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ASSESSMENT/EVALUATION

Changes in Health-Related Attitude and Self-Reported Behaviour of Undergraduate Students at the American University of Beirut Following a Health Awareness Course

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ABSTRACT *The importance of the university as a setting for health promotion is increasingly being acknowledged. Part of this health promoting function includes curricular offerings to increase health awareness. However, there is a dearth of systematic evaluations of such courses.*

Objective: *To evaluate the impact of a university level ''Health Awareness'' course on attitudes and behaviours of undergraduates enrolled in the course.*

Methods: *A self-administered survey was used to assess attitude and self-reported behaviour of students at the beginning and end of the course. Paired analysis of means compared responses at pre and post assessments for groups of items within a particular health topic. Cross tabulations of stage of change at pre and post assessment indicated movement related to tobacco use, exercise, and nutrition.*

Results: *Results indicated an improvement of at least 20% from pretest score in four out of eleven health topic areas, and of 10–20% in an additional five topical areas. In addition, movement in a health promotive direction along the stages of change was evident for smoking, eating fruits and vegetables, and exercise.*

Discussion: *The results presented herein are encouraging and indicate support for the impact of a health awareness class on knowledge, attitude, and behaviour of undergraduate students. The two topical areas that did not show improvements between pre and post assessment were those (i) for which students already scored high at pre assessment, or (ii) which the course did not tackle specifically. Conclusions to be drawn*

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are limited by several factors inherent in the design of this evaluation. Future evaluation should include a larger number of students and a comparison group.

KEYWORDS *University, health promotion, students, Middle East, evaluation, attitude and behaviour.*

Classrooms within schools have been identified as an important setting for adolescent health promotion (Crockett & Petersen, 1993; Parcel *et al*., 2000). Evaluations of the impact of health curriculum in the middle and high school have often indicated significant changes in knowledge, attitudes, and behaviours of students exposed to the curriculum (Devine *et al*., 1992; Boyer *et al*., 1997; Yarber & Torabi, 1997; Coleman-Wallace *et al*., 1999; Baranowski *et al*., 2000). More recently, the importance of promoting student health through courses offered at the university/college level has been acknowledged. However, there is a dearth of systematic evaluations of such courses.

Results of research evaluating the impact of health courses at the university level on student knowledge, attitude, and behaviour are still unclear (Friesen & Hoerr, 1990; Sallis *et al*., 1999; Furber & Ritchie, 2000; Cardinal *et al*., 2002). Evaluation designs have included one-group pretest posttest designs (Friesen & Hoerr, 1990) and pretest posttest control/comparison group designs (Sallis *et al*., 1999; Cardinal *et al*., 2002). Health foci have varied among nutrition (Friesen & Hoerr, 1990), physical fitness (Sallis *et al*., 1999; Cardinal *et al*., 2002) and healthy lifestyles and environments (Furber & Ritchie, 2000). Most assessments have taken place directly after the course (Friesen & Hoerr, 1990; Furber & Ritchie, 2000; Cardinal *et al*., 2002), but Sallis *et al*. (1999) also assessed impact at 1 and 2 years post intervention. Some of the courses led to significant improvements in knowledge and attitudes (Friesen & Hoerr, 1990), to improvements in understanding of the connection between health and other sectors (Furber & Ritchie, 2000), and to changes in behaviour (Sallis *et al*., 1999). Cardinal *et al*. (2002), however, indicated no impact of the fitness course on behaviour (Cardinal *et al*., 2002). To date all the research on the impact of a university health course on knowledge, attitudes, and behaviours of students enrolled in the course has been conducted in ''developed'' countries.

To contribute to the analysis of the effect of university level health courses, the present research evaluated the impact of an undergraduate health awareness class offered at the American University of Beirut (AUB), Lebanon on students' attitudes, and self-reported behaviours associated with 11 health topics.

Background and Significance

The AUB is a private non-sectarian institute of higher learning founded in 1866. It consists of a student body of approximately 5000 students, and offers programmes leading to bachelors and masters degrees. The AUB is situated in Beirut, the capital city of Lebanon.

A survey focused on 13 health and lifestyle risk behaviours was administered to almost all entering students (90% response rate) in the Fall of academic year 1998–1999. Results indicated a relatively high prevalence of a variety of health risk behaviours. In addition, 89% of respondents reported two or more risk behaviours simultaneously (Shediac-Rizkallah *et al*., 2000–2001). Based on these results, a research group of public health and medicine faculty members felt the need to develop effective interventions aimed at improving the student's knowledge, attitude and behaviours (KAB) and at changing the social and physical environment of the university to support health-promoting behaviours. Providing a health awareness class for students fulfilled both the objective of raising KAB and of changing environments if it became a required course for all students. However, prior to proposing that such a class be required, a thorough evaluation of its impact on knowledge, attitude and behaviour was necessary.

The Social/Economic Context of Lebanon

Lebanon is a country with an estimated total population of 4 million, and 81% of the population lives in urban areas (Amar, 2003). Its gross domestic product (GDP) per capita stands at $5884. Although technically termed a ''developing'' country, Lebanon has advanced rapidly in some indicators of development. The life expectancy at birth is 67.6 years for males and 72.0 years for females (www.who.int). Mean age at first marriage is 28 years for females and 31 years for males (United Nations Development Programme, 1998). Child mortality, however, is still relatively high: 34/1000 for males and 28/1000 for females (www.who.int). Children (< 15 years) account for 28% (Amar, 2003) while youth (15–24 years) account for about 19% of the total population (United Nations Development Programme, 1998).

The Context of Health Promotion in Lebanon

Health programmes for the Lebanese population are coordinated by the Lebanese Ministry of Public Health, Ministry of Social Affairs and NGOs (Amar, 2003). These services are curative and preventive (immunization) but until recently were not health promotive in nature. In the last few years, several joint programmes between the MOPH and UN agencies have been initiated, including the National Tobacco Control Programme, the National Non-Communicable Diseases Programme, and the National Aids Programme. Despite these programmes, however, the messages in the mass media which are detrimental to health and well-being far outnumber those that are beneficial to health. Economic issues outweigh health issues in community perceptions of problems (Afifi Soweid *et al*., 2002[1]).

No national representative surveys of health behaviours have been conducted in Lebanon. In the absence of such surveys, researchers rely on the results of community-based studies. With respect to cigarette smoking, such surveys indicate a prevalence rate of 46% for adult males, and 35% for adult females (the highest in the region for females) (www.emro.who.int). The prevalence rate of cigarette smoking among youth varies according to age and indicator: 11% of 13–15 year olds have smoked in the last month (Saadeh, 2001[2]), 20% of entering (first year) university students at AUB (mean age = 18 years) consider themselves to be regular smokers, but 34% have smoked cigarettes on one or more days in the last month (Shediac-Rizkallah *et al.*, 2000–2001). In addition to cigarettes, the water pipe (nargileh, hubble bubble) is a popular pastime in Lebanon. Surveys of university students indicate prevalence rates of around 28% (Tamim *et al.*, 2003). The reasons persons smoke are diverse, stress release being the most common.

Physical activity has been growing in popularity. A common location for walking is the 'Cornishe al Manara' seaside boulevard in Beirut. This boulevard is filled with walkers of all ages. In entering university students, 34% state that they do not exercise at all (Shediac-Rizkallah *et al.*, 2000–2001). Related to nutrition, 15.5% of entering AUB students are classified as obese according to self reported heights and weights. The long history of exposure to other cultures, including those of the West, has influenced attitudes and behaviours of the Lebanese. This has recently become evident with nutrition related issues. Whereas traditionally, plumpness was viewed as an asset, currently, 38% of entering AUB students are trying to lose weight, and 21% state that they are preoccupied with a desire to be thinner (Afifi Soweid *et al.*, 2002). The SIBER survey reports on a variety of other behavioural risk factors of AUB students (Shediac-Rizkallah *et al.*, 2000–2001).

The evaluation described below is framed within the social, economic, and health context of Beirut and Lebanon.

The Course

An introductory ''Health Awareness'' course has been offered by the department of Health Behaviour and Education of the Faculty of Health Sciences (FHS) at AUB since 1996. The course is an undergraduate elective taken by juniors and seniors of various majors. The objective of the course is to introduce students to general principles of wellness with the aim ultimately to encourage positive health attitudes, reinforce a healthier life style and help students make decisions regarding their wellness. The course is offered for 3 h a week for a total of 40 h a semester. Course methodology includes lecture, presentations by students, group discussions, fieldwork and problem solving

exercises. Topics covered in the course are included in Table 1. Since the Fall semester of academic year 2001–2002, the course has been taught by a physician and a medical anthropologist.

Evaluation Methods

Evaluation Design and Description of the Survey Instrument

In the fall of academic year 2000–2001, the evaluation of the ''Health Awareness'' course was conducted using a one-group pretest posttest non-experimental design. The instrument used for the evaluation was the Comprehensive Health Assessment Inventory (CHA). This assessment instrument was adapted from a similar instrument found in the course textbook ''Health and Wellness'' (Edlin *et al*., 2002). The adaptation was based on a critical review of items that were relevant to the course objectives and content and perceived to be appropriate for the context of students in Lebanon and at AUB. A copy of the questionnaire can be obtained from the first author upon request.

Table 1. Course Outline

Topic	Description
The Socio-cultural Dimension of Health	1. Gender and health 2. Socio-economic status and health 3. Culture and health
The Mind	1. Shaping your health 2. Achieving psychological wellness 3. Coping with stress
The Body	1. Staying physically fit 2. Understanding nutrition and your diet 3. Maintaining a healthy weight
Preventing Disease	1. Reducing your risk of cardiovascular disease 2. Living with cancer 3. Managing chronic conditions 4. Preventing infectious disease transmission
Addictive Substances	1. Living drug free 2. Using alcohol responsibly 3. Rejecting tobacco use
Sexuality and Reproductive Health	1. Exploring the origins of sexuality 2. Understanding sexual behaviour and relationships 3. Managing your fertility 4. Becoming a parent
Consumerism and Environment	1. Making consumer health decisions 2. Caring for our environment 3. Protecting your safety

The CHA assessed students' self-reported attitude and behaviour through 66 items related to 11 health topics: social health (2 items), spiritual and psychological health (5 items), stress management (6 items), fitness (6 items), nutrition and weight management (12 items), substance abuse (7 items), disease prevention (5 items), sexual health (9 items), safety practices (2 items), health care consumerism (3 items) and environmental health (9 items). Each of the items was rated on a four point scale from not true/rarely (1) to very true/always (4). Three questions measuring progress along the Transtheoretical Model's stage of change (Prochaska *et al*., 1997) for fruit and vegetable intake, regular exercise, and tobacco use respectively were added to this instrument. In addition, several questions were added to measure demographic and socio-economic status of respondents including: sex, age, current place of residence, current employment status, amount of pocket money received per week, education of mother and father, and occupation of mother and father.

The intent of the evaluation was not to make a decision whether the course should be kept or not. The course is quite popular among students, and changes in knowledge (as evident by performance on exams, papers, and final grades) have already been established. The intent of the evaluation was to push beyond knowledge to assess attitudes and behaviours. If such changes were found, then the authors felt there would be justification to advocate for the course to become a requirement. If not, then it would remain in its current form, a popular elective course. As such, there was no pressure on the evaluation researchers or the course instructor, and thus biases from the evaluation researchers being from the same department were considered minimized.

Survey Administration

The survey was self administered to students enrolled in the ''Health Awareness'' course during the first class period of the semester (pre-assessment) and the last class period of the same semester (post assessment). A graduate student in Health Behaviour and Education (author: DK) was present during the administration of the survey. The course instructors and the faculty evaluation researchers were not present. Students were asked to select a number between 1 and 50 and to record this number on the pre assessment and the post assessment. This would allow for the matching of assessment instruments pre and post while maintaining confidentiality. The list of student names and respective chosen numbers was kept by one of the class students in case anyone forgot their chosen number.

Data Analysis

Data were analysed using SPSS version 10. Descriptive statistics were obtained for all variables. Scores of items within the same health-related topic were added and averaged to create one variable measuring each topic. Paired

analysis of means were conducted for the 11 topical areas at pre assessment as compared to post assessment. Statistical significance levels are not included due to the small number. In order to assess practical significance, a variable measuring percent change was created: [(mean of topical area at posttest—mean of topical area at pretest)/mean of topical area at pretest]. Finally, cross tabs of the stage of change at pre and post assessment were carried out for fruit and vegetable consumption, regular exercise, and tobacco use.

Results

Thirty-two students were enrolled in the ''Health Awareness'' course during the Fall of academic year 2000–2001. Paired pre and post assessments were obtained from only 16 students, and these constitute the final sample for analysis. A description of the students' demographic profile is included in Table 2.

Comprehensive Health Assessment

At pre assessment, only two of 11 topical areas had means over 3.00. The topical area with the greatest mean at pretest was alcohol, tobacco, and other drugs indicating health-promoting attitudes and behaviours of students with respect to these. The topical area with the lowest mean score at pretest was environmental health (Table 3).

There was considerable improvement at post assessment. Eight of 11 topical areas had means over 3.00. The topical area with the greatest mean at post assessment was sexual health, indicating improved knowledge, attitude, and practice related to this area. Environmental health remained the topical area with the lowest mean score at post assessment (Table 3). When looking at differences in means between pre and post assessment, the topical area of stress management had the greatest difference in mean indicating the most improvement in knowledge, attitude, and behaviour. This was followed closely by the topic of sexual health (Table 3). Although mean differences are one indicator of raw change, the rate of change—controlling for pretest scores, is another important indicator. Four topical areas showed rates of change of over 20%: stress management, sexual health, health care consumerism, and environmental health. An additional five topical areas showed improvement rates between 10 and 20% (Table 3).

Stage of Change

Progress along the stages of change was compared pre and post assessment for fruit and vegetable consumption, tobacco use and regular exercise (Table 4). With respect to fruit and vegetable consumption, all those originally in contemplation moved at least one stage forward. In addition, the one person in action moved to maintenance, and the five persons in maintenance remained in

Table 2. Demographic characteristics of the study sample

Variable	N	Percent*
Sex:		
Female	15	94%
Age		
18 years	1	6%
19 years	8	50%
20 years	5	31%
21 years	1	6%
22 years	1	6%
Current place of residence		
Off campus with parents	4	69%
Off campus with relatives	11	6%
On campus dorms	1	25%
Current employment status		
Working part time	3	19%
Not working	13	81%
Major		
Nutrition	7	44%
Medical Laboratory Technology	2	12%
Education	6	37%
Pocket money**		
< = 25,000 L.L./week	3	19%
> 25,000 – < = 50,000 L.L./week	5	31%
> 50,000 – < = 75,000 L.L./week	2	12%
> 75,000 – < = 100,000 L.L./week	0	0%
> 100,000 – < = 200,000 L.L./week	5	31%
> 200,000 L.L./week	0	0%
Educational level of father		
Up to elementary	1	6%
More than elementary and up to intermediate	1	6%
More than intermediate and up to secondary	1	6%
Technical degree	1	6%
University and above	11	69%
Educational level of mother		
Up to elementary	0	0%
More than elementary and up to intermediate	1	6%
More than intermediate and up to secondary	5	31%
Technical degree	0	0%
University and above	10	62%
Occupation of father		
Self-employed	7	44%
Employed	8	50%
Occupation of mother		
Employed	2	12%
Seasonal/interrupted employment	1	6%
Seeking employment	1	6%
Full time housewife	12	75%

*If totals do not round to 100%, due to missing/don't know answers.
**1,500L.L=1US$.

Table 3. Health-related topic means and differences between means pre and post assessment

Health-related topic	N	Mean pre (A)	Mean post (B)	Difference in mean pre & post (B-A)	% change pre to post [(B-A)/A]
Social and occupational health	14	2.93	2.89	− 0.04	− 1.4%
Spiritual and psychological health	15	2.83	3.20	0.37	13.1%
Stress management	13	2.35	3.04	0.69	29.4%
Fitness	14	2.82	3.14	0.32	11.3%
Nutrition and weight management	14	2.59	2.93	0.34	13.1%
Alcohol, tobacco, and other drugs	8	3.52	3.55	0.03	0.8%
Disease prevention	11	2.91	3.25	0.34	11.7%
Sexual health	10	2.90	3.57	0.67	23.1%
Safety practices	13	3.04	3.54	0.50	16.4%
Health care consumerism	13	2.85	3.46	0.61	21.4%
Environmental health	11	2.20	2.66	0.46	20.9%

Table 4. Students at various stages of change related to fruit and vegetable intake, regular exercise, and tobacco use at the beginning and end of the Health Awareness course – Fall 2000

	Stage of change at end of course					
Stage of change at the beginning of the course	Pre-contemplation	Contemplation	Preparation	Action	Maintenance	Total at beginning
5 fruits and vegetables/day						
Precontemplation						0
Contemplation			3	1	1	5 (36%)
Preparation		1				1 (7%)
Action					1	1 (7%)
Maintenance			1	1	5	7 (50%)
Total at end of course	0	1 (7%)	4 (28%)	2 (14%)	7 (50%)	14 (100%)
Regular exercise						
Precontemplation		1				1 (7%)
Contemplation		2		2		4 (27%)
Preparation		1	1	3		5 (33%)
Action			1	2		3 (20%)
Maintenance		1		1		2 (13%)
Total at end of course		5 (33%)	2 (13%)	8 (53%)		15 (100%)
Tobacco use						
Precontemplation	1	2				3 (100%)
Contemplation						
Preparation						
Action						
Maintenance						
Total at end of course	1 (33%)	2 (67%)				3 (100%)

maintenance. However, supporting the cyclical nature of change described by the model, one person originally in preparation regressed back to contemplation, and another two originally in maintenance moved back.

In terms of exercise, the one student in precontemplation moved to contemplation. Two of the four students in contemplation moved to action, and the other two stayed in contemplation. Three of the five students in preparation moved to action, one stayed in preparation, and one moved back to contemplation. Two of the three students in action remained in action, and one moved back to preparation. Finally, the one student originally in maintenance reported moving back to action, a probable miscalculation at one of the two assessment points.

Only three of the students in the class were ever smokers. Of these, two moved from precontemplation to contemplation, and the last remained in precontemplation.

Discussion

The evaluation results generally indicated that students who attended a ''Health Awareness'' class improved their health attitude and behaviour between the beginning and end of the course. Only two of the eleven health-related topic areas showed rates of improvement below 10%: social and occupational health, and alcohol, tobacco, and other drugs. Reasons for this may be varied. With respect to alcohol, tobacco, and other drugs, students already indicated relatively high health supportive attitude and behaviours related to these at pretest. With respect to social health, the course did not tackle the specific items included in the assessment instrument under this topic area. Areas with the most practically significant improvement were stress management, a critical aspect for health enhancement for university students. The University Counseling Service reports increased visits during times of stress: examination periods, transition periods in intimate relationships (personal communication with UCS director: Dr. Antoine Khabbaz, 2001). In addition, improved attitudes and behaviours related to sexual health are particularly relevant to this age group.

Although it may seem difficult to show changes in behaviours in such a short time period, the stage of change constructs allows for movement along a continuum leading to eventual behaviour change and maintenance. The use of this measure in the evaluation of the course indicated movement in a health promotive direction in the area of tobacco use, regular exercise, and fruit and vegetable consumption.

However, several factors limit the conclusions to be drawn from this evaluation. The number of students with matched data available was small. In addition, students for whom paired data are available have several characteristics that suggest a selection bias: many come from health related majors; the

vast majority are women; and pretest results indicate that they come into the course with relatively high knowledge and pro health attitudes and behaviours. The combination of all 66 items resulted in a mean score of 2.74 already at pretest. It may be that students who choose a health awareness course as an elective are already sensitized and interested in the topic of health generally and may be more receptive to messages transmitted in the course. The evaluation design of the course, in the absence of a comparison group, does not allow for the differentiation in effect between selection and true intervention effect. Finally, some of the items included in the CHA assessed knowledge but were scaled along a continuum rather than as positive or negative (true/false; yes/no). This mismatch between items and scoring mechanisms may have resulted in a diluted effect.

In conclusion, this evaluation has indicated preliminary support for the impact of a health awareness class on self-reported attitude and behaviour of undergraduate students. The non-experimental evaluation design, however, does not allow for generalization of findings to all students and thus cannot support the recommendation to make the course a requirement. Future evaluation should include a more robust design with a larger number, a comparison group not taking the course, and an assessment instrument that is carefully developed.

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Notes

1 Afifi Soweid, R.A., Nakkash, R, Nehlawi, M, *et al*. (2002). Together for heart health: an initiative for community-based cardiovascular disease risk factor prevention and control. Beirut: European Union (unofficial publisher).
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