

## Health Knowledge among College Freshmen Students in Palestine

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**Abstract:** Inadequate health knowledge is associated with poor health status and increased rates of morbidity and mortality. College students with limited health knowledge may face many difficulties, ranging from what major to choose to lifestyle decisions that impact their health status in the present as well as in the future. The objectives of this descriptive cross sectional study were assessing the health knowledge among students of five colleges in Al Quds University, Palestine. Students from 5 colleges (580 undergraduate freshmen students: 307 males and 273 females) participated in this study. The study instrument was a 70-item inventory used to assess general health knowledge among undergraduate college freshmen students. The Health Knowledge Inventory (HKI) contains 10 questions from each of 7 health content areas. The results of this study confirmed that college-aged students are not well-informed about health. Of the 7 health topic subscales, percentage of correct responses ranged from 37.3% for communicable disease to 47.8% for nutrition. Of major concern is the overall lack of health knowledge among these students in a time of growing health concerns for the 18-24 year-old age group. The results are discussed in light of implications for health education and health promotion programs at the college level. The findings of this study might facilitate development of appropriate health education and health promotion interventions for the college population. The researchers recommend including health courses within the teaching curricula as a compulsory and not as an elective for all college students regardless of their major.

**Key words:** Health knowledge • College students • Freshmen students • Palestine

### INTRODUCTION

The 18-24 year-old age college experience is a unique time in an individual's life. It is a time that is marked by freedom from parental supervision and independent decision making. College is also characterized by a time when students acquire a vast amount of knowledge that eventually affects the future. This knowledge sets a foundation for career choices, financial planning and personal values, but it can also set a foundation for lifestyle choices and health knowledge. It is known that college students engage in risky health behaviors and poor health choices [1]. Students may not be aware that participating in poor health behaviors may increase their chances of developing serious chronic diseases in the future.

Many of the most important risk factors for chronic disease in later life are determined by behavioral choices made during adolescence and young adulthood.

The years from 18 through 24 are a time of changing health hazards. "Caught up in change and experimentation, young people develop behaviors that may become permanent. Attitudes and patterns related to diet, physical activity, tobacco use, safety and sexual behavior may persist from adolescence into adulthood"[2].

According to the American College Health Association (ACHA) [1], there are eleven health-risk behaviors that college and university students might encounter. These eleven health risk areas include tobacco use prevention, alcohol and other drug use prevention, sexual assault/relationship violence, violence prevention, injury prevention, sexuality transmitted disease prevention, dietary behaviors and nutrition and physical activity and fitness. ACHA strongly encourages educational institutions to educate their students about these areas in order to prevent disease and improve health quality of life. The fact that college students are a unique audience for a planned program of health education has been noted by Brener and Gowda [3].

In the Palestinian schools and according to a study by Ghrayeb *et al.* [4], it is noted that separate health education curricula do not exist in Palestinian schools. Instead, the study stated, health education is included in school educational curricula in order to increase awareness of health problems. A planned health education curriculum in schools is an important informational source to provide students with the necessary information for maintaining and improving their health, as well as reducing their risky health behavior. In reality, students receive factual information about personal health embedded within other courses, such as science, biology and Arabic reading [4].

According to Green and Kreuter [5], even though knowledge alone may not be sufficient to bring about action, in conjunction with other predisposing (motivating) factors, knowledge is a necessary component of behavior change. Knowledge has to be present for a change in behavior to occur.

Since the 1930s, extensive research has been conducted to identify levels of general health knowledge among college students in the United States to establish health education program needs [6-9]. However, research of this type had never been conducted in Palestine. Most research in Palestine was focused on the epidemiological and occurrence of specific health conditions. A review of professional literature revealed that there was only one study conducted by Ghrayeb *et al.* [4] that addressed health knowledge among Palestinian high school students. However, the Ghrayeb *et al.* study subjects were high school students.

This study was conducted at Al Quds University with the freshman classes as the study population aiming at providing a clearer picture of the level of health knowledge among college freshmen at Al Quds University, located in Palestine. The results of this study provide policy makers in the Palestinian Ministry of Education with an overview of which health topics need more emphasis in the curricula in schools prior to college. Furthermore, the findings provide a scientific databases of needs to develop health intervention programs and also to remind college health educators of the health risks that adolescents bring to campus.

**Subjects and Methodology:** Study Design: A descriptive cross-sectional survey study was designed to assess health knowledge in the undergraduate college freshmen student population.

**Study Population:** The study population consisted of all male and female college freshmen students who were

registered in the records of the AL Quds University in the current year (2015/2016). Al Quds University's records (Al Quds University, 2016) showed that the total number of all freshmen students who were enrolled at the university in 2015/2016 was almost 4,800, whereas the university has approximately a total of 17,500 students.

**The Instruments:** The instrument used to gather demographic and academic variables was the cover sheet of the Health Knowledge Inventory (HKI). The HKI test is a valid and reliable instrument for assessing the health knowledge of college students. It included 5 items to record the variables of age, sex, stream of education in high school (scientific, non-scientific), place of residence (city, village, camp) and academic major. The instrument used to test health knowledge, the Health Knowledge Inventory (HKI), is a 110-item multiple choice test that measures general health knowledge among the college student population [11]. The HKI consists of 10 items from each of the following 11 health content areas: Accidents and Safety, Aging and Death, Chronic Disease, Communicable Disease, Environmental Health, Consumer Health, Human Sexuality, Physical Fitness, Mental Health, Nutrition, Substance Use/Abuse. The following areas Environmental Health, Consumer Health, Human Sexuality and Substance Use/Abuse were dropped from the study according to the recommendations of the ethical committee. Therefore, the total items included in the final utilized questionnaire were 70.

**Data Collection:** The written approval from both the Institutional Review Board (TRB) of Al Quds University and the president of the Al Quds University was obtained. The data were collected from freshmen students who were attending the twelve selected sections of the general classes (Medicine, Nursing, Low, engineering and Art). The modified version of the HKI test was administered during the regular class time of the selected sections. The researcher contacted each professor in advance asking for permission to administer the test in his/her class. The researcher informed each professor who taught the selected section that completion of the test required a single class period. The date and time to administer the test were determined by the researcher and the professor of the class. The researcher was on time for each appointment and terminated the data collection process at the agreed-upon time. The procedure to administer the modified version of the HKI test was the same across twelve selected sections of the general classes.

**Data Analyses:** Data analyses were performed by using version 23 of the Statistical Package for Social Sciences (SPSS). The purpose of these analyses was to answer the two research questions. Descriptive statistics was computed to answer the first question, "What are the levels of general health knowledge and specific health knowledge of the 7 areas among freshmen students enrolled at Al Quds University?" Frequencies and Percentages of correct and incorrect answers for each of the 7 health areas were computed to determine participants' knowledge level of general and specific health knowledge. Independent t test was performed to compute the mean and standard deviation (SD) scores of freshmen students in general health knowledge and 7 health areas as related to their gender and stream of educational track in high school (scientific, non-scientific) were included.

**RESULTS**

**Socio-Demographic Characteristics of the Sample:**

The final analysis was conducted with 580 participants, giving a response rate of 98.3%. The study participants were college freshmen students at Al Quds University and the majority (49.6%) were village residence, followed by city residence (41.6%) and camp residence (8.8%). Of the 580 participants, 273 were females (47.1%) and 307 males (52.9%), 368 (63.4%) were Scientific and 212 (36.6%) non-scientific (Table 1). Regarding age of participants, the majority of participants 472 (81.4%) were 17 – 19 years old, 101 (17.4%) were 20 - 22 years old and 7 (1.2%) were 23 - 25 years old.

Table 2 presents the levels of general health knowledge and specific health knowledge of the 7 areas among freshmen students enrolled at the Al Quds University. Percentages of correct and incorrect answers for each of the 7 health areas were computed to determine participants' levels of general and specific health knowledge. The researcher consulted the panel of experts to determine the categories of health knowledge levels (i.e., excellent, very good, good, weak). Table 2 illustrates that the percentages of correct answers for most of health areas did not vary greatly. The lowest and the highest percentages of correct answers for all participants were 37.3% for communicable disease and 47.8% for nutrition, respectively. The levels of participants' general health knowledge as well as their knowledge on each health area were weak.

Table 1: Demographic characteristics of the study sample (n=580).

Characteristics	No. of respondents (n)	(%)
<b>Stream of Education</b>		
Scientific	368	63.4
Non Scientific	212	36.6
Total	580	100
<b>Gender</b>		
Male	307	52.9
Female	273	47.1
Total	580	100
<b>Place of residence</b>		
City	241	41.6
Village	288	49.7
Camp	51	8.8
Total	580	100
<b>Age group (years)</b>		
17 -19	472	81.4
20-22	101	17.4
23-25	7	1.2

Table 2: Levels of General Health Knowledge and Specific Health Knowledge of 7 Areas among Freshmen Students Enrolled at Al Quds University (n = 580)

Health Area	percent	Knowledge level (excellent, very good, good, weak)
Accidents and Safety	41.5%	Weak
Nutrition	47.8%	Weak
Physical Fitness	41.4%	Weak
Chronic Diseases	44.3%	Weak
Communicable diseases	37.3%	Weak
Mental Health	38.9%	Weak
Environmental health	46.3%	Weak
<i>General health knowledge</i>	42.5%	Weak

Table 3 presents the mean and standard deviation (SD) for the total sample (n = 580) and for participants as categorized by gender. Despite that the mean scores of females (n = 273) in all 7 health areas were higher than the mean scores of males (n = 307) and higher than mean score for total sample (n = 580), a significant differences in mean knowledge scores were detected in 2 health areas solely between male & female students. These health areas are: nutrition (P = 0.003) and mental health (P = 0.009).

Table 4 addresses the mean and standard deviation of participants as related to their stream of educational track in high school (scientific, non-scientific). The range of mean scores of scientific and non-scientific participants was from 4.21 to 5.03 and from 2.92 to 4.34, respectively.

Table 3: Means and standard deviations of the percentage of correct answers for HKI subscales in relation to participants' gender tested by independent samples t-test

Health area	Mean knowledge (SD)		t statistic (df)	P value
	Male (n=307)	Female (n=273)		
Accident and safety	3.99 (2.259)	4.34 (2.141)	-1.911 (578)	0.056
Nutrition <sup>1</sup>	4.47 (2.562)	5.12 (2.638)	- 3.001(578)	0.003
Physical Fitness	4.07 (2.355)	4.25 (2.519)	- 8.72(578)	0.383
Chronic diseases	4.33 (2.397)	4.55 (2.335)	- 1.154(578)	0.249
Communicable diseases	3.58 (2.211)	3.92 (2.299)	- 1.787(578)	0.074
Mental health <sup>2</sup>	3.65 (2.224)	4.16 (2.446)	-2.629 (578)	0.009
Environmental health	4.53 (2.532)	4.75 (2.541)	-1.025 (578)	0.306
Total	28.48 (12.118)	31.62 (12.463)	-2.546(578)	0.115

SD = standard deviation

df = degree of freedom

Note: The maximum score for specific health knowledge area is 10

<sup>1</sup>Specific health area with highest mean knowledge scores by gender.

<sup>2</sup>Specific health area with lowest mean knowledge scores by gender.

Table 4: Mean and Standard Deviation (SD) Scores of Freshmen Students' General Health Knowledge and 7 Health Areas as Related to Their Stream of Educational Track in High School (Scientific, Non-scientific)

Health area	Mean knowledge (SD)		t statistic (df)	P value
	Scientific (n=368)	Non-scientific (n=212)		
Accident and safety	4.76 (2.305)	3.26(1.699)	8.431 (544.058)	0.001
Nutrition	5.03(2.738)	4.34 (2.332)	3.218 (498.411)	0.001
Physical Fitness	4.60(2.671)	3.37 (1.697)	6.766 (571.883)	0.001
Chronic diseases	4.90(2.495)	3.61 (1.873)	7.062 (538.962)	0.001
Communicable diseases	4.21(2.435)	2.92 (1.617)	7.657 (565.395)	0.001
Mental health	4.39(2.476)	3.02 (1.791)	7.671 (548.847)	0.001
Environmental health	4.59(2.723)	4.08 (2.093)	4.282 (530.991)	0.001
General Health Knowledge	32.67(13.340)	24.61 (8.216)	8.976 (573.046)	0.001

Independent t- test

df = degree of freedom

SD = standard deviation

Note: The maximum score for specific health knowledge area is 10

Results showed that scientific participants (n = 368) possessed more knowledge in the 7 health areas and in general health knowledge than both non-scientific (n = 212) and all participants (n = 580). Surprisingly, students in both scientific and non-scientific streams of education were most knowledgeable in nutrition. On the other hand, scientific stream students were less informed in communicable diseases, whereas non-scientific stream students were less knowledgeable in mental health area. The results showed significant difference in all health areas including the general health knowledge between scientific and non-scientific stream students.

## DISCUSSION

This study aimed at identifying the level of health knowledge for Al Quds University students according to some variables and the study sample contained (580) male and female students from different colleges during the fall semester of the year 2015/2016 who were subjected to the health knowledge Inventory scale.

The findings indicated that the lowest and the highest percentages of correct answers to items of the modified version of the HKI test were 37.3% for communicable disease and 47.8% for nutrition.

It would be expected that freshmen, usually coming directly from high school, where they receive factual information about personal health embedded within other courses, such as science, biology and Arabic reading, would have the least amount of life experiences and health-related college level courses and therefore the least amount of health knowledge.

The results of this study are compatible with the areas of most and least knowledge as reported in previous research by Ghrayeb *et al.* [4], Wahsheh *et al.* [10] and Nicholson *et al.* [11]. Two studies [13] found an opposite result related to the area of nutrition; participants were least knowledgeable about the area of nutrition.

The majority of correct responses by subscale ranged from 37 to 47%, revealing a definite lack of health knowledge among this population as determined by percentage of correct responses. This is compatible with results reported by Ghrayeb *et al.* [4], who concluded that Palestinian high school students did not have sufficient health knowledge in each of the same included health areas. The results of the dissertation study are not surprising due to the limited number of existing health education programs for college students in Palestine.

The results of the current study indicated that female students possessed more general health knowledge than male peers. This finding can be justified that caring for their physical appearance than males have affected the level of nutrition knowledge and eating habits of educated young adults. Gender differences in general health knowledge are consistent with those reported by previous studies [4, 10, 13]. Other studies [14-15] indicated that female participants possessed more general health knowledge than males. Schuster [16] yielded contrary evidence to the conclusion that female participants possessed more general health knowledge than males.

One of the expected findings of this study was that participants who completed the scientific stream in high school were more informed about general health knowledge than those who were in the non-scientific stream. The researcher hypothesizes knowledge differences may reflect curricula content for each education stream at high school. Stream of education differences in general health knowledge are consistent with those reported in previous studies [4, 10].

### CONCLUSION

In general, a concern for this population is the considerable lack of knowledge in general and specific knowledge about 7 health areas of the college freshmen

students at Al Quds University, Palestine. The lack of health knowledge needs to be addressed, especially in terms of its impact upon health related behavior. Although knowledge alone cannot ensure the adoption of health-promoting behavior, lack of knowledge may tend to lead to lifestyle choices which are less than health enhancing.

**Recommendations:** In light of these results, the researchers recommend the following: (1) Conducting a similar study on other samples of teaching stages, (2) Including health courses within the teaching curricula as compulsory and not as an elective for all college students regardless of their major, (3) Conducting a study that aims at assessing the efficacy of some intervention programs or workshops in raising the students' awareness level.

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### REFERENCES

1. American College Health Association, 2007. American college health association national college health assessment Spring 2006 reference group data report (abridged). *Journal of American College Health*, 55(4): 195-206.
2. U.S. Department of Health and Human Services, Public Health Service, 1991. *Healthy People 2000. National Health Promotion and Disease Prevention Objectives.* (DHHS Publication no. PHS 91-502120). Washington, DC: U.S. Government Printing Office.
3. Brener, N. and V. Gowda, 2001. US college students' reports of receiving health information on college campuses. *Journal of American College Health*, 49(5): 223-228.

4. Ghrayeb, F.A.W., A.M. Rusli, A. Al Rifai and I.M. Smail, 2014. Effectiveness of School-Based Environmental Education on Knowledge of Various Environmental Issues among School Adolescents in Palestine. *World Applied Sciences Journal*, 31(11): 1965-1970.
5. Green, L. and M. Kreuter, 1999. *Health promotion planning: An educational and ecological approach* (3<sup>rd</sup> ed.). New York, NY: McGraw-Hill. Make references like this style.
6. Schuster, C., T. Nicholson, W. Higgins, I. Simoneau, J. White and C. Ogbonna-Mcgruder, 1999. A Multinational comparison of health knowledge: College students in Canada, Nigeria and the United States. *College Students Journal*, 33(3): 424-432.
7. Brener, N. and V. Gowda, 2001. US college students' reports of receiving health information on college campuses. *Journal of American College Health*, 49(5): 223-228.
8. Beier, M. and P. Ackerman, 2003. Determinants of health knowledge: An investigation of age, gender, abilities, personality and interests. *Journal of Personality and Social Psychology*, 84(2): 439-448.
9. American College Health Association (ACHA). 2004. The American College Health Association National College Health Assessment (ACHA-NCHA) spring 2003 reference group report. *Journal of American College Health*, 53(5): 199-210.
10. Ghrayeb, F.A.W., A.M. Rusli, A. Al Rifai and I.M. Smail, 2014. Effectiveness of Educational Intervention on Physical Activity-Related Knowledge among High School Students in Southern Rural Palestinian Community, in 2012. *Middle-East Journal of Scientific Research*, 21(5): 726-732.
11. Nicholson, T., W. Higgins, P. Minors and J. Price, 1996. A comparison of general health knowledge between American and French-speaking Canadian college students: A pilot study. *College Student Journal*, 30(1): 141-143.
12. Richmond, G., A. Vener and L. Krupka, 1991. Assessment of health knowledge in college women. *The American Biology Teacher*, 53(5): 265-271.
13. Abd Al-Haqq, E., M. Shana'eh, Q. Nu'erat and S. Al-Amad, 2012. The Health Awareness Level for the Students of Al-Najah National University & Jerusalem University. *The Journal of Al-Najah University for Researches (Humanitarian Sciences)*, 26(4): 939-958.
14. Price, J., W. Higgins and T. Nicholson, 1991. Health knowledge of college students. *College Student Journal*, 25(1): 252-256.
15. Beeson, L., 1992. Health knowledge competencies and essential health skills of entry level college freshmen enrolled in Oregon's research universities. <http://hdl.handle.net/1957/36483>
16. Schuster, C., T. Nicholson, W. Higgins, I. Simoneau, J. White and C. Ogbonna-Mcgruder, 1999. A Multinational comparison of health knowledge: College students in Canada, Nigeria and the United States. *College Students Journal*, 33(3): 424-432.