The effectiveness of a counseling program to develop the awareness of female students of the College of Education at Najran University in ways to rationalize food consumption

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Abstract

Rationalization of consumption and reduction of waste is one of the proposed solutions to address the problem of food shortage. Therefore, the need to rationalize food consumption has increased, due to the conditions in which we live, and the accompanying increase in population, lack of food resources and the clear rise in prices, which requires the use of available resources to the maximum extent possible, and an attempt to limit irrational consumption, and therefore it is necessary to raise The level of awareness of ways to rationalize food consumption.

Therefore, this research aimed to identify the students' knowledge of rationalizing food consumption, and to design a program to develop awareness of ways to rationalize food consumption for female students who are less knowledgeable. And to verify the effectiveness of the program in follow-up telemetry. By using the descriptive and semi-experimental method, the descriptive sample consisted of (120) students and the experimental sample consisted of (20) students, and they were divided into two experimental and control groups, each of them (10). The tools used to identify awareness of ways to rationalize food consumption and the extension program (prepared by the researcher). The most important results revealed that the level of awareness of the students about ways to rationalize food consumption came to a moderate degree. It turned out that preserving food by refrigeration came first, followed by preserving food by freezing, then preserving the nutritional value, then cooking, then preparation, followed by purchase, followed by serving, followed by preserving food in the kitchen cupboard, followed by dealing with leftover foods, followed by home manufacturing.

It also shows the effectiveness of the program in developing awareness of ways to rationalize food consumption for the experimental group in the post and follow-up measurements among female students of the College of Education at Najran University, which indicates the continuity of the program.

Keywords: *extension program, awareness, consumption rationalizing, ways to rationalize food consumption.*

INTRODUCTION

Food waste is a national security problem for any country, as it affects the amount of food available to the state as well as the expected quantity for the individual. It is also associated with some other problems such as the use of a large amount of water in its preparation, in addition to the waste resulting from it, whether when preparing it for cooking or when disposing of it in garbage and turning it into toxic gases, as it affects the budget of the state and the family alike. and The Sustainable Development Goals target 12.3 aims for decreasing global per capita food by 2030, as well as minimizing food losses along

the production and supply chains(González-Santana ,et al,2022) .

Despite this, food losses and waste constitute at least a third of the food produced globally (United Nations Organization, 2019). The Arab countries are among the most wasted countries of food in the world, and the percentage of food waste resulting from households varies from one country to another in the Arab world, as it is estimated at about 68-150 kg / person per year in the authority of Oman, and about 72-160 kg / person per year in Iraq. And about (194-230) kg / person annually in the United Arab Emirates. In other words, food wastage in more economically developed countries is greater than in less developed countries. (Fakhry, 2018), and (Abiad and Lokman, 2018). The Kingdom of Saudi Arabia ranks advanced globally in food waste, with about 33 percent of food wasted, with a value of more than 40.4 billion Saudi riyals, according to Minister Al-Fadli (Ministry of Environment, Water and Agriculture, 2020) .

Among the most important factors influencing consumption: tradition, pride, advertising, financial capabilities, awareness and rationality, urbanization and its living requirements, installment and lending policy (Al-Zahrani, 2017). And the existence of an effect for each of the attitudes towards purchasing sustainable food products, perceived availability and personal criteria on the purchase intention (Jabali, 2021), so the dominance of the consumption culture leads to the doubling of human needs and exceeding the ability of the available resources to meet them (Shiha, 2014). Al-Dosari's study (2006) confirmed that the majority of Saudi families consume more than their income, and there is a relationship between family size and consumer behavior.

This was confirmed by the results of Al-Mutairi's study (2019), indicating that 35% of the study sample spend between 16-25% of their monthly income on food consumption, with an average expenditure of 20%. While the average public consumption expenditure in the Kingdom of Saudi Arabia does not exceed 18%. However, the food consumption of 60% of Saudi families exceeds their actual needs, and there are no clear mechanisms for disposing of surplus food, as the percentage of food waste for the sample examined ranges from 11-30% of the total monthly waste.

The phenomenon of extravagant food consumption is one of the phenomena that characterizes many individuals, whether in cities or villages, educated or uneducated, and wasteful food consumption has increased at very rapid rates that are not followed by the increase in production rates, and thus a large gap appeared between production and consumption. The study of Obaidat and Al-Sarabi (2016) concluded that there is waste in the consumption of bread among a large percentage of buyers, who do not consume the entire quantity purchased each time, at a rate of (56.95%). While a study Ali (2020) showed that about 98% of the respondents fall into the category of low and medium behavior with regard to reducing household food waste. This increases the amount of food waste in the social events of the Arab peoples, especially holidays and weddings. That is why the problem of ignorance of food consumption rationalization is considered one of the most serious problems (Hanna, 2003). The growth of negative indicators of the culture of food consumption on the social, economic and cultural aspects requires intensified efforts to develop awareness of the areas of rationalization of food consumption for members of society. Therefore, FAO focused on the need to raise public awareness to reduce food loss and food waste, provided that it is within the framework of political initiatives and media campaigns, and that education in schools play a major role in rationalizing consumption (Abdul Hafez, 2015).

That is why the issue of rationalizing consumption has become truly the topic of the hour, and it is a national necessity that must be adopted by developed and developing countries alike, because it is an important element of the national economy, (Nofal, 2006). Because of the conditions in which we live, and the accompanying increase in the number of The population, the lack of food resources and the obvious rise in prices for various food commodities, which requires the use of available resources to the maximum extent possible, and an attempt to limit irrational consumption, while making efforts to reduce waste as much as possible.

The rationalization of food consumption is concerned with the optimal use of foodstuffs, balance and moderation in spending without wasting, whether in terms of quantity or nutritional value, starting with the purchase of foodstuffs and preparing them for cooking, methods of presentation, methods of dealing with remaining cooked foods, as well as food preservation and storage. Abu Talib(1999) defines it as providing food for family members in accordance with their physical, mental and scientific needs, provided that spending on food is appropriate to the family's capabilities and resources, and rational decision-making with regard to choosing food and determining its quantities and how to prepare, eat and preserve it.

The study of Nofal et al. (2013) concluded that consumer awareness is of great importance in making the right purchase decision. By choosing the most appropriate and best of the offered commodities (Sharif and Al-Mahtadi, 2021). This entails the process of preparation, cooking, preservation and storage. Chopra's (2014) study indicated that women have a greater role in consumption than men, as women no longer play the role of "housewives only" but rather are responsible for purchases and controlling purchase decisions. The woman is responsible for spending and consumption within the limits of her family, and she is the cornerstone of the consumption process (Al-Mursi, 2023).And it became clear from the study (McDowell et al (1997), Al-Qutb (1994), Al-Dweik (2002) and Abu Al-Nasr (2003) (Al-Abyan, 2020) that the head of the family has a direct responsibility with regard to consumption in its various fields, as well as placing the responsibility on her to educate her family members With good rationalization and non-extravagance, and then raising the level of consumer culture among them, with the important role it plays in the processes of selection, purchase, preparation, cooking and serving of food, and everything related to food consumption, according to the extent of its information and awareness, the pattern of family food consumption depends, and the formation of consumer habits and trends among individuals her family.

In spite of this, women's economic rationalization of consumption is not in the required manner, which should be the rational behavior of women (Al-Rumani, 2004), as it was shown from the study of Al-Garhi and others (2005) the low level of practices of rationalization of food consumption and the high percentage of spending on the food item of income Overall, as it was evident from the study of Abdel-Rahim (2012), the lack of interest of civil society institutions in the culture of rationalization of consumption. Raising awareness of the harmful consequences of wasting food and encouraging behavioral changes to reduce waste of precious resources is the first step in addressing this problem. There is an urgent need to promote behavioral changes in Saudi society (Baig, et al, 2022).

Whereas, female university students are the mothers and teachers of tomorrow. Therefore, this research aims to identify the students' knowledge of ways to rationalize food consumption. Designing a program to develop awareness of ways to rationalize food

consumption for female students with a lower level of knowledge, and verifying the effectiveness of a counseling program to develop awareness of female students of the College of Education at Najran University on ways to rationalize food consumption in post- and follow-up measurement. So that she can spread this culture among her family and in her field of work in the future.

Study Methodology and Procedures:

In this part, it deals with the procedures of the study, starting with the study's approach, the society in which the researcher applied her study, the study tool and its construction, the statistical methods by which the validity and reliability of the scale were calculated, and finally the statistical methods used in the study, which are used to answer the questions of this study.

First- Study Methodology:

The current research depends on the descriptive and quasi-experimental approach as an experiment aimed at identifying a program based on cognitive counseling, the effectiveness of a counseling program (independent variable) to develop awareness of ways to rationalize food consumption (dependent variable) among female students of the College of Education at Najran University, in addition to the use of the experimental design with two equal groups. (experimental and control) to determine the impact of the program (post-measurement) on the variables of the study, in addition to using the one-group design to determine the continuity of the impact of the program after the follow-up period (tracing measurement of the experimental group).

Second - Study Population:

The study population is all female students of the College of Education at Najran University

Third- study sample:

1- Exploratory sample: The exploratory sample, numbering (30), consisted of female students of the College of Education at Najran University. The scale was applied to them to verify the psychometric efficiency to identify awareness of ways to rationalize food consumption.

2- Final sample: The descriptive sample consisted of (120) female students from the College of Education at Najran University, and (20) female students were selected from among them, which obtained the lowest scores in awareness of ways to rationalize consumption, and the sample was randomly divided into two groups (10) as an experimental group And (10) as a control group whose chronological age ranged between (18-23) years with a mean age (20.70) and a standard deviation of (1.809).

Fourth- Parity between the experimental and control groups:

The researcher conducted an equivalence between the experimental and control groups in terms of: chronological age, the degree to which they obtained a questionnaire about awareness of ways to rationalize food consumption in the tribal measurement. Using the Mann-Whitney Test to verify the equivalence of the two groups in each of:

Table (1) The significance of the differences between the average ranks of the chronological age and awareness of ways to rationalize food consumption for the members of the experimental and control groups:

Variables	group name	N	average rank	total ranks	U. value	value Z	significance level
Chronological age	experimental	10	10.80	108.00	47.000	-0.231	0.818
	Control	10	10.20	102.00			
Awareness of ways to rationalize food consumption	experimental	10	10.80	108.00	47.000	-0.227	0.820
	Control	10	10.20	102.00			

It is clear from Table (1) that the calculated Z value is less than the limit value (1.96), which indicates that there are no statistically significant differences between the average ranks of chronological age and awareness of ways to rationalize food consumption for members of the experimental and control groups among the students of the College of Education at Najran University.

Fifth: Study Tools:

1- Determining awareness of ways to rationalize food consumption

Questionnaire of awareness of ways to rationalize food consumption: The researcher reviewed the theoretical framework and previous studies, and what was available from previous measures related to awareness of ways to rationalize food consumption. Knowledge related to: buying food (15) phrases, preparing (14) phrases, cooking (16) phrases, serving foods (11) phrases, dealing with leftover foods (6) phrases, storing food in the kitchen cupboard (4) phrases, Preserving food by freezing (8) phrases, preserving food by freezing (5) phrases, home manufacturing (10) phrases, preserving nutritional value (6) phrases. The questionnaire is suitable for individual or group application, and the ease and clarity of the phrases were taken into consideration in the formulation of the phrases, and their suitability for the female students, and there are three levels to answer each of the phrases (agree, do not know, disagree).

Sixth - Psychometric characteristics to determine awareness of ways to rationalize food consumption

To reach the final picture, the researcher applied the questionnaire's vocabulary to (30) female students of the College of Education at Najran University

The scale is correct:

Validity and stability of the tool:

Virtual validity

To ensure the validity of the tool, it was presented to (11) professors in the field of nutrition to survey their opinion on formulating phrases and choosing the best appropriate phrases to measure students' awareness of ways to rationalize food consumption. The required amendment was made by adding or deleting some phrases and taking approval as a viable tool, and the word that was agreed upon between the arbitrators was less than (80%) was deleted.

Internal consistency (singular with the total score of the dimension to which it belongs)

The researcher calculated the correlation coefficients between the degree of each individual and the total degree of the dimension to determine awareness of ways to rationalize food consumption after deleting the

degree of dimension from the total degree, and it extended between (0.389, 0.992), which indicates that the questionnaire has a high degree of validity

Table (2) Internal consistency (singular with the total score of the dimension to which it belongs)

buy food		Preparation		Cooking		serving food		Handling leftover foods	
Sequence	correlation coefficient	S	correlation coefficient	S	correlation coefficient	s	correlation coefficient	S	correlation coefficient
1	0.750**	16	0.754**	30	0.576**	46	0.517**	57	0.643**
2	0.788**	17	0.792**	31	0.477**	47	0.517**	58	0.389*
3	0.797**	18	0.831**	32	0.784**	48	0.643**	59	0.756**
4	0.885**	19	0.832**	33	0.789**	49	0.643**	60	0.761**
5	0.887**	20	0.872**	34	0.801**	50	0.663**	61	0.805**
6	0.903**	21	0.872**	35	0.801**	51	0.663**	62	0.824**
7	0.906**	22	0.901**	36	0.810**	52	0.734**		
8	0.936**	23	0.926**	37	0.871**	53	0.734**		
9	0.944**	24	0.981**	38	0.912**	54	0.734**		
10	0.955**	25	0.986**	39	0.912**	55	0.769**		
11	0.965**	26	0.986**	40	0.914**	56	0.769**		
12	0.992**	27	0.986**	41	0.945**				
13	0.992**	28	0.986**	42	0.945**				
14	0.902**	29	0.986**	43	0.945**				
15	0.922**			44	0.945**				
				45	0.945**				
Storing food in the kitchen cupboard		Food preservation by refrigeration		Food preservation by freezing		home manufacturing		Maintaining nutritional value	
Sequence	correlation coefficient	S	correlation coefficient	S	correlation coefficient	S	correlation coefficient	S	correlation coefficient
63	0.573**	67	0.389*	75	0.474**	80	0.590**	90	0.474**
64	0.659**	68	0.409*	76	0.554**	81	0.414*	91	0.554**
65	0.746**	69	0.428*	77	0.664**	82	0.451*	92	0.664**
66	0.778**	70	0.616**	78	0.714**	83	0.590**	93	0.714**
		71	0.883**	79	0.777**	84	0.590**	94	0.777**
		72	0.899**			85	0.597**	95	0.616**
		73	0.908**			86	0.876**		
		74	0.908**			87	0.934**		
						88	0.934**		
						89	0.934**		

** The value is function at (0.01) * The value is function at (0.05)

It is clear from Table (2) that the values of the correlation coefficients between the degree of the individual and the total degree of the dimension to which it belongs at (0.01), which indicates that the vocabulary measures what the dimensions measure, that is, there is internal consistency.

Internal consistency dimensions with the total score of the scale

The researcher calculated the correlation coefficients between the degree of each dimension and the total score of the awareness questionnaire about ways to rationalize food consumption after deleting the degree of the dimension from the total score, and it extended between (0.732, 0.937), which indicates that the questionnaire has a high degree of validity.

Table (3) Pearson's correlation coefficient between the degree of each dimension and the total degree of the resolution

Dimensions	correlation coefficient	Sig.
buy food	0.858**	0.01
Preparation	0.866**	0.01
Cooking	0.908**	0.01
serving food	0.813**	0.01
Handling leftover foods	0.754**	0.01
Storing food in the kitchen cupboard	0.732**	0.01
Food preservation by refrigeration	0.937**	0.01
Food preservation by freezing	0.760**	0.01
home manufacturing	0.754**	0.01
Maintaining nutritional value	0.760**	0.01

**Function at significance level (0.01)

It is clear from Table (3) that the values of the correlation coefficients between the degree of dimension and the total degree are significant at (0.01), which indicates the existence of internal consistency.

Reliability using Cronbach's alpha coefficient, and hash-half

The researcher calculated the stability coefficient of the dimensions and the degree of awareness of the methods of rationalizing food consumption using the alpha-Cronbach coefficient and it ranged between (0.654, 0.91), and the half-segmentation method (0.621, 0.874), which indicates that the scale has a high degree of stability.

Table (4) Stability coefficient using Cronbach's alpha coefficient, and hash-half

Dimensions	Alpha-Cronbach	split half
buy food	0.769	0.704
Preparation	0.845	0.812
Cooking	0.745	0.701
serving food	0.825	0.841
Handling leftover foods	0.654	0.621
Storing food in the kitchen cupboard	0.873	0.846
Food preservation by refrigeration	0.872	0.812
Food preservation by freezing	0.771	0.745
home manufacturing	0.732	0.874
Maintaining nutritional value	0.784	0.705
Total marks	0.910	0.830

It is clear from the previous table that the values of the stability coefficients computed by the Alpha Cronbach method amounted to (0.910) and the half-segmentation reached (0.830) for the questionnaire, which are high stability values, which indicates that the questionnaire has a high degree of stability .

Resolution correction:

The questionnaire statements were corrected as follows: Positive statements were given (3-2-1) to answer with agreement, I don't know, and disapproval of the order, while negative statements were given (1-2-3) to answer with agreement, I don't know and disagree respectively, and the diagnosis is made according to the total score and the low score obtained by the student, which expresses the low awareness of ways to rationalize food consumption.) divided by the number of options, i.e., the category range = 3-1=2 ÷3=0.67. Thus, the judgment criterion becomes. The paragraphs that received averages less than (1.67) have a poor level of approval, and the paragraphs that got averages ranging from (1.67) And less than (2.33) the level of approval is medium, and the paragraphs that get averages greater than (2.33) the level of approval is high

2- counseling program

An indicative program has been prepared to develop the awareness of female students of the College of Education at the University of Najran on ways to rationalize food consumption

Techniques used in the program:

Many techniques were used, including cognitive reconstruction, problem solving method, giving instructions to oneself (self-dialogue method), role playing, modeling, homework, and reinforcement (reinforcement).

Program objective:

The objectives of the program can be divided into:

1-An indicative goal: where the program aims to develop awareness of ways to rationalize food consumption for the members of the experimental group by using the cognitive-behavioral counseling techniques used in the program.

2- A preventive goal: by providing the experimental group members with some behaviors that enable them to confront wrong practices and that help in wasting the value or quantity of food.

Key features of the program:

1- Number of sessions in the program: The current program includes (12) sessions, and the program is implemented at the rate of (3) sessions per week within a time frame of (4) weeks.

2- The method of counseling used: The program was applied in a (collective) manner on the members of the counseling group.

3- Session time: The time of one session ranges from (45-60) minutes, depending on the topic of the session, the techniques used and the conditions of the sample.

4- Language of the program: The program is presented in an easy language ranging from colloquial to standard to make it easier for them to understand and benefit from the sessions.

5- The stages of implementing the program: It took place in five stages: preparation, preparatory, beginning, application, evaluation, and then the follow-up stage.

The survey:

An exploratory study of the program used in the current research was conducted on a number of female students of the College of Education at Najran University who met the same conditions as the experimental sample. It was identified: the appropriate duration for each session, the number of sessions appropriate to achieve the goal, and the techniques used.

Place of sessions: The program was implemented in the College of Education, Najran University.

The content of the sessions: The content of the indicative sessions was selected based on the general and procedural objectives that were identified for the program and the practical procedures, including the techniques, indicative method and the material means used.

Table (5) shows the order of the cognitive-behavioral counseling program sessions

Session type and time	Session Title	Objective of the session	The techniques used
Group session (45-60) Minutes	**Introduction of researchers and guidance group + Program preface**	**Establish familiarity between researchers and study sample.** □ **Familiarizing participants with the program and giving then a comprehensive idea about the main steps in light of which guidance sessions will be carried out.** **dentify the concept of rationalization in general,**	□ **Lecture** □ **Discussion** □ **PowerPoint pres.** □ **Emphatic training** □ **Reinforcemen** □ **Homework**

		rationalizing food consumption, Learn how to rationalize food consumption	
Group session 45-60)(Minutes	Developing awareness of ways to buy food	dentify the concept of buying food -Pre-purchase steps Knowing what to do while buying food Knowing the good specifications of food commodities	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Homework
Group session 45-60)(minutes	Developing awareness of the appropriate preparation steps for foods	Increasing awareness of what should be available in the person preparing the food Increasing awareness of the importance of cleanliness of the place and food preparation tools Increasing awareness of the proper preparation of each food item Increasing awareness of ways to reduce waste during preparation	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Homework
Group session 45-60) (minutes	Developing awareness of ways to reduce waste during cooking	Increasing awareness of cooking methods Increasing awareness of choosing the appropriate cooking method for food and family members Increasing awareness of ways to reduce waste during cooking	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training Reinforcemen Homework
Group session 45-60) (minutes	Developing awareness of ways to reduce food waste	Increasing awareness of the attractive ways of serving food Increasing awareness of ways to reduce food waste	☐ Lecture ☐ Discussion ☐ PowerPoint pres ☐ Emphatic training ☐ Reinforcem Homewor
Group session 45-60) (minutes	Developing awareness of ways to deal with leftover foods.	Identify the nutritional practices followed by the research sample in dealing with the remaining. Correcting the wrong nutritional practices followed by the induction sample in dealing with the remaining. Increasing awareness of ways to reduce waste from residual.Increasing awareness of ways to reuse leftover foods in new and healthy dishes	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling☐Homework
Group session 45-60) (minutes	Storing food in the kitchen cupboard	-Identify the practices followed by the research sample in storing food in the kitchen cupboard Correcting the wrong nutritional practices followed by the induction sample in storing food in the kitchen cupboard.	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling .Homework
-Group session 45-60) (minutes	Food preservation by refrigeration	Increasing awareness of refrigerated food preservation methods -Practices to be followed to reduce waste during cooling Training how to preserve some food by refrigeration	☐ Lecture ☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling☐ Homework
Group session 45-60) (minutes	Food preservation by freezing	Increasing awareness of food preservation methods by freezing -Practices to be followed to reduce waste during freezing Training how to preserve some foods by freezing	☐ Lecture. Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling☐ Homework
Group session 45-60) (minutes	Developing awareness of the importance and methods of home manufacturing (jam - pickles(	-Increasing awareness of the importance of making use of excess fruits and vegetables in home manufacturing -How to make jam - How to make pickle	☐ Discussion ☐ Lecture ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling☐ Homework

Group session (45-60) minutes	Preserve the nutritional value of food	Identify the concept of nutritional value -Increasing awareness of the importance of preserving nutritional value. Ways to preserve the nutritional value	☐ Lecture☐ Discussion ☐ PowerPoint pres. ☐ Emphatic training ☐ Reinforcemen ☐ Modeling☐ Homework
Group session (45-60) minutes	Review and integrative view of the program. Conclusion and calendar, a day of fun	- review what has been achieved in previous sessions Remind the sample members of all the techniques, information and skills they obtained through the program -Identifying the strengths and weaknesses in the extent to which the program has achieved its main objective -Review any deficiencies, malfunctions, or any technical or session before terminating the program Preparing the sample members to finish the program Evaluating the effectiveness of the program in developing awareness of ways to rationalize food consumption Thanking the sample members, celebrating them, and encouraging them to continue implementing and following what they learned through the program's sessions	☐ Lecture ☐ Reinforcemen

Sixth: Statistical methods:

In order to reach the results that achieve the objectives of the study, and to analyze the data, a set of various statistical methods were used, by using the Statistical Package for Social Sciences (SPSS), after the data was encoded and entered into the computer, and the statistical methods that Used in this study are:

1- The correlation coefficient (Pearson), Cronbach's alpha, and the hash-half were used using Spearman's equation.

2-Descriptive statistics through means, standard deviations and relative weight

3- The Wilcoxon test, the Mann-Whitney test and the binary correlation coefficient of ranks and the awareness of female students of the College of Education at the University of Najran about ways to rationalize food consumption.

Study results and discussion:

First, the results of the descriptive study

On the following main question: What is the level of awareness of female students of the College of Education at the University of Najran about ways to rationalize food consumption?

To answer this question, the researcher calculated frequencies, percentages, arithmetic averages, standard deviations, and ranks for the responses of female students of the College of Education at Najran University to a questionnaire about awareness of ways to rationalize food consumption. Table (6) highlights the results related to the first question.

Table (6) The results of the arithmetic mean and standard deviation of the dimensions of the awareness questionnaire about ways to rationalize food consumption, arranged in descending order

Dimensions	Medium	Sd	Relative Weight	arrangement	degree level
Food preservation by refrigeration	2.363	0.543	78.75	1	High
Food preservation by freezing	2.267	0.506	75.56	2	Medium
Maintaining nutritional value	2.267	0.506	75.56	2	Medium
Cooking	2.254	0.677	75.14	4	Medium
Preparation	2.238	0.736	74.60	5	Medium
buy food	2.211	0.757	73.71	6	Medium
serving food	2.203	0.565	73.43	7	Medium
Storing food in the kitchen cupboard	2.156	0.538	71.85	8	Medium
Handling leftover foods	2.120	0.566	70.67	9	Medium
home manufacturing	2.058	0.575	68.61	10	Medium
Total marks	2.214	0.491	73.79		Medium

It is clear from Table (6) that the level of female students' awareness of ways to rationalize food consumption came to a medium degree with an average of (2.214) and a relative weight of (73.79%). The same table shows that after food preservation by refrigeration, it came first, where it reached (mean = 2.363, standard deviation = 0.543) and relative weight (78.75%), followed by after food preservation by freezing, where it reached (mean = 2.267, standard deviation = 0.506) and relative weight (75.56%).), It is followed by after Maintaining the nutritional value where it reached (average = 2.267, standard deviation = 0.506) and relative weight (75.56%), followed by after cooking where it reached (average = 2.254, standard deviation = 0.677) and relative weight (75.14%), It is followed by after preparing foods where it reached (mean = 2.238, standard deviation = 0.736) and with a relative weight (74.60%), followed by after buying foods where it reached (mean = 2.211, standard deviation = 0.757) and with a relative weight (73.71%), followed by after serving foods Where it reached (mean = 2.203, standard deviation = 0.565) and with a relative weight of (73.43%), It was followed by after storing food in the kitchen cupboard, where it reached (average = 2.156, standard deviation = 0.538) with a relative weight of (71.85%), followed by after dealing with the remaining foods, where it reached (average = 2.120, standard deviation = 0.566) and with a relative weight (70.67%).), followed by home manufacturing, where it reached (average = 2.058, standard deviation = 0.575) and with a relative weight of (68.61%).

Second, the results of the pilot study:

Results of the first hypothesis: The first hypothesis states, "There are statistically significant differences between the mean scores of the experimental group and the control group in the dimensional measurement on the identification of awareness of ways to rationalize food consumption among female students of the College of Education at Najran University at the level (0.01) in favor of the experimental group.

To verify the validity of this hypothesis, the Mann-Whitney test (U and Z value) was used as one of the non-parametric methods to identify the significance of the differences between the mean ranks of the two groups' scores, members of the experimental group

and members of the control group in the post-measurement, in order to determine the significance of what might occur in the post-measurement. Questionnaire of awareness of ways to rationalize food consumption among female students of the College of Education at the University of Najran, as reflected by their scores on the questionnaire of awareness of ways of rationalizing food consumption among female students of the College of Education at the University of Najran, and to calculate the size of the impact of the program using the binary correlation coefficient of ranks

Table (7) (U, Z) values and their significance for the differences between the mean ranks of the scores of the experimental group members and the control group members and the size of the effect to identify awareness of ways to rationalize food consumption in the post-measurement

Dimensions	group name	N	M	Total	Values Z	Sig.	r prd
buy food	Experimental	10	14.65	146.50	8.500	-3.142	0.830
	Control	10	6.35	63.50			
Preparation	Experimental	10	15.50	155.00	0.000	-3.785	1.000
	Control	10	5.50	55.00			
Cooking	Experimental	10	15.30	153.00	2.000	-3.628	0.960
	Control	10	5.70	57.00			
serving food	Experimental	10	15.50	155.00	0.000	-3.784	1.000
	Control	10	5.50	55.00			
Handling leftover foods	Experimental	10	15.05	150.50	4.500	-3.460	0.910
	Control	10	5.95	59.50			
Storing food in the kitchen cupboard	Experimental	10	15.45	154.50	0.500	-3.765	0.990
	Control	10	5.55	55.50			
Food preservation by refrigeration	Experimental	10	15.50	155.00	0.000	-3.795	1.000
	Control	10	5.50	55.00			
Food preservation by freezing	Experimental	10	15.50	155.00	0.000	-3.803	1.000
	Control	10	5.50	55.00			
home manufacturing	Experimental	10	15.50	155.00	0.000	-3.785	1.000
	Control	10	5.50	55.00			
Maintaining nutritional value	Experimental	10	15.50	155.00	0.000	-3.805	1.000
	Control	10	5.50	55.00			
Total marks	Experimental	10	15.50	155.00	0.000	-3.782	1.000
	Control	10	5.50	55.00			

Tabular (Z) value at a significance level of (0.05) equal to (1.96)

It is clear from Table (7) that: It is clear that the calculated Z value in the total score and sub-dimensions is greater than the limit value (1.96), which indicates that there are statistically significant differences between the mean ranks of the scores of the two groups, members of the experimental group and members of the control group on the

identification of awareness in ways Rationalizing food consumption among female students of the College of Education at Najran University in the dimensional measurement, and that these differences are significant at (0.01) in favor of the averages of the experimental group.

The value of the binary correlation coefficient of ranks (RPRB) ranged between (0.83 to 1) and this indicates a very strong effect of (the indicative program) on (the level of awareness of ways to rationalize food consumption for the experimental group compared to the control group, which indicates the achievement of the first hypothesis of the hypotheses The study attributes this result to the experimental group being exposed to the program and its effect on the control group, and this result agrees with most of the previous studies that found that it is possible to raise awareness of ways to rationalize food consumption after the experiment. The tasks were reduced to simple steps, as this contributed to the development of awareness of ways to rationalize food consumption among female students of the College of Education at the University of Najran. This

result agreed with the studies of Abu Al-Nasr, Mahfouz(2005), Al-Halabi (2009), Abdel Latif (2018) Saad (2020).

The results of the second hypothesis:

The second hypothesis states that "there are statistically significant differences between the mean ranks of the experimental study group's scores in the pre and post procedural measures on the awareness of ways to rationalize food consumption among female students of the College of Education at the University of Najran at the level (0.01) in favor of the post-measurement.

To test the validity of this hypothesis, the Wilcoxon test and the Z-value were used as one of the non-parametric methods to identify the significance of the differences between the mean ranks for the scores of the experimental group in the questionnaire of awareness of ways to rationalize food consumption among students of the College of Education at Najran University in the two procedural standards, before and after. In his calculation, the researcher relied on the Wilcoxon test for the two linked samples using the binary correlation coefficient (r prd)) for ranks

Table (8) The significance of the differences between the average ranks of the scores in the tribal and remote measures and the size of the effect to determine the awareness of ways to rationalize food consumption in the experimental group

Dimensions	Measurement AFTER ME/FOLLOW ME	N	M	Total	Z . value	Sig.	r_{prb}
buy food	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.825-**		
	positive ranks	**10**	**5,50**	**55.00**		**0.01**	**1.00**
	Equality	**0**					
	Total	**10**					
Preparation	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.829-**		
	positive ranks	**10**	**5.50**	**55.00**		**0.01**	**1.00**
	Equality	**0**					
	Total	**10**					
Cooking	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.823-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
serving food	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.814-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			

	Equality	**0**					
	Total	**10**					
Handling leftover foods	**Negative ranks**	**0**	**0.00**	**0.00**	**2.814-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
Storing food in the kitchen cupboard	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.820-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
Food preservation by refrigeration	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.820-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
Food preservation by freezing	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.911-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
home manufacturing	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.807-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
Maintaining nutritional value	**Negative ranks**	**0**	**0.00**	**0.00**	**-2.814-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					
Total	**Negative ranks**	**0**	**0.00**	**0.00**	**2.807-**	**0.01**	**1.00**
	positive ranks	**10**	**5.50**	**55.00**			
	Equality	**0**					
	Total	**10**					

Tabular (Z) value at a significance level of (0.05) equal to (1.96)

It is clear from Table (8) that the calculated Z value in the total score and sub-dimensions is greater than the limit value (1.96), which indicates that there are statistically significant differences between the average ranks of bicycles in the dimensions of the awareness questionnaire about ways to rationalize food consumption among students of the College of Education at Najran University and the degree The total and that is at (0.05) in the tribal and remote measurements of the experimental group, and that these differences are in favor of the averages of the dimensional measurement, and the value of the binary correlation coefficient for the ranks of the related pairs (r prb) which is equal to) 1.0) indicates that there is a very strong effect of (the indicative program) In the improvement of awareness of ways to rationalize food consumption among female students of the College of Education at the University of Najran, which indicates the achievement of the results of the second hypothesis of the study's hypotheses. The program's sessions to learn more ways to rationalize food consumption in all its aspects, which led to the development of their awareness of ways to rationalize food consumption, as well as the possibility of replicating information and skills until the stage of mastery and Itqan. The researcher also divided the skills into small steps that require a response and give immediate feedback, which focuses on the educational goal.

The results of the third hypothesis:

The third hypothesis states that "there are no statistically significant differences between the

mean scores of the experimental study group in the dimensional and follow-up measurements (two months after the end of the program) on the awareness of ways to rationalize food consumption among female students of the College of Education at Najran University.

And to test the validity of the hypothesis, the Wilcoxon test and the value of Z were used as one of the non-parametric methods to identify the significance of the differences between the mean ranks of the experimental group's scores in the questionnaire of awareness of ways to rationalize food consumption among students of the College of Education at Najran University in both post and follow-up measurements. The results were as shown in Table (9).

Table (9) The significance of the differences between the mean ranks of the two post- and follow-up measurements to determine awareness of ways to rationalize food consumption among the experimental

Dimensions	Measurement AFTER ME/FOLLOW ME	N	M	Total	Z . value	Sig.
buy food	Negative ranks	4	5.50	22.00	-.632-	
	positive ranks	6	5.50	33.00		0.527
	Equality	0				
	Total	10				
Preparation	Negative ranks	4	5.50	22.00	-.632-	
	positive ranks	6	5.50	33.00		0.527
	Equality	0				
	Total	10				
Cooking	Negative ranks	5	5.50	27.50	.000^c	
	positive ranks	5	5.50	27.50		1.000
	Equality	0				
	Total	10				
serving food	Negative ranks	4	5.50	22.00	-.632-	0.527
	positive ranks	6	5.50	33.00		
	Equality	0				
	Total	10				
Handling leftover foods	Negative ranks	4	5.50	22.00	-.632	0.527
	positive ranks	6	5.50	33.00		
	Equality	0				
	Total	10				
Storing food in the kitchen cupboard	Negative ranks	4	5.50	22.00	-.632	0.527
	positive ranks	6	5.50	33.00		
	Equality	0				
	Total	10				
Food preservation by refrigeration	Negative ranks	5	5.50	27.50	.000	1.000
	positive ranks	5	5.50	27.50		
	Equality	0				
	Total	10				
Food preservation by freezing	Negative ranks	4	5.50	22.00	-.632	0.527
	positive ranks	6	5.50	33.00		
	Equality	0				
	Total	10				
home manufacturing	Negative ranks	4	5.50	22.00	-.632	0.527
	positive ranks	6	5.50	33.00		
	Equality	0				

	Total	10				
Maintaining nutritional value	Negative ranks	5	5.50	27.50	.000	1.000
	positive ranks	5	5.50	27.50		
	Equality	0				
	Total	10				
Total	Negative ranks	4	6.50	26.00	-.162	0.871
	positive ranks	6	4.83	29.00		
	Equality	0				
	Total	10				

It is clear from Table (9) that the calculated Z value in the total score and sub-dimensions is less than the cut-off value (1.96), which indicates that there are no statistically significant differences between the mean ranks of the experimental group scores in the two post and follow-up measurements on the identification of awareness of ways to rationalize food consumption in my Female students of the College of Education at Najran University, and this means the continuity of the program.

Interpretation of the results:

It was clear from the descriptive results that the level of awareness of the students of the College of Education at the University of Najran about ways to rationalize food consumption came to a medium degree and that after food preservation by refrigeration came first, while after home manufacturing it came in the last rank. Refrigeration, while home manufacturing depends more on precision in controlling the ingredients and more on buying canned products more than on manufacturing.

The results of the first and second hypotheses of the study indicated the effectiveness of the counseling program in developing the awareness of the students of the College of Education at the University of Najran about ways to rationalize food consumption, by comparing the average ranks of the scores of the experimental group members (before - after) applying the program, as well as by comparing the average ranks of the scores of members of the two groups. (experimental - control) after applying the program. And by

calculating the impact size of the program used.

The results of comparing the average ranks of the scores of the experimental group members (post-test) indicated that there were no statistically significant differences, and consequently the continued high awareness of ways to rationalize food consumption among the experimental group.

This can be explained by the fact that the program included a set of training, technical guidance and nutritional information that contributed to the improvement in the experimental group, which in turn led to an increase in awareness of ways to rationalize their food consumption. Through this program, cognitive counseling and behavioral counseling were combined with the techniques included in each of them represented in lecture, discussion, modeling, self-dialogue, problem solving, role playing, cognitive reconstruction in addition to the use of reinforcement, homework and presentations in each session. Therefore, the combination in the program used between all these techniques had an effective effect in developing awareness and awareness of the students of the College of Education at the University of Najran about ways to rationalize food consumption.

The results of the current research agree with the results of the following studies of Yassin (2007), Al-Haddad, et al (2016) , Al-Ghazali ,et al (2019), which concluded the effectiveness of the program used in raising or developing the level of nutritional awareness.

Recommendations and suggestions:

1-Inclusion of ways to rationalize food consumption in the school curricula.

2- Providing educational courses for students on ways to rationalize food consumption

3- Interest in spreading the culture of rationalizing food consumption among university students.

4-Disseminating correct information on rationalizing food consumption through the media

5-Preparing training programs to train students on ways to rationalize food consumption.

Acknowledgments:

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