

## **The effect of nutritional health perceptions on the academic achievement for students of secondary school A field study on a sample of high school student in Algerian schools**

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**Received: 01/2024, Published: 02/2024**

### **Abstract:**

Proper and balanced nutrition for students is considered a health and educational priority, due to its impact on physical and mental growth and its impact on health. Therefore, the current study aims to reveal the impact of nutritional health perceptions on the academic achievement of secondary school students. To determine that impact, the Nutritional Health Perceptions Scale by (Ahmed Samir) was applied. Saad Zaghoul, 2022) on a sample estimated at (542) male and female students, who were selected using a stratified method.

Based on the descriptive approach, collecting data, tabulating it, and processing it based on the statistical package program SPSS23, the results showed that: There are no statistically significant differences in the level of nutritional health perceptions among secondary school students due to the variables of both academic achievement and academic level (first year of secondary school, second year). Secondary, third year of secondary school, section (scientific, literary).

**Keywords:** Nutrition; Perceptions, health, study.

### **Introduction:**

. Arab societies have increased interest in healthy dietary behaviors that help improve their health and livelihood, given the important role that nutrition plays in the life of the individual, and in its progress, advancement, and well-being, directly or indirectly. Caring for the individual's health, nutrition and care is one of the most important pillars on which human development is based. It is utter in those international organizations like the World Health Organization have authorized several of nutritional goals, including the spread of accurate information to combat malnutrition issues and promote healthy diets and active lifestyles. (Akes, 2015-2016, p. 155)

This is because the world has witnessed a slowdown in development due to the Covid-19 pandemic, in the past three years, which led to the disruption of many development programs in general and in Africa in particular. Among them are development programs related to food security in the African continent and its relationship with promoting children's health and nutrition in order to ensure an appropriate school environment and overcome difficulties that prevent access to education, as well as increasing the survival rate in schools. Based on the results of the seventh edition of School Feeding Day in Africa "Nutrition and Human Capital", organized by the Department of Education, Science, Technology and Innovation of the African Union Commission, on March 1, 2022, in partnership with the United Nations World Food Program (WFP) under the theme "Nutrition and Human Capital" (Development in Africa through increased investment in home-grown school feeding. (Zerrougui, 2022, p. 393)

Good nutrition is the first line of defense against diseases, and it is also the source of energy that you need. Therefore, nutritional problems that result from improper or insufficient meals when they afflict a generation of young people can reduce their ability to learn, think, and produce, and thus endanger their future. It leads to the creation of a continuous cycle of malnutrition for successive generations. (Abdul Hamid Ahmed, 2018, p. 351).

Studies show that the nutritional system is related to the development of many diseases, and therefore the development and maintenance of a healthy diet is supposed to be a goal for each individual, because obesity, which is one of the factors that can be controlled, causes exposure to many of the main risks that cause death and plays a fundamental role. Contributes to exposure to many diseases, however, only 35% of the total population eat fruits and vegetables at a rate of five times a day, according to what is recommended, and

experts estimate that nutrition that does not observe health rules is responsible for more than (300,000) deaths Every year. (Taylor, 2017, p. 224)

Health problems that are mainly due to nutritional imbalance or wrong nutrition in terms of food and drinks, which hinders the ability of individuals to develop their skills and reduce their productivity at work, and their lack in childhood and adolescence will affect mental and physical development and impede their ability to learn.

On the other hand, a person's development of proper eating habits and techniques, together with their ability to restrain themselves from overeating, helps to prevent numerous diseases that could result in human death (Shada iman, 2022, p. 144)

Accordingly, the practice of healthy behaviors is linked to cognitive factors, such as the belief that certain health practices are necessary, or the person's feeling that he has become vulnerable to serious diseases if he does not observe the practice of healthy nutritional behaviors (Taylor, 2017, p. 128)

Food awareness includes understanding and perceiving information about food and correct nutrition and the ability to apply this information in daily life on an ongoing basis that acquires the form of habit that directs the individual's capabilities in determining his integrated home duties that maintain his health and vitality within the limits of his capabilities (Shada iman, 2022, p. 144).

Due to its effects on this group of students, this awareness begins at educational institutions, as schools are thought of as acceptable environments for the improvement of students' health, which is one of the most significant educational indicators. Balanced food commensurate with the requirements of the rapid growth of the body's organs and weight, and accordingly any food chosen for the schoolteacher will directly affect not only his growth, but also his energy levels, mood, resistance to diseases, and his ability to focus and academic excellence in the future (Abdul Hamid Ahmed, 2018, p. 351).

This would weaken the chances of success in any level of education, as the poor quality of food is reflected in the physical condition, and the latter would cause mental and psychological problems such as aggression, inattention, and hyperactivity and thus the deterioration of scientific and academic formation, and such associations have already been mentioned. In others, highlighting the universal importance of adequate and healthy food at all stages of development for physical, mental, and scientific alike.

Dr. Ashraf Gomaa's research on numerous instances of children who are distinguished by excellence, high capabilities, and a high level of intelligence, but who are now adopting abnormal nutritional behaviors that are reflected in their physical structure, so they have become abnormal children, confirmed that healthy food affects academic achievement and helps to revitalize students' minds. Given that these youngsters succeeded and their achievement levels were below what was expected of them, they are obese or anemic. This is what the doctor attributed to bad nutritional behaviors that negatively affected their body and therefore their psyche and then their academic performance.

Other studies have also shown that a balanced breakfast helps achievement in the exam, as there is a close relationship between a balanced breakfast and improving concentration and comprehension (Merbah Fatima Zahra, 2020, pp. 116-117).

Other studies have also shown that undernutrition negatively affects students' ability to absorb, pay attention, and learn, and reduces their motivation toward learning. The topic of nutrition is one of the most important topics of soil.

The topic of nutrition is one of the most important subjects of health education for school students due to its close relationship with growth and disease prevention, as improper nutrition leads to exposure of the body to malnutrition diseases. Therefore, students need to know the importance of good nutrition, the types of food and their importance to the body, as well as the characteristics of healthy food and the diseases that result from malnutrition (Akes, 2015-2016, p. 156).

This is what calls for following health education programs that work to meet the health demands of learners and provide them with knowledge and attitudes toward practicing many healthy behaviors that they need throughout their lives and to protect them from accidents, risks, and widespread diseases (Gilbert, 2000, p. 84) as confirmed by both the American Food Association (ADA) and the School Nutrition Association (SNA) to consolidate the concepts of nutritional education starting from the primary stage to ensure the improvement of the nutritional, health and academic status of teachers and the community as a whole, provided that this is done through nutritional education for families and teachers and the promotion of comprehensive and integrated nutrition services in schools (Briggs, 2003, p. 366).

And based on what has been mentioned and looking at the psychological heritage, where there is a clear scarcity in dealing with such studies, which made the researchers in this study address the detection of

health perceptions and their relationship to academic achievement among students, which raised the following question:

To what extent do nutritional health perceptions affect the academic achievement of secondary school students?

Study questions: They consisted of:

Are there statistically significant differences in the level of nutritional health perceptions of secondary school students due to academic achievement?

Are there statistically significant differences in the level of nutritional health perceptions of secondary school students due to the academic level (first year of secondary school, second year of secondary school, third year of secondary school)?

Are there statistically significant differences in the level of nutritional health perceptions of secondary school students attributed to the division?

Study Hypotheses: Based on these questions, the following hypotheses were formulated:

There are statistically significant differences in the level of nutritional health perceptions among secondary school students due to academic achievement.

There are statistically significant differences in the level of nutritional health perceptions among secondary school students due to the academic level (first year of secondary school, second year of secondary school, third year of secondary school).

There are statistically significant differences in the level of nutritional health perceptions among secondary school students due to the (scientific, literary) section..

**Method:**

In this study, the descriptive approach was chosen to suit the characteristics of our research, as the subject of our study aims to reveal the level of nutritional health perceptions among secondary school students who were selected according to the stratified sample. The nutritional health perceptions scale was distributed to the research sample, which numbered (542) male and female students. Tables (1) and (2) show the sample characteristics;

**Table N (01): Characteristics of the sample by gender and phylum.**

<u>Sex</u>	Repetition	Percentage	Div	Repetition	Percentage
Males	212	39,11%	scientific	263	48.52%
Females	330	60,89%	literary	279	51,48%
Total	542	100%	total the	542	100%

The data presented in Table (1) show that the percentage of male students was estimated at: 39.11%, while the percentage of female students was estimated at: 60.89%. As for the branch, the percentage of students in the scientific section was estimated at: 48.52%, and the percentage of students in the literary section Table N (01): Characteristics of the sample by gender and phylum.

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**Table N (02): Characteristics of the sample by educational stage and academic achievement**

Academic level	Repetition	Percentage	Academic achievement (transfer rate)	Repetition	Percentage
First year secondary	131	24,17%	From 13 to 18	187	34,50%
Second year secondary	161	29,70%	From 11 to 13	243	44,83%
Third year secondary	250	46,13%	From 10 to 11	112	20,67%
total	542	100%	total	542	100%

The data contained in Table (02) shows the percentage of students in the first year of the secondary school mentioned above, estimated at: 24.17%, while the percentage of students in the second year of secondary school was estimated at: 29.70%, while the percentage of students in the third year of secondary school was estimated at: 46.13%. As for the level of academic achievement, the majority of the respondents were of the average level, with an estimated rate of: 44.83%, while the individuals of the good level were estimated at: 34.50%, while the poor level was estimated at: 20.67%.

Study tool:

In order to reveal the level of nutritional health perceptions among secondary school students, the scale found in the study (Ahmed Samir Saad Zaghoul, 2022) was relied upon. Yet (food supplements) it does not serve the subject of the study; Therefore, the dimensions included in the scale are as follows:

The first dimension: food awareness, which includes (16) phrases.

The second dimension: food habits, which includes (14) phrases.

The third dimension: Food and mental health (15) phrases.

The fourth dimension: health awareness, which includes (11) phrases. Determine the psychometric characteristics of the questionnaire:

We addressed this aspect before applying it to the research sample, as it was applied to an exploratory sample of (47) male and female students, and the findings of the application in terms of validity and reliability were as follows:

**Validity:** Honesty is considered one of the most important psychometric characteristics of data collection tools, as it verifies that this tool actually measures what it was designed for. There are many methods to verify the validity of the tool, and with regard to our study, the following types of validity were addressed:

**A- The validity of the arbitrators:** We presented it to a group of professors (a professor at the University of Khemis Meliana specializing in counseling and mental health, four professors of science in the secondary education stage in the state of Ain Defla, and two teachers of the Arabic language in the secondary education stage in the state of Ain Defla), to verify the compatibility of the items The scale corresponds to the needs of our local environment, and the arbitrators agreed unanimously on the clarity of the phrases because they were formulated in classical Arabic, and their suitability because they contain scientific information suitable for the class to which it will be applied in terms of their absorption and understanding of this information.

**B- Computing the validity of the peripheral comparison (discriminatory validity):** The scale scores for the pilot study were arranged in descending order, 27 percent were chosen from the upper category and 27 percent from the lower category, after which the differences between the two groups were calculated through the (t) test.

**Table N (03): shows the validity of the comparison between the upper group and the lower group on the nutritional health perception scale**

Group	Groups senior group	Arithmetic mean	Standard deviation	T – test	Degrees of freedom	Value (SIG)	Statistical significance
senior group	13	147,71	8,042	5,19	24	0 0,0	
	13	136,07	64,051				

Through the table N:(03): we can see the obtained results, which represent the arithmetic average of the upper category on the nutritional health perception scale of secondary school students equal to (147.71), while the average for the lower category was equal to (136.07).

As for the standard deviation for the higher category, it is equal to (8.04) and for the lower category, it is equal to (0.64). As for the value of (t) to know the differences between the two groups, it amounted to (5.19), and from it we notice that there is a difference between the upper group and the lower group at the level of significance (0.05), because Significance (Sig) is equal to (0.00) and it is less than (0.05). Therefore, the nutritional health perception scale has a high degree of validity.

reliability: The stability of the test means that it will give the same results if it is applied again to the same sample and under the same circumstances. We have calculated it in two different ways:

Calculating the stability coefficient through the split-half method and Cronbach's alpha internal consistency coefficient

First: reliability coefficient according to the split-half method:

Where we divided the scale into two equal halves after applying it to the survey sample, and the division was done by dividing the individual items in exchange for the even items, and after this division, the Pearson correlation coefficient was calculated between the two halves of the test, and the results are shown according to the following table:

**Table N (04): reliability coefficient according to the half-partition method**

Halves of the scale	Alpha ( $\alpha$ ) for Cronbach	Correlation coefficient	Spearman's correction equation
first half	0,97	0,95	0,97
second half	0,98		

We note from the table N (04) that the Pearson correlation coefficient between the two halves of the test, which was estimated at: 0.95, and the stability coefficient for each test was calculated by entering the Spearman / Brown equation (due to the homogeneity of the variance of the two halves of the test), as its value was estimated at: 0.97, which is a high stability coefficient.

Second- Calculating the reliability modulus by applying Cronbach's alpha ( $\alpha$ ) equation:

Cronbach's alpha coefficient is one of the most important measures of internal consistency of tests. It relates the stability of the test to the stability of its items. We calculated the  $\alpha$  coefficient for each of the five dimensions that make up the scale using the SPSS program, and the results were as shown in the following table:

**Table N (05): shows Cronbach's alpha values for scale dimensions**

Dimension number	Scale dimensions	Alpha cronbach's
1	nutritional :dimension awareness	0,95
2	food habits :dimension	0,94
3	food and :dimension mental health	0,92
4	health :dimension awareness	0,92
scale as a whole		0,98

We notice from the table N (05) : that the value of the stability coefficient using Cronbach's  $\alpha$  method was acceptable and high, as it ranged between (0.92 to 0.95) for the four dimensions of the scale, while the value of the stability coefficient as a whole was (0.98).

And through the results of the analysis regarding the validity and reliability of the food health perception scale, we note that the validity values were acceptable, indicating its validity and the reliability results were high, which we can conclude that the scale has acceptable psychometric properties that allow us to apply it to our research sample.

Statistical Methods:

The statistical package for social sciences SPSS V23 was used to test the hypotheses, and descriptive statistical methods were used (arithmetic means, standard deviations), Levin's (F) test for homogeneity, and the (t) test for the significance of the difference between two means.

**Discussion:**

To test the validity of the research hypotheses, we administered the nutritional health perception scale to secondary school students in the field. We organized the field data into specific tables and used relevant statistical tools to examine the field outcomes. The following were the results of our research hypothesis presented and discussed:

**1.5. Presentation and discussion of the results of the first hypothesis:**

Which stated that: "There are statistically significant differences in the level of food health perceptions among secondary school students due to academic achievement." To verify the validity of this hypothesis, it was processed according to the one-way analysis of variance (ANOVA) test.

**Table N (06): Results of the one-way ANOVA test according to the academic achievement variable**

Distribute	Repetition	Arithmetic mean	Standard deviation	F value	Probabilty valeua SIG	Statistical significance

Hig	187	124,97	10,23	0,73	0,48	statistica Not ly significant
Midd	243	124,07	11,15			
weak	112	125.52	12,80			

The above table N (06) :shows us the results of the one-way analysis of variance, and through it, we conclude that there are no differences between students in the three levels of achievement (high; low; medium) where the value of "f" was (0.73) with a probability value of (0.48), which is a value greater than (0.05). It is not statistically significant. The previous table also shows that the value of the averages of the three levels did not increase.

Modern educational developments highlight the significance of food culture as an essential component of food education, which aims to bridge the gap between teaching nutrition science and learners' ability to meet their food demands by providing them with food-related information and skills, as well as the formation of healthy eating habits related to nutrition and food behavior such as distancing. To consume fats and sugars, as well as foods with high nutritional value and health benefits, such as vegetables and fruits.

Based on the results of the current study, we show the importance of studying dietary habits and behaviors in adolescence, and the results of their academic achievement due to the variables they go through during this period of physical, psychological, and social transformations and the effects of the environment surrounding them, which are followed by many profound changes on their behavior and academic results. As the results of the research sample, represented by students with high, medium, or poor achievement, are due to different other effects on what has been studied in the healthy eating habits taken up by this group, which contradicts the study of Ashraf Gomaa in his scientific article on many cases of children. Those who are distinguished by excellence, high capabilities, and a high level of intelligence, and it turns out that they are now adopting abnormal nutritional behaviors that are reflected in their physical structure, so they are suffering from obesity or anemia. It reflected negatively on their body, and therefore on their psyche, and then on their academic performance

Accordingly, nutritional health perceptions do not affect the results of academic achievement among the study sample. Therefore, the results of the first hypothesis were not achieved.

**Presentation and discussion of the results of the second hypothesis:**

Which stated that: There are statistically significant differences in the level of nutritional health perceptions among secondary school students due to the academic level (the first year of secondary school, the second year of secondary school, and the third year of secondary school). To verify the validity of this hypothesis, it was processed according to a one-way analysis of variance (ANOVA) test.

**Table N (07): Results of the one-way ANOVA test according to the academic level variable**

<u>Distribution</u>	<u>Repetition</u>	<u>Arithmetic mean</u>	<u>Standard deviation</u>	<u>"Fvalue "</u>	<u>Probabilty valeua SIG</u>	<u>Statistical icancesignif</u>
<u>First year secondary</u>	131	124,58	10,12	0,36	0,69	<u>Not statistically significant</u>
<u>Second year secondary</u>	161	124,14	11,49			
<u>Third year secondary</u>	250	125,09	11,58			

The above table N (07) :shows us that there were no differences between Taizy's students for the academic year (the first year of secondary school, the second year of secondary school, and the third year of secondary school), where the value of "f" was (0.36) with a probability value of (0.69), which is a value greater than (0.05), as it is not statistical function. The previous table also shows that the value of the averages of the three levels did not increase.

Based on the rationale of saying that the individual must train to eat complete, balanced, and ideal food that contains all the main nutrients needed for the body and that the lack of nutrition negatively affects the ability of students to absorb, pay attention and learn, whether for children or adolescents at different levels, we show us the importance and essence of food for students, this has been proven by many studies, especially foreign ones, but what contradicts these studies is the members of the sample of this study, as

what was revealed by the results of the current study is that healthy nutritional perceptions do not affect students at their different levels of study, represented in the first year, the second year, and the third year of secondary education. Rather, it is due to other factors, and this indicates that they have previous experiences on this subject in their cognitive structure that enabled them to acquire nutritional awareness, especially from the cognitive point of view. This is contrary to the study of both Resnicow (1997) and the study of Mesmah (2009), which found a low nutritional level among secondary school students due to the (literary-scientific) section". between the mean scores of the students.

**Table N (08): shows the significance of the differences between the mean scores of students in the level of nutritional health perceptions in terms of division:**

Groups	A number	Average Arithmetic	Standard deviation	T test	( valueSIG )	Statistical significance
scientific	263	124,09	13,94	1,18-	0,23	Not a statistical function
literary	279	125,24	7,74			

It is clear from Table N (08) that there are no statistically significant differences between the mean scores of scientific students and the mean scores of literary students on the food health perceptions scale, as we note that the value of "t" was (-1.18), with a significant value of (0.23). It is a non-statistically significant value at (0.05). This explains to us that there are no differences between the scientific and literary students in the level of nutritional health perceptions.

Health education is a fundamental educational process that aims to modify behavior, change concepts, and provide people with sound healthy habits that are linked to a sound health concept at various stages of life and scientific disciplines, using basic principles in the field of health education to create health awareness and sound awareness of health issues in order to have a positive impact on life. Individuals, as the results of the study sample individuals, whether scientific or literary, have proved that they are unaffected by nutritional health beliefs, as we see a distinct scarcity in prior studies at this point, and thus it is regarded as the first current study to address this trend

**Ruselts:**

Nutrition is one of the most passionately debated topics due to its enormous impact on both individuals and society. A good diet is a good predictor of disease-free growth, which creates prospects for advancement and prosperity in society, although the behaviors that manifest in the person in educational institutions are what we are most interested in. Obesity, diabetes, academic delay, and the outcomes of academic achievement among adolescents, the study's subject, cause us to stop studying the reason that is the first assumption to the nutritional health perceptions taken by these students.

Based on the theoretical aspect that was revealed through the reality of the current study, the goal to be reached requires following methodological steps that are compatible with the subject of the study, which raises a problem that the impact of nutritional health perceptions on the academic achievement of secondary school students, and as a preliminary step to achieving the goal, the scale was applied to a sample A part of the study population in the state of Ain El-Defla has the characteristics and characteristics of the research variables. Accordingly, we analyzed the results of the statistical treatment of the aforementioned hypotheses, so we concluded that there was no effect of nutritional health perceptions on the academic achievement of secondary school students, so the studied hypotheses were not fulfilled.

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