(Original Article)

Exploring Egyptian Youth's Awareness Towards Food Waste

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Abstract

Decreasing food waste (FW) came to be an urgent need to achieve sustainable food systems transformation. Measuring the youth's awareness towards FW represents an important action to design an effective strategy intervention that aims reduction the percentage of FW. The purpose of this paper is to explore the knowledge of youth regarding FW as well as identify factors influencing this knowledge. To achieve the aim of this study, the primary data have been collected from 430 students at Fayoum University, Egypt. The binary logistic regression (BLR) model was employed to identify factors influencing FW knowledge among youth. Results showed that age, residence place, and knowledge of social, economic and environmental impacts of food waste are significantly influencing knowledge about FW. The current results concluded and highlighted the importance of designing an educational curriculum at universities including FW and sustainable consumption concepts. So, youth's skills-building interventions through campaigns should be regularly held to promote changing norms and attitudes toward less FW and responsible consumption behaviour to accelerate the sustainable agri-food systems transformation in developing countries.

Introduction

FW came to be one of the biggest concerns for all nations and governments in recent years. Commonly, food consumption is determined by economic, social, and cultural factors, where economic factors include individual income, prices, availability, population, etc., while social factors comprise family size, education, location, etc., and culture includes beliefs, ideologies, unwritten norms, motivations, attitudes and knowledge about food. Decreasing food loss and waste came to be an urgent need to achieve the global transformation of agro-food system to be more sustainable and resilient with the climate change (Ali *et al*., 2021b). Globally, one-third of the food produced for human needs is lost or wasted over the entire food supply chain[1], where grown but lost or wasted food has significant environmental and economic costs (Ali *et al*., 2021b; Gustavsson and Stage, 2011). FW is a threat to the global food security and reducing FW by 50% could contribute feeding the hungry people around the world (Abbade, 2020).

Decreasing the share of FW increases the household savings and achieves additional environmental impacts, in other words, the future demand of food could be met with a minimum increase in agricultural production (Gustavsson *et al*., 2013; Poore and Nemecek, 2018).

FW is the food lost at the end of the food supply chain (i.e. distribution, retail and final consumption) (Gustavsson *et al*., 2011; Parfitt *et al*., 2010). Our FW happens in many ways, for instance fresh production that is not proper for consumption because of its appearance, size or color and usually took off from the supply chain during sorting processes, food that are near to expiry date and thrown away by retailers or consumers, big quantities of edible food that are often unused or residue and thrown away by household kitchens or eating places[1]. In developing countries, FW generation is growing rapidly at household levels due to urbanization and demographic changes (Abu Hatab *et al*., 2022). As for Egypt, it is considered among the highest contributors to global FW percentages, the percentage of food losses and waste for tomatoes estimated to be 49% of the total production (Ali *et al*., 2021b). According to United Nations Environment Program, the estimated amount of FW in Egypt is 91 kg/ capita/ year[2]. In many studies, according to household's analysis of FW based on individuals' demographic characteristics, youth tend to waste more food than elders(Brook, 2007; Hamilton *et al*., 2005; Principato *et al*., 2015). Subsequently, working to increase environmental and social awareness among youth is become a vital need to help protecting the environment and to develop more sustainable societies (Principato *et al*., 2015).

According to Sustainable Development Goal (SDG 12.3), the global policymakers have projected that the percentage of FW could be half by 2030[3]. Although, most of previous studies in developing countries have investigated the causes of FW, however few studies give intention to study the impact awareness-raising on FW reduction. This study focuses on exploring the degree of youth's awareness regarding FW which purchased from shops, takeaways or consumed within the home, in addition, determining causes of high FW and identifying socioeconomic factors influencing the knowledge about FW. The current study could contribute bridging the research gap of the role of awareness-raising on FW reduction in developing countries to achieve the global food system transformation. This study is organized as follows; the first section covers the introduction while the second section introduces the literature review about influencing factors on FW, youth's awareness towards FW, and impact of

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[1] Food and Agriculture Organization, Food Loss and Food Waste, available at: https://www.fao.org/food-loss-and-food-waste/flw-data), (Accessed, 23 December 2021).

[2] United Nations Environment Program, food waste index report (2021), available at: https://www.unep.org/resources/report/unep-food-waste-index-report-2021 (Accessed, 25 December 2021).

[3] "The United Nations' Sustainable Development Goal 12 seeks to "ensure sustainable consumption and production patterns." The third target under this goal (Target 12.3) calls for cutting in half per capita global food waste at the retail and consumer level and reducing food losses along production and supply chains (including post-harvest losses) by 2030". Source; https://champions123.org/

knowledge sharing on FW reduction. Finally, the third section covers data collection and sample strategy, methodology and data analysis. The main results of our analyses have been presented and discussed in the results and discussion section, finally, the conclusion and implications of the study are presented in this section.

Related literature

Influencing factors on FW

Reviewing relevant literature, various studies have investigated the influencing factors on FW, a study of(Abdelradi, 2018)revealed that the individual's positive perception about FW was associated with lower quantities of FW at the household level. Another study of (Diaz-Ruiz *et al.*, 2018) has shown that purchasing practices, waste prevention habits and materialism values directly influence FW, whereas environmental values indirectly influence it. While (Kala *et al.*, 2020)showed that too much food cooking has a strong relationship with FW generation. Finally, a study of (Ali *et al.*, 2021a) illustrated that the main determinants for reducing FLW are deficient infrastructure and shortage of government legalizations, while the secondary causes are insufficient marketing systems, inappropriate handling practices, and environmental and technological determinants. Food-shopping routines is found to be associated significantly to avoid FW(Abu Hatab *et al.*, 2022; Stefan *et al.*, 2013), furthermore, those who frequently visit grocery-shopping (3–5 times/week or more than 6 times/week) tends to waste higher amounts of food compare to those who conduct less visits (less than three times per week) (Abu Hatab *et al.*, 2022). As for pre-shopping planning, many studies have revealed that Seems to be high with improper behavior during the pre-shopping phase where consumers failed to pre-check food stocks before shopping or forget to prepare an exact shopping list (Exodus, 2006), furthermore, if customers check their stocks and make a shopping list before shopping more FW could be avoided (Chandon and Wansink, 2006; Stefan *et al.*, 2013).

As for the impact of socioeconomic demographics on FW reduction, some studies investigated the knowledge about FW and its causes, for instance, (Barr, 2007) stated that individuals with a good knowledge of the problems caused by FW are more likely to be aware of FW issue and avoid it. While (Abu Hatab *et al.*, 2022) demonstrated that the more the knowledge about the negative impacts of FW and the clear information on labels of food products, the more the decreased quantities of household FW. Others, inspected gender differences in behavior towards FW, which has shown that females more careful to reduce waste than males(Barr, 2007)but other studies found that women are wasting more than men (Buzby and Guthrie, 2002).While for household income, some studies stated that the higher the income of households, the higher the food wasted (Brook, 2007; Buzby and Guthrie, 2002), by the same way, individuals with low income are more likely to waste less food. For example in developing countries, where poor people can't afford to throw food away that represents a big share of their expenditure (Abu Hatab *et al.*, 2022). As for education level, some studies indicated that

individual's education seems to have indirect influence on FW knowledge and practices(MOHAMED, 2021), while other studies revealed that in general there is no strong relation between the level of an individual's education and household FW practices (Abu Hatab *et al*., 2022). Growing urbanization tends to be responsible for increased FW generation at household levels in developing countries than those residing in poorer and less urbanized areas(Abu Hatab *et al*., 2019).

Youth's Awareness towards FW

With objectives of investigating the association between awareness, knowledge and attitudes towards environmental education, the results of (Abu Hatab *et al*., 2022; Aminrad *et al*., 2013)showed that there is a significant association between awareness and attitudes, moreover, between awareness and knowledge on environmental issues among students. The study highlighted that a rising level of awareness and knowledge added to positive attitude of students may have attained from families, media, educators, personal reading and school curriculums about the environment that increases the environmental attitude among students as well as in general for the society (Aminrad *et al*., 2013).A study of (Szakos *et al*., 2020)indicated that key activities to be rooted are childhood education and awareness raising to shape behavioral patterns and restrain excessive FW. Several studies have also indicated that individuals with high civic and environmental awareness waste less food compared with others(Barr, 2007). A low level of FW awareness leads to increase the percentage of wasted food, which highlights the importance of rising the stakeholder awareness(Liu *et al*., 2013).

Impact of knowledge sharing on FW reduction

Agricultural higher education institutions are the main mainstay for achieving the current progress in economic for the global rural areas in recent years. In the recent years the agricultural education systems have a great progress to change the traditional thinking, which was aiming to achieve the progress on the quantity of agro-food production. Currently, the education system focuses on the quality of produced food, pesticides content, environmental impacts, climate change impacts on the human being and biodiversity (Tian *et al*., 2021). The new approaches including water, energy, food and ecosystem nexus (WEFE) which considered as the main three resources that sustain the human life as well as international, regional, and domestic economies (Salam *et al*., 2017).That highlights the importance of using the available resources efficiently through reducing the percentage share of lost and wasted food.

Promoting and increasing consumer awareness about FW could contribute to achieve sustainable food transformation in the next years. Information and communications technology (ICT) currently represent a main assistant channel to disseminate the knowledge among stakeholders in different countries (Anunobi and Anunobi, 2018), including build alternative food networks trough learning from social media to produce and market the food products. Which highlights the

importance of social networks for awareness raising about FW reduction strategies transformation to sustainability. Transition towards more sustainable food systems will also require new forms of knowledge and new processes of learning (Choesni and Schulz, 2013). Mobile phones is connecting 65% of Africa's labor force that work in the continent's agricultural sector (Magesa *et al.*, 2014). Through using mobile small-scale stakeholders can access the required information for reducing FW. Social networks and knowledge hubs currently represent the best way to accelerate the knowledge sharing among the youth round the world because the spread of using internet, which could be a great opportunity to achieve the global SDG2030 in the next years (Ioannis *et al.*, 2019).

Methodology and Data Source

Data collection and sampling strategy

Sampling strategy was based on the total number of students at Fayoum university, where the current study aimed to invstigate1.5 % (519 students) out of total number of students (34591) during (2020/2021)[4].Data was collected by an Internet-based survey created through Google Forms and randomly distributed through students' emails at Fayoum university. The survey was done during January to March 2021 where only 430studentsresponded and submitted their complete forms. A structured questionnaire was used to collect the data and was consisted of three parts; part one was mainly designed to collect the socio-economic demographics of students surveyed. While part two was questioning their knowledge of FW, percentages of food wasted by individuals and households, and finally part three which was designed to investigate the causes of FW from students' viewpoint and their degree of awareness towards it.

The 5-point Likert scale was used to answer the questions related to causes and degree of awareness of FW, where students indicate their degree of agreement or disagreement between the ranges of 'strongly agree' to 'strongly disagree'.

Methodology and Data Analysis

In this paper, both qualitative and quantitative methods were used. In fact, the research is partly qualitative, since we collected students' opinions and partly quantitative since the data was quantified in order to measure it and get results. Before analysis, the data was coded and collected in Excel sheets, and then it was ready for statistical analysis. In this study we used descriptive analysis by using the tools of descriptive statistics such as frequencies and percentages. Finally, binary logistic model was used to test the impact of some socio-economic demographics on the students' FW knowledge.

Binary logistic regression (BLR) is an extension of a regular linear regression, in which Y (dependent variable) is binary, in this case the dependent variable, Y, is categorical and is a "Yes/No" type variable, the two categories are usually recoded as "1" and "0," so that they are represented numerically in order to best be processed by a statistical software program, where, in these situation,

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[4]Fayoum university, https://fayoum.edu.eg/

regular linear regression is not appropriate. The goal of BLR is to find the best fitting, simplest model, to understand the relationship between the Y and the X's (Fritz and Berger, 2015).

$$Y = \beta_0 + \beta X_1 + \beta X_2 \dots\dots\dots\dots\dots + \beta X_7$$

Where β_0 is the intercept and $\beta_1, \dots, \beta_n$ are the regression coefficients.

A BLR model was applied to analyze the impact of some socio-economic demographics on FW knowledge. In our case the Y (dependent variable) is the knowledge of FW, where "1" is "Yes, I know what FW is" and "0" "No I don't know what FW is". The explanatory variables (X_n) include socio-economic demographics based on available data that include (Age, Gender, Marital status, Residence place, Accommodation type, Households' income, and Knowledge of social, economic and environment impacts of FW). The reference category for gender is "Females", for marital status is "Single" while other category is "Married", for residence place is "Urban areas" while other category is "Rural areas", for accommodation type is "With family" while other category is "Outside family", for household's income is "Income < 2000 L.E", for Knowledge of SEEIFW "Yes" while another category is "No".

A score between zero and one for a respondent answer with feature values x1, …, xn is computed using the logistic function.

$$Score \;=\; \frac{1}{1 + e^{-(\beta 0 + \sum_{i=1}^{n} \beta i x i)}}$$

Where β_0 is the intercept and $\beta_1, \dots, \beta_n$ are the feature weights. Together, β_0 and $\beta_1, \dots, \beta_n$ are the model (Mueller, 2015).

Results and discussion

In the following sub-sections, we first report the socioeconomic characteristics of students, causes of FW, and degree of awareness of FW among students. Finally, the results of the binary logistic regression have been presented and discussed.

Socioeconomic characteristics of students

Results showed that 72.8% of the students interviewed were females and 27.2% were males. About 87.7% of studentsweresinglewhereas12.3% were married. Referring to residence, 62.8% of students lived in urban areas and 37.2% were lived in rural areas. The majority of students interviewed with a percentage of 96% were lived with their families while only4%were lived separately. Regarding the monthly income of students' households, 47.4% of students indicated that their household's income was between 2000 L.E[5] to less than 4000
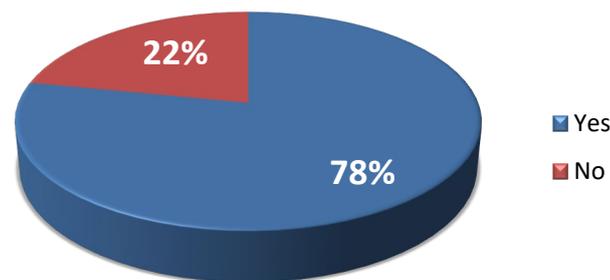
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[5] 15.66 LE= 1$ USA central bank of Egypt, accessed on 11 Feb 2022. Source: http://www.cbe.org.eg/English

L.E, whereas 30.5% were less than 2000 L.E, and only 5.6% their household income was more than 7000 L.E.

Table 1. Socio-economic demographics of students surveyed (N= 430)

Characteristics		Percent
Gender	Male	27.2
	Female	72.8
Marital status	Married	12.3
	Single	87.7
Residence	Urban	62.8
	Rural	37.2
Residence style	With family	96
	Outside the family	4
Monthly household's Income	< 2000 L.E	30.5
	2000 L.E to < 4000 L.E	47.4
	4000 L.E to < 7000 L.E	16.5
	> 7000 L.E	5.6
Students' Age	18-20	50.2
	21-23	44.9
	> 24	4.9

Source: calculated using survey data, 2021

Figure 1. Students' knowledge of food waste

The results showed that 78.1% of students know the term FW while 21.9% didn't hear about the term and have no idea about it, as shown in Fig. (1). About 39.3% of students indicated that 10% of food was purchased or prepared at home was wasted by their households, while 29.8% indicated that around 20% of the food purchasing was prepared at home by their households was wasted and only 6.7% of them indicated that their households waste more than 40% of food, as shown in Fig. (2). Regarding food wasted by students themselves, 62.1% saw that they only waste 10% of their food, while 15.1% of them waste 20% of it and only 5.8% of them waste more than 40% of their food (Principato *et al.*, 2015). The students related this low percentages of FW by them compared to their households because they often buy fast food according to their actual needs during the day of studying at University. While their household at home, most of the food wasted was due to leftover of cooked meals, fruits, vegetables, baked goods, etc., which are consumed at home level for periods of time. Finally, 57% of students have the knowledge about the social, economic and environmental impacts of FW, while

43% didn't know about it, as shown in Fig. (3). Which has been revealed a significant factor affecting FW reduction (Reynolds *et al.*, 2019).
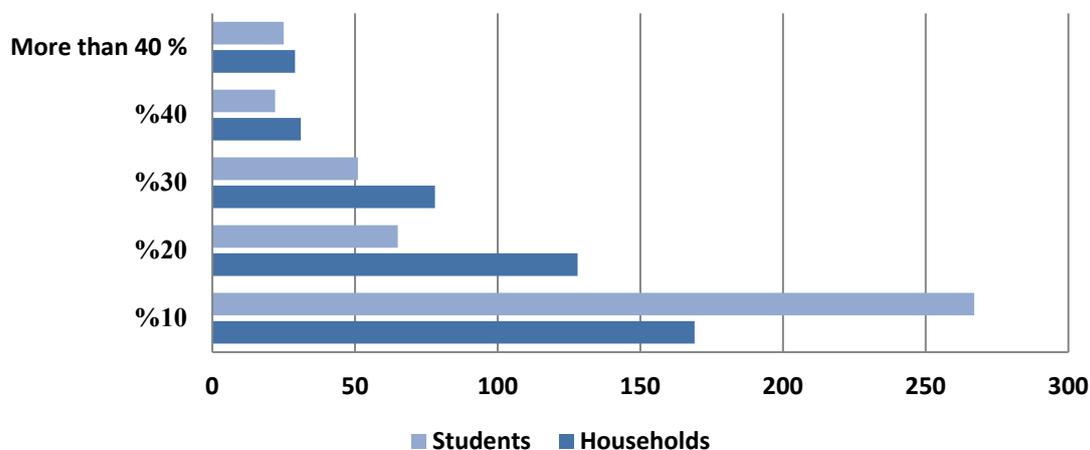

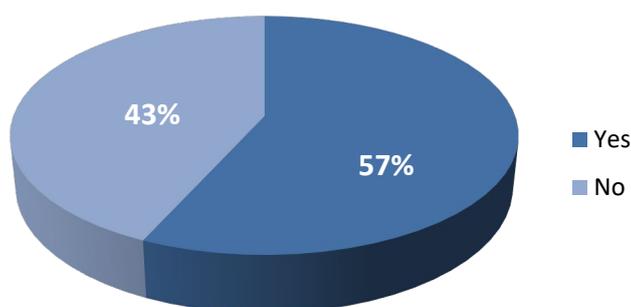**Fig. 2.** Percentages of food wasted by students vs. their households

Figure 3. Knowledge of social, economic and environmental impacts of food waste

Causes of Food waste

Using a five-point Likert scale, ranges from 'strongly agree' to 'strongly disagree', students were asked to assess the causes of high FW in their opinions. The students required to indicate the degree of their agreement or disagreement with each of the statements, ranging from strongly disagree to strongly agree. As specified in table (2),72.4 per cent of students interviewed agreed with the statement of "dropping off items that are nearing the expiration date" which comes first as reason for them for high FW (Katajajuuri *et al.*, 2014), followed by lack of awareness of the economic importance of FW with 72.2 per cent**,** while 69.8 per cent of them agreed that offers and discounts at supermarket cause FW, for instance, bulk or pack discounts are considered one of the most prominent contextual drivers of FW (González-Santana *et al.*, 2020). Followed by the large package sizes for some commodities compared to the requirement of consumption with 68.2 per cent of agreement (Stangherlin and de Barcellos, 2018).

Table 2. Causes of food waste among students surveyed (N=430)

Statement	Mean	Std. Deviation	% Of strongly agree to strongly disagree
Offers and discounts at supermarket	3.49	1.08	69.8
Not planning ahead for the shopping process	3.20	1.2	64
I drop off items that are nearing the expiration date	3.62	1.17	72.4
As the family income increases, I buy large amounts of food	2.98	1.28	59.6
Lack of awareness of the economic importance of food waste	3.61	1.24	72.2
Package sizes for some commodities are large compared to the requirement	3.41	1.14	68.2
Whenever the daily expense increases, I buy more quantities at a greater loss	2.70	1.19	54

Source: calculated using field data, 2021

Degree of awareness of Food waste

To assess the degree of awareness of FW among students, the same five-point Likert scale was used, as specified in Table (3), 94.8 per cent of students strongly agreed and think that it's important to don't waste food (Principato *et al.*, 2015).Moreover, they would probably throw away less food if they had more information about the negative impact of FW with the same per cent of agreement, this result is in line with the findings of (Reynolds *et al.*, 2019) which indicated that information campaigns had a positive impact on FW reduction. While 90.4 per cent of them strongly agreed that FW creates economic damage to the society, and 78.2 per cent of them agreed that FW is harmful to the environment(Chauhan *et al.*, 2018). On the other hand, they disagree with the statement stating that "FW is not a problem for the environment as it is natural" where the per cent is only 36.2.Which implies their knowledge of FW impacts on the environment, moreover, the students worried about both the amount and the cost of food thrown away and they think it is better to don't throw away leftovers as it is shown with a per cent 44.4, 40.8 and 44 respectively (Kala *et al.*, 2020).

Table 3. Degree of awareness of food waste among students surveyed (N=430)

Statement	Mean	Std. Deviation	% Of strongly agree to strongly disagree
I think it's important that I don't waste food	4.74	0.512	94.8
Food waste is harmful to the environment	3.91	1.021	78.2
Food waste creates economic damage to the society	4.52	0.688	90.4
Food waste is **not** a problem for the environment as it is natural	1.81	0.843	36.2
I think it is better to throw away leftovers rather than risk of use	2.20	1.033	44
I am **not** worried about the amount of food thrown away	2.22	0.882	44.4
I am **not** worried about the cost of food thrown away	2.04	0.880	40.8
I would probably throw away less food if I had more information about the negative impact of food waste	3.22	1.030	94.8

Source: calculated using field data, 2021

The results of binary logistic model

As table 4 shows, out of seven explanatory variables, only three are significant at 10%, 5% and 1% respectively, which are Age, Residence place and Knowledge of social, economic and environmental impacts of FW. The overall model was statistically significant, Chi-square (X^2 (6) = 54.01, P< 0.001), explained 18.2% of the variation of FW knowledge, (Nagelkerke R^2) and correctly predicted 79.5% of cases.

Age

Holding other explanatory variables constant, a one-year increase in a student's age multiplies the odds of knowledge of FW and consequently tries to reduce it rather than those who don't know by 1.165, increases it by 16.5%. In other words, a one-year increase in a student's age is associated with a 0.153increase in the relative log odds of being knows what FW versus no knowledge is. This finding, that age has a positive impact on FW knowledge and reduction is in line with previous studies which revealed that as the person's age increases in general, he/ she generates lower amounts of FW than youngers (Abu Hatab *et al*., 2022; Principato *et al*., 2015; Spang *et al*., 2019; Wakefield and Axon, 2020).

Residence place

Holding other explanatory variables constant, a student lives in urban areas multiplies the odds of not knowing what FW is rather than those who know by 0.569, increases it by 0.43%. In other words, a student lives in urban areas is associated with a 0.564decrease in the relative log odds of being knows what FW versus no knowledge is. Interestingly, this is consistent with what is well known about rural areas which are more familiar with the concept of FW and keener to reduce it through the reuse of food loss and food leftovers resulting from farm production or house's meals in feeding their poultry and small farm animals such as sheep and goats. The result is in line with many studies showed that people live in rural areas usually know more about FW and concerning more about reducing it(Abu Hatab *et al*., 2022, 2019).

Knowledge of social, economic and environmental impacts of food waste (KSEEIFW)

Holding other explanatory variables constant, a student knows about the social, economic and environmental impacts of FW multiplies the odds of knowledge of FW rather than those who don't know by 3.956, increases it by 296%. In other words, a student's knowledge about the social, economic and environmental impacts of FW is associated with a 1.375 increase in the relative log odds of being knows what FW versus no knowledge is. This result corroborates the findings of recently studies on consumer FW knowledge and behavior (Abu Hatab *et al*., 2022; Heidari *et al*., 2018).

Table 4. Results of the binary logistic model

Classification Table [a]				
		Predicted		
Observed		**Food waste knowledge**		**Percentage Correct**
		Yes	**No**	
Food waste knowledge	Yes	328	8	97.6
	No	80	14	14.9
Overall Percentage				79.5

Variables in the Equation								
Variables	**β**	**S.E.**	**Wald.**	**Df**	**Sig.**	**Exp (β)**	**95% C.I. for EXP (β)**	
							Lower	**Upper**
Age	0.153	0.089	2.947	1	**0.086**	1.165	0.979	1.387
Gender	-0.370-	0.301	1.510	1	0.219	0.691	0.383	1.247
Marital status	0.329	0.397	0.686	1	0.408	1.389	0.638	3.023
Residence place	-0.564-	0.282	3.993	1	**0.046**	0.569	0.327	0.989
Accommodation type	0.519	0.610	0.724	1	0.395	1.680	0.508	5.552
Households' income < 2000 L.E			2.969	3	0.396			
2000 L.E to < 4000 L.E	-0.287-	0.280	1.048	1	0.306	0.751	0.433	1.300
4000 L.E to < 7000 L.E	-0.253-	0.391	0.419	1	0.517	0.776	0.361	1.671
> 7000 L.E	-1.624-	1.064	2.330	1	0.127	0.197	0.024	1.586
KSEEIFW	1.375	0.259	28.092	1	**0.000**	3.956	2.379	6.579
Constant	-5.855-	2.022	8.389	1	0.004	0.003		

a. The cut value is .500

Variable(s) entered: Age, Gender, Marital status, Residence place, Accommodation type, households' income, KSEEIFW.

KSEEIFW: Knowledge of social, economic and environmental impacts of food waste

Significance: *** <0.01, ** p < 0.05, * p < 0.1" * , ** and *** = significant at 10%, 5% and 1%, respectively.

Chi-square X^2 (6)= 54.01, P <0.001, Nagelkerke R^2 = 18.2%

Conclusion and implications

Decreasing food loss and waste was coming to be an urgent need to achieve the global transformation of agro-food system to be more sustainable and resilient with the climate change. This paper aimed to explore the knowledge of youth regarding FW, causes and degree of awareness of FW among them as well as examining the most important socio-economic demographics determining FW knowledge amongst a sample of 430 students at Fayoum University, Fayoum city, Egypt. The results showed that dropping off items that are nearing the expiration date and lack of awareness regarding the economic importance of FW are considered the main causes of FW. Moreover, students think that it's important not wasting food and they would probably throw away less food if had more information about the negative impact of FW.

Among students, age, residence place, and knowledge of social, economic and environmental impacts of FW are significantly influencing knowledge about FW. In other words, the higher the student's age, the higher the odds of knowledge about FW. Likewise, the more knowledge of social, economic and environmental

impacts of FW, the higher the odds of knowledge about FW. Finally, a student being living in rural areas, tend to know more what FW is. Empirically, the study suggests, to raise youth awareness regarding FW, the educational curricula at universities must include FW and sustainable consumption concepts, moreover, youth's skills-building interventions through awareness campaigns should be regularly held to promote for changing norms and attitudes toward less FW and responsible consumption behavior.

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استكشاف وعي الشباب المصري تجاه هدر الطعام

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أصـــبح تقليل هدر الطعام حاجة ملحة لتحقيق التحول المســتدام للنظم الغذائية. ويمثل قياس وعي الشباب تجاه هذه القضية إجراءً هامًا لتصميم تدخل إستراتيجي فعال يهدف إلى تقليل النسب المئوية في هدر الطعام. يهدف من هذا البحث الي اسـتكشـاف معرفة الشـباب فيما يتعلق بالسـيطرة على هدر الطعام وكذلك تحديد العوامل التي تؤثر على هذه المعرفة. ولتحقيق الهدف من هذه الدراسة، تم جمع البيانات الأولية من 430 طالب وطالبة بجامعة الفيوم، مصر. تم استخدام نموذج الانحدار اللوجستي الثنائي لتحديد العوامل التي تؤثر على معرفة الهدر الغذائي بين الشباب.

أوضـحت أهم النتائج أن العمر ومكان الإقامة والمعرفة بالتأثيرات الاجتماعية والاقتصـادية والبيئية لهدر الطعام تؤثر بشكل كبير على معرفة الشباب بقضية هدر الغذاء. هذا وسلطت النتائج الحالية الضـــوء على أهمية تصـــميم منهج تعليمي في الجامعات بما في ذلك مفاهيم هدر الغذاء والاسـتهلاك المسـتدام. لذا ينبغي بناء مهارات الشـباب الجامعي من خلال الحملات بشـكل منتظم لتعزيز تغيير مواقفهم وسلوكياتهم بشكل ايجابي نحو الاستهلاك المسؤول والمستدام لتسريع التحول المستدام لنظم الأغذية الزراعية في البلدان النامية.