

A Cross-cultural Comparison of Health Promoting Behaviors Among College Students

Steven R. Hawks, Ed.D., M.B.A.,¹ Hala N. Madanat, M.S.,¹ Ray M. Merrill, Ph.D., M.P.H.,^{1,2} Marylynn B. Goudy, M.S.,¹ Takeo Miyagawa, M.S.³

¹Department of Health Science, College of Health and Human Performance, Brigham Young University, Provo, Utah; ²Department of Family and Preventive Medicine, University of Utah College of Medicine, Salt Lake City, Utah; ³Otemae College, Osaka, Japan

Corresponding author: Steven R. Hawks, EdD, MBA, Department of Health Science, 229-L Richards Building, Brigham Young University, Provo, Utah, 84602; Telephone (801) 422-1706; Facsimile: (801) 422-0273; Email: STEVE_HAWKS@BYU.EDU. Submitted July 2, 2002; Revised and Accepted October 21, 2002.

Abstract

English:

The Health-Promoting Lifestyle Profile (HPLP) was used to compare the prevalence of selected behaviors between 594 college students residing in the US, and 629 students residing in Japan. No significant differences were found on subscales for stress management and interpersonal relations. Japanese students, however, scored higher on nutrition and health responsibility subscales, whereas US students scored higher on spiritual growth and exercise subscales. Paradoxically, Japanese students reported higher levels of restrictive dieting and placed greater importance on weight loss, but US students were more likely to be actively trying to lose weight and to have had experience with eating disorders. Differences in social environments were considered in the interpretation of results. Arguments are made for addressing the macro level determinants of health behaviors as part of the design and implementation of population based health education programs.

Spanish:

El "Health-promoting Lifestyle Profile"/HPLP ("Perfil del Estilo de Vida conducente a la Promoción de la Salud") fué usado para comparar la prevalencia de los comportamientos seleccionados entre 594 estudiantes universitarios que viven en los Estados Unidos y 629 estudiantes que viven en Japóón. No se encontraron diferencias significativas entre las sub-escalas del manejo del estrés y relaciones inter-personales. Sin embargo, los estudiantes Japoneses tuvieron puntajes máas altos en las sub-escalas de nutriciión y responsabilidad hacia la salud, mientras que los estudiantes de los Estados Unidos tuvieron puntajes mayores en las escalas de crecimiento espiritual y ejercicio. Paradóójicamente, los estudiantes Japoneses reportaron unos niveles máas altos de dietas restrictivas y demostraron un mayor importancia hacia la péérdida de peso, pero los estudiantes de los Estados Unidos estaban máas dispuestos a tratar de perder peso activamente y estaban máas predispuestos a tener experiencias relacionadas con los desórdenes del consumo alimentario. Las diferencias en los ambientes sociales fueron consideradas en el proceso de interpretaciión de los resultados. Los argumentos fueron hechos de tal manera que cubriían el nivel amplio de los determinantes de los comportamientos en salud como parte del diseño y la implementaciión de los programas de educaciión en salud para esta poblaciión.

KEY WORDS: health behavior, health education, cross-cultural comparison, sociocultural patterns

Introduction

It has been a consistent goal of epidemiological research to identify specific behaviors that contribute to a variety of both negative and positive health outcomes, and to describe the underlying determinants of those behaviors (Hansen, 2001). Such knowledge can then be used by health educators to improve health outcomes by implementing programs that attempt to eliminate risky behaviors and promote positive ones (Orleans, Gruman, Ulmer, Emont, & Hollendonner, 1999). Previous research, for example, has demonstrated a relationship between positive health outcomes and such behaviors as regular exercise (Marcus & Forsyth, 1999), not smoking (Orleans & Cummings, 1999), maintaining an ideal weight (Foreyt & Goodrich, 1994), eating a well-

balanced diet (Glanz, 1999), and managing stress (Ornish et al., 1998).

In searching for the determinants of personal health behaviors, much of the focus in the past has been on the individual (or micro) level. Such constructs as locus of control, self-esteem, loneliness, depression, hardiness, resilience, and personality type have been used to explain individual behavior patterns (Booth-Kewley & Vickers, 1994). At the same time, health behaviors that are prevalent within larger populations may have determinants that go beyond individual variables (Gebhardt & Maes, 2001). As such, there is growing interest in the macro level determinants of health behavior including the role of social norms, culture, mass media, national health policies, advertising practices, physical and social environments, etc.

(Orleans, 2000). Comprehensive behavior change interventions of the future will likely be most effective if they are able to address both the micro and macro level determinants of behavior.

The purpose of this exploratory study was to compare the health promoting lifestyle behaviors of college students from two diverse cultures. It was assumed that meaningful comparisons were possible using existing instruments with convenience samples of university students. It was hypothesized that significant behavioral differences would be found, and that differences in health behaviors might be discussed and partially understood in light of the macro level influences that seem to operate within the cultures. Future population based interventions that target these groups might be refined by reflecting on the findings of this and other studies that strive to clarify the macro level determinants that may be influencing the practice of healthy lifestyles.

Methods

Research Participants

The priority population for this study was college students residing in the US and Japan. Findings are based on a convenience sample of 1,233 college students aged 18 years and older who were attending one of two institutions in the western US (Brigham Young University or Utah State University), or an institution in central Japan (Otemae College). Participants were taken from large sections of general education courses.

Almost all students at Brigham Young University, and approximately 50% at Utah State University, are members of the Church of Jesus Christ of Latter-day Saints (Mormons). As such, the U.S. sample represents a unique population in terms of religious affiliation and spiritual orientation that is not representative of other U.S. college populations with respect to religiosity and spirituality.

Instrument

In order to quantify the degree to which a variety of health promoting behaviors are practiced among certain groups, a number of health behavior surveys have been developed including the Health-Promoting Lifestyle Profile (HPLP) (Walker, Sechrist, & Pender, 1987). The HPLP was designed to assess the relationship between several different lifestyle behaviors and health status. The questionnaire has a 4-point response format with 70 items that are divided into six subscales: health responsibility, spiritual growth, physical activity, nutrition, interpersonal support, and stress management. A total HPLP score provides a comprehensive measure of health promoting lifestyles. Previous evaluation of the HPLP indicates that the scale is both valid and reliable with an initial Cronbach's alpha rating of .92 indicating high internal consistency, and test-retest reliability above .85 indicating acceptable levels of stability. Content and face validity were initially established using expert reviews and extensive pilot tests (Walker et al., 1987).

In 2000, the HPLP was translated into Japanese and evaluated for validity and reliability. After pilot

testing, the HPLP was given to 337 participants in northern Japan. Cronbach's alphas of .94 and .91 were obtained respectively at initial testing and at retesting two weeks later. Researchers concluded that the instrument was valid, reliable, culturally relevant, and capable of describing the health-promoting components of lifestyle among Japanese respondents (Wein et al., 2000).

In addition to the HPLP, the final questionnaire used in this study included items about weight loss, eating disorders, and exercise frequency, as well as demographic items including nationality, education level, age, and gender.

Data Collection

Approval from institutional review boards at participating institutions was obtained. After receiving appropriate instructions, course instructors administered the survey to students. Voluntary participation based on informed consent yielded student response rates of approximately 80-90 percent in each of the surveyed courses. English and Japanese versions of the HPLP were used to collect the data in the US and Japan respectively. Data was hand entered into an excel file by research assistants and then each entry was rechecked to ensure accuracy.

Data Analysis

Differences between US and Japanese responses to categorical questions (weight loss, eating disorders, and exercise) were assessed using the chi-square test.

Differences in the mean level of agreement to HPLP subscale statements (involving interpersonal relations, nutrition, health responsibility, exercise, stress management, and spiritual growth), and a summary HPLP score, were compared between the US and Japan using the t-test. The normality assumption was reasonably satisfied for the HPLP and for each subscale according to the Kolmogorov-Smirnov test. Equality of variances were assessed using an F statistic. Pooled variances or the Satterthwaite variance was used in computing the t statistic, depending on whether the assumption of equal variances was satisfied. All analyses were stratified by gender.

The linear association between HPLP and variables related to weight loss, eating disorders, exercise, and select demographics (age, education, and gender) was assessed using multiple regression analysis.

Results

Analysis was based on 594 respondents residing in the US (249 men, 343 women, and 2 undeclared), and 629 respondents residing in Japan (62 men, 564 women, and 3 undeclared). The average age was 21.0 in the US (22.0 for men and 20.2 for women), and 21.5 in Japan (22.2 for men and 21.4 for women). Although all respondents in the sample had at least a high-school degree, men and women in Japan were significantly more likely to have a two- or four-year college degree (chi-square, $p < 0.0001$).

Gender-specific responses to questions on weight loss, eating disorders, and exercise for US and Japan study participants are presented in Table 1. Men in the US compared with Japan were significantly less likely

Table 1. Summary of Selected Variables According to Nation and Gender

Variable	Men		Women	
	US	Japan	US	Japan
Are you currently trying to lose weight?				
Yes	75 (30.2%)	19 (30.6%)	196 (57.1%)	229 (40.8%)
No	173 (69.8%)	43 (69.4%)	147 (42.9%)	333 (59.2%)
	p = 0.9507		p < 0.0001	
How important is it to lose weight?				
Not important	132 (53.0%)	26 (41.9%)	71 (20.7%)	49 (8.7%)
Somewhat important	84 (33.7%)	21 (33.9%)	148 (43.2%)	252 (44.8%)
Very important	24 (9.6%)	8 (12.9%)	69 (20.1%)	153 (27.2%)
Always on my mind	9 (3.6%)	7 (11.3%)	55 (16.0%)	109 (19.4%)
	p = 0.0602		p < 0.0001	
How frequently do you diet to lose weight?				
Never	185 (74.3%)	29 (46.8%)	169 (49.4%)	104 (18.5%)
1-3 times per year	49 (19.7%)	28 (45.2%)	103 (30.1%)	297 (52.8%)
4-6 times per year	5 (2.0%)	2 (3.2%)	31 (9.1%)	81 (14.4%)
7-12 times per year	8 (3.2%)	1 (1.6%)	28 (8.2%)	38 (6.7%)
12+ times per year	2 (0.8%)	2 (3.2%)	11 (3.2%)	43 (7.6%)
	p < 0.0003		p < 0.0001	
Do you feel you currently may have an eating disorder?				
Yes	8 (3.2%)	0 (0.0%)	17 (5.0%)	20 (3.6%)
No	229 (92.0%)	51 (82.3%)	289 (84.2%)	466 (82.6%)
Unsure	12 (4.8%)	11 (17.7%)	37 (10.8%)	78 (13.8%)
	p = 0.0010		p = 0.2638	
Have you ever had an eating disorder?				
Yes	11 (4.4%)	6 (9.8%)	65 (19.0%)	69 (12.3%)
No	227 (91.2%)	49 (80.3%)	249 (72.8%)	427 (76.0%)
Unsure	11 (4.4%)	6 (9.8%)	28 (8.2%)	66 (11.7%)
	p = 0.0525		p = 0.0093	
Approximately how much do you exercise?				
Once a month or less	3 (1.2%)	18 (29.0%)	6 (1.8%)	222 (39.6%)
2-3 times per month	43 (17.3%)	16 (25.8%)	48 (14.0%)	116 (20.7%)
1-3 times per week	90 (36.1%)	20 (32.3%)	124 (36.3%)	128 (22.8%)
4-5 times per week	71 (28.5%)	4 (6.5%)	104 (30.4%)	52 (9.3%)
Almost daily	42 (16.9%)	4 (6.5%)	60 (17.5%)	43 (7.6%)
	p < 0.0001		p < 0.0001	

to diet to lose weight but more likely to exercise on almost a daily basis. Japanese men were more likely to indicate they are unsure whether they currently or previously had an eating disorder. Because of the high level of this response among men, we were not able to evaluate whether a history of eating disorders differed between men in the US and Japan.

Women in the US were significantly more likely than women in Japan to be currently trying to lose weight and to exercise on almost a daily basis. They were also more likely to have had an eating disorder.

Yet the stated importance of losing weight and the frequency of dieting to lose weight was higher among Japanese women. A comparison between men and women shows that issues related to weight are of greater importance for women than men in both countries.

Mean level of agreement (on a four point scale) to HPLP subscale statements involving interpersonal relations, nutrition, health responsibility, exercise, stress management, and spiritual growth, and a summary HPLP score, are presented for the US and

Table 2. Mean Level of Agreement (And Standard Error) on a Four Point Scale (1 = Almost Never to 4 = Almost Always) on Total HPLP Score and its Subscales

Variable	US	JAPAN	P-value
	Men		
Interpersonal Relations	2.93 (0.03)	3.00 (0.06)	0.3335
Nutrition	2.40 (0.03)	2.56 (0.07)	0.0317
Health Responsibility	1.80 (0.07)	2.12 (0.03)	<0.0001
Exercise	2.41 (0.08)	2.10 (0.04)	0.0005
Stress Management	2.46 (0.03)	2.54 (0.06)	0.2222
Spiritual Growth	3.21 (0.53)	2.67 (0.02)	<0.0001
Total score (HPLP)	2.54 (0.02)	2.48 (0.05)	0.2072
	Women		
Interpersonal Relations	3.19 (0.02)	3.14 (0.03)	0.1119
Nutrition	2.65 (0.03)	2.74 (0.02)	0.0024
Health Responsibility	2.05 (0.02)	2.19 (0.03)	<0.0001
Exercise	2.41 (0.04)	2.10 (0.08)	0.0005
Stress Management	2.47 (0.03)	2.54 (0.06)	0.2222
Spiritual Growth	3.19 (0.07)	2.61 (0.03)	<0.0001
Total Score (HPLP)	2.72 (0.01)	2.56 (0.02)	<0.0001

In cases where the hypothesis of equal variance was rejected, the Satterthwaite rather than the pooled variance was used for computing the t statistic.

Japan by gender in Table 2. Respondents were asked to indicate the frequency with which they engaged in each behavior, with higher scores representing a greater level of participation. Mean responses to nutrition and health responsibility were higher for both women and men in Japan, and mean exercise and spiritual growth were higher for both women and men in the US. Total HPLP scores were higher for both men and women in the US versus men and women in Japan, although statistical significance was achieved only for differences between women.

On the basis of multiple regression analysis, the linear association between a comprehensive HPLP score and variables related to weight loss, eating disorders, exercise (see Table 1 for questions related to these variables), age, education, and gender were

assessed (Table 3). Using the backward stepwise procedure, only statistically significant variables were retained in the models.

For US respondents, HPLP scores were significantly lower for men (vs. women), and lower for those who thought it was important to lose weight (vs. not important) and who currently had an eating disorder. On the other hand, HPLP scores were significantly higher for those who exercised at least 4-5 times per week (vs. never exercised).

For Japanese respondents, HPLP scores were also significantly lower for men (vs. women). HPLP scores were significantly higher, however, for those who felt that weight loss was somewhat important or always on their mind (vs. not important), those who exercised (vs. never exercised), and those who were older.

Table 3. Association of the Hplp Total Scores and Select Variables According to Nation Based on Multivariate Regression Analysis

Variable	US	JAPAN
Gender		
Female	Reference	Reference
Male	—0.188*	—0.095*
How important is it to lose weight?		
Not important	Reference	Reference
Somewhat important	—0.082*	0.122*
Very important	—0.141*	0.053
Always on my mind	—0.127*	0.113*
How frequently do you diet to lose weight?		
Never	Reference	
1-3 times per year	0.039	
4-6 times per year	0.058	
7-12 times per year	0.118	
12 or more times per year	0.244*	
Do you feel you currently may have an eating disorder?		
No	Reference	
Yes	—0.163*	
Approximately how much do you exercise?		
Once a month or less	Reference	Reference
2-3 times per month	—0.036	0.122*
1-3 times per week	0.164	0.200*
4-5 times per week	0.289*	0.240*
Almost daily	0.378*	0.217*
Age		0.025*

*P < 0.05.

Discussion

This study found significant differences between US and Japanese college students in the practice of certain health behaviors that remained consistent after stratification by gender. Scores on two of six HPLP subscales, interpersonal relations and stress management, were very similar for men and women in both cultures indicating little disparity in the practice of health behaviors that impact these constructs. The focus of this discussion will be on the macro level determinants that may be influencing the four subscale constructs that were significantly different.

Health Responsibility

The health responsibility subscale measures the degree to which respondents actively seek reliable health care information from health providers, and the degree to which they engage in positive self-care practices such as self-examinations. Previous research suggests that the Japanese place a comparatively higher value on self-care independence (Tsutsi, Hachisuka, & Matsuda, 2001), and that they report fewer medical symptoms than US respondents (Haug, Akiyama, Tryban, Sonoda, & Wykle, 1991). Some authors have speculated that such differences may be attributed to a higher cultural value the Japanese place on positive health and self-care behaviors (Haug et al., 1991).

Nutrition

Low nutrition scores for the US participants is not surprising given that skipping meals, frequent snacking, and indulgence in fast foods seem to be common practices in the US (Jeffrey & French, 1998). Such dietary practices are generally thought to be a primary cause of rising rates of obesity (Binkley, Eales, & Jekanowski, 2000). At present, Asian cultures may be somewhat health protective in terms of honoring traditional diets that are high in grains and vegetables while maintaining nutritional norms that somewhat limit snacking, skipping meals, and other poor nutritional practices. For example, Asian students who migrate to the US for higher education tend to have diets that are superior to their American classmates in terms of diet composition and eating habits (Pan, Dixon, Himburg, & Huffman, 1999). Yet the longer that these students resided in the US the more likely they were to skip meals, indulge in high fat/sugar snacks, and select fast foods when they ate out. Likewise, changes in the social environment in Japan may be leading to diets that include more snacking, fast foods, and high fat/high sugar diets (Matsumura, 2001; Sasaki et al., 1999). While the findings of this study support higher nutritional standards for Japanese students, this advantage may be lost if current trends continue unaltered.

Exercise

US participants were more likely to outperform the Japanese in terms of active lifestyles. A higher HPLP subscale score in this area was confirmed by actual reports of activity levels among students. Almost half

of American women (48%) reported exercising at least four times per week, but only 17% of Japanese women indicated similar levels of activity. In spite of lower exercise scores, it may be possible that in Japan the levels of activity involved in commuting (including walking and bicycling) may somewhat counterbalance the low levels of reported exercise.

It is possible that for many US men and women the goal of exercise is to enhance appearance and social acceptance, rather than improve physical health (Smith, Handley, & Eldredge, 1998). Given their higher scores on the health responsibility subscale, it is possible that exercise for Japanese students is pursued more for health enhancement than for concerns over appearance. If so, appearance and social acceptance may be stronger motivations for exercise (as in the US) than simply improved health status (as in Japan). Findings from the present study, however, indicate that higher levels of activity correlate significantly with higher total HPLP scores for both US and Japanese students, regardless of underlying motivation. Similarly, research in Japan has reported that high levels of leisure-time physical activity tend to accompany other healthy behaviors (Iwai et al., 2000).

Spiritual Growth

The higher spiritual growth scores recorded for US students may be an artifact of the methodology employed in this study. One of the sampled US universities (BYU) was a private, religious institution where spiritual growth and development is an explicit goal of the educational process. A second factor may be that the US is reportedly experiencing a "spiritual awakening" as evidenced by growing levels of new age spirituality, interest in Eastern and Native American religious traditions, and the practice of alternative therapies that have a spiritual component (Taylor, 1994).

Weight Management

Given high rates of eating disorders and weight management concerns among college students (Schwitzer, Bergholz, Dore, & Salimi, 1998), this study collected additional data on weight loss, eating disorders, and exercise levels. Not surprisingly, it was found that concerns over weight management were greater for women than for men in both cultures. Paradoxically, college women in Japan were more likely to rate weight loss as "very important" or "always on my mind" as compared with their US counterparts (47% vs. 36%). Yet more American women were actively trying to lose weight at the time of the survey (57% vs. 41%) and had experienced eating disorders in the past (19% vs. 12%).

Even though the majority of US women were trying to lose weight, it is possible that positive statements about weight loss importance may be considered undesirable by members of this group, and may even indicate an unhealthy preoccupation (Rodin, 1993). This theory is supported by the finding that

statements indicating that weight loss is important were negatively correlated with overall HPLP scores for US Students. Yet the reverse was true for Japanese participants. Given the somewhat higher health responsibility scores for the Japanese, and their already very low levels of overweight, it is possible that Japanese students rated weight loss as being important because of positive health considerations related to healthy weight management (Tashiro, 2002). In support of this possibility, the multivariate regression analysis in this study found that for Japanese students, statements that weight loss was “somewhat important” or “always on my mind” were positively correlated with overall HPLP scores.

Alternatively, it is also possible that the Western preoccupation with thinness as the only acceptable body type may be creeping into Japanese culture and contributing to unnecessary concerns about weight loss and dieting (Kiriike, Nagata, Sirata, & Yamamoto, 1998). In this study, half of American women reported dieting at least once a year, whereas over 80% of Japanese women stated that they diet at that level. While past research suggests lower rates of eating disorders among Japanese women (Nakamura et al., 1999a; Nakamura et al., 1999b; Nakamura et al., 2000), the relatively high rates of dieting and the high importance of weight loss found among the Japanese women in this study may indicate a negative move toward unhealthy dieting practices that are motivated by social pressure rather than health (Kiriike et al., 1998; Mukai, Crago, & Shisslak, 1994).

Even though a majority of US women were actively trying to lose weight at the time of this study, they reported comparatively low levels of dieting, and much higher rates of exercise. It seems likely that many US women who were trying to lose weight at the time of the study were relying on exercise instead of restrictive diets. While the motivation for exercise among US women is still uncertain (appearance vs. health), the trend away from dieting and toward greater levels of exercise as a weight management tool seems positive. The promotion of similar trends for Japanese women seems warranted (Kiriike et al., 1998).

Implications for Health Education

From a cultural standpoint, Japanese college students may be more receptive to positive nutrition and fitness messages that focus on health responsibility and self-care independence than their US counterparts. At the same time, this population seems to be at risk for succumbing to Western ideals that support unrealistic body images and that promote restrictive dieting practices as normative behaviors for managing weight and enhancing appearance (Kiriike et al., 1998). Likewise, Japanese nutritional practices are at risk of being negatively impacted by a growing fast food culture that is fueled by Western media (Sasaki et al., 1999). Before eating disorders, poor nutritional habits, and unhealthy dieting practices reach levels similar to

the US, there seems to be a window of opportunity for comprehensive health education interventions that can protect positive practices while curtailing the spread of negative influences (Yajima, Takano, Nakamura, & Watanabe, 2001).

As one example, South Korea has been successful at the national level in supporting messages and policies that favor traditional, and more nutritious, diets—thereby using macro level interventions to support those elements of the culture that are already health protective (Kim, Moon, & Popkin, 2000). The result has been lower levels of fat intake and less obesity in South Korea as compared with other Asian countries. Similarly, Japan may be in a position to bolster positive nutrition practices through national policies and education programs that counter the growing efforts of the fast food industry to make burgers and fries the foundation of a new national diet.

One of the greatest disparities found in this study was in the area of exercise, with Japanese students engaging in relatively low levels of purposeful physical activity. While activity associated with commuting (e.g. walking, bicycling) may diminish this difference, there is an opportunity to evaluate exercise opportunities for activity available to college students, and to create social environments and physical facilities that support exercise (Arai & Hisamichi, 1998). Using multivariate regression analysis, this study found a significant correlation between overall HPLP scores and increased levels of exercise among Japanese students. This relationship between exercise and overall healthy lifestyles might be exploited more effectively through increased levels of national fitness promotion (Iwai et al., 2000). Beyond health enhancement, there is also an opportunity to promote exercise as a sustainable method for weight management that is preferable to restrictive dieting. If not redirected, the high levels of restrictive dieting reported by Japanese students in this study may soon lead to levels of eating disorders similar to those reported in the US (Kiriike et al., 1998).

In relation to weight management, proper nutrition, and fitness, one of the primary challenges facing health education is the confusion created by having two sets of potentially conflicting goals (Hawks & Gast, 1998). For the health educator, the goal is the promotion of holistic health. For those individuals who are targeted by health education programs, on the other hand, the goal is often the pursuit of a more attractive body—even if health is compromised in the process. At present, Japan seems to have an edge in relation to higher levels of health responsibility and nutrition. Even so, the excessive concern over weight loss and the high prevalence of restrictive dieting found in this study may indicate that the Japanese are adopting Western standards of beauty, and are pursuing potentially unhealthy methods of weight management (Kiriike et al., 1998).

While the US participants scored higher on exercise and spirituality subscales, they still seem to be

preoccupied with the pursuit of unrealistic body ideals (Allaz, Bernstein, Rouget, Archinard, & Morabia, 1998). The majority of women in this study were trying to lose weight, and one out of five indicated experience with an eating disorder. Health responsibility and nutrition scores reflected room for improvement, a finding that is supported elsewhere in the literature (Haug et al., 1991; Jeffrey & French, 1998). On a positive note, this study provides evidence that weight management efforts are shifting from a reliance on restrictive dieting, to a more balanced approach that includes higher levels of exercise. This trend should be supported and at the same time enhanced by health education messages that encourage a more balanced, holistic perspective in relation to the positive role of exercise (Yajima et al., 2001).

Given conflicting goals (appearance vs. health), there is a need for leadership from the health education profession in developing and promoting common goals in a variety of diverse cultural settings (Orleans, 2000). For example, health education is in a position to help fight against the notion that only very thin bodies are socially acceptable (Hawks & Gast, 2000). There is growing evidence that high levels of health and happiness can be achieved at many different body sizes (Hawks & Gast, 1998). In promoting positive nutrition practices, health educators can develop coalitions, lobby politicians, propose national policies, and develop mass media messages that counter fast food and junk food advertising, and that support the availability, accessibility, affordability, and desirability of healthy food choices (Nestle & Jacobson, 2000).

The primary limitation of this study was the relatively small sample that was drawn from only three institutions. The US sample may have been even less representative of American university students due to the unique religious affiliation of most participants. As such, the generalizability of results is weakened. Future research should include a wider diversity of participants.

Conclusion

The authors of the HPLP have argued that the instrument should be used in studies with populations representing "...diverse cultural backgrounds..." by researchers who wish to describe "...the health promoting component of lifestyle in various populations..." (Walker et al., 1987). Per their suggestion, the HPLP was used in the present study to compare health promoting behaviors between Japanese and American college students. As hypothesized, differences were found with Japanese students scoring higher on nutrition and health responsibility subscales, and US students scoring higher on spiritual growth and exercise subscales. It is plausible that some of these differences are the result of social and cultural influences that occur at the macro level.

In order to be effective behavior change agents, health educators need to develop comprehensive

interventions that address both the micro and macro level determinants of health behaviors (Orleans, 2000). This exploratory study analyzed differences in health promoting lifestyle behaviors between two diverse populations from the larger perspective of culture and social environment. While the analysis does not allow for cause and effect determinations, it does offer potential insights that might be useful in guiding the development of comprehensive interventions. It seems probable that population based interventions that recognize and support cultural strengths, while resisting weaknesses, will be more successful than those that fail to take such a broad perspective (Orleans, 2000; Yajima et al., 2001).

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