

# College Students with Medical Dietary Restrictions Face Financial and Personal Challenges Trying to Meet Nutritional Needs

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## Abstract

**Introduction:** Dietary restrictions are followed due to personal choices and/or medical diagnosis. The literature lacks studies focused on the experiences of college students navigating campus life and managing the effects of restricted eating. The goal of this study was to assess how food allergies, food sensitivities, and/or autoimmune disease affect one's well-being as a college student. **Methods:** A 33-item web-based survey was promoted to undergraduate and graduate students at a large state institution in Louisiana. Participants needed to identify as having dietary restrictions due to food allergies, food sensitivities, and/or autoimmune disease. Items assessed their prioritization of dietary restrictions, commitment to reading food labels, and common symptoms experienced when eating a restricted food item. **Results:** People who had food sensitivities were found to prioritize their dietary restrictions significantly less than those with allergies or autoimmune diseases ( $p < 0.001$ ). This was also reflected in their responses to how often they read food labels, which revealed they were significantly less likely to read labels ( $p = 0.005$ ) than those with food allergies. Students with food sensitivities were also more likely to report high incidence of gastrointestinal (GI) symptoms. Students also reported issues with locating appropriate foods and financing their dietary needs. **Conclusion:** Experiencing uncomfortable GI symptoms may interrupt college students' busy schedules causing an increase in stress, embarrassment, missing class/work, feelings of isolation, and put a strain on intimate relationships. Minimal dietary adherence may lead to an increased risk for decreased GI motility time resulting in malabsorption of vitamins and minerals that could over time cause more serious health issues. Soliciting ideas for the changes students expect to see in university dining facilities to better manage medical dietary restrictions is the next area of focus.

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## Keywords

Food Allergies, Food Sensitives, College Students, Medical Dietary Restrictions

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## 1. Introduction

Dietary restrictions may be followed because of personal and/or medical choices. People may need to restrict certain foods due to food allergies (FA), autoimmune diseases (AD) including Celiac disease, Type I Diabetes, and/or because of food sensitivities (FS). FA affects approximately 10% of adults and 8% of children, while 19% of adults believe that they have FA without a formal medical diagnosis (Gupta, Springston, Warriar et al., 2011; Gupta, Warren, Smith et al., 2019). AD affects 3% - 5% worldwide and this number is growing in Western societies (Mazzucca, Raineri, Cappellano, & Chiocchetti, 2021). FS affects 15% - 20% percent of the population (Lomer, 2015). Having a perceived FS was reported to be a distressing condition by 3% - 35% of individuals but the prevalence of FA was 0.9% - 3% (De Petrillo, Hughes, McGuinness, Roberts, & Godfrey, 2020). There have been many studies on adults and the general population, but very few focus on college students. There is a need for further investigation because many lifelong dietary habits are made in college, and students may struggle to transition from living with family or parents to living on their own or with a roommate.

Food hypersensitivity includes both FA and FS. The main difference between FS and FA is that non-immunological mechanisms like difficulty digesting certain foods often play a key role in FS while FA is a hypersensitivity of immunological etiopathogenesis. Reactions to allergy causing agents in foods may cause serious and even life-threatening events and often require maintenance of emergency epinephrine medication. People with food hypersensitivities face obstacles when trying to maintain an elimination diet to prevent the symptoms from occurring (Valenta, Hochwallner, Linhart, & Pahr, 2015). The level of difficulty depends on their lifestyle, finances, and time spent away from a home where meals can be prepared. College students often leave the comfort of the environment they grew up in and face a steep learning curve on how to effectively self-manage time to best afford to live, take care of their health, and do well in school (Bartuzi, Szamocka, & Ukleja-Sokołowska, 2023).

A study done in a Polish population found that 36.6% of respondents stated that being too busy was the main reason for poor overall diet and about 57.7% subjectively believed they were able to follow a healthy diet. The research showed general knowledge of healthy eating principles was low, and that collaborating with a dietitian is a better way to assess healthy eating. The main symptoms of FS are most commonly gastrointestinal (GI) symptoms like abdominal pain, diarrhea, bloating, nausea, constipation, and heartburn. The most well-known causes of FS are lactose and gluten followed by several types of fruit and vegetables. Properly following an elimination diet provided 95.4% of the participants with a

positive impact on both their quality of life and well-being. For some, expenses were the main challenge, but for others, it was unknowingly consuming the food they should avoid or intentionally choosing to eat the forbidden food(s) and dealing with the symptoms. There remains a problem with the amount of time it takes these people who experience various unpleasant and even life-threatening symptoms to receive a proper diagnosis and then learn the best way(s) to live with this diagnosis (Bartuzi et al., 2023).

There seems to be a strong correlation between disease-specific knowledge and adherence to medical management. Knowledge is a key factor in FA management especially due to the transition into independent allergy management from living with parent(s) and/or other family members. Abiding by medically recommended dietary restrictions is especially important because there can be several short- and long-term side effects such as anaphylaxis, hives, edema of oral cavity, asthma, angioedema, GI symptoms (diarrhea, vomiting, nausea, abdominal pain), lethargy, exercise-induced anaphylaxis, and atopic eczema/dermatitis depending on the type of allergy or restriction required (Muraro, Werfel, Hoffmann-Sommergruber et al., 2014). A study on alcohol consumption in college students with diabetes revealed harmful rates of alcohol consumption and the need for increased focus on educational interventions for college-age chronic illness populations (McLaughlin, Macaulay, & Peterson, 2021). Alcohol also can affect allergic reactions. In some circumstances, alcohol can increase the absorption rate of allergens. Many college students and young adults are more likely to consume allergens when under the influence. If they are not educated about potential consequences and/or advocating for themselves, “partying” can be the most dangerous environment for them. Even without alcohol being involved, food is a huge part of college students’ lives. Campus engagement events attract students by enticing them with food. This leaves those with FA, FS, and ADs to often need to eat first before the event, bring their own food, or wait to eat until the event is over.

Having additional dietary restrictions can increase the chances of food insecurity because these foods are often less convenient, more expensive, and less nutritionally balanced. Allergen-friendly packaged and convenience foods normally cost anywhere from 2 to 3 times as much as non-gluten free food. College students do not always have extra money to spend on the food that they need. There is also not as much spare time to prepare food due to the amount of work from school, clubs, jobs, and hobbies. It is also less common to find allergen-friendly and allergen-free food even though there are currently more options than there used to be. A lot of these options are more processed to be certified allergen-free. The available options are usually snacks and bars instead of well-rounded meals. Eating a well-rounded meal is only common if the student has the time and resources like a kitchen to prepare their meals. It is also more challenging to find food that tastes good, can be taken to go, has variety, and is enjoyable to consume due to the limited options. Improvements should be made for students to better manage FA and reduce stress (Ersig & Williams, 2018).

Patel and colleagues concluded that a multidisciplinary approach could help young adults cope with FA (Patel, Herbert, & Green, 2017). Because few people talk about living with dietary restrictions, college students may feel like they are left to deal with it completely on their own. Often, once students start to verbalize their issues with managing their food restrictions on campus, others will come alongside them to help them get the resources that they need. When students advocate for themselves, improvements are made to better accommodate them (Shaker & Matteson, 2013). Collecting constructive feedback through surveys and interviews with students with FA and sensitivities may help the university administration understand how to improve support services and accommodations.

## 2. Purpose

This is the first study of its kind; the goal was to help fill the gap in the scientific knowledge about college undergraduate and graduate students living with dietary restrictions by surveying and interviewing a diverse population of students at one university in the southern United States. The background research for this study revealed that young adults have a greater risk of dying from anaphylaxis than children. They are also at higher risk of exposure to allergens due to the increased likelihood of being a risktaker (consuming food or beverages anyway due to peer pressure), stigmatization, inconsistent schedules, and wavering availability of food options that are safe, affordable, and accessible. This strengthens the need to further investigate universities that are currently accommodating these people because young adults are still relatively understudied (McLaughlin et al., 2021). There appears to be a gap in the scientific knowledge on how college students are living with medically required dietary restrictions. The results of the survey will help to contribute added information to the literature and provide investigators with a better picture of the experiences of college students with FA and restrictions.

## Objectives & Research Aims

The aim of this survey was to assess how college students, both undergraduate and graduate, at Louisiana State University (LSU) in Baton Rouge, Louisiana manage dietary restrictions resulting from medical diagnosis(es).

The specific aims were to:

- 1) Assess prioritization of adhering to medical dietary restrictions and reading food labels.
- 2) Assess participant perceptions of the ability to eat balanced meals.

## 3. Methods

### 3.1. Study Design

The study was cross-sectional in nature, intended to assess how having dietary restrictions affects the overall quality of life of the undergraduate and graduate

students at LSU and their thoughts and experiences managing their daily diet. Ethical approval was obtained from the LSU AgCenter Institutional Review Board (IRBAG-22-0100) and the study involved no more than minimal risk to the prospective participants.

### 3.2. Study Participants

The participants were college undergraduate and graduate students studying at LSU. The participants had to

- Be 18 years or older.
- Be a graduate or undergraduate student irrespective of major.
- Have dietary restrictions (FAs and/or FSs and/or ADs).
- Have access to a web browser via a computer, tablet, or smartphone.

### 3.3. Data Collection

Data collection took place from January to October 2023. The survey recruitment flyers were distributed around the campus bulletin boards. Instructors and professors, irrespective of the major, were contacted and requested via email to help distribute the survey among their students. Instructors were invited to either post the flyer PDF on the electronic learning system for the course or to screen share during lecture.

### 3.4. Statistical Methods

The survey results were exported to an Excel document and cleaned. The incomplete responses were deleted and analyzed using Statistical Package for Social Sciences (SPSS) version 26. The data was coded, and descriptive statistics were calculated to report the demographics in frequencies and percentages. The means and standard deviations of the sample for prioritizing dietary restrictions, report of reading food labels, and food affordability were reported. Analysis of Variance (ANOVA) and chi-square statistics were used to report differences in how they approach food, focusing on whether they read food labels and if they prioritize their restrictions. The resulting data will be analyzed using SPSS software. Frequencies and percentages will be run to produce a thorough profile of the study sample. ANOVA was used to find differences in various elements of dietary management among the demographic items.

## 4. Results

### 4.1. Sample Demographics

A total of 104 complete responses were included in the final analysis. The mean age of the participants was 19.7 years, with a range of 18 to 26 years. The majority (85.6%) of the participants were female, white (66.3%), and undergraduate students (97.1%). Over 56% were living on campus and 43.2% were off campus. A demographic snapshot of the participants of the study is available ([Table 1](#)). The breakdown of categories of medical dietary restrictions was dominated by those with sensitivities (57.6%).

**Table 1.** Demographics of college students with medical dietary restrictions.

Demographic	Frequency (n)	Percentage (%)
<b>Gender</b>		
Male	13	12.5
Female	89	85.6
Other	2	1.9
<b>Race</b>		
Asian	9	8.6
Black or African American	23	22.1
White	69	66.4
Others	3	2.9
<b>Academic College</b>		
Agriculture	37	35.6
Business	10	9.6
Science	24	23
English	10	9.6
<b>Academic Level</b>		
Freshman	46	44.2
Sophomore	23	22.1
Junior	21	20.2
Senior	11	10.6
Graduate	3	2.9
<b>Housing</b>		
On Campus	59	56.7
Off Campus	45	43.3

## 4.2. Label Reading and GI Symptoms

About 55% of the participants were found to “*always*” read food labels while 18% “*often*” read food labels, 24% “*sometimes*” read food labels, and 3% “*never*” read labels. Looking closer at the sample categorically by type of restriction, those with FS were significantly less likely to read labels ( $p = 0.005$ ) than those with FA. People with FS were found to prioritize their dietary restrictions significantly less often than those with FA and AD ( $p < 0.001$ ) (Table 2). Most students (87.5%) with medical dietary restrictions reported GI symptoms like diarrhea, nausea, bloating, gas, and vomiting when eating food(s) they should be avoiding. GI symptoms were more prevalent in the students with FS vs. FA.

**Table 2.** Label reading frequency and restriction prioritization (N = 104).

	n (%)	Read Food Labels Mean (SD)	p-value	Prioritize Restrictions Mean (SD)	p-value
Food Sensitives	60 (57.6)	2.68 (0.70)		3.00 (1.00)	
Food Allergies	34 (32.6)	3.65 (0.64)	<0.001	3.59 (0.60)	0.005
Auto-immune Diseases	10 (9.5)	3.50 (0.70)		3.60 (0.84)	

### 4.3. Affordability of Balanced Meals

When asked, “*In the last 12 months, did you feel like you could not afford to eat balanced (grains, proteins, fats, fruits, and vegetables) meals?*” only 26.9% indicated that they could afford balanced meals while 46.2% sometimes had affordability issues, and 26.9% frequently could not afford balanced meals. In total, 73% of the participants had financial issues while buying their food. Further, 86.6% had difficulty locating ready-to-eat options that met their nutritional needs, leaving only about 13.5% that could always find food on or near campus.

## 5. Conclusion

Most students (87.5%) with medical dietary restrictions reported GI symptoms, which included diarrhea, nausea, bloating, abdominal pain, gas, and vomiting after eating the food(s) they should be avoiding. Since having GI symptoms was the most frequent way students realized medical dietary restrictions should be followed, it was interesting to find that many students with FS still experienced these symptoms by choice when not reading labels or prioritizing restrictions. These uncomfortable GI symptoms can interrupt college students’ busy schedules causing an increase in stress, embarrassment, money spent on medication to alleviate symptoms, missing class/work, feelings of isolation, hospital visits that interrupt their schedule if severe reactions occur and add an additional strain on their relationships. Some contributing factors for why college students with food sensitivities still consume the foods they should avoid are a limited budget for food, not enough appropriate food options on and near campus, accidentally consuming the restricted food items in meals prepared by other people, not receiving a formal diagnosis and/or help from the medical professionals and lack of education on proper management of diet (Bartuzi et al., 2023). With an increase in GI symptoms a student with undiagnosed sensitivities may choose to try to completely cut out all foods they think are triggering the problem. Without these foods, it causes a lack of intake of the vitamins and minerals they provide and over time may lead to more serious health conditions like vitamin and mineral deficiencies, sub-optimal bone mineralization from lack of calcium, and osteoporosis (Alkalay, 2021). To better support students with medical dietary restrictions, education on how to properly read food labels could be a helpful resource. The campus administration, health professionals, and dining staff should help advocate for their basic dietary needs and the dining facilities around cam-

pus should help students accommodate their special dietary needs including those with food sensitivities. Bringing more awareness to the issue along with being open to students' feedback on how to help accommodate and be inclusive could help decrease the burden these students feel they must carry alone.

### Limitations

The results and findings of the study cannot be generalized to all college students with medical dietary restrictions as it just included students from one university. Not all students on the LSU campus who had FA, FS, and ADs were recruited for the study. The topic of FA, FS, and AD can be sensitive to some participants which may have influenced how they answered the survey. Since the participants completed the survey without any assistance, there might have been instances where they did not interpret the questions correctly or answer truthfully.

## 6. Discussion and Implications

Having dietary restrictions may make college students feel more anxious, stressed, and isolated due to the additional emotional, social, and financial burdens (Patel et al., 2017). An article on "Student and parent perspectives on severe FA at college" revealed that 40% of students did not consistently carry the emergency medication needed to counteract their reactions. Constantly being vigilant to severe FA can lead to chronic stress along with the increased stress that is due to transitioning from home to college (Ersig & Williams, 2018). University retention and graduation rates are affected when appropriate accommodations are not arranged for those with medical dietary restrictions. Students with medical dietary restrictions may choose which college they go to based on the food availability and accommodations. They are often frustrated about having to purchase a meal plan that cannot be fully utilized. College meal plans usually range from \$3000 to \$5500 and can cost up to \$9000 per academic year according to experts and *US News & World Report* (Wood, 2022). Students are often required to live on campus in dorms without a kitchen to cook allergen-friendly meals at their convenience and without cross-contamination. Parents often try to stand up for their children if their accommodation is not adequately provided. It is challenging to pack homemade food for an entire day and even if they do, food safety remains a concern about how to keep food at a safe temperature. Anything that impairs college student's judgments including lack of sleep can put them at greater risk for not prioritizing proper precautions before consuming food (Wood, 2022). Not feeling well and being unable to eat at social events can lead to isolation and an increase in stress and social anxiety often leading to the students just wanting to go home dropping their classes or attending another university where they could be better accommodated.

When studying participants with medical dietary restrictions, it can be challenging to find people to talk about their struggles and provide feedback when free time is already a limiting factor they must face. More affordable and readily available options on and near campus can be helpful to students dealing with



food insecurity. Moreover, clear labeling and safe precautions taken when preparing food while reducing accidental cross-contamination or proper labeling of food(s) is also necessary to minimize the severity of symptoms. Meal plans are expensive on their own, but students with medical dietary restrictions bear the burden of the additional cost of allergen-friendly foods. If proper food options are not available within university premises, they should allow these students to opt out of having to purchase meal plans that they cannot use adequately to meet their nutritional needs. There needs to be additional research to gather more information on how college students are navigating the additional financial burden. If they cannot afford to feed themselves nutritional foods, then these college students have a disadvantage when trying to maintain their overall health. Free food that college students are often enticed or rewarded with rarely accommodates those with dietary restrictions. The increase in stress due to more expensive snacks, ready to go meals, and safe dining options can impact their overall sense of well-being and enjoyment of their college experience.

Future semi-structured interviews will be conducted with this sample of students to allow more time to share additional details about their experiences living with dietary restrictions, their accommodations received, real and perceived challenges, and their suggestions on how the university can better accommodate their needs. Future studies should ideally be conducted at more universities across the US and overseas to help fill in the current knowledge gap and highlight the impact of dietary restrictions in college life. Qualitative research on what changes students expect to see around university dining facilities and grocery stores to better manage their medical dietary restrictions is a major aspect of focus for future work in this area.

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### **Conflicts of Interest**

The authors declare no conflicts of interest regarding the publication of this paper.

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## **Acronyms**

ANOVA: Analysis of Variance

AD: Autoimmune Disease

FA: Food Allergy

FS: Food Sensitivity

GI: Gastrointestinal

SPSS: Statistical Package for Social Sciences