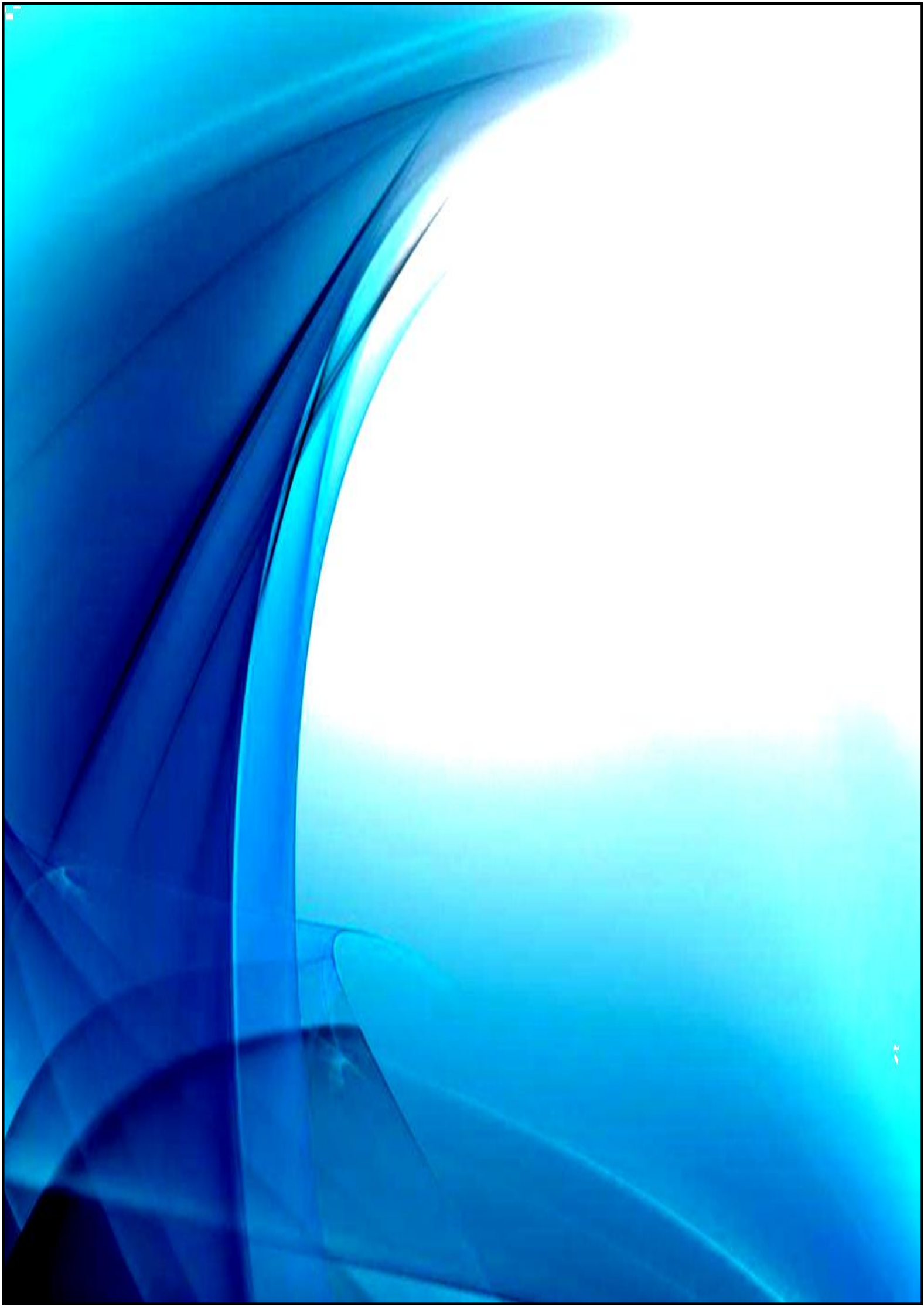


جامعة أحمد بن يحيى الونشريسي

-تيسمسيلت-

المعيار

مجلة نصف سنوية متعددة التخصصات

مصنفة " C "

في الآداب، الحقوق والعلوم السياسية، علوم وتقنيات النشاطات البدنية والرياضية، العلوم الاقتصادية، والعلوم الإنسانية والاجتماعية

المجلد السادس عشر العدد 01 جوان 2025

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مجلة نصف سنوية متعددة التخصصات

مصنفة " C "

جامعة أحمد بن يحيى الونشريسي، تيسمسيلت – الجزائر–

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-المعيار مجلة علمية مصنفة تنشر البحوث الأكاديمية والدراسات الفكرية والعلمية والأدبية التي لم يسبق نشرها من قبل.

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- تتم كتابة البحوث كاملة أو الفقرات والمصطلحات والكلمات باللغة الأجنبية داخل البحوث المكتوبة باللغة الفرنسية بخط (**Times new roman**) حجم (**12**)، وفي الهامش بالخط نفسه حجم(**10**).

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- لا يقل حجم البحث عن **08** صفحات ولا تتجاوز **15** صفحة.

- المواد المنشورة تعبر عن آراء أصحابها، والمجلة غير مسئولة عن آراء وأحكام الكتاب. كما أن ترتيب البحوث يخضع لاعتبارات تقنية وفنية.

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أ. د. عيساني امحمد.

المعيار

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كلمة العدد

السلام عليكم،

بعد واجب التّحيّة تطل عليكم **مجلة المعيار** –كما عودتكم – بمجلد جديد وعدد متجدد هو **المجلد السادس عشر، العدد الأول**، حاملة في طيّاتها مجموعة ثرية ومتنوعة من المقالات العلميّة والبحوث الأكاديمية، التي تتناول طيفا واسعا من المواضيع والقضايا التي تهم القارئ المتطلّع للمعرفة والفهم العميق.

وكالمتوقع، يتضمن هذا العدد نخبة من المقالات التي كتبت بأقلام نَيِّرَةٍ، وبأفكار ناضجة، تجمع بين العمق العلمي والطّرح الجذّاب، وذلك في مجالات شتّى، تشمل: **الأدب، والقانون، والسّياسة، والاقتصاد، والاجتماع، وغيرها** وبلسان مختلف اللّغات منها الانجليزيّة، الفرنسية والألمانيّة، ومن الميادين التي تتجدّد أهميتها مع متغيرات الواقع وتحديات العصر.

ومَا يضفي على هذا العدد طابعا خاصّا، هو ما يتضمنه من أعمال كتبت من داخل الوطن ومن خارجه، في دليل واضح على عمق الامتداد العلميّ للمجلة، وحرصها على جمع الآراء والأصوات العلميّة من كافة الأصقاع، فكلّ مقال يضيف بعدا ورؤية تساهم في بناء معرفة شاملة ورؤية متوازنة نتطلّع من خلالها إلى نيل رضى القارئ والفوز بإعجابه.

المدير المسؤول عن النشر

أ.د. عيساني امحمد

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The Reality of Household Food Waste Reduction Among Families in Chlef Province: An Analysis of Awareness, Behaviors, and Influencing Factors

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Abstract:

This study examines household food waste reduction among Algerian families in Chlef Province by assessing awareness, behaviors, and influencing factors. A questionnaire was distributed to 271 households, and data were analyzed using SPSS (Version 26). The findings reveal a high level of awareness regarding food waste reduction, yet a gap persists between knowledge and actual behavior. External factors have minimal impact, as families primarily rely on personal consumption choices but face challenges in applying waste-reduction strategies, such as meal planning and food reuse. Despite these difficulties, families contribute positively to minimizing food waste. The study underscores the need to bridge the gap between awareness and practice by strengthening both educational initiatives and practical measures. Encouraging sustainable consumption habits and supporting households in adopting effective strategies are essential to ensuring that awareness translates into meaningful daily actions, ultimately fostering a more responsible approach to food consumption and waste reduction.

key words: Household food waste; Food waste reduction; Food security.

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Introduction:

With the increasing scarcity of natural resources and the worsening crises of hunger and malnutrition, food waste has become a critical issue threatening global food security, in addition to its negative economic and environmental impacts. Despite ongoing efforts to raise awareness about the importance of reducing food waste, substantial amounts of food continue to be wasted at the household level, necessitating an investigation into the factors influencing this phenomenon and the strategies to mitigate it.

In Algeria, household food waste is a growing problem, with estimates indicating that a significant proportion of total food consumption is wasted within homes. In Chlef Province, which has an estimated population of 1.2 million, households experience high levels of food waste. This situation calls for an in-depth study of the factors associated with this issue, an analysis of household awareness and behaviors in reducing waste, and the proposal of sustainable solutions to address this challenge.

Research Problem:

Household food waste is a critical economic and social issue, where individuals' behaviors and awareness levels play a pivotal role in either mitigating or exacerbating this phenomenon. In Chlef Province, a key question arises regarding the extent to which households recognize the importance of reducing food waste and whether this awareness translates into tangible daily practices. Moreover, multiple factors may influence the magnitude of food waste, either increasing or reducing it, necessitating a comprehensive analysis to understand the relationship between awareness, behaviors, and the various influencing factors in minimizing household food waste.

Main Research Question:

What is the current state of household food waste reduction among families in Chlef Province, and to what extent do awareness, behaviors, and various influencing factors contribute to mitigating this issue?

Research Objectives:

Despite the multiple and overlapping objectives of this study, they can be summarized into three main goals:

- To assess the level of awareness among households in Chlef Province regarding the importance of reducing food waste.

- To examine the practices adopted by households in Chlef Province to minimize food waste.
- To identify the factors contributing to increased food waste among households in Chlef Province.

Significance of the Study:

This study holds significance for the following reasons:

- The findings can help households in Chlef Province significantly reduce their grocery expenses.
- The results can aid in developing plans and strategies to minimize food waste, contributing to efforts in combating hunger, poverty, and enhancing food security.
- The study's recommendations can be used to raise awareness and improve food management skills among households.

Research Scope :

- **Geographical Scope:** This study focuses on Algerian households, specifically those in Chlef Province.
- **Temporal Scope:** Data collection took place during the last quarter of 2024.
- **Thematic Scope:** The study centers on analyzing the state of household food waste reduction among Algerian families in Chlef Province by examining their awareness levels, behaviors, and the factors influencing this phenomenon.

Study Structure:

This study is divided into three main sections as follows:

- **First Section:** The concept of food waste, its causes, and its impacts.
- **Second Section:** Development of the study instrument and selection of the sample.
- **Third Section:** Analysis of the Questionnaire Data on Reducing Household Food Waste Among Families in Chlef Province

First Section: Definitions of Food Waste, Its Causes, and Effects

In this Section, we will provide some definitions related to food waste, in addition to its causes and the resulting effects.

1.1 Definitions of Food Waste:

Among the definitions of food waste, the following stand out:

- **Food and Agriculture Organization (FAO) Definition:** Food waste is a reduction in the quantity or quality of food resulting from decisions and actions taken by retailers, food service providers, and consumers **(World Government Summit, 2023, p. 7).**

- **United Nations Environment Programme (UNEP) Definition:** From the perspective of UNEP, food waste refers to food and associated inedible parts removed from the human food supply chain (i.e., ending up in landfills, incineration, sewers, garbage disposal, aerobic and anaerobic digestion, or soil applications) within the food manufacturing sector, the food retail and grocery sector, the food service sector, and households **(World Government Summit, 2023, p. 7).**
- **European Parliament Definition:** Food waste is defined as all food that has turned into waste, as specified in Article 2 of Regulation No. 178/2022 of the European Parliament and Council. Waste refers to any material or object discarded, intended to be discarded, or required to be discarded by its owner **(World Government Summit, 2023, p. 7).**
- **United States Environmental Protection Agency (EPA) Definition:** According to the EPA, food waste refers to food remnants (i.e., food that was served but not consumed), spoiled food, or inedible peels that are used for animal feed, composted, subjected to anaerobic digestion, buried, or incinerated with energy recovery **(World Government Summit, 2023, p. 7).**

Based on these definitions, we can formulate a comprehensive definition of household food waste that considers various aspects:

Household food waste is the unnecessary loss or disposal of edible or inedible food within homes due to consumer behaviors, poor planning, or inefficient storage, leading to its transformation into waste or alternative uses such as composting or animal feeding, with environmental, economic, and social consequences.

1-2- Causes of Food Waste:

Food waste causes can be classified as follows:

1-2-1- On the Farm:

The causes of food waste on the farm include the following **(Soudani, 2021, p. 114):**

- Poor agricultural practices and procedures.
- Inadequate and insufficient technology for handling, transporting, and processing crops.
- Inappropriate harvesting times, climatic conditions, and harvesting and handling practices.

1-2-2- During Storage:

Due to weak drying and storage techniques (especially cold storage), contamination, and infestation by microorganisms, rodents, and other pests **(FAO, 2015, p. 2).**

1-2-3- During Marketing:

- The causes of food waste at the retail level are related to limited shelf life and the need for food products to meet financial standards in terms of color, shape, size, and demand diversity **(United Nations, 2024).**
- Lack of market infrastructure at the retail level, in addition to inadequate refrigeration and poor transportation.
- Challenges in marketing products **(Soudani, 2021, p. 114).**
- Inaccuracies in demand forecasting **(World Government Summit, 2023, p. 16).**

1-2-4- During Consumption:

Households are the primary factor in food waste, and several motives contribute to this:

1-2-4-1- Social Motives:

These include factors related to social and demographic aspects, such as household characteristics, gender, age, and average cooking skills. They also include individual behaviors that are difficult to modify, as well as those that can be adjusted through awareness. Larger households tend to waste more food than smaller ones, and adults waste more than children. Households with children are more likely to waste food compared to those without, with food waste levels varying by children's ages. Additionally, the gender of the individual responsible for grocery shopping, food storage, and cooking may play a role in food waste **(Alnaser, 2022, pp. 25-26).**

1-2-4-2- Income Levels:

The higher the income, the greater the food waste **(Alnaser, 2022, pp. 25-26).**

1-2-4-3- Awareness Motive:

Lack of awareness or knowledge is one of the most significant drivers of household food waste. This results from insufficient knowledge about how to use food effectively. Consumers who do not utilize packaging to preserve food waste more than those who adopt proper packaging methods **(Alnaser, 2022, pp. 25-26).**

1-3- Implications of Food Waste

1-3-1- Environmental Implications

Food waste results in significant financial costs, amounting to approximately $1 trillion annually **(FAO, 2020, p. 3).** Uneaten food contributes to landfill waste, exacerbating global warming. As food waste decomposes, it releases methane, a harmful greenhouse gas that escapes into the atmosphere. Methane is 21 times

more potent than carbon dioxide in terms of its impact on global warming. Globally, food waste accounts for 7% of total greenhouse gas emissions. If food waste were properly composted, carbon dioxide, which is less harmful than methane, would be released instead.

Another environmental concern is the long-distance transportation of food, which requires substantial fuel consumption and leads to increased carbon dioxide emissions into the atmosphere **(Seberin, 2020, p. 4).**

1-3-2- Economic Implications

Beyond its environmental consequences, food waste has substantial economic ramifications. According to estimates by the Food and Agriculture Organization (FAO), the global economic cost of food waste is nearly $1 trillion per year. This figure includes expenses related to food production, transportation, storage, and disposal. By reducing food waste, financial resources can be conserved and redirected toward more pressing societal needs.

1-3-3- Social Implications

Food waste is not solely an environmental or economic issue; it also has profound social consequences. While millions of people around the world suffer from hunger and malnutrition, vast quantities of edible food are discarded. According to the World Food Programme, one in nine people globally does not have access to enough food to maintain a healthy and active life **(Faster Capital, 2024).**

1-3-4- The Impact of Food Waste on Food Security

Food waste and food security have increasingly drawn attention from researchers and policymakers in both developed and developing countries, particularly in light of the growing global population. Eliminating food loss and waste is crucial for enhancing food security. One-third of all food produced worldwide is lost or wasted, while nearly 800 million people suffer from chronic hunger. To feed the global population by 2050, food production must increase by approximately 60% **(FAO, 2014, pp. 26-27).**

Approximately 14% of food is lost between harvest and retail distribution, while 17% of total global food production is wasted. This includes 11% at the household level, 5% in food service industries, and 2% in retail **(United Nations, 2024).**

Since food waste is directly linked to food security, which in turn is closely tied to natural resources, addressing food waste is essential to preventing the depletion of these resources and mitigating risks to global food security **(Alnaser, 2022, p. 28).**

1-4-The Research Gap Addressed by This Study

Despite the growing number of studies examining household awareness of food waste, few have delved deeply into the behavioral gap between knowledge and actual practice—particularly within local contexts such as Algeria. Moreover, the factors that hinder the implementation of food waste reduction practices have not received sufficient attention or analysis. This study seeks to address this gap by focusing on the reality of household food waste reduction among families in Chlef Province, through the analysis of three key dimensions: awareness levels, behavioral practices, and influencing factors. Chlef is considered here as a representative local case that can offer deeper insights into food waste reduction behaviors within the Algerian context.

Second Section: Development of the Study Instrument and Sample Selection

2.1 Development of the Study Instrument

Given the type of data required to complete this study, the adopted research methodology, the available time, and financial constraints, we found that the most suitable data collection tool was a field survey using a questionnaire. This choice was made due to the unavailability of secondary data related to the study topic and the difficulty of obtaining data through other methods such as observation or interviews.

After reviewing the relevant literature and previous studies, we developed a questionnaire for our study, which focuses on analyzing the reality of household food waste in Chlef Province. The questionnaire was distributed to a random sample of households in the province. This instrument effectively facilitated data collection and was designed to address the study's central research question.

The questionnaire was designed according to the following steps:

- An initial draft of the questionnaire was developed to assess its suitability for achieving the study objectives.
- The initial version was reviewed by experts in the field to ensure validity and relevance.
- Based on the experts' feedback, the questionnaire was refined and finalized, consisting of two main sections preceded by an introductory statement addressed to the respondents. This introduction outlined the study topic and the institution to which the researcher belongs. The final questionnaire included the following sections :

Section 1: Personal Information

This section collected demographic data about the respondents, including marital status, gender, age, education level, household size, family income, and shopping frequency per week.

Section 2: Core Study Variables

This section included the main variables of the study, designed to assess the state of household food waste in Algerian households in Chlef Province. The section comprised 38 statements distributed across three dimensions:

- **Household Awareness of the Importance of Reducing Food Waste:** This dimension included 10 statements measuring respondents' awareness of the significance of minimizing household food waste.
- **Household Practices for Reducing Food Waste:** This dimension included 16 statements assessing respondents' practices in minimizing household food waste.
- **Factors Contributing to Increased Food Waste:** This dimension included 12 statements evaluating respondents' perspectives on factors influencing household food waste.

To quantify responses, a five-point Likert scale was used as follows:

- Strongly Agree (5)
- Agree (4)
- Neutral (3)
- Disagree (2)
- Strongly Disagree (1)

2.2 Study Sample Selection and Recruitment

The target population was defined as a random sample of households in Chlef Province, totaling 271 respondents. The broader study population consisted of approximately 300,000 households residing in Chlef Province.

The optimal sample size was determined using the following formula:

$$N = \frac{Z^2.P.(1-P)}{e^2} \div \left[1 + \frac{Z^2.P.(1-P)}{e^2.N}\right]$$

Where:

- **Z** = 1.645 (for a 90% confidence level)
- **P** = 0.5 (proportion estimate)
- **N** = 300,000 (population size)
- **e** = 0.05 (margin of error)

Using these values, the sample size was calculated as follows:

$$N = \frac{\left(1.645^2 \times 0.5 \times (1-0.5)\right)}{0.05^2} \div [1 + \frac{\left(1.645^2 \times 0.5 \times (1-0.5)\right)}{(0.05^2 \times 300000)} = \frac{270.6025}{1.0009} = 270.359 \approx 271$$

The questionnaire distribution was conducted randomly, using both paper-based and electronic versions. A total of 271 completed questionnaires were collected. During data entry and processing using **SPSS v26**, all questionnaires were found to be valid for analysis due to the consistency and reliability of responses.

2-3- Validity and Reliability of the Questionnaire

2-3-1- Preliminary Validity and Reliability of the Questionnaire

After distributing the questionnaire to an exploratory sample of 68 respondents to test its preliminary validity at a significance level of 10%, we found that the questionnaire is valid and can be administered to the study sample. The reliability coefficient of the questionnaire based on the exploratory sample data was found to be 0.68, indicating that the questionnaire has preliminary reliability, thus allowing its distribution to the study sample.

2-3-2- Post-Validation and Reliability of the Questionnaire

After distributing the questionnaire to the study sample and retrieving responses from 273 participants, we tested its post-validation at a significance level of 10%. The results indicated that the questionnaire possesses post-validation, confirming that its data can be processed and analyzed. Upon testing the reliability of the questionnaire, we obtained the following results: Following the distribution of the questionnaire to the study sample and subjecting the collected data to analysis, we found that the reliability coefficient of the questionnaire was 0.81. This result indicates that the questionnaire has strong post-reliability, making it suitable for data processing and analysis.

Third Section: Analysis of the Questionnaire Data on Reducing Household Food Waste Among Families in Chlef Province

3-1- Statistical Analysis of the Reality of Reducing Household Food Waste in Chlef Province (Analysis of Arithmetic Means)

3-1-1- Results of the Statistical Analysis of Arithmetic Means

The statistical analysis of the reality of household food waste in Chlef Province yielded the results presented in Table 1.

Table 1: Statistical Analysis Results of Reducing Household Food Waste in Chlef Province

Dimension	Arithmetic Mean	Standard Deviation	Level of Agreement (Adoption)
First Dimension : Household Awareness of the Importance of Reducing Food Waste in Chlef Province	4.07	0.758	High
Second Dimension : Household Practices in Reducing Food Waste in Chlef Province	3.78	0.687	High
Third Dimension : Factors Influencing the Increase in Household Food Waste in Chlef Province	2.91	0.783	Moderate
Overall Dimensions : Reality of Reducing Household Food Waste in Chlef Province	3.6	0.432	High

Source: Prepared by the researcher based on SPSS v26 output.

3-1-2- Discussion of the Statistical Analysis Results of Arithmetic Means:

The statistical analysis results indicated that the arithmetic mean for the level of household awareness regarding food waste reduction reached **(4.07)**, reflecting a high level of awareness among households in Chlef Province. This result demonstrates the extent to which families recognize the importance of rationalizing food consumption, aligning with their increasing knowledge of waste reduction practices, such as portion control, adhering to a set food budget, and ensuring food safety before purchasing.

Conversely, the results showed that the level of actual household practices in reducing food waste scored **(3.78)**, which is lower than the awareness level. This suggests a gap between perception and application. While households understand the importance of minimizing waste, implementing such measures in reality remains suboptimal. This could be attributed to ingrained consumption habits or the lack of effective incentives to translate awareness into tangible practices.

Regarding the factors influencing increased household food waste, the arithmetic mean for this dimension was **(2.91)**, which is lower than the awareness and practice levels. This indicates that households do not perceive these factors as the primary cause of food waste. Instead, they might focus more on their individual behaviors rather than external influences such as social traditions or economic considerations.

Looking at the overall arithmetic mean for the reality of reducing household food waste, which was **(3.6)**, it suggests a relatively high adoption of preventive

measures. However, it also highlights the need to enhance the practical implementation of food waste reduction strategies, particularly given the gap between awareness and actual practices.

3-2- Testing the Differences Hypotheses

3-2-1- Results of the Statistical Analysis of Differences in Responses Among the Study Sample

In this section of the study, we will test the differences hypotheses to determine whether there are statistically significant differences in the responses of the study sample.

We will examine the following differences hypothesis:

"There are no statistically significant differences at a 10% significance level in the responses of the study sample regarding household behavior in Chlef Province towards reducing household food waste, attributed to personal characteristics (family status, gender, age, educational level, number of family members, household income, and frequency of grocery shopping per week)."

After breaking this hypothesis into seven sub-hypotheses based on demographic variables, the results indicated that there were no statistically significant differences in the responses of the sample members due to these variables. Therefore, the null hypothesis was confirmed and accepted.

3-2-2- Discussion of the Statistical Analysis Results of Differences in Responses Among the Study Sample

The statistical analysis results for the differences in responses among the study sample reflect homogeneity in the attitudes and behaviors of households, regardless of demographic and social variables. This suggests that the general awareness of the need to reduce food waste is similar across different groups, leading to no significant differences in their responses. This could be attributed to the widespread dissemination of rational consumption concepts through various sources such as media awareness campaigns, family traditions, and general societal trends toward resource conservation.

However, the absence of significant differences does not necessarily mean that all households adopt the same behaviors to the same extent. Other unmeasured factors may have an influence, such as cultural values, inherited consumption habits, or the availability of economic resources within households.

3-3- Testing the Partial and Main Hypotheses on Household Food Waste Reduction in Chlef Province

3-3-1- Results of Testing the Partial and Main Hypotheses on Household Food Waste Reduction in Chlef Province

The following hypotheses will be tested:

- **First Partial Hypothesis:** *The level of household awareness in Chlef Province regarding the importance of reducing household food waste is moderate, with statistical significance at the 10% level.*
- **Second Partial Hypothesis:** *The level of household practices in Chlef Province toward reducing household food waste is moderate, with statistical significance at the 10% level.*
- **Third Partial Hypothesis:** *The impact of various factors on increasing household food waste in Chlef Province is moderate, with statistical significance at the 10% level.*
- **Main Hypothesis:** *The level of household food waste reduction in Chlef Province is moderate, with statistical significance at the 10% level.*

A one-sample T-test was conducted on the study data, and the results are presented in Table (2):

Table 2: Results of Testing the First Partial Hypothesis on Household Awareness in Chlef Province Regarding the Importance of Reducing Food Waste

Hypothesis	Mean Score	Mean Difference	T	SIG
First Partial Hypothesis	4.07	1.07	23.411	0.00
Second Partial Hypothesis	3.78	0.78	18.937	0.00
Third Partial Hypothesis	2.92	-0.08	-1.69	0.092
Main Hypothesis	3.59	0.59	22.723	0.00

Source: Prepared by the researcher based on SPSS V26 output.

3-3-2- Discussion of the Hypothesis Testing Results on Household Food Waste Reduction in Chlef Province

3-3-2-1- First Partial Hypothesis: Level of Household Awareness Regarding the Importance of Reducing Food Waste

The mean score was (4.07), and the significance value (SIG = 0.00) was below 10%, indicating that household awareness in Chlef Province regarding the importance of reducing food waste is high. This result suggests that awareness and media campaigns aimed at reducing food waste have successfully spread knowledge about minimizing food loss. This high level of awareness may positively influence household food consumption behaviors; however, it does not

necessarily imply that practical measures are being implemented in line with this awareness.

3-3-2-2- Second Partial Hypothesis: Level of Household Practices Toward Reducing Food Waste

The mean score was (3.78), with a significance value (SIG = 0.00) below 10%, indicating that household practices in reducing food waste are relatively high. However, when compared to the awareness level (4.07), a gap between knowledge and behavior becomes evident. This suggests that possessing awareness does not automatically translate into strict behavioral changes to reduce waste. The delay in behavioral adaptation may be due to factors such as deeply ingrained consumption habits or the absence of clear strategies for managing household food consumption effectively.

3-3-2-3- Third Partial Hypothesis: Impact of Various Factors on Increasing Household Food Waste

The mean score was (2.92), with a significance value (SIG = 0.092), close to the adopted significance level of 10%, indicating that the influence of external factors on increasing food waste is weak. Compared to awareness (4.07) and practices (3.78), it is evident that households do not perceive external factors (such as promotional offers, food surplus in markets, and social pressures) as major contributors to their food waste. Instead, they take greater individual responsibility for waste reduction. This suggests that the issue may be more closely linked to personal behaviors and household purchasing habits.

3-3-2-4- Main Hypothesis: Reality of Household Food Waste Reduction in Chlef Province

The mean score was (3.59), with a significance value (SIG = 0.00) below 10%, indicating that the level of food waste reduction among households is relatively high. When comparing this level to other variables, it is evident that waste reduction is directly influenced by high awareness levels and moderate to high waste reduction practices. However, the gap between awareness and actual practices highlights the need to enhance strategies that translate awareness into sustainable behavior. This could include providing practical guidelines on efficient food management or promoting a culture of food recycling and repurposing.

Conclusion:

This study examined household food waste reduction in Chlef province by evaluating awareness, practices, and influencing factors. The findings highlight a gap between awareness and actual behavior, emphasizing the need for integrated strategies to encourage sustainable practices. These insights lead to key conclusions and recommendations that can improve food consumption patterns, enhance rationalization, and support food security and environmental sustainability.

Findings:

• The level of awareness among families in Chlef province regarding the importance of reducing household food waste is relatively high, reflecting the success of awareness efforts.

• There is a gap between awareness levels and actual practices, as awareness does not necessarily translate into effective daily behaviors.

• Families face practical challenges in implementing food waste reduction strategies, such as weak commitment to meal planning and the suboptimal utilization of food leftovers.

• The impact of external factors on increasing food waste is weak, as families mainly rely on their personal consumption choices.

• The level of food waste reduction is high, but it still needs improvement to achieve more sustainable rates.

Recommendations:

• Enhancing applied awareness programs by offering training courses on food storage techniques and recycling leftovers.

• Launching intensive media campaigns through mass media and social networks to encourage families to adopt sustainable consumption behaviors.

• Integrating food waste reduction topics into school curricula to instill a culture of food sustainability in future generations.

• Encouraging families to develop weekly meal plans to reduce random purchases and achieve more organized consumption.

• Promoting a culture of reusing food leftovers by sharing innovative recipes and methods for their utilization.

• Developing supportive policies, such as providing incentives for families that adopt food waste reduction practices and encouraging retailers to offer products in quantities suitable for small families.

• Strengthening the role of charitable organizations to facilitate the redistribution of surplus food to needy families.

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