

Article

Relationships Between Basic Needs Insecurities and Symptoms of Mental Illness in Neurodivergent College Students

Jonathan K. Noel ^{1,*}, Aaliyah S. Couto ², Kelsey A. Gately ^{1,2}  and Samantha R. Rosenthal ^{1,2,3} ¹ Department of Health Science, College of Health and Wellness, Johnson & Wales University, Providence, RI 02903, USA² Center for Student Research & Interdisciplinary Collaboration, Johnson & Wales University, Providence, RI 02903, USA³ Department of Epidemiology, Brown School of Public Health, Brown University, Providence, RI 02903, USA

* Correspondence: jonathan.noel@jwu.edu

Abstract

Students who are neurodivergent may be at risk of experiencing one or more basic needs insecurities (BNIs). Experiencing BNI, generally, can also increase symptoms of mental illness. The current study examined BNI experiences between students who were neurodivergent and neurotypical and tested whether experiencing BNIs was associated with symptoms of depression and anxiety. Data were collected from $n = 507$ college students via a cross-sectional, web-based survey. Neurodivergent status, experiencing six BNIs (i.e., food, finance, healthcare, housing, transportation, hygiene), and symptoms of depression and anxiety were measured. Logistic and linear regression models tested main effects after adjusting for sociodemographic factors. Overall, 90.4% of neurodivergent students experienced one or more BNIs, with food (68.3%) and financial (76%) insecurity most common. Odds of experiencing hygiene insecurity were two times greater (OR [95%] = 2.07 [1.09, 3.91]) among neurodivergent students. Experiencing food, financial, or healthcare insecurity was associated with increased depression (p 's ≤ 0.006) and anxiety (p 's ≤ 0.027) symptoms among neurodivergent students. BNIs are common in neurodivergent students, and neurodivergent students who experience BNIs are more likely to experience symptoms of depression and anxiety. Universities should consider implementing proactive policies, such as care coordination through health services, food options to accommodate non-traditional schedules, and affordable hygienic products and services.

Keywords: basic needs insecurity; neurodivergent; food insecurity; hygiene insecurity; depression; anxiety



Academic Editor: Xiaochuan Pan

Received: 17 April 2026

Revised: 13 July 2026

Accepted: 3 August 2026

Published: 6 August 2026

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1. Introduction

Neurodiversity is the natural variation in neurocognitive functioning across a population at a specific age, and the term “neurodivergent” serves as a broad umbrella for individuals whose neurocognitive profiles differ from dominant societal norms [1]. Importantly, “neurodivergent” was conceived as a means of demographic categorization, similar to race or gender, not disease status [2]. Nonetheless, neurodivergent individuals are often pathologized through labels, such as autism spectrum disorder (ASD), attention-deficit hyperactivity disorder (ADHD), or dyslexia [1–3].

The prevalence of neurodivergence varies based on target population and measurement method. A parent-based survey conducted in the U.S. reported that 22.7% of males and 12.6% of females, 3–17 years old, had one or more neurodevelopmental conditions,

including ASD, ADHD, speech disorders, learning disorders, intellectual disabilities, and other developmental delays [4]. Others have estimated a childhood prevalence rate of 1% for ASD, 5.9% for ADHD, and 9.7% for learning disorders [5–7]. Rates among all adults are likely between 2% and 6% [8,9]; however, analysis from the American College Health Association–National College Health Assessment III suggests 13.3% of college students may be classified as neurodivergent [10].

College students who are neurodivergent may face unique challenges balancing school and life demands, placing them at risk of experiencing basic needs insecurity (BNI), defined as a lack of adequate access to a basic need, such as food, finances, or housing [11,12]. While food and housing insecurity among all college students was reported to be as high as 44.1% and 52.3%, respectively [12], research specific to neurodivergent students remains sparse, albeit informative. For example, in a survey of households with children under 18 years old and diagnosed with ASD, 32.3% were classified as having very low food security, and households including a person of any age with ASD had 3.7 times higher odds (95% CI = 3.1, 4.4) of experiencing very low food security compared to households without an individual with ASD [13].

Neurodivergent individuals may also face heightened risk for other forms of BNIs beyond food access. For example, households with an adolescent diagnosed with ASD are more likely to experience significant financial hardship, such as large income losses or bankruptcy [14], and qualitative interviews of adults with ASD found a consistent lack of financial well-being [15]. Concerningly, persons who are neurodivergent may also be at risk of being unhoused. In a 33-year follow-up study, a childhood diagnosis of ADHD between 6 and 12 years old was associated with 3.6 times higher odds (95% CI = 1.32, 9.76) of experiencing homelessness in adulthood [16]. Healthcare access further compounds these challenges. Children with ASD report high levels of unmet medical and mental healthcare needs [17], and uninsured children diagnosed with ADHD are more likely to receive no medical service relative to peers with public or private insurance [18].

Importantly, experiencing BNI is not benign, and studies of adolescents and young adults strongly suggest that odds of depression or anxiety are higher when experiencing food insecurity [19–22]. Although the relationship is complex, BNIs are likely highly stressful experiences that cause a heightened and consistent stress response that can manifest itself in symptoms of mental illness over time [20], and indeed, financial insecurity may destabilize basic psychological needs while simultaneously increasing depression and anxiety symptoms in adults [23]. Alternatively, those with pre-existing risk factors for mental illness may be more likely to experience BNI [20]. Regardless, there is little information on the effect of BNIs within the neurodivergent population, although emerging evidence suggests that BNIs may exacerbate symptoms of ADHD and ASD [19,24–27]. In response, the current study sought to (a) determine if neurodivergent college students were at risk of experiencing BNI, and (b) if experiencing BNI was associated with symptoms of mental illness among neurodivergent college students. It was hypothesized that BNIs would be more prevalent among neurodivergent students and that neurodivergent students who experienced BNIs would report greater symptoms of mental illness.

2. Materials and Methods

The basic needs insecurity study was a cross-sectional, web-based survey that was distributed to students attending a university with campuses in the Northeast and Southern United States in January 2024.

2.1. Sample and Procedures

Participants were recruited via university email, and invitations were sent to all enrolled students (i.e., undergraduate and graduate, in-person and online). Inclusion criteria included being actively enrolled in a university program and 18 years old or older. Prospective participants completed a screening survey, which confirmed eligibility and included attention and location checks. Then, eligible individuals read a study description, and informed consent was collected via digital affirmation. Data were collected using Qualtrics, and participants received a \$10 electronic gift card upon completion. The study was approved by the Johnson & Wales University Institutional Review Board.

The initial response rate was 7.2%. Of those who responded ($n = 552$), $n = 526$ (95.3%) were eligible to participate. Reasons for ineligibility included failed attention checks ($n = 3$), failed location checks ($n = 2$), and not providing informed consent ($n = 15$). $N = 507$ (91.8%) who provided complete data are included in the current analysis.

2.2. Measures

The independent variable was neurodivergent status, which was calculated based on responses to the prompt: “Do you have any of the following disabilities or chronic conditions? (Select all that apply)”. If a participant indicated an affirmative response to attention-deficit hyperactivity disorder (ADHD), autism spectrum disorder, or Learning Disability, the participant was classified as neurodivergent (ND, coded as 1). These responses were collapsed together based on previous studies that categorized individuals who experience these conditions as ND [1–10]. All other participants were considered neurotypical (NT, coded as 0).

The following BNIs were measured: food, finances, housing, healthcare, transportation, and hygiene. Experiencing each specific BNI, or any BNI, was coded as 1, and not experiencing BNI was coded as 0. Food insecurity was defined as experiencing any food security issue using the 6-item Adult Food Security Survey (AFSS), which was developed by the US Department of Agriculture [28]. In college students, the 6-item AFSS had 96.2% agreement in identifying food insecurity relative to the 10-item AFSS [29]. Food insecurity was defined as experiencing any food security issue. Two items that focused on difficulty paying for general and school-related expenses were used to measure financial insecurity [30]. Four-point Likert scales, ranging from “not at all” to “very” were used, and financial insecurity was indicated with any response of “very” or “somewhat” difficult. Two items assessed housing insecurity. Participants indicated the number of places they lived in and any use of shelters, vehicles, or other temporary places to sleep at night during the past 12 months [31]. Housing insecurity was indicated if a participant lived in 3 or more places or used temporary housing in the past 12 months.

Three items from the National Health Interview Survey measured healthcare insecurity [32]. Participants indicated if they delayed medical care or prescription drug use due to cost or insurance. Response options were “yes” and “no”, and healthcare insecurity was defined as any “yes” response across items. Two items measured transportation insecurity. Participants were asked if a lack of transportation kept them from attending class or other school appointments, with response options “yes,” “no” and “don’t know,” and how often it was difficult to get transportation to school, with responses captured on a 4-point Likert scale from “never” to “always” [33]. Transportation insecurity was defined as responding “yes” to a lack of transportation keeping them from class or responding that they often or always had difficulty getting transportation to school. Hygiene insecurity was measured using two items that asked about the frequency of bathing per week, from “0 days” to “7 days,” and washing clothes per month, from “never” to “4 or more times a week” [34].

Participants who bathed on two or fewer days per week or washed clothes monthly or less were considered hygiene insecure.

Additional dependent variables included self-reported depression and anxiety symptoms. The Center of Epidemiologic Studies Depression Scale (CES-D10) measured depression symptoms [35]. Consisting of 10 items that asked participants how often they experienced different states in the last week (e.g., “I was bothered by things that usually don’t bother me,” “I had trouble keeping my mind of what I was doing,” “I felt depressed”), responses were collected on 5-point Likert scales, ranging from “rarely or none of the time” (coded as 0) to “most of the time” (coded as 4). Responses were aggregated by summation ($\alpha = 0.83$). CES-D10 scores are strongly correlated ($r = 0.86$) with other standardized assessments of depression (i.e., BASIS24–Depression and Functioning Subscale) [35]. The Generalized Anxiety Disorder (GAD-7) scale measured anxiety symptoms [36]. The 7-item scale asked how often a participant was bothered by different problems (e.g., “Feeling nervous, anxious, or on edge,” “Not being able to stop or control worrying,” “Worrying too much about different things”) in the past two weeks. Responses were collected on a 4-point Likert scale ranging from “not at all” (coded as 0) to “nearly every day” (coded as 3). Responses were aggregated by summation ($\alpha = 0.92$). The GAD-7 has high test–retest reliability (intraclass correlation = 0.83) [36].

Covariates included age, sexual/gender status (SGS), race, ethnicity, income, and first-generation student status. SGS included heterosexual cisgender (cis) females, heterosexual cis-males, and any sexual/gender minority, including transgender, non-conforming, and any sexual orientation other than heterosexual. This categorization was thought to best reflect the intersectionality between sex assigned at birth, gender identity, and sexual orientation [37]. Participants selected all racial identities that applied, and categories included American Indian/Alaska Native, Asian, Black or African American, Native Hawaiian or Other Pacific Islander, White, or Some other race. Ethnicity consisted of Hispanic and non-Hispanic, while personal income was categorized as living below the poverty line, defined for a one-person household, living above the poverty line but below the living wage at the time of the study, and living above the living wage [38,39]. First-generation student status was a dichotomous question with yes/no response options.

2.3. Analysis

The distributions of continuous variables (i.e., CES-D10, GAD-7) were examined for skew and kurtosis and were deemed normally distributed. All other variables in the analysis were considered categorical. Descriptive statistics are reported for all included variables, and sociodemographic differences based on neurodivergent status were assessed via chi-square tests. Due to the low sample size of some groups, American Indian/Alaska Native, Native Hawaiian or Other Pacific Islander, and Some other race racial identities were collapsed into a single category for analysis. Then, unadjusted and adjusted logistic regression models were specified to determine if neurodivergent status was associated with experiencing any BNI and each specific BNI. Adjusted models included age, SGS, race, ethnicity, income, and first-generation student status. The Hosmer and Lemeshow test was used to assess model fit of the main model, where experiencing any BNI was the dependent variable, and a correlation matrix was calculated to identify potential multicollinearity issues.

Finally, among only participants who were ND ($n = 104$), adjusted linear regression models were specified to determine if experiencing any BNI or a specific BNI was associated with increased depression and anxiety symptoms. The Durbin–Watson (DW) and variance inflation factor (VIF) statistics were used to identify auto-correlation and collinearity, respectively, for the main model. Independent t-tests were also used to determine if

depression and anxiety scores differed based on neurodivergent status. Data analysis was completed using SPSS v28.0 (Armonk, NY, USA: IBM Corp), and 95% confidence intervals (CI) and *p*-values were used to determine statistical significance at $\alpha = 0.05$.

3. Results

3.1. Sample Characteristics

Overall, the sample was predominantly White (72.2%) and non-Hispanic (79.1%) (Table 1). Most participants were 18 to 21 years old (78.9%), while a plurality identified as heterosexual cis-female (43.4%). The personal income for a majority (73.6%) was below the federal poverty line, and approximately one-third (36.5%) were first-generation college students. In addition, 20.5% of participants were classified as ND, and only SGS differed significantly between ND and NT participants ($\chi^2_{(2)} = 48.87$, $p < 0.001$). Approximately two-thirds of participants who were ND (66.3%) identified with any sexual or gender minority compared to 29.3% among participants who were NT.

Table 1. Descriptive statistics of sociodemographic variables and bivariate associations with neurodivergent status (*n*, %).

Variable		Total	Neurodivergent Participants (<i>n</i> = 104)	Neurotypical Participants (<i>n</i> = 403)	χ^2	df	<i>p</i>
Age *	18–21 years old	400 (78.9)	83 (79.8)	317 (78.7)	1.48	2	0.476
	22–29 years old	64 (12.6)	15 (14.4)	49 (12.2)			
	30 years old or older	43 (8.5)	6 (5.8)	37 (9.2)			
SGS *	Heterosexual cis-female	220 (43.4)	25 (24.0)	195 (48.4)	48.87	2	<0.001
	Heterosexual cis-male	100 (19.7)	10 (9.6)	90 (22.3)			
	Any sexual/gender minority	187 (36.9)	69 (66.3)	118 (29.3)			
Race **	American Indian/Alaska Native	10 (2.0)	3 (2.9)	7 (1.7)	0.56	1	0.453
	Asian	36 (7.1)	7 (6.7)	29 (7.2)	0.03	1	0.869
	Black/African American	88 (17.4)	15 (14.4)	73 (18.1)	0.79	1	0.376
	Native Hawaiian/Pacific Islander	4 (0.8)	0 (0.0)	4 (1.0)	1.04	1	0.308
	White	366 (72.2)	81 (77.9)	285 (70.7)	2.11	1	0.146
	Some other race	42 (8.3)	9 (8.7)	33 (8.2)	0.02	1	0.878
Ethnicity	Hispanic	106 (20.9)	16 (15.4)	90 (22.3)	2.41	1	0.120
	Non-Hispanic	401 (79.1)	88 (84.6)	313 (77.7)	5.45	2	
Income	Below poverty level	373 (73.6)	85 (81.7)	288 (71.5)			0.066
	Above poverty level, below living wage	83 (16.4)	14 (13.5)	69 (17.1)			
	Above living wage	51 (10.1)	5 (4.8)	46 (11.4)			
First-Generation	Yes	185 (36.5)	42 (40.4)	143 (35.5)	0.86	1	0.355
	No	322 (63.5)	62 (59.6)	260 (64.5)			

* Age and SGS percentages do not add to 100% due to rounding. ** Race percentages will not add to 100% because participants were able to select more than one category. $N_{\text{total}} = 36$ and $n_{\text{ND}} = 10$ participants identified with multiple racial categories. Bold indicates statistical significance.

3.2. Experiencing Basic Needs Insecurities

Over four out of five participants (82.6%) reported experiencing any BNI, with food (57.2%) and financial (68.0%) insecurity most common, followed by healthcare (36.7%), transportation (18.9%), hygiene (11.8%), and housing (6.3%) insecurity. Among ND students, 90.4% experienced one or more BNIs, with a majority of ND students experiencing food (68.3%) and financial (76.0%) insecurity (Table 2). The odds of experiencing any BNI were significantly higher among ND students in the unadjusted model (OR [95% CI] = 2.26

[1.12, 4.53]). The adjusted model had good model fit ($\chi^2_{(7)} = 1.99, p = 0.960$), although the correlation matrix suggested potential collinearity issues between age and income ($r > 0.5$). Neurodivergent status was not associated with experiencing any BNI after adjusting for age, SGS, race, ethnicity, income, and first-generation status, and removal of age or income from the model did not change that relationship. Among the covariates, only age was significantly associated with experiencing any BNI, with 22 to 29 year olds having higher odds of experiencing BNI relative to 18 to 21 year olds (OR [95% CI] = 3.07 [1.02, 9.19]). Similarly, odds of experiencing food (OR [95% CI] = 1.81 [1.14, 2.86]) and healthcare (OR [95% CI] = 1.91 [1.24, 2.96]) insecurity were only significant in the unadjusted model. However, odds of experiencing hygiene insecurity were approximately two times higher among ND students after adjustment (OR [95% CI] = 2.07 [1.09, 3.91]).

Table 2. Unadjusted and adjusted odds of experiencing any or specific basic needs insecurities by neurodivergent status *.

Dependent Variable	<i>n</i> (%) in Neurodivergent Students **		Unadjusted		Adjusted ***	
			OR	95% CI	OR	95% CI
Any BNI	Yes	94 (90.4)	2.26	1.12, 4.53	1.85	0.87, 3.93
	No	10 (9.6)				
Food insecurity	Yes	71 (68.3)	1.81	1.14, 2.86	1.54	0.94, 2.54
	No	33 (31.7)				
Financial insecurity	Yes	79 (76.0)	1.63	0.99, 2.67	1.56	0.91, 2.68
	No	25 (24.0)				
Healthcare insecurity	Yes	51 (49.0)	1.91	1.24, 2.96	1.39	0.86, 2.25
	No	53 (51.0)				
Hygiene insecurity	Yes	21 (20.2)	2.36	1.32, 4.22	2.07	1.09, 3.91
	No	83 (79.8)				
Transportation insecurity	Yes	24 (23.1)	1.38	0.82, 2.33	1.58	0.88, 2.82
	No	80 (76.9)				
Housing insecurity	Yes	6 (5.8)	0.89	0.36, 2.22	0.75	0.28, 2.02
	No	98 (94.2)				

* Separate models specified for each dependent variable; bold indicates statistical significance. ** *n* = 104.
 *** Adjusted for age, sex/gender status, race, ethnicity, income, and first-generation status. Bold indicates statistical significance.

3.3. Impact of Experiencing Basic Needs Insecurities

In the entire sample, the mean CES-D10 score was 11.0 (SD = 5.9), and the mean GAD-7 score was 7.11 (SD = 5.3). Bivariate analysis suggests that CES-D10 scores were significantly higher ($p < 0.001$) among ND students (mean [SD] = 13.5 [5.9]) compared to NT students (mean [SD] = 10.3 [5.7]). Similarly, GAD-7 scores were significantly higher ($p < 0.001$) among ND students (mean [SD] = 8.7 [5.5]) relative to NT students (mean [SD] = 6.7 [5.2]). Among ND students only, experiencing any BNI was associated with increased symptoms of depression (b [95% CI] = 7.14 [3.54, 10.7], $p < 0.001$) and anxiety (b [95% CI] = 4.52 [1.00, 8.04], $p = 0.012$) after adjustment for the covariates (Table 3). No auto-correlation (DW's = 2.00 to 2.08) or multicollinearity (VIF's < 3.3) concerns were identified. Specifically, depression and anxiety symptoms were higher among neurodivergent students if they experienced food (p 's < 0.03), financial (p 's < 0.02), and healthcare (p 's < 0.003) insecurity.

Table 3. Adjusted associations between experiencing any basic need insecurity and depression or anxiety symptoms among neurodivergent students ($n = 104$) *.

		Depression			Anxiety		
Variable		b	95% CI	p	b	95% CI	p
Any BNI	Yes	7.14	3.54, 10.7	<0.001	4.52	1.00, 8.04	0.012
	No						
Food insecurity	Yes	3.45	1.03, 5.86	0.006	2.60	0.30, 4.90	0.027
	No						
Financial insecurity	Yes	5.49	2.91, 8.08	<0.001	3.31	0.76, 5.87	0.012
	No						
Healthcare insecurity	Yes	4.90	2.78, 7.01	<0.001	3.42	1.35, 5.51	0.002
	No						
Hygiene insecurity	Yes	0.28	−2.73, 3.29	0.853	2.53	−0.24, 5.29	0.073
	No						
Transportation insecurity	Yes	1.10	−1.01, 4.42	0.216	1.79	−0.74, 4.33	0.163
	No						
Housing insecurity	Yes	1.36	−3.76, 6.48	0.599	2.14	−2.64, 6.91	0.890
	No						

* Adjusted for age, sex/gender status, race, ethnicity, income, and first-generation status; bold indicates statistical significance. Bold indicates statistical significance.

4. Discussion

Experiencing BNI may be common among neurodivergent college students, with students who self-reported as neurodivergent having higher odds of experiencing hygiene insecurity relative to college students who are not neurodivergent. Food and healthcare insecurity may also be a concern. Further, experiencing BNI was associated with greater depression and anxiety symptoms among neurodivergent students, with food, finance, and healthcare insecurity having the largest effects.

To our knowledge, this is among the first assessments of BNIs in college students who are neurodivergent and the first to report rates of experiencing BNIs in secondary, but important, domains (e.g., transportation, hygiene). Past assessments of BNIs reported food and housing insecurity rates of approximately 30% to 50% among persons who are neurodivergent or in households with persons who are neurodivergent [12,13], and the range of rates across BNI domains was considerably wider in the current sample (5.8% to 76%). The discrepancy is likely due to college students being the target population of the current study. Some BNIs are likely less prevalent, such as housing insecurity, because of built-in structures that are expected within the college experience, such as dormitory housing. Conversely, other BNIs, such as financial or food insecurity, may be higher due to the decrease in structural or social support available to college students as they transition from the high school experience.

Higher odds of hygiene insecurity in students who are neurodivergent are consistent with the broader literature suggesting that neurodivergent individuals are more likely to struggle with activities of daily living, such as cooking, cleaning, or showering. Caregivers of children 6 to 18 years old with ADHD report decreased ability to complete self-care and family-related chores by their children [40], and neurodivergent adults who had co-occurring symptoms, such as those related to ASD and ADHD, report less confidence in successfully completing activities of daily living independently [41]. Interestingly, others have reported that deficits in completing daily life skills were most likely to occur in neurodivergent persons with low IQ scores (e.g., <70) [42], which is not applicable to the

college student population. Instead, we propose two possible explanations. First, and broadly, students who are neurodivergent may struggle with cognitive flexibility and may be more prone to perseveration errors [43]. In the college context, these challenges may be magnified by executive function demands such as irregular schedules, communal living environments, and reduced parental scaffolding, which together make time management, planning, prioritizing, task switching, and impulsivity more difficult and may manifest as BNIs. Second, and more specifically, because sensory experiences may be directly related to overall well-being in neurodivergent students and qualitative research suggests strong fabric preferences in this population, hygiene-related activities, such as clothes washing, may not be completed because preferred garments would not be immediately available [44].

Associations between experiencing BNIs and poor mental health among students who are neurodivergent are also consistent with previous research [19,21–23], and past parental intrusiveness may, at least in part, explain the relationship. Parents of children who are less than 21 years old and neurodivergent may be highly involved in self-care activities, and indeed, research in younger populations suggests stronger parental involvement may be associated with increased quality of life [45]. However, excessive parental involvement may limit autonomy [46], and reduced participation in care routines in adolescence, when combined with the expanded independence and responsibilities of the university setting [47], may create stress that exacerbates symptoms of mental illness [48–50]. In addition, neurodivergent students often experience challenges with executive functioning, which may heighten vulnerability to stress when basic needs are unmet [51,52]. Stigma and a negative campus climate may further discourage help-seeking behaviors, creating barriers to mental health and basic needs support [53,54]. These risks may also be compounded by intersectional factors, as neurodivergent students who also identify as first-generation, a historically marginalized race or ethnicity, or LGBTQ+ may face disproportionate burdens [55,56]. Finally, given that emerging adulthood may already be marked by heightened vulnerability to mental illness onset [57,58], the combined influence of BNIs, reduced parental scaffolding, and stigma may place neurodivergent college students at a particularly elevated risk.

4.1. Implications

Evidence suggests that access to disability accommodations, peer mentoring, and structured campus supports can buffer the impact of BNIs and promote resilience in neurodivergent populations [59,60]. Although most universities and colleges offer services specifically for neurodivergent students, community benefits may be limited if individuals choose not to disclose their status [61], are unaware of available supports, or face barriers in securing the required documentation [62], leaving them without necessary accommodations. Consequently, dedicated offices, while important, may have only limited impact, and universities may need more holistic and proactive systems. In the context of BNIs, traditional classroom accommodations may be insufficient, and positive structural changes should be embedded throughout the college experience. For example, care coordination can be offered by university health services as a routine measure [63]; price reductions can be implemented in campus facilities [64]; hours of service of campus food options can be expanded to accommodate non-traditional schedules; and open educational resources can be used to reduce the cost of attendance [65]. Additionally, colleges should assess the availability and affordability of hygienic products and services offered on campus, including showers, laundromat facilities, and relevant costs to use those services, to ensure sufficient resources are available to meet the needs of neurodivergent students.

4.2. Limitations

The study is cross-sectional, and causation cannot be determined. The sample is unlikely to be representative of all college students or college students who are neurodivergent, although participants were recruited from campuses in two different states and online students may live throughout the U.S. Selection bias may also be a concern as the study was conducted solely online and only students with sufficient technological access and time to complete the study are likely to have been recruited. As a result, the experiences of BNIs and students with symptoms of mental illness are likely under-represented. It is also possible that students who are neurodivergent are under-represented because they were less likely to participate, and the low sample size limits statistical power, which may lead to Type II error.

Additionally, neurodiversity is self-reported, and self-reported neurodivergent status is not equivalent to a medical diagnosis. Although most measures used in the study are implemented in national surveillance studies and previously published in the peer-reviewed literature, psychometric properties of these items have either not been tested or the testing has not been published, with the validity and reliability of the items being a concern. Data were collected via self-reporting, so recall and social desirability bias may have occurred. Finally, because participant recruitment and data collection were conducted completely online, participant identities cannot be verified, despite invitations being sent to university email addresses and location checks being included in the screening survey.

To address these concerns, future research should design longitudinal protocols that are able to enroll neurodivergent college students at or near the start of their academic career across a geographically and sociodemographically diverse range of schools. School corporate status (i.e., public vs. private) should also be considered. In-person recruitment may resolve participant identity concerns, and sample sizes need to be substantial enough to perform meaningful sub-group analyses. Formative research, with direct input from persons who are neurodivergent through a community-based participatory research approach, is needed to develop culturally appropriate methods of recruitment and to refine existing measures or develop new measures to best assess relevant BNI domains. Additional formative research is also needed with persons who are neurodivergent to better understand which basic needs are of greatest concern to the population.

5. Conclusions

The prevalence of experiencing basic needs insecurities among neurodivergent college students may be high, and among neurodivergent students, experiencing food, financial, or healthcare insecurity may be associated with depression and anxiety symptoms. Colleges should consider proactive approaches, which are inclusive of all students, such as care coordination through health services, food options to accommodate non-traditional schedules, and affordable hygienic products and services.

Author Contributions: Conceptualization, J.K.N.; methodology, J.K.N.; data curation, J.K.N.; formal analysis, J.K.N.; writing—original draft, J.K.N. and A.S.C.; funding acquisition, J.K.N.; writing—review and editing, K.A.G. and S.R.R. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by a Johnson & Wales University—Undergraduate Research Experience grant. The funders had no role in the design, implementation, analysis, or writing of this study. The views and opinions contained in the publication do not necessarily reflect those of the funder.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Johnson & Wales University Institutional Review Board (protocol code #: #230905 and date of approval 6 November 2023).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon request from the corresponding author due to privacy concerns and the sensitive nature of the data collected from students, whom the authors consider a potentially vulnerable population.

Conflicts of Interest: The authors declare no conflicts of interest.

Abbreviations

The following abbreviations are used in this manuscript:

BNI	Basic needs insecurities
ASD	Autism spectrum disorder
ADHD	Attention-deficit hyperactivity disorder
DW	Durbin–Watson statistic
ND	Neurodivergent
NT	Neurotypical
CES-D10	Center of Epidemiologic Studies Depression Scale
GAD-7	Generalized Anxiety Disorder Scale
SGS	Sexual and gender status
VIF	Variance inflation factor
CI	Confidence Interval

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