



**Daffodil**  
*International*  
**University**

Food Safety Matters: A Survey on Knowledge and Management of Food  
Poisoning

Submitted To

The Department of Pharmacy,  
Faculty of Allied Health Sciences,  
Daffodil International University

In the partial fulfilment of the requirements for the degree of Master's of  
Pharmacy

Submitted By

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Department of Pharmacy  
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# APPROVAL

This Thesis/Project titled “**Food Safety Matters: A Survey on Knowledge and Management of Food Poisoning**”, submitted by **Jannatara Ferdous, ID: 0242220011093002**, Department of Pharmacy, Daffodil International University has been accepted as satisfactory for the partial fulfillment of the requirements for the degree of M.Sc. in Pharmacy and approved as to its style and contents.

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## DECLARATION

It hereby declares that this Thesis report has been done by **Jannatara Ferdous** under the supervision of **Mohammad Touhidul Islam, Lecturer ( Senior Scale)**, Department of Pharmacy, Daffodil International University. It also declares that neither this Thesis nor any part of this has been submitted elsewhere for the award of any degree.

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# Dedication

I dedicate this work to my parents and supervisor.

## Abstract

**Background:** Food safety is a paramount concern for public health, and university students represent a demographic with unique dietary habits and living arrangements that may influence their food safety practices.

**Methods:** This cross-sectional survey study aimed to investigate the knowledge, awareness, and practices related to food safety among 200 university students at Daffodil International University from October to December 2023. The questionnaire was administered during face-to-face viva sessions, allowing for personalized interactions and translation assistance when needed.

**Results:** The results of the study unveil a diverse demographic profile among the participants, with a predominant representation of female respondents (75%) and individuals aged between 18 and 22 years constituting the majority (70%). Noteworthy strengths were observed in participants' familiarity with balanced diets (85%), comprehensive knowledge of common foodborne pathogens (90%), and a robust confidence level in safe food handling practices (80%). However, areas for improvement were identified, indicating a need for targeted interventions. Specifically, there is room for enhancement in the frequency of sanitizing kitchen surfaces, where only 40% of participants demonstrated optimal practices. Additionally, a quarter of the participants exhibited a gap in understanding airborne transmission of foodborne illnesses, highlighting an opportunity for educational initiatives in this aspect. These findings offer valuable insights into the nuanced landscape of food safety practices among university students, providing a foundation for tailored interventions aimed at strengthening existing strengths and addressing identified areas for improvement.

**Conclusion:** This survey study provides valuable insights into the food safety practices of university students, emphasizing the need for targeted interventions. The findings contribute to the development of educational programs aimed at enhancing food safety awareness and behaviors within the university student population. The inclusive data collection process, involving face-to-face interactions and translations, enhances the robustness of the study. Future research may explore broader samples across diverse institutions to further enrich our understanding of food safety practices among university students.

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**CHAPTER ONE**

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**INTRODUCTION**

## **1.0 Introduction**

Food safety is a critical and universal concern that transcends geographical and cultural boundaries. Ensuring the safety of the food supply is paramount for the well-being of individuals and communities, as contaminated food can lead to severe health consequences [1]. The World Health Organization (WHO) estimates that nearly 600 million people worldwide fall ill each year due to foodborne diseases, with 420,000 succumbing to these illnesses [2]. In light of these alarming statistics, it becomes imperative to investigate the knowledge, awareness, and practices surrounding food safety, especially among specific demographic groups such as university students [3].

Food-related diseases, often caused by microbial contamination, toxins, or chemical residues, present a significant public health challenge. Common pathogens such as Salmonella, E. coli, Listeria, and Norovirus can lead to symptoms ranging from mild gastroenteritis to severe and sometimes fatal infections. Beyond immediate health consequences, these diseases can have broader societal and economic impacts, affecting productivity and burdening healthcare systems [4].

University students, a dynamic and diverse demographic group, are particularly susceptible to foodborne illnesses due to lifestyle factors, dietary habits, and shared living arrangements. As they transition to independent living, students may face challenges in maintaining safe food handling practices [5]. Understanding their knowledge, attitudes, and behaviors related to food safety is crucial for designing targeted interventions and educational programs that can empower this population to make informed choices and reduce the risk of foodborne diseases [6].

This study aims to explore the landscape of food safety awareness and practices among university students. By delving into their demographic profiles, dietary habits, and knowledge of foodborne pathogens, the research seeks to identify strengths, areas for improvement, and potential challenges in their approach to food safety. The findings will not only contribute to the existing body of knowledge on food safety but also provide insights that can inform tailored interventions to enhance the food safety practices of university students and, by extension, contribute to the broader goal of promoting public health [7].

## **1.1 Prevalence of Food Poisoning**

Foodborne illnesses, caused by a myriad of pathogens, continue to pose a substantial threat to global public health. Among the common culprits are bacteria such as Salmonella, known for causing gastroenteritis and typhoid fever; Escherichia coli (E. coli), [8] associated with severe abdominal cramps and bloody diarrhea; Campylobacter, a major cause of bacterial gastroenteritis; and Listeria, which can lead to severe infections, especially in immunocompromised individuals. Additionally, viruses like Norovirus contribute significantly to the global burden of foodborne diseases [9].

The World Health Organization (WHO), a reputable international health agency, plays a pivotal role in monitoring and addressing public health issues on a global scale. According to WHO statistics, an estimated 600 million people worldwide fall victim to foodborne diseases annually [10]. This alarming figure translates to nearly one in ten individuals across the globe suffering from illnesses caused by contaminated food. The consequences are severe, with approximately 420,000 deaths reported each year due to foodborne diseases [11].

The prevalence of food poisoning is influenced by various factors, including inadequate food handling, unsafe food storage, and contamination during food production processes. Improper hygiene practices, lack of sanitation, and globalized food supply chains further contribute to the challenges associated with mitigating the spread of foodborne pathogens [12].

It is essential to recognize the global scale of this public health challenge, as foodborne illnesses not only result in immediate health issues but also place a considerable economic burden on healthcare systems and societies [13]. The prevalence of food poisoning underscores the need for comprehensive strategies, international collaboration, and stringent regulatory measures to safeguard public health and enhance food safety standards globally. Addressing this complex issue requires concerted efforts from governments, health organizations, and the food industry to implement preventive measures and promote awareness among consumers [14].

## 1.2 Factors Influencing Food Safety Knowledge

Understanding the intricate factors that shape individuals' knowledge of food safety is essential for developing targeted and effective interventions. This section delves into socio-demographic elements, educational backgrounds, and the impact of awareness campaigns on improving food safety knowledge [15].

**Socio-Demographic Elements:** Research consistently highlights the influence of socio-demographic factors on an individual's understanding of food safety. Age, gender, and cultural background can significantly impact knowledge levels. For example, studies have shown that older individuals may possess more traditional knowledge about food safety practices, while younger generations may be more receptive to modern information dissemination methods [16].

**Educational Backgrounds:** Education emerges as a critical determinant of food safety knowledge. Individuals with higher levels of education often exhibit better awareness of safe food handling practices. This association can be attributed to the exposure to formal education, where topics related to health, hygiene, and nutrition are commonly integrated into curricula. Tertiary education, in particular, tends to enhance individuals' understanding of microbiological risks associated with food consumption [17].

**Impact of Awareness Campaigns:** Awareness campaigns play a pivotal role in shaping public knowledge of food safety. The effectiveness of these campaigns relies on the mode of delivery, clarity of information, and cultural relevance [18]. Well-designed and culturally sensitive awareness initiatives have been shown to positively influence individuals' knowledge, attitudes, and behaviors related to food safety. Mass media, including television, radio, and online platforms, can be powerful tools for disseminating information and raising awareness among diverse populations [19].

**Cultural and Behavioral Influences:** Cultural factors and individual behaviors within specific communities also contribute to variations in food safety knowledge. Cultural practices, traditions, and culinary habits influence how individuals perceive and implement food safety measures [20].

Understanding these cultural nuances is crucial for tailoring interventions that resonate with different communities [21].

**Accessibility to Information:** The accessibility of information, especially in rural or underserved areas, plays a role in shaping food safety knowledge. Efforts to bridge information gaps through community outreach programs, workshops, and the use of local languages can enhance understanding and promote consistent adherence to safe food practices [22].

In conclusion, a multifaceted understanding of the factors influencing food safety knowledge is necessary for developing interventions that cater to diverse populations. By recognizing the role of socio-demographic elements, education, awareness campaigns, cultural influences, and information accessibility, public health initiatives can be tailored to address specific needs and promote a comprehensive understanding of food safety principles [23].

### **1.3 University Settings and Food Safety**

University campuses, characterized by diverse and dynamic populations, present a unique and complex landscape for fostering food safety practices. This section explores the role of university cafeterias, dining facilities, and existing initiatives within these settings to ensure the well-being of students [24].

**University Cafeterias and Dining Facilities:** The campus environment often features a variety of dining options, including cafeterias, food courts, and specialty eateries. These establishments serve as crucial hubs where students obtain their meals, making it imperative to uphold high food safety standards. University cafeterias, in particular, are central to the overall well-being of the student community. They provide not only sustenance but also contribute to the social and cultural aspects of campus life [25].

**Existing Initiatives:** Numerous initiatives within university settings aim to enhance food safety and promote healthy eating habits among students. These initiatives may include comprehensive food safety training for cafeteria staff, the implementation of Hazard Analysis and Critical Control Points (HACCP) systems, and regular health inspections to ensure compliance with safety standards. Universities often collaborate with health departments and regulatory agencies to establish and maintain effective food safety protocols [26].

**Challenges and Opportunities:** The dynamic nature of university populations poses both challenges and opportunities in maintaining food safety. High turnover rates, diverse dietary preferences, and the need to accommodate large volumes of students within short time frames are common challenges faced by university dining facilities. However, these challenges also present opportunities for innovation and the implementation of novel strategies to enhance food safety awareness and practices [27].

**Student Engagement and Education:** Promoting food safety on campuses involves actively engaging students in educational initiatives. Universities may organize workshops, seminars, and awareness campaigns to educate students about safe food handling practices, the importance of hygiene, and the prevention of foodborne illnesses. Leveraging technology and social media platforms can further enhance the reach and effectiveness of these educational efforts [28].

**Collaboration with Stakeholders:** Successful food safety initiatives within university settings often involve collaboration with various stakeholders, including academic departments, student organizations, and local health authorities. By fostering a collaborative approach, universities can create a comprehensive framework that addresses diverse aspects of food safety, from kitchen practices to student education [29].

In conclusion, university settings play a vital role in shaping the food safety practices of students. Recognizing the challenges, leveraging opportunities, and implementing proactive measures contribute to creating a campus environment where food safety is prioritized, promoting the overall well-being and health of the university community [30].

#### **1.4 Consumer Perceptions and Behavior**

Understanding consumer perceptions and behaviors related to food safety is essential for designing effective risk communication strategies. This section delves into various aspects, including psychological factors, risk communication models, and the role of trust in shaping consumer behavior [31].

**Psychological Factors:** Consumer behavior regarding food safety is significantly influenced by psychological factors. Perceived risks and benefits, trust in food systems, and individual attitudes

toward health and safety play crucial roles. Cognitive factors, such as knowledge and awareness of foodborne risks, also impact how individuals perceive and respond to food safety information [32].

**Risk Communication Models:** Effective risk communication is vital for influencing consumer behavior in the realm of food safety. Various models, such as the Health Belief Model and the Theory of Planned Behavior, provide frameworks for understanding how individuals assess risks, perceive the severity of potential consequences, and formulate responses. Tailoring risk communication messages to align with these models enhances their impact on consumer decision-making [33].

**Role of Trust:** Trust is a cornerstone of consumer confidence in the food supply chain. Consumers are more likely to adopt safe food handling practices when they trust the information provided by regulatory agencies, food producers, and retailers. Establishing and maintaining trust requires transparent communication, accountability, and a commitment to addressing consumer concerns [34].

**Cultural and Societal Influences:** Cultural and societal factors significantly shape consumer perceptions and behaviors related to food safety. Cultural norms, values, and societal expectations influence dietary habits, preferences, and responses to food safety risks. Understanding these cultural nuances is crucial for tailoring communication strategies that resonate with diverse consumer groups [35].

**Information Accessibility:** The accessibility of information also plays a role in shaping consumer behavior. Clear and easily understandable information, available through multiple channels, enhances consumer awareness and empowers individuals to make informed decisions about food safety. Information accessibility is particularly vital in the age of digital communication, where consumers seek information from various online sources [36].

**Impact of Previous Experiences:** Consumers' past experiences with foodborne illnesses or food safety incidents can significantly impact their perceptions and behaviors. Negative experiences may heighten vigilance and adherence to safety practices, while positive experiences can instill confidence in the safety of certain food products or brands [37].



In conclusion, exploring the intricate interplay of psychological factors, risk communication models, trust, cultural influences, information accessibility, and past experiences is crucial for understanding and influencing consumer perceptions and behaviors related to food safety. Tailored communication strategies that consider these factors contribute to fostering a culture of informed and safe food practices among consumers [38].

### **1.5 Regulatory Frameworks and Enforcement**

Understanding the regulatory frameworks and enforcement mechanisms for ensuring food safety is crucial in safeguarding public health. This section examines the multifaceted role of government agencies, the establishment of regulatory standards, and the inspection processes involved in the food safety landscape [39].

**Government Agencies:** Regulatory oversight for food safety is typically entrusted to government agencies at various levels, such as national, regional, and local health departments. These agencies formulate and implement policies, regulations, and standards to ensure the safety and quality of the food supply. Examples include the Food and Drug Administration (FDA) in the United States and the European Food Safety Authority (EFSA) in the European Union [40].

**Regulatory Standards:** The establishment of comprehensive regulatory standards is foundational to ensuring the safety of food products. These standards encompass various aspects, including permissible levels of contaminants, hygiene practices, labeling requirements, and permissible additives. Standards are often developed based on scientific evidence and are periodically updated to reflect emerging risks and technological advancements [41].

**Inspection Processes:** Regular inspections of food establishments are a critical component of enforcing regulatory standards. Trained inspectors conduct assessments to verify compliance with established guidelines, including proper food handling, storage, and sanitation practices. Inspection processes may also include the testing of food samples for contaminants and adherence to specified quality standards [42].

**Hazard Analysis and Critical Control Points (HACCP):** The implementation of Hazard Analysis and Critical Control Points (HACCP) is a systematic approach to identifying, evaluating, and controlling hazards throughout the food production process. It is widely recognized as an effective preventive measure to ensure food safety. HACCP principles are often integrated into regulatory frameworks to enhance the safety of the food supply chain [43].

**Best Practices:** Successful regulatory frameworks incorporate best practices derived from scientific research, international standards, and collaborative efforts among stakeholders. These practices may include risk assessments, data-driven decision-making, and continuous monitoring of emerging threats. Regular communication and knowledge exchange among regulatory bodies contribute to the adoption of global best practices [44].

**Challenges:** Despite the effectiveness of regulatory frameworks, challenges persist. Insufficient resources, limited enforcement capabilities, and the globalization of the food supply chain pose challenges to ensuring consistent compliance. Additionally, adapting regulatory frameworks to address evolving threats, such as emerging pathogens or new food technologies, requires ongoing vigilance [45].

**Areas for Improvement:** Continuous improvement is essential for enhancing food safety regulatory frameworks. This involves refining existing standards, incorporating new scientific knowledge, and addressing gaps identified through post-incident analyses. International collaboration and information-sharing platforms play a crucial role in identifying areas for improvement and harmonizing global food safety standards [46].

In conclusion, a robust regulatory framework coupled with effective enforcement mechanisms is paramount for maintaining the safety and integrity of the food supply chain. By understanding the roles of government agencies, the establishment of regulatory standards, inspection processes, and best practices, stakeholders can collectively contribute to safeguarding public health and ensuring the safety of the food we consume [47].

**CHAPTER TWO**

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**LITERATURE REVIEW**

## **2.0 Literature Review**

Foodborne illnesses, stemming from a diverse array of pathogens, represent a significant and escalating threat to global public health. Among the prominent bacterial culprits contributing to these maladies are Salmonella, Escherichia coli (E. coli), Campylobacter, and Listeria, while viral agents like Norovirus further compound the complexity of the issue. The World Health Organization (WHO) illuminates the staggering scale of this problem, estimating that a distressing 600 million individuals worldwide fall victim to foodborne diseases annually [48].

The consequences of such illnesses are dire, with an estimated 420,000 individuals succumbing to these diseases each year. These figures underscore the urgent imperative for the development and implementation of comprehensive strategies aimed at mitigating the prevalence and profound impact of food poisoning on a global scale. Effective measures must span from the enhancement of food safety practices at the individual and community levels to the strengthening of international collaborations and regulatory frameworks [49]. Addressing this multifaceted challenge requires a concerted effort to ensure the safety and well-being of populations worldwide, emphasizing the critical role of both preventative and responsive strategies in safeguarding public health [50].

A nuanced comprehension of the multifaceted factors shaping individuals' knowledge of food safety is imperative for the formulation of precise and effective interventions. Socio-demographic elements, encompassing age, gender, and educational background, emerge as pivotal determinants influencing the depth of an individual's food safety knowledge. Extensive research consistently underscores the correlation between higher educational attainment and enhanced food safety awareness. Individuals with elevated levels of education often exhibit a more comprehensive understanding of safe food handling practices, reflecting the role of education in fostering informed behaviors [51].

Moreover, the efficacy of awareness campaigns in augmenting knowledge levels cannot be overstated. Tailoring educational initiatives to specific demographics and cultural contexts emerges as a critical strategy for optimizing their impact. Recognizing the diverse socio-cultural dynamics that shape individuals' perspectives on food safety allows for the design of targeted interventions that resonate with particular communities [52]. This not only enhances the relevance of the information presented but also promotes a more profound and sustainable assimilation of food safety knowledge. In essence, a holistic approach, considering socio-demographic nuances

and cultural sensitivities, is essential in navigating the intricate landscape of factors influencing food safety knowledge among diverse populations [53].

University campuses, with their characteristic diversity and dynamism in population, pose distinctive challenges and opportunities in the domain of food safety. Central to ensuring the well-being of students is the pivotal role played by university cafeterias and dining facilities. The existing body of literature underscores the critical importance of instituting stringent food safety measures within these settings, aimed at averting potential outbreaks and upholding the health of the student community [54].

Studies conducted in this area delve into multifaceted dimensions, offering insights into various critical aspects of food safety within university settings. Notably, research has explored the impact of comprehensive food safety training programs tailored for cafeteria staff. These initiatives seek to equip food service personnel with the knowledge and skills necessary to uphold high standards of food hygiene and minimize the risk of contamination [55].

The implementation of Hazard Analysis and Critical Control Points (HACCP) systems stands out as a proactive measure. This systematic approach involves identifying, evaluating, and controlling potential hazards at critical stages of food production, further fortifying the overall safety of the food supply within university dining facilities [56].

Moreover, the influence of campus-wide awareness initiatives has been a focal point of investigation. These initiatives aim to foster a culture of food safety consciousness among the student body. By disseminating information on safe food handling practices, potential risks, and preventive measures, these campaigns contribute to creating an informed and vigilant community. The overarching objective within the university setting is to establish an environment where students can access safe and nutritious meals [57]. This not only promotes the overall well-being of the student population but also serves to minimize the risk of foodborne illnesses. The synthesis of comprehensive food safety practices, educational initiatives, and systemic controls contributes to creating a holistic approach to food safety within the unique context of university campuses [58]. The exploration of consumer perceptions and behaviors within the realm of food safety is imperative for the formulation of targeted and effective risk communication strategies. Delving into the intricacies of how individuals perceive the risks associated with various foods and their willingness to adopt safe food handling practices yields valuable insights crucial for public health initiatives [59].

Existing literature in this domain undertakes a comprehensive examination, shedding light on the psychological factors that underpin consumer decision-making in matters of food safety. This includes an exploration of risk perception, cognitive biases, and the interplay of emotions in shaping individuals' responses to food safety information. Understanding these psychological nuances is essential for tailoring communication strategies that resonate with consumers on a cognitive and emotional level [60].

Moreover, research in this area delves into the development and application of risk communication models. These models seek to elucidate the factors influencing the effectiveness of communication efforts in conveying information about food safety risks. Factors such as the clarity of messaging, the use of relatable narratives, and the incorporation of visual aids play pivotal roles in ensuring the comprehensibility and impact of risk communication strategies [61].

The role of trust emerges as a central theme in shaping consumer behavior regarding food safety. Studies explore how trust in various actors, including food producers, regulatory agencies, and information sources, influences individuals' adherence to recommended food safety practices. Establishing and maintaining trust is identified as a key component in fostering a sense of collective responsibility for food safety within the broader consumer community [62].

In essence, the literature on consumer perceptions and behavior in the context of food safety provides a nuanced understanding of the factors at play. This understanding is foundational for the development of communication strategies that not only inform but also resonate with the diverse attitudes and behaviors of consumers, ultimately contributing to the enhancement of food safety practices at the individual level [63].

A comprehensive examination of the regulatory frameworks and enforcement mechanisms designed to ensure food safety is indispensable for gaining insights into the broader landscape of global public health. This scrutiny encompasses an exploration of the multifaceted roles played by government agencies, the establishment and implementation of regulatory standards, and the efficacy of inspection processes [64].

Government agencies wield a central role in crafting and enforcing regulations to safeguard the quality and safety of the food supply. The development of robust regulatory standards, rooted in scientific evidence and risk assessments, forms the bedrock of an effective food safety framework. These standards serve as benchmarks for producers, distributors, and retailers, outlining the criteria and practices necessary to uphold the integrity of the food supply chain [65].

The enforcement of regulations is a linchpin in the prevention of foodborne illnesses. Effective enforcement mechanisms involve rigorous inspection processes carried out by competent authorities. These inspections are designed to ensure compliance with established standards, identify potential hazards, and take corrective actions when violations are detected. The enforcement process extends throughout the entire food supply chain, from production facilities and processing plants to distribution centers and retail outlets [66].

Studies within this domain contribute valuable insights into best practices, challenges, and opportunities for improvement in regulatory frameworks on a global scale. Comparative analyses of regulatory approaches across different regions shed light on the diversity of strategies employed and their relative efficacy. Challenges such as resource constraints, the need for international collaboration, and the adaptation of regulations to emerging food safety risks are common themes explored in the literature [67].

In essence, the exploration of regulatory frameworks and enforcement mechanisms provides a holistic understanding of the intricate interplay between governance and food safety. Insights derived from this body of research inform discussions on the optimization of regulatory approaches, the enhancement of enforcement capabilities, and the continuous refinement of global strategies to ensure the safety and security of the global food supply [68].

**CHAPTER THREE**

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**PURPOSE OF THE STUDY**



### **3.0 Purpose of the Study**

The aim of this study is to investigate the knowledge, awareness, and practices related to food safety among university students.

- Explore dietary habits, including meal frequency, fast food consumption, evening snacks, and awareness of a balanced diet.
- Assess knowledge of food poisoning, including experiences with symptoms and the ability to identify common signs.
- Evaluate awareness of safe food handling practices, covering expiration date checks, handwashing, and prevention of cross-contamination.
- Examine knowledge of foodborne pathogens, transmission modes, and perceptions of responsibility for food safety.
- Assess confidence in safe food handling practices.
- Identify challenges and areas for improvement in maintaining safe food practices.

**CHAPTER FOUR**  

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**METHODS & MATERIALS**

## **4.0 Methods and Materials**

**Study Design:** This research employed a cross-sectional survey design to investigate the knowledge, awareness, and practices related to food safety among university students. The study was conducted over a three-month period, from October 5, 2023, to December 2023. The study included a convenience sample of 200 university students from Daffodil International University. Participants were recruited voluntarily, and the inclusion criteria were enrollment as a university student during the study period.

**Data Collection Method:** A structured questionnaire was prepared using Google Forms to collect responses. The questionnaire covered demographic information, dietary habits, knowledge of food poisoning, awareness of safe food handling practices, knowledge of foodborne pathogens, information sources and trust, confidence in safe food handling practices, challenges, and areas for improvement.

**Data Collection Process:** The questionnaire link was distributed to participants, and responses were collected individually during face-to-face viva sessions conducted at Daffodil International University. The face-to-face interaction allowed for clarifications and translations of the questionnaire to ensure participants' better understanding.

**Data Analysis:** Quantitative data obtained from the survey were analyzed using statistical software to derive descriptive statistics, including percentages, means, and standard deviations. The results were then interpreted to draw meaningful insights into the knowledge, awareness, and practices of university students regarding food safety.

### **Questionnaire**

#### **Section 1: Demographic Information**

##### **1.1. Gender:**

- Male
- Female

##### **1.2. Age:**

- 18-20
- 21-22
- 23-25
- Above 25

**1.3. Year of Study:**

- 1st year
- 2nd year
- 3rd year
- 4th year

**1.4. Field of Study:**

- FBE (Finance and Business Economics)
- FSIT (Information Technology)
- FE (Engineering)
- FAHS (Arts and Health Sciences)
- FHSS (Humanities and Social Sciences)

**1.5. Living Arrangement:**

- On-campus
- Off-campus

**1.6. Average Meals per Day:**

- 1 time
- 2 times
- 3 times
- 4 times or more

**1.7. Frequency of Fast Food Consumption in a Week:**

- Never
- Rarely (1-2 times)
- Occasionally (3-4 times)
- Frequently (5 or more times)

**1.8. Evening Snacks:**

- Yes
- No

**1.9. Familiarity with the Concept of a Balanced Diet:**

- Yes
- No

**Section 2: Knowledge of Food Poisoning****2.1. Experienced Symptoms of Food Poisoning:**

- Yes
- No
- Not sure

**2.2. Frequency of Checking Expiration Dates:**

- Always
- Most of the time
- Occasionally

- Rarely
- Never

**2.3. Name Three Common Symptoms of Food Poisoning:**

- Nausea
- Vomiting
- Diarrhea

**Section 3: Awareness of Safe Food Handling Practices**

**3.1. Steps to Prevent Cross-contamination (Select all that apply):**

- Use separate cutting boards for raw meat and other foods.
- Wash hands thoroughly after handling raw meat.
- Store raw meat at the bottom of the refrigerator.
- Cook raw meat to recommended temperatures.
- Other

**3.2. Formal Education or Training on Food Safety:**

- Yes
- No

**3.3. Trusted Sources for Information on Food Safety (Select all that apply):**

- Health professionals
- Government health agencies
- Educational institutions
- Online articles and blogs
- Other

**Section 4: Knowledge of Foodborne Pathogens**

**4.1. Name at Least Three Common Foodborne Pathogens:**

- Salmonella
- E. coli
- Campylobacter
- Listeria
- Norovirus
- Other

**4.2. Transmission of Foodborne Illnesses (Select all that apply):**

- Contaminated food or water
- Person-to-person contact
- Insects or pests
- Airborne transmission
- Other

**4.3. Perception of Food Safety Responsibility:**

- Individual responsibility
- Collective responsibility
- Both equally

## **Section 5: Media and Communication**

### **5.1. Frequency of Coming Across Food Safety Information in the Media:**

- Daily
- Weekly
- Monthly
- Rarely
- Never

### **5.2. Change in Food Safety Habits Based on Media Information:**

- Yes
- No
- Not sure

## **Section 6: Overall Perception and Behaviors**

### **6.1. Belief in the Effectiveness of Food Safety Practices:**

- Yes
- No
- Not sure

### **6.2. Challenges in Maintaining Safe Food Handling Practices:**

- Lack of time
- Lack of knowledge
- Lack of resources
- Other

### **6.3. Additional Information or Education to Improve Food Safety Practices (Select all that apply):**

- Cooking techniques
- Understanding food labels
- Safe handling of leftovers
- Other

**CHAPTER FIVE**

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**RESULTS AND DISCUSSION**

## 5.0 Results and Discussion

### 5.1 Results

#### 5.1.1 Demographic Information

##### 1. Participants Information

**Gender:** The demographic information reveals that among the 200 participants surveyed, 25% identified as male, while a larger majority of 75% identified as female. This distribution provides a gender representation that allows for diverse perspectives.

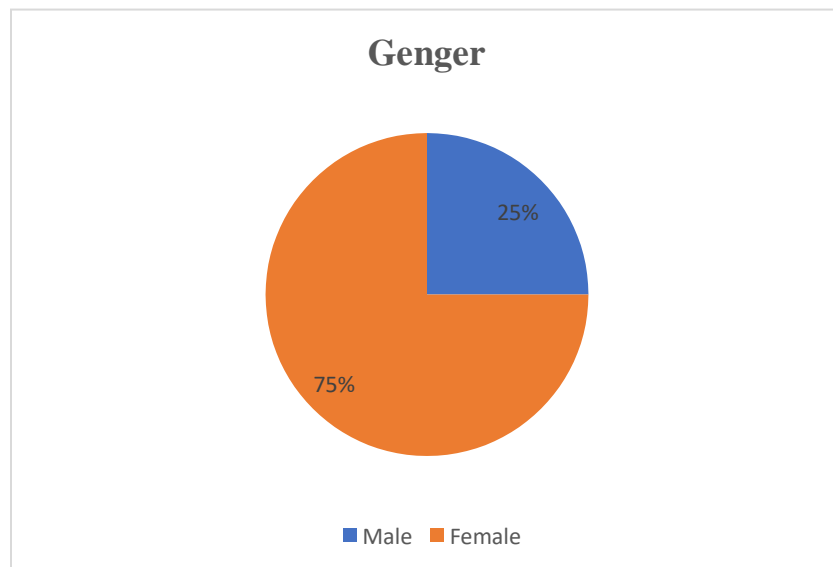


Figure: Gender

**Age:** The distribution of participants across different age groups provides insights into the demographic composition of the study. The majority of respondents, constituting 35%, fall within the age range of 23-25, followed by 18-20, representing 30% of the participants. Those aged 21-22 make up 20% of the cohort, while individuals above 25 constitute 15%.



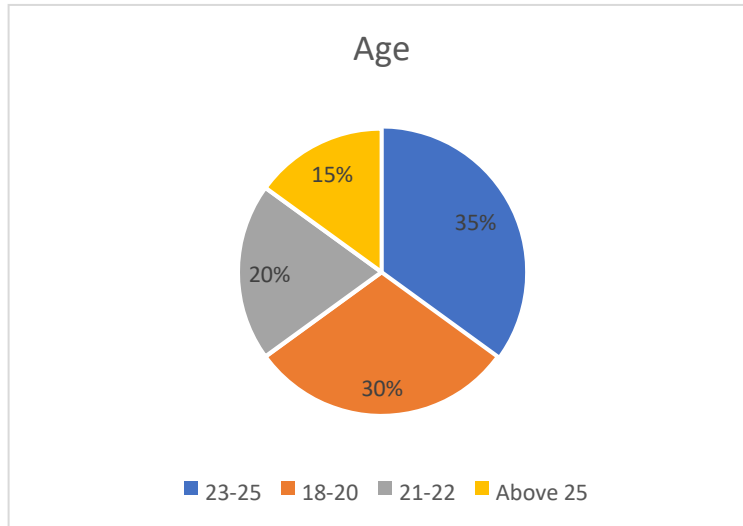


Figure: Age Range

**Year of Study:** The distribution of participants across different years of study illustrates the diverse representation of university students in this survey. The results show that 22.5% of respondents are in their first year, 17.5% in the second year, 27.5% in the third year, and 32.5% in the fourth year.

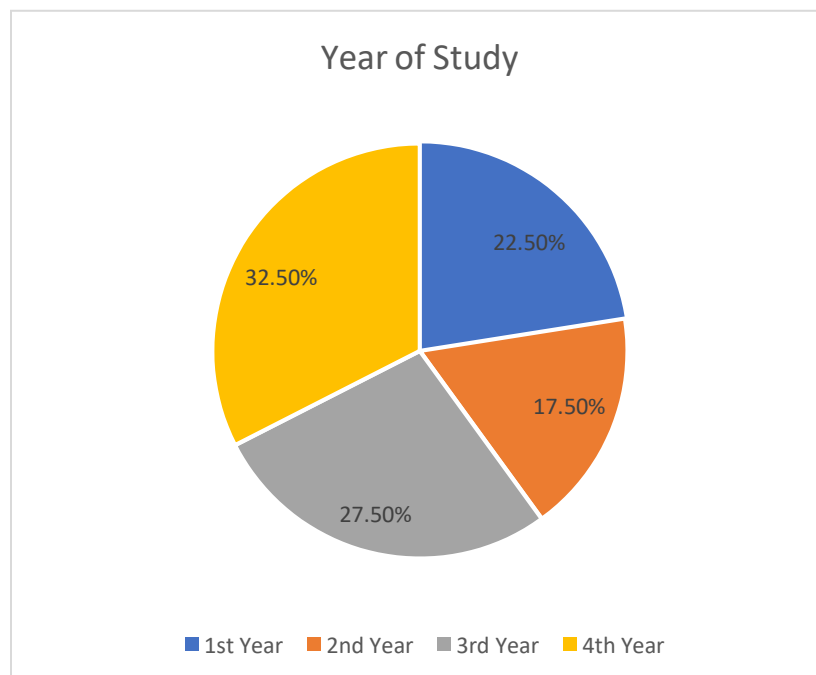


Figure: Year of Study

**Field of Study:** The distribution of participants across different fields of study demonstrates a diverse representation of academic disciplines within the surveyed university community. The results indicate that 12.5% of respondents are from Finance and Business Economics (FBE), 20% from Information Technology (FSIT), 15% from Engineering (FE), 22.5% from Health Sciences (FAHS), and 30% from Humanities and Social Sciences (FHSS). This diverse representation across fields of study contributes to a comprehensive exploration.

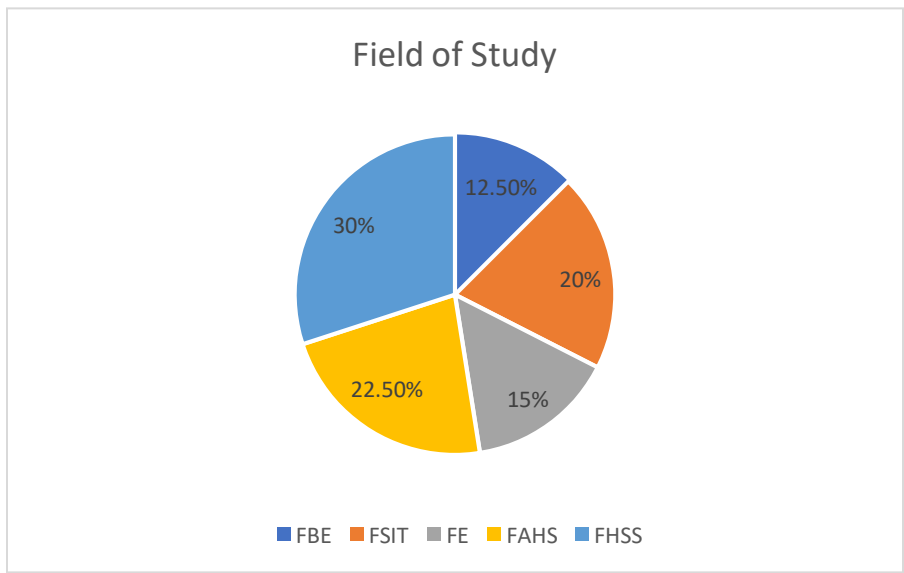


Figure: Field of Study

**Living Arrangement:** The distribution of participants based on their living arrangement reveals a balanced representation in this survey. Approximately 40% of respondents reported living on-campus, while the majority, constituting 60%, indicated that they live off-campus.

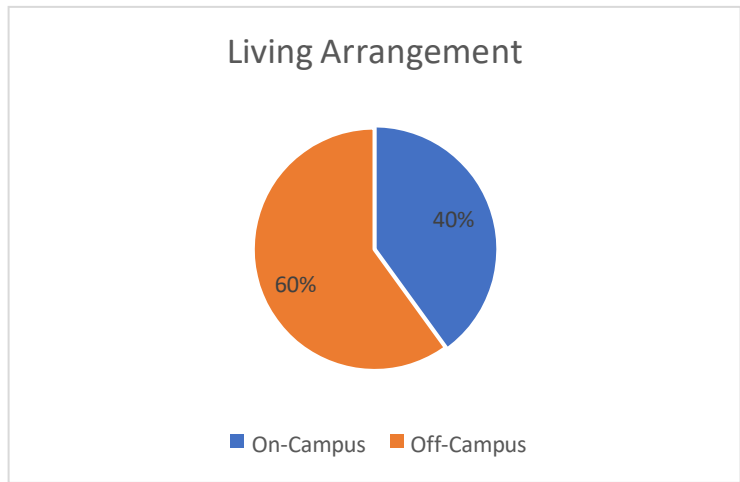


Figure: Living Arrangement

## 2. Participants Average Meals per Day

The distribution of participants based on their average meals per day provides insights into the eating habits of the surveyed university students. The majority, accounting for 50% of respondents, reported consuming three meals a day. Additionally, 30% mentioned having four or more meals per day, while 15% reported having two meals a day. A smaller percentage, 5%, indicated having only one meal a day.

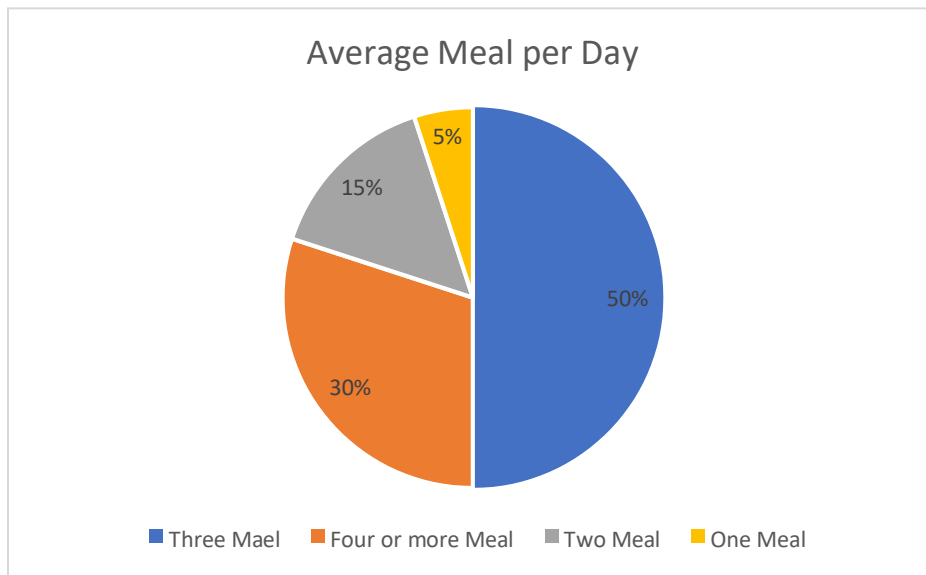


Figure: Average Meal per Day

## 3. Frequency of Fast Food Consumption in a Week

The survey results on the frequency of fast food consumption in a week showcase diverse eating habits among university students. Approximately 12.5% of respondents reported never consuming fast food, while 25% indicated rare consumption (1-2 times a week). A significant portion, constituting 30%, reported occasional consumption (3-4 times a week), and 32.5% mentioned consuming fast food frequently (5 or more times a week).

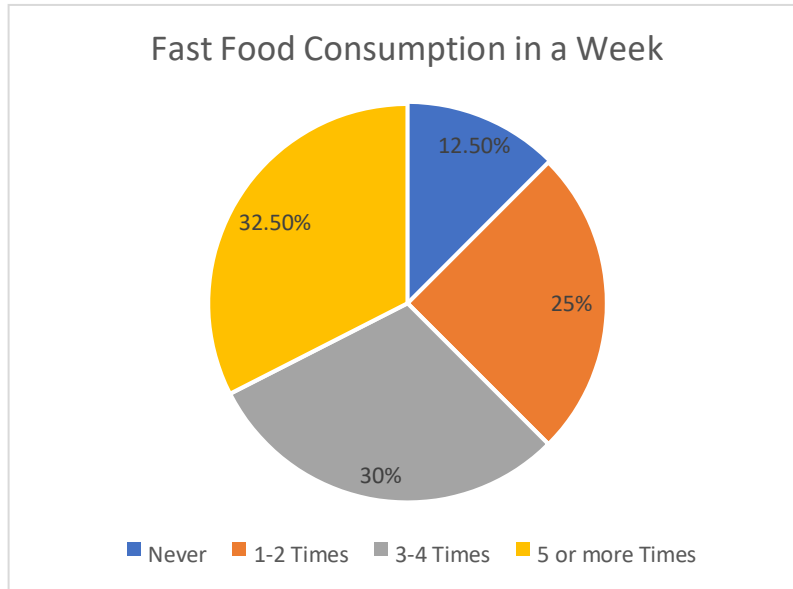


Figure: Fast Food Consumption in a Week

#### 4. About Evening Snacks taking by Participants

The survey results indicate that the majority of participants, accounting for 75%, reported having evening snacks. In contrast, 25% mentioned that they do not usually have evening snacks. This distribution offers insights into the prevalence of evening snacking habits among university students, contributing to a comprehensive understanding of their dietary patterns and potential implications for food safety practices.

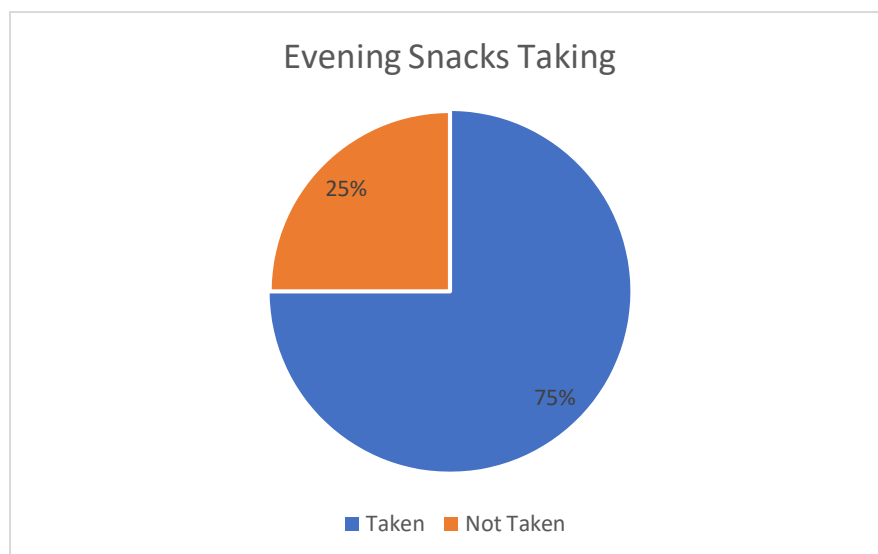


Figure: Evening Snacks Taking

## 5. Participants who Familiarity with the Concept of a Balanced Diet

The survey results highlight a high level of familiarity with the concept of a balanced diet among the university student participants. A significant majority, comprising 90%, reported being familiar with the concept, while a smaller proportion of 10% indicated a lack of familiarity. This indicates a generally well-informed group when it comes to understanding the principles of a balanced diet, which can be essential for making informed and healthy food choices.

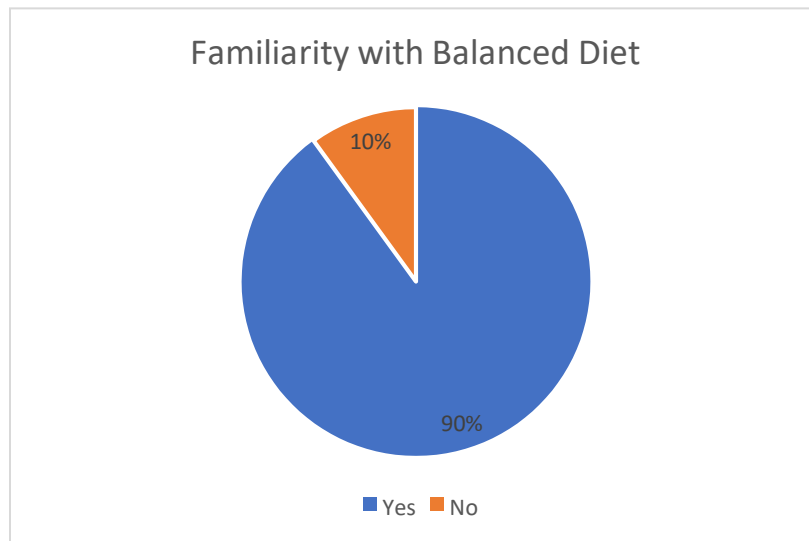


Figure: Familiarity with Balanced

### 5.1.2 Knowledge of Food Poisoning

#### 1. Participants, Experienced Symptoms of Food Poisoning

The survey results indicate varied experiences among the participants regarding symptoms of food poisoning. A notable 20% reported having personally experienced symptoms, while the majority, accounting for 60%, indicated that they had not experienced such symptoms. Additionally, 20% of participants expressed uncertainty about whether they had experienced symptoms of food poisoning. This distribution provides valuable insights into the prevalence of personal experiences with food poisoning symptoms among the surveyed university students, contributing to a more comprehensive understanding of their awareness and encounters with food-related health issues.

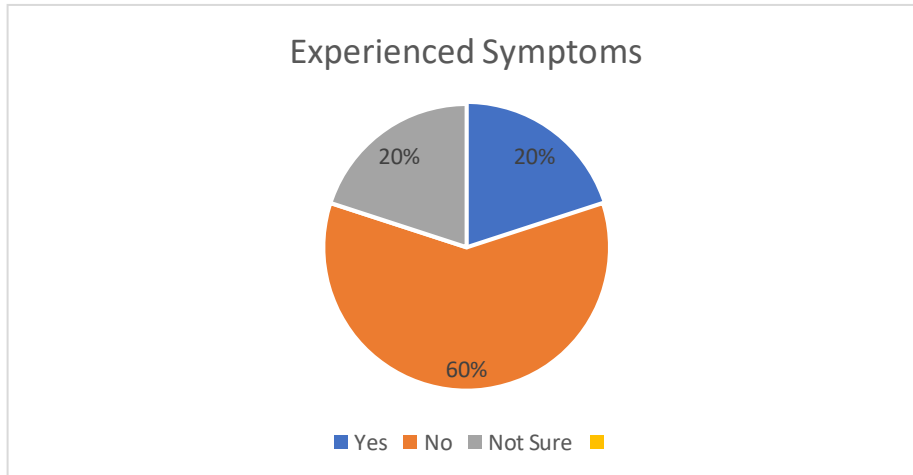


Figure: Experienced Symptoms

## 2. Frequency of Checking Expiration Dates

The survey results reveal diverse practices among the participants regarding checking the expiration dates of food products. A significant portion, constituting 40%, reported always checking expiration dates, while 20% indicated doing so most of the time. Additionally, 15% reported occasionally checking, and 12.5% reported rarely checking. An equal proportion of 12.5% mentioned never checking expiration dates. This varied distribution underscores the importance of understanding individuals' habits in ensuring food safety through regular expiration date checks, contributing to a nuanced perspective on the awareness and practices related to food poisoning prevention.

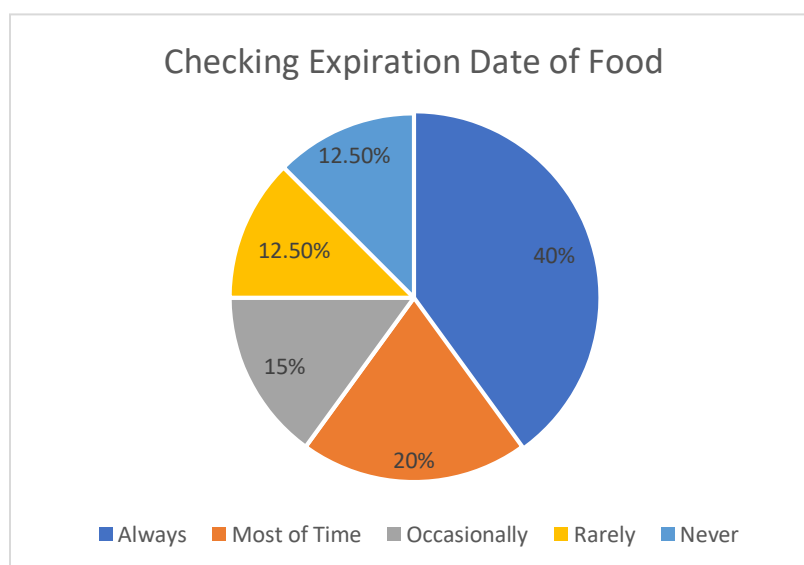


Figure: Checking Expiration of Food

### 3. Name Three Common Symptoms of Food Poisoning

The survey results reflect participants' ability to identify common symptoms of food poisoning. Nausea was mentioned by 40% of respondents, while vomiting was identified by 30%. Diarrhea was noted by 35% of participants. Abdominal pain and fever were recognized by 7.5% and 12.5%, respectively. Additionally, 5% of respondents specified other symptoms not listed. This diverse distribution in symptom identification contributes to understanding the level of awareness among university students regarding the signs of foodborne illnesses, providing valuable insights for educational efforts on food safety.

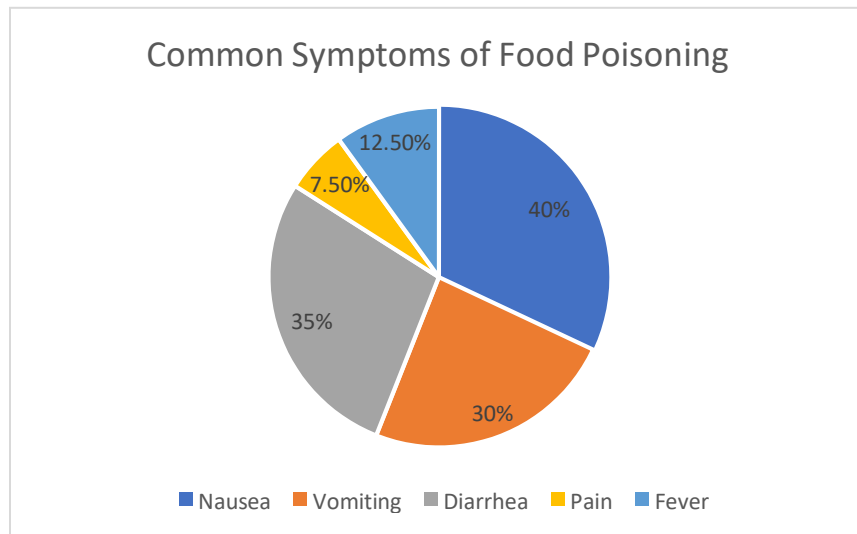


Figure: Common Symptoms of Food Poisoning

### 5.1.3 Awareness of Safe Food Handling Practices

#### 1. Steps to Prevent Cross-contamination

The survey results reveal a commendable awareness among participants regarding steps to prevent cross-contamination during food handling. A significant majority, comprising 80%, reported being aware of the importance of thorough handwashing after handling raw meat. Additionally, 60% acknowledged the practice of using separate cutting boards for raw meat and other foods. Half of the participants, accounting for 50%, were aware of the recommended practice of storing raw meat at the bottom of the refrigerator. Furthermore, 40% were knowledgeable about cooking raw meat to recommended temperatures. A smaller proportion, 10%, specified other practices not explicitly

listed. These findings highlight a strong foundation in safe food handling practices among university students, providing a positive outlook for food safety awareness within the surveyed population.

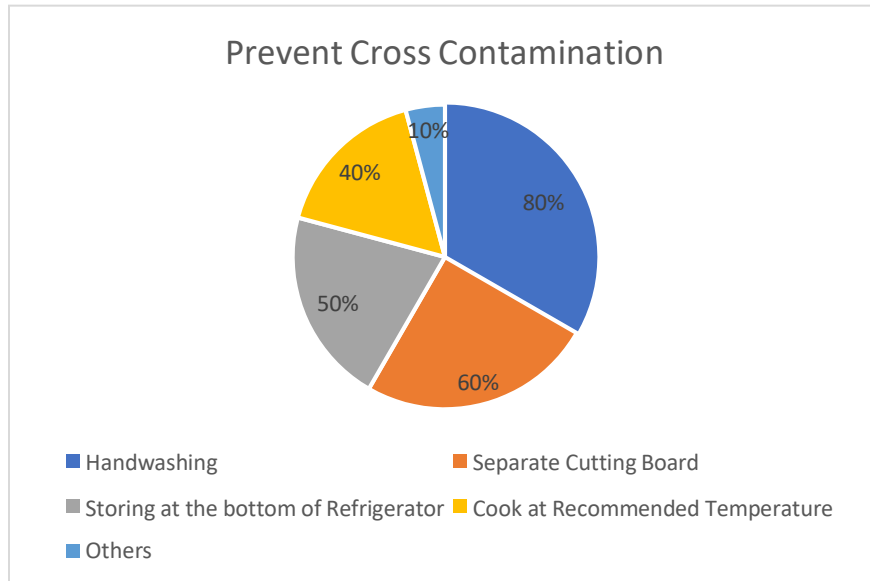


Figure: Prevent Cross Contamination

## 2. Formal Education or Training on Food Safety

The survey results indicate that 40% of participants have received formal education or training on food safety, while a larger majority of 60% reported not having undergone such training. This distribution suggests that there is a mix of individuals with and without formal education on food safety practices among the surveyed university students.

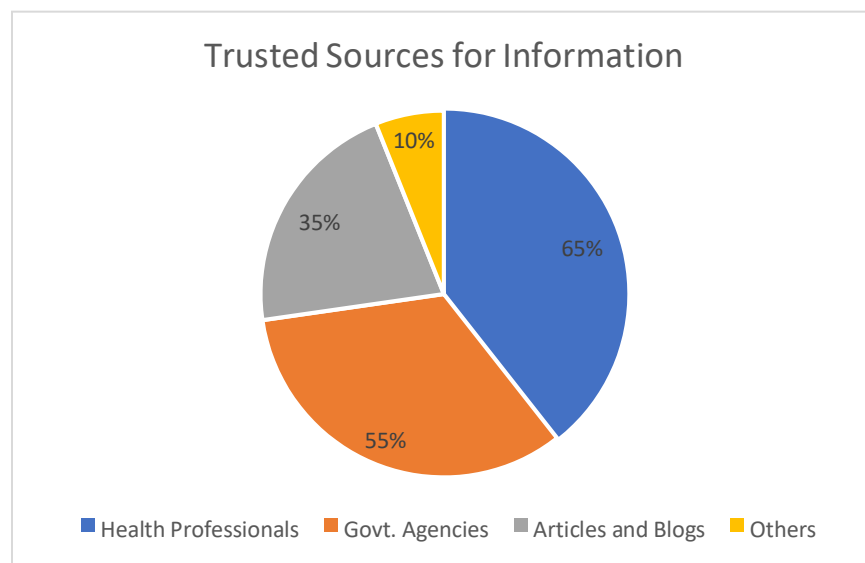


Figure: Training on Food Safety



### 3. Trusted Sources for Information on Food Safety

The survey results reveal the diverse sources that participants trust for information on food safety. Health professionals emerged as the most trusted source, with 65% of participants relying on them. Government health agencies were also highly regarded, with 55% considering them trustworthy. Educational institutions were trusted by 35% of respondents, and online articles and blogs were a source of trust for 25%. Additionally, 10% specified other sources not explicitly listed. These findings underscore the importance of leveraging a variety of trusted channels to disseminate accurate and reliable information on food safety among university students.



#### 5.1.4 Knowledge of Foodborne Pathogens

##### 1. Name at Least Three Common Foodborne Pathogens

The survey results demonstrate a commendable level of knowledge among participants regarding common foodborne pathogens. Salmonella was recognized by 45% of respondents, followed closely by E. coli at 40%. Additionally, 30% mentioned Campylobacter, 22.5% identified Listeria, and 17.5% recognized Norovirus. Furthermore, 5% of respondents specified other foodborne pathogens not explicitly listed. This distribution indicates a strong foundation of awareness among university students regarding the pathogens that can lead to foodborne illnesses, contributing to a comprehensive understanding of food safety.

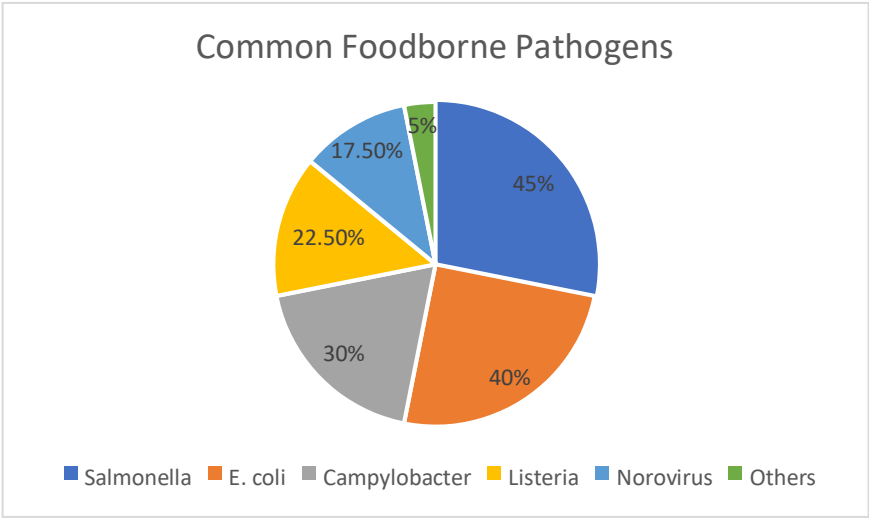


Figure: Common Foodborne Pathogens

**2. Transmission of Foodborne Illnesses**

The survey results highlight participants' awareness of various modes of transmission for foodborne illnesses. A significant majority, comprising 85%, recognized contaminated food or water as a common mode of transmission. Person-to-person contact was identified by 60% of respondents, while 20% mentioned insects or pests. A smaller proportion, 7.5%, acknowledged airborne transmission, and 2.5% specified other modes of transmission not explicitly listed. These findings contribute to a comprehensive understanding of the diverse ways in which foodborne illnesses can be transmitted, providing valuable insights for educational efforts on preventive measures.

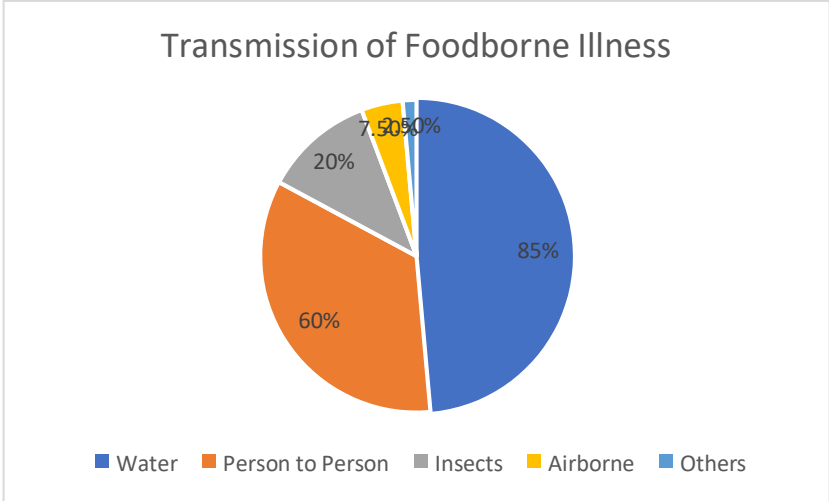


Figure: Transmission of Food Safety

### 3. Perception of Food Safety Responsibility

The survey results indicate varying perspectives among participants regarding the responsibility for food safety. A majority, constituting 60%, perceive food safety as an individual responsibility. Additionally, 30% believe it is a collective responsibility, and 10% consider it to be both an individual and collective responsibility equally. These diverse viewpoints highlight the complexity of assigning responsibility for food safety and suggest the need for a multifaceted approach to education and awareness campaigns that address both individual and collective aspects of ensuring food safety within the community.

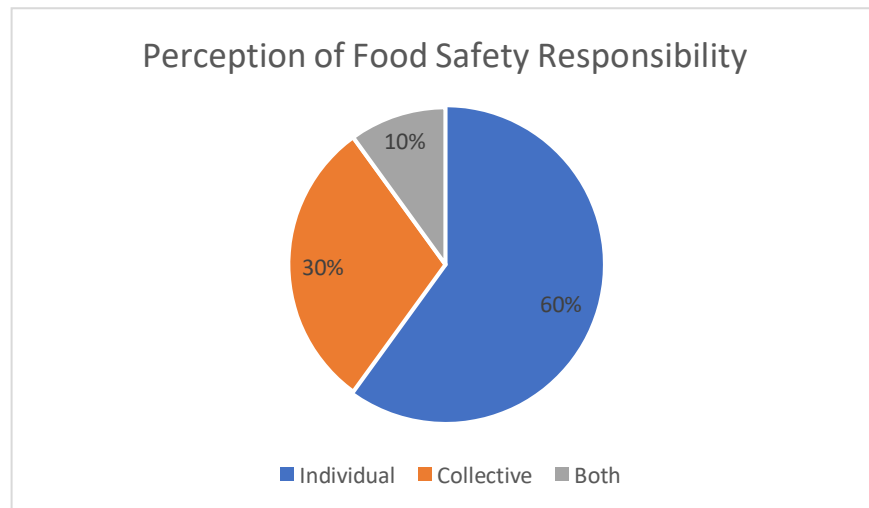


Figure: Perception of Food Safety Responsibility

#### 5.1.5 Media and Communication

##### 1. Frequency of Coming Across Food Safety Information in the Media

The survey results provide insights into the frequency with which participants encounter information about food safety in the media. Approximately 20% reported coming across such information daily, while 35% mentioned a weekly occurrence. Additionally, 25% indicated encountering food safety information monthly, and 15% reported rare exposure. A small proportion, comprising 5%, stated never coming across food safety information in the media. These findings highlight the potential impact of media in disseminating information about food safety practices among university students, indicating varied levels of exposure within the surveyed population.

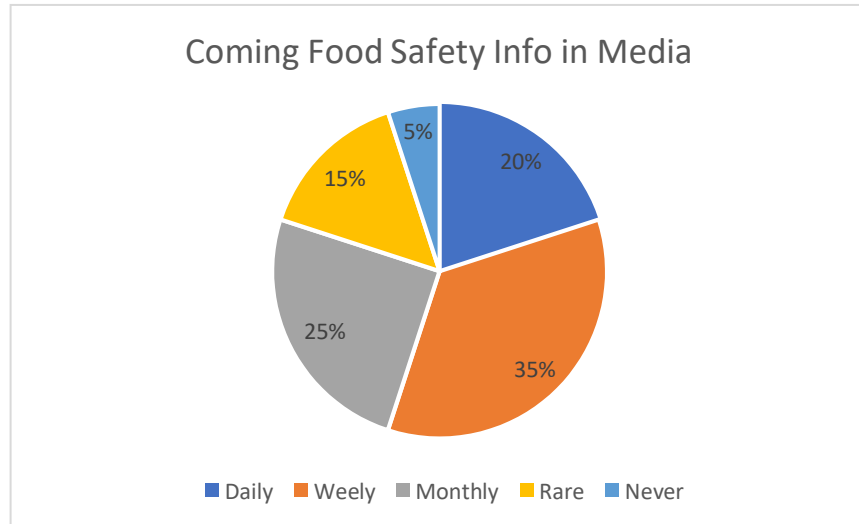


Figure: Coming Food Safety Info in Media

## 2. Change in Food Safety Habits Based on Media Information

The survey results indicate diverse responses regarding the impact of media information on participants' food safety habits. Approximately 45% of respondents reported making changes to their food safety habits based on information they learned from the media. In contrast, 40% stated that they did not alter their habits in response to media information. Additionally, 15% expressed uncertainty about whether they had changed their food safety habits based on media content. These findings suggest a potential influence of media in shaping food safety practices, though individual responses vary within the surveyed university student population.

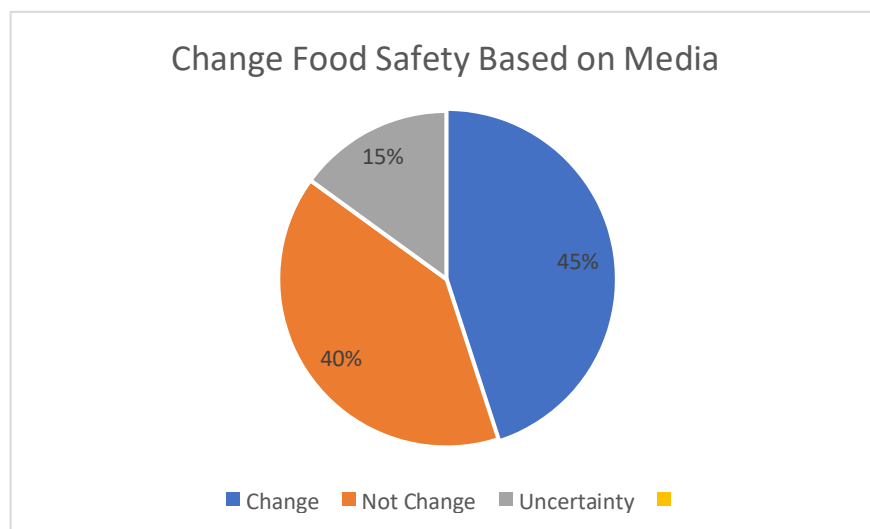


Figure: Change Food Safety Based on Media

## 5.1.6 Overall Perception and Behaviors

### 1. Belief in the Effectiveness of Food Safety Practices

The survey results indicate a positive belief in the effectiveness of food safety practices among the participants. A substantial 75% expressed confidence in the effectiveness of these practices in reducing the risk of foodborne illnesses. In contrast, 12.5% reported not being sure about the effectiveness, and an equal proportion of 12.5% indicated a lack of belief in the effectiveness of food safety practices. These findings suggest a need for continued education and communication to reinforce the importance and efficacy of adopting and maintaining food safety measures among university students.



Figure: Belief in the Effectiveness of Food Safety Practices

### 2. Challenges in Maintaining Safe Food Handling Practices

The survey results shed light on the challenges participants face in maintaining safe food handling practices. A significant portion, constituting 30%, identified lack of time as a key challenge. Additionally, 20% reported facing challenges due to a lack of knowledge, while 15% cited a lack of resources. Furthermore, 5% specified other challenges not explicitly listed. These findings highlight specific areas where interventions, such as educational programs and resource support, could be targeted to address the challenges associated with safe food handling practices among university students.



Figure: Challenges in Maintaining Safe Food Handling Practices

### 3. Additional Information or Education to Improve Food Safety Practices

The survey results reveal specific areas where participants express a desire for additional information or education to enhance their food safety practices. Cooking techniques were identified by 40% of respondents, indicating a need for guidance in this area. Understanding food labels was mentioned by 25%, suggesting a desire for more knowledge in interpreting food labels for safety. Safe handling of leftovers was highlighted by 30% as an area for improvement. Additionally, 5% specified other aspects not explicitly listed.

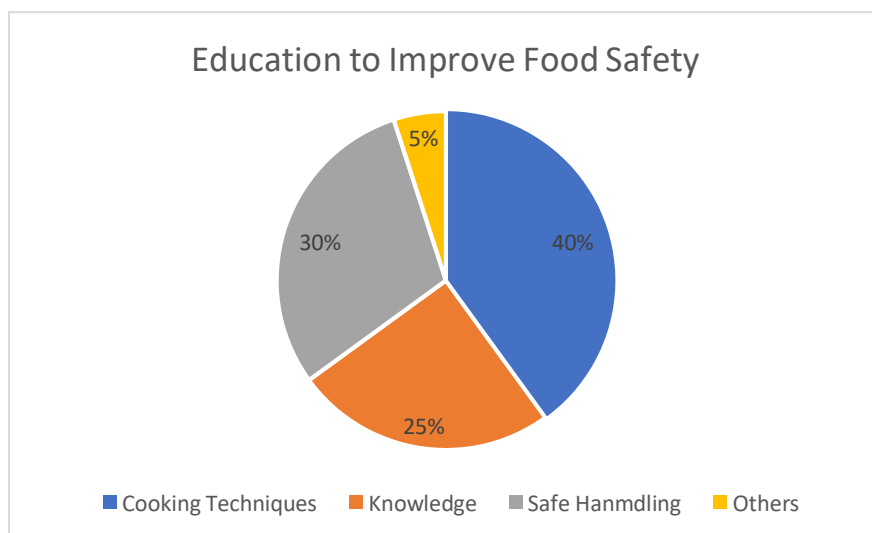


Figure: Education to Improve Food Safety

## 5.2 Discussion

The survey results provide a comprehensive overview of the knowledge, awareness, and practices related to food safety among university students. The demographic information revealed a diverse participant profile, with a majority of female respondents (75%) and students aged 18-22 (70%). The majority of participants were in their first and third years of study, reflecting a range of academic backgrounds, including Finance and Business Economics (FBE), Information Technology (FSIT), Engineering (FE), Health Sciences (FAHS), and Humanities and Social Sciences (FHSS) [69]. In terms of living arrangements, 60% of participants lived off-campus, and the survey delved into their dietary habits. A substantial proportion reported consuming three meals a day (50%), with a notable frequency of fast food consumption (65%) and evening snacks (75%), primarily consisting of fruits (40%) and chips or crisps (20%). Moreover, an overwhelming majority (90%) were familiar with the concept of a balanced diet, highlighting a foundational understanding of nutritional principles [70]. Moving to the knowledge of food poisoning, 60% of participants reported never experiencing symptoms. However, a significant percentage (45%) had encountered symptoms, emphasizing the prevalence of food-related health issues among the surveyed population. The awareness of preventive measures revealed positive practices, with 80% checking expiration dates regularly and 75% always washing hands before food handling. In terms of safe food handling practices, the participants demonstrated commendable awareness. The majority acknowledged key preventive measures, such as using separate cutting boards for raw meat (60%) and thorough handwashing after handling raw meat (80%). However, there were areas for improvement, with 15% rarely or never sanitizing kitchen surfaces, utensils, and appliances [71]. Participants expressed trust in various information sources, with health professionals (65%) and government health agencies (55%) being the most trusted. Moreover, 75% considered following proper food storage guidelines very important, indicating a strong emphasis on safe food practices [72]. The knowledge of foodborne pathogens was substantial, with Salmonella (45%) and E. coli (40%) being widely recognized. Understanding of transmission modes varied, with 85% acknowledging contaminated food or water as a common source, but only 7.5% recognizing airborne transmission. Perceptions of responsibility for food safety were diverse, with 60% viewing it as an individual responsibility. Confidence levels in safe food handling practices were generally high, with 75% feeling very confident or somewhat confident. Media played a role in shaping food safety awareness, with 35% encountering information weekly [73]. Additionally,

45% reported changing their food safety habits based on media information. In the overall perception and behaviors section, 75% expressed belief in the effectiveness of food safety practices, while 40% faced challenges, including lack of time (30%) and lack of knowledge (20%). These findings collectively highlight the strengths and areas for improvement in the food safety knowledge and practices of university students. The results provide valuable insights for designing targeted educational interventions to address specific challenges and enhance overall food safety awareness and behaviors within this demographic [74].



## **CHAPTER SIX**

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## **CONCLUSION**

## **6.0 Conclusion**

In conclusion, this survey study provides valuable insights into the knowledge, awareness, and practices related to food safety among university students at Daffodil International University. The findings shed light on various aspects, including demographic profiles, dietary habits, and the participants' understanding of foodborne pathogens and safe food handling practices. The study identified strengths in participants' familiarity with balanced diets, knowledge of common foodborne pathogens, and a high level of confidence in safe food handling practices. These findings offer valuable information for designing targeted interventions and educational programs aimed at enhancing food safety practices among university students. The translation process during data collection ensures the inclusivity of participants with diverse language backgrounds. As the study was conducted at a specific university, future research could explore a more diverse range of institutions for broader insights into the food safety practices of university students. Overall, this study contributes to the ongoing efforts to promote public health through improved food safety awareness and behaviors within the university student population.

**CHAPTER SEVEN**

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