

## The Level of Health Awareness and Its Reflection on Body Mass Index among University Students.

مستوى الوعي الصحي وانعكاسه على مؤشر كتلة الجسم لدى طلبة الجامعة.

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Received: 10/06/2020

Accepted: 27/09/2020

Published: 17/12/2020

**Abstract:** The aim of this study was to find out the level of Health Awareness among university students, and to identify differences according to the variable of body mass index (BMI). The study was conducted on a sample of student-athletes (475 female and male students from the University of Djilali Bounaama, Khemis Miliana – Algeria) selected randomly. A Descriptive survey research method was used. A measurement tool to assess health awareness consisted of five axis (including nutrition, physical exercise, personal health, mental health, and strength) with 57 items as well as body mass index were applied. In conclusion, the health awareness among students was high. There are statistically significant differences in health awareness according to BMI variable. Further qualitative studies should be conducted to identify potential nutrition and physical exercises issues so that an intervention can be planned at the community to promote students awareness.

**Keywords:** Health Awareness, Body Mass Index, University Student.

**المخلص:** هدفت الدراسة الى التعرف الى مستوى الوعي الصحي لدى طلبة السنة الثانية والثالثة ليسانس ذكور واناث، وتحديد الفروق حسب متغير تصنيف مؤشر كتلة الجسم. حيث اعتمد الباحث المنهج الوصفي بالأسلوب المسحي على عينة تم اختيارها بالطريقة العشوائية من طلبة السنة الثانية والثالثة ليسانس (ذكور واناث) من جامعة الجيلالي بونعاما خميس مليانة والبالغ عددهم (475) طالب وطالبة، تم تطبيق مقياس الوعي الصحي مكون من خمسة محاور، (التغذية، ممارسة النشاط الرياضي، الصحة الشخصية، الصحة النفسية، القوام) بمجموع عبارات (57) وتم استخدام اختبار مؤشر كتلة الجسم. وقد أسفرت أهم النتائج على أن مستوى الوعي الصحي العام لطلبة الجامعة مرتفع. وجود فروق ذات دلالة احصائية في مستوى الوعي الصحي لدى الطلبة تبعاً لمتغير تصنيف مؤشر كتلة الجسم. وعلى ضوء نتائج الدراسة أوصى الباحث بقياس الوعي الصحي لدى مزيد من الفئات في المجتمع والاهتمام بتحسين الوعي الصحي في مجال التغذية وممارسة النشاط الرياضي لدى الطلبة.

## The theoretical framework

### 1- Introduction and problematic of the study:

Health is a great blessing that God gives to His servants. One's duty is to preserve this grace and do what it can to keep and reinforce it. Health, as defined in the WHO Constitution, is a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity .

Man is responsible for his health and disease prevention. In a study carried out by several preventive health centres, it was found that 53% of diseases can be avoided by following a healthy lifestyle, 21% can be avoided by a healthy living environment, and only 10% can be treated by visiting doctor (Muhammad Hani Ratib, Salma, 2007, p. 3).

The aspect of prevention is based on two complementary principles: the first is adopting healthy culture (Nadia Rashad, 2000, p. 13) and the second is applying health information and knowledge, and interpreting it into behaviour and lifestyle.

In this context, health awareness is deliberately considered a health practice, which it is particularly as a result of understanding and accepting. It means turning into habits practiced without feeling or thinking. In other words, health awareness is the goal that we must strive and reach, not that information remains only as a healthy culture (Bahaa El-Din Ibrahim Salama, 2001, p. 23) .

As such, it has become necessary to teach community members how to protect themselves from diseases and health problems that arise through the spread of health awareness among them. However, people with higher levels of health awareness are more likely to adopt better health behaviours, It is no secret that the practice of physical activity achieves a better life for the individual at any

stage of his life (Bachir Nemroud et al, 2019, p. 429). and to be able to promote health information and services, including universal health coverage. Health awareness in this manner enables an individual to protect himself, his family and his community from various shocks (WHO, 2016, p. 2).

In this light, the promotion of health awareness has a great importance among university students, as many studies have been conducted on health awareness and have had variable results. Suzan (2009) and Aqeel Muslim et al. (2012) revealed that the health awareness among students is increased, while in Abdullah Muhammad Khattabiya (2010) study, the outcomes uncovered that there is a decrease in students' health awareness. Therefore, there is no doubt that conducting more studies on health awareness is extremely important to reveal the strengths and weaknesses among the research community and accordingly, the problem of the study can be identified in **the following questions:**

What is the level of health awareness among university students and how does it reflect on their Body Mass Index?

Based on the above-mentioned, the sub-questions were:

- 1- Are there significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama?
- 2- Are there statistically significant differences in the level of health awareness among students according to the BMI variable?

## **II. Research Hypotheses:**

**Main Hypothesis:** There are significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama, in addition to statistically significant differences in accordance with the BMI variable.

**Sub-hypotheses :**

- 1- There statistically significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama; and.
- 2- There statistically significant differences in the level of health awareness among students according to the BMI variable.

**III. Research Objectives :**

We seek through this study to determine the following:

- Highlighting the differences in the level of health awareness among second and third-year undergraduate students; and.
- Remarking the disparities in accordance with the BMI variable.

**IV- Research Terminology:**

- 1- Health Awareness: Theoretically, Health Awareness is defined as “an interpretation of health related knowledge, information and experiences into individual behavioural patterns” (Elewah, Aladdin, 1999).
- 2- Health Awareness Level: Procedurally, means the students responses rates to health awareness on a research scale.
- 3- Body Mass Index: An indirect measure of inference over weight and obesity. It's a simple calculation that takes into account weight and height. BMI is calculated using height and weight measurements by the following equation: body weight in kilograms divided by height in meters squared ( $BMI = kg/m^2$ ). (Hazaa, 2010, p. 26).
- 4- University student: A person whose scientific competence has allowed him to pass from the secondary or vocational or higher technical training stage to the university, depending on to his/her qualification (certificate or diploma) (Fadil Delio, et al., 1999, p. 226) .

**Previous Researches:**

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- 1- Al-Qadomi study (2005) entitled "Health awareness level and sources of health information of Arab clubs players in Volleyball". The study purpose was to determine the effect of players experience and qualification on health awareness level. The sample consisted of 90 players who participated in the twenty-second Arab clubs championship held in Jordan. The questionnaire contained 57 items on health awareness and 8 items measure sources of health information. The results indicate that there was a high degree of health awareness level of the study sample .
- 2- Susan Duraied (2009) study entitled: "Health awareness among the students and the sources of the Faculty of Education - Ibn al-Haytham". This study aimed to identify the level of health awareness among fourth grade students in the Department of Chemistry and Life Sciences at the College of Education / Ibn Al-Haytham - University of Baghdad. The study was conducted on a sample consisted of 17 professors and 153 students. A descriptive survey method was used. A questionnaire contained 81 items on health awareness was applied. The results uncover that study members had a higher degree of health awareness level .
- 3- Imad Abddlhaq et al. (2012) entitled : "The Level of Health Awareness among An-Najah National University and Al-quds University Students". The purpose of this study was to determine health awareness in addition to determine the differences in health awareness according to university, gender, collage and GPA Variables. The sample of the study consisted of (800) students that was selected randomly. A (32) items questionnaire was applied for measuring health awareness. The result of the study indicated that the level of health awareness among students was moderate. The researchers recommended to re-construct the Curricula that is related to health, and constructing workshops.

## Empirical side

### V-Methodological Techniques Employed :

#### Research Methodology :

The researcher used A Descriptive survey research method for study purposes .  
Research Society and Samples: The researcher adopted the stratified random sampling method. The sample consisted of 475 second and third-year undergraduate students at the University of Djilali Bounaama for the academic year 2018/2019, representing 9.87% of the total members of the research society (except students involved in sports clubs and whose age is under or above 19 and 25 years).

### VI-Exploratory study :

The exploratory study was carried out in several stages, according to the objectives:

- 1- First stage: a review of a set of related studies, through which the health awareness scale was primarily determined and presented to a group of students to reveal the clarity and relevance of the questionnaire's elements. Besides, data and information about the research community were collected and the place and the most appropriate way to distribute the questionnaire and make measurements were specified.
- 2- Second stage: the questionnaire was presented in its preliminary form to nine (09) experts in order to determine the validity of axes and items to measure students' health awareness.
- 3- Third stage: in this phase the scale was distributed to thirteen (30) students to calculate the internal consistency of the scale.
- 4- Fourth stage: scientific coefficients for the tools used in the study were calculated.

### VII- Research fields:

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- 1- **Community:** The research community consisted of 5612 students enrolled at the University of Djilali Bounaama for the academic year 2018/2019.
- 2- **Spatial-frame:** health awareness scale and height and weight measurements were taken at the level of College classrooms.
- 3- **Time-frame:** The study was conducted from September 2018 to May 2019.
- 4- **Study tools:** The researcher employed two tools: a Health Awareness Scale (HAS), and a BMI Calculator.

**4-1-Health Awareness Scale:** The scale has been used to measure the level of health awareness among university students. The researcher reviewed a set of studies related to health awareness, its questionnaire or one of its axes, the most important are: the studies of Abdel Naser Abdel Rahim Al-Qadumi (2005), Suzan Duraid Ahmed Zangana (2009), Imad Abddlhaq, Mo'ayad Shana'a, Qais Nairat & Sulaiman Alamad (2012) and Aqeel Muslim et al.(2012). After the review of the available literature, the researcher determined a (92) items and (7) axes questionnaire was applied for measuring health awareness. To determine the validity of the axes questionnaire, the researcher presented it to (09) experts, where (05) axes were accepted (namely; including nutrition, physical exercise, personal health, mental health, and strength) with a total of (61) items and an acceptance rate of (75%). Thus, all the items were positive, and accordingly they were rectified in all axes as follows: (3 = Often 2 = Sometimes 1 = Seldom). In order to ascertain the strength of the correlation between the items and the axes that are related to and the axes and the overall degree of the scale, the researcher distributed the questionnaire, after evaluation, to the survey study sample, (30) male and female students in order to calculate the internal consistency.

Accordingly, the items whose correlation coefficients were not statistically significant were deleted.

**4-2-Body mass index test:** to achieve this, BMI is calculated using height and weight measurements by the following equation: body weight in kilograms divided by height in meters squared (BMI = kg/m<sup>2</sup>).

$$BMI = \text{weight (kg)} / \text{height (m}^2\text{)}.$$

After calculation, the formula was compared to the following table (Shaima Ahmad Rahim Rabia, 2017):

**Table (01) demonstrates the BMI value.**

BMI Kg\m <sup>2</sup>	Underweight	Normal weight	Overweight	Obesity
Classification	<18.5	18.5-<25,	25-<30	≥30

**VIII-Tools scientific basis:**

**1-Reliability :**

Health awareness questionnaire Reliability: Split-half reliability: The researcher relied on SPSS (Statistical Package for the Social Sciences) by entering data collected from a sample of (30) male and female students. The results however are summarized in the following table :

**Table (02) shows correlation coefficient and Split-half reliability.**

Health Awareness Questionnaire	Items Number	Cronbach' s α	correlation coefficient between two splits	Spearman-Brown prophecy formula
First Split	29	0,885	0,79	0,88
Second Split	28	0,900		

It can be drawn from the table above that the value of the correlation coefficient of the test as a whole is (0.887) and the amount according to value is high,



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because the square of (0.77) is greater than (0.50 - 0.75) by which it means that the coefficient of stability is high .

**Cronbach's  $\alpha$ :** the value of correlation coefficients calculated by Cronbach formula is (0.940) between the scale items, which is considered a high value and reveals the strength of correlation between the questionnaire items.

**BMI Calculator:** the reliability coefficient was calculated using the method of the test application and then re-application for a time interval of one week between the two applications on the same exploratory sample (05 students) taking into account the uniformity of the same measurement conditions. The correlation coefficient was calculated between the first and second applications using the Pearson correlation coefficient. The results obtained are demonstrated in the following table:

**Table (03) shows the results of the reliability coefficient calculation for the tests.**

Tests	1 <sup>st</sup> Application		2 <sup>nd</sup> Application		Reliability coefficient	Validity coefficient	Significance Level
	$\bar{x}^1$	$\sigma^1$	$\bar{x}^2$	$\sigma^2$			
Height (m <sup>2</sup> )	1,66	0,04	1,66	0,03	0,99	0,99	4 degrees of freedom for a two-sided test at significance level $\alpha = 0.05$ .
Weight (kg)	73,86	3,96	73,74	3,50	0,99	0,99	
BMI = kg/m <sup>2</sup>	26,84	1,86	26,79	1,66	0,99	0,99	

It is clear from the table shown above that the correlation coefficients between the two tests were at a high level (0.99), which means that the tests have a good degree of reliability.

### **Tools Validity :**

**HA-Scale Validity:** Content validity: The researcher relied on a set of studies addressed the topic of health awareness, which was mentioned herein, in addition to the theoretical side with a view to ensure the scale's content validity.

Arbitrators' Certification: The scale was presented to (09) specialized professors to judge the axes validity and the scale's items.

**Construct Validity (composition hypothesis validity):**

Pearson's correlation coefficient ( $r$ ) was calculated between each item and the degree to which axes are correlated, and between the total score of the questionnaire and the degree to which each axis is correlated. In conclusion, the correlation coefficient is very highly significantly different between the axes and the overall score of the questionnaire. Also, the items that did not have statistically significant correlation values were deleted.

**BMI Calculator Validity:** Self-validity: It is equal to the square root of reliability, reaching (0,99) which is a high value indicates that the tests are characterized by a good degree of self-validation .

**Objectivity :**

For the purpose of subjectivity free tests, the same response time on the scale (20 minutes) were available to the sample, so the researcher can be able to respect the order of tests by answering the scale, and then measuring height and weight as well as giving the same explanations and instructions to the assistant team.

**Statistical Method Used:** to answer the study related questions, SPSS (Statistical Package for the Social Sciences) that includes statistical processing was used.

**IX-Results and Discussions:**

**first Hypothesis Presentation, Analysis and Discussion:**

**Hypothesis 01:**

The first hypothesis is formulated as follows: there are significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama.

Table (04) reveals the differences between the arithmetic mean and the theoretical median degrees to which the axes and the total score are correlated.

Health Awareness Axes	Items Number	arithmetic mean	theoretical median	Calculated T value	Significance Level	Significance	Awareness level
Full degree	57	127.2	114	21.062	0.000	(***)	High
(-) Non-significant, (*) significant at the level (0.05), (**) significant at the level (0.01), and (***) significant at the level (0.001)							

As follows from the table shown above, the mean of the total score is greater than the theoretical median, and the values of significance showed that there are statistically significant differences between the arithmetic mean and the theoretical median at a significant level ( $p \leq 0.001$ ). Thus, we conclude that there is a high level of health awareness among students, because the arithmetic mean is greater than the theoretical median.

**Discussion :** from the findings that were reached and indicated the presence of statistically significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama, most students have a higher health awareness level. Thus, the findings are quite convincing and enhancing the outcomes of previous studies as a study conducted by Abdel Halim Khalafi (2013) which showed that the level of health awareness among students of the University Center of Tamanrasset is very high of (81.94%). The study of Khoueldi El Haouary et al. (2018) concluded that the students of the University Center of El-Bayadh have a high level of health awareness of about (71,60%). The survey results are in fact supported by other findings available in literature, the study of Aqeel Muslim et al. (2012) and Suzan Duraid (2009) for instance concluded that students of the Faculty of Physical Education have a relatively high level of health awareness. The outcomes are

also supported by the results of study conducted at Harvard University. It reveals that education and health protection are correlated through their association with education and the level of health culture since the most educated are the ones that are the most receptive to obtain medical information from its correct source (Basant Muhammad Mustafa, 2014, p. 172). However, these results are contrasted with the findings of the study of Imad Abdel Haq et al. (2012), which concluded that the level of the general health awareness among the sample studied was an intermediate level .

**Second Hypothesis Presentation, Analysis and Discussion:**

**Hypothesis 02:** there are significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama in accordance with BMI .

Based on the results of Kolmogorov-Smirnov Test, we can perform parameter analyses on the results obtained, because the data has been collected on BM under the condition of normal distribution. Therefore, ANOVA (one-way analysis of variance) test can be applied to determine whether there are any statistically significant differences between the means of two or more independent (unrelated) groups .

Table (05) demonstrates differences in the total mean (average) of a health awareness data set among students in accordance with BMI variable.

BMI Classification	Students Number	Percentage %	Average Level	Calculated $\chi^2$	Significance Level	Significance
Underweight	50	10	221,48	8.479	0.037	(*) significant at the level (0.05)
Normal weight	359	76	247,17			
Overweight	52	11	210,43			
Obesity	14	3	164,18			
(-) Non-significant, (*) significant at the level (0.05), (**) significant at the level (0.01), and (***) significant at the level (0.001)						

We note that the rates of underweight, normal weight, overweight and obesity prevalence among the study sample were 10%, 76%, 11% and 3%, respectively; where normal weight of the participants (76%) was found to be the largest proportion of the study sample .

We also note that the calculated chi-square ( $\chi^2$ ) value is (8.479). This means that there is exactly 0.05 level of significance of the area under the chi square distribution that lies to the right of  $\chi^2 = 8.479$ . Therefore, it can be concluded that there are statistically significant differences between the average values of health awareness among students according to BMI where underweight, normal weight, overweight and obesity rates among students were 221.48, 247.17, 210.43, and 164.18, respectively .

**Discussion** :It can be demonstrated from the results that there are significant differences in the level of health awareness among second and third-year undergraduate students at the University of Djilali Bounaama in accordance with BMI in favour of the normal weight, underweight, overweight and obese students, respectively .

These findings reinforce in fact the results of previous studies, and indeed, the study of Al-Arabi Muhammad and Hurriyat Hakim (2018) showed a relationship between health awareness and health-related fitness components, including the physical composition represented by the body mass index calculator. Moreover, a study conducted by Khaled Muhammad Al-Sadiq Muhammad Salama (2005) reveals that there is a statistically significant correlation between the daily lifestyle and its dimensions, the body fat percentage (BFP) and bodyweight of healthy university students. In addition, Ismail's study (2013) found that there is an inverse correlation between education and obesity rates among female teachers (Ismail Adel Abdel-Rahman, 2013).

### Conclusions and suggestions:

- 1- The general health awareness levels among the students of the University of Djilali Bounaama is relatively high;
- 2- The normal weight students have a healthier awareness level than underweight, overweight and obese students;
- 3- The most of second and third-year undergraduate students have a normal weight of (76%), which was found to be the largest percentage in accordance with BMI calculator; and
- 4- The prevalence of obesity was about (3%) and overweight was (11%) among second and third-year undergraduate students at the University of Djilali Bounaama .

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