extended stays for diagnostics, treatment, or rehabilitation. Therefore, these care facilities use a limited amount of the hospital's resources, and in return, are more cost-effective and less time-consuming. These benefits may be crucial for college students who may not be able to support their healthcare financially and have other obligations that require their time. However, the quick routine services offered at outpatient centers may not be enough to treat some of the health conditions experienced by college students that may require prolonged care, and in turn, may consequently affect their academic performance. To our knowledge, no studies have explored outpatient services and college students' perceptions of these facilities, prospective studies could potentially provide a perspective on this finding.

When parents set health care appointments for college students, students reported their physical health impacting their educational outcomes less than when they set their appointments themselves. Overestimating one's own health behavior and underestimating one's health risk is common among college students (Lewis et al., 2014; Carey et al., 2011). These students may perceive their health complaints differently than their

	Model 1			Model 2		
	Physical Health			Mental Health		
	95% Confidence Interval			95% Confidence Interval		
	Odds Ratio	Lower Level	Upper Level	Odds Ratio	Lower Level	Upper Level
Predisposing Factors						
Age	0.98	0.88	1.09	1	0.9	1.12
Race and Ethnicity						
White						
Black/African American	0.45*	0.21	0.998	0.33*	0.15	0.73
Hispanic or Latino(a)	0.74	0.45	1.23	0.73	0.44	1.22
Asian or Pacific Islander	0.82	0.41	1.65	0.71	0.35	1.42
Other/Multiracial	0.85	0.38	1.93	1.41	0.59	3.37
Gender						
Male						
Female	1.46	0.94	2.26	1.66*	1.07	2.57
Class Status	1.09	0.87	1.37	1.14	0.9	1.43
Enrollment Status						
Full-time						
Part-time	0.93	0.44	1.95	1.09	0.51	2.32
Enabling Factors						
Insurance Status						
Yes	1.77	0.92	3.43	1.72	0.89	3.31
No						
Received Health Information from the University						
Yes	1.03	0.67	1.58	1.01	0.65	1.57
No						
Usual Source of Care						
Private Doctor's Office						
	Odds Ratio	Lower Level	Upper Level	Odds Ratio	Lower Level	Upper Level
Outpatient Clinic	6.69*	1.55	28.91	6.4*	1.18	34.72
Health Center	1.38	0.82	2.3	1.26	0.75	2.11
Emergency Room	1.25	0.33	4.72	0.45	0.11	1.78
Urgent Care Clinic	1.97*	1.12	3.48	1.23	0.69	2.18
Other	1.56	0.4	6.14	0.95	0.24	3.79
Distance to Source of Care	1.01	0.83	1.23	1.04	0.86	1.27
Who sets appointments for student						
Student						
Parent	0.6*	0.37	0.99	0.7	0.43	1.16
Wait Time	1.25*	1.04	1.51	1.13	0.93	1.36
Need Factors						
General Health						
Fair/Poor						
Good	0.76	0.39	1.51	1.54	0.77	3.08
Very Good	0.46*	0.24	0.91	0.78	0.4	1.53
Excellent	0.29*	0.13	0.67	0.38*	0.16	0.85

*p≤.05

Table 2. Logistic Regression Models for Health Impact on Academic Performance

parents when setting appointments or participating in patient-provider communication. A study on body image and weight perception showed that females tend to overestimate their measurements while males tend to underestimate their measurements. Incorrect self-perception of body image and weight status led to unnecessary and negative health behaviors (Zaccagni et al., 2014). This index can show that students may not be getting the proper treatment for their health problems when they underestimate or overestimate their conditions which may cause an impact on their physical health.

In this study, students who self-reported their general health status as excellent or very good were less likely to report their physical or mental health affecting their academic performance, which is consistent with the findings of previous studies (Bruffaerts et al., 2018; Wald et al., 2014). Studies have shown a positive association between health and academic achievement. Students in better health typically missed fewer days and had reported higher grades and GPAs (Henry et al., 2018; Dudovitz et al., 2016). Therefore, our finding was consistent with the literature.

Predisposing factors such as gender and race were identified as significant predictors of student reports of health having an impact on their academic performance. Previous studies have identified that females have higher morbidity and seek out health care at higher rates compared to men (Price et al., 2010). Consistent with the literature, this study found that being female increased the likelihood of physical and mental health impacting educational outcomes (Upright et al., 2014). Students who identified as Black or African American had lower odds of reporting that their health impacted their academic performance compared to those identifying as White. This could be related to lower rates of treatment for physical conditions and the stigma of mental health help-seeking in minority communities that is still prevalent today (Eisenberg et al., 2011).

Limitations

There are a few limitations in this study that should be addressed. First, the measures of health and academics in the study were self-reports, which may have resulted in biases as students could have overestimated or underestimated their overall health status or academic impact. Future studies should use different methods to gather data such as conducting interviews to identify

themes. Respondents were also recruited through convenience sampling and an intercept survey method was used to gather data. Thus, selection and reporting biases may also be present. Potential studies could use different approaches and distribution methods, such as random sampling and sending the survey to students via email to see if these findings are supported. Also, although the logistic regression models of this study provide useful information on how the Andersen Behavior Model predicts health services utilization and their impact on academic performance, we cannot draw a conclusion regarding causation. A longitudinal study approach may be more appropriate in confirming these claims and drawing such conclusions.

CONCLUSION

The findings of this study indicate that enabling factors were the best predictors of health impacts on academic performance in the sample, though predisposing and need factors were also important. Our data shows clear evidence that health management during young adulthood is crucial as the health behaviors students engage in influence their academic performance. This study also highlights the importance of healthcare among university students. Government officials, health professionals, and higher education institutions could implement services to provide better access to healthcare offered to college students. Health awareness programs and accessibility can improve the quality of life and educational outcomes among students. Although the Andersen Behavioral Model provided to be a good framework for understanding health as it relates to educational outcomes, further investigation is required to examine specific findings of this study. Possible interventions may be necessary to understand differences in gender, race, and usual source of care facilities among this population. Identifying factors that impact the academics and wellbeing of college students is imperative to future success among this population.

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