12-2010

Further Validation of the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory for College Students

Nicole Mareno
Kennesaw State University, nmareno@kennesaw.edu

Kathy Shadle James
University of San Diego

Further Validation of the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory for College Students

December 2010

Nicole Mareno, PhD, RN
Assistant Professor
WellStar School of Nursing
Kennesaw State University
Kennesaw, Georgia

Kathy Shadle James, DNSc, RN, FNP
Associate Professor
Hahn School of Nursing and Health Science
University of San Diego
San Diego, California

Abstract

Health promotion is a vital component of college health programs. College health professionals are challenged to find cost-effective, comprehensive measures to assess wellness and risk behaviors. Hettler's 1979 Six Dimension of Wellness Model guided this inquiry. Physical, emotional, intellectual, occupational, social, and spiritual wellness dimensions were

measured by the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory (BMS-WBCI). This study aimed to further validate the BMS-WBCI by reporting reliability as internal consistency of the scale when used to measure wellness in a sample of college students. A descriptive cross-sectional design was utilized. A convenience sample of 106 college students from a small, private southwestern university participated. Cronbach's alphas were calculated for the entire scale and each subscale. An item analysis was performed. Cronbach's alpha for the entire scale was .91 indicating an acceptable degree of internal consistency. The alpha scores for the subscales were: body (.69), mind (.87), and spirit (.88). The further psychometric evaluation of the BMS-WBCI adds to the data supporting the use of this instrument in the college population.

Further Validation of the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory for College Students

Introduction

The American College Health Association [ACHA] created *Healthy Campus 2010*, a comprehensive plan built on the USDHHS's *Healthy People 2010* to construct campus initiatives aimed at improving student health.[2] Health promotion activities during college matriculation are an essential action for college health programs.

Priority health concerns for the college-aged client include obesity, nutritional inadequacy, lack of physical activity, tobacco use, binge drinking, and unsafe sexual practices.[3,4] The period of college matriculation often brings significant changes to physical, emotional, mental, and spiritual well-being. Academic pressure, socialization to university life, and new found control over personal health care decisions all impact one's health.[5,6] The college-aged client may succumb to previous unhealthy health habits or develop new unhealthy behaviors during college matriculation.[7]

Wellness is defined as a holistic self-driven process involving personal lifestyle, spiritual, mental, and environmental dimensions of well-being. Wellness is a way of living that values health, balance, and the minimization of unhealthy behaviors.[8] Hettler's Six Dimensions of Wellness Model is one of several conceptual models explaining wellness. The hexagonal model encompasses six major areas of wellness that include social, occupational, spiritual, physical, intellectual, and emotional dimensions. A basic assumption of Hettler's model is that wellness is an active and self-driven process. This perspective acknowledges that the individual becomes aware of health-related behaviors that promote or

impede their physical, mental, spiritual, and emotional health. Once the individual is aware of their behaviors they make choices that move them toward reaching their fullest potential.[8,9]

Assessment of wellness and health risk behaviors is essential in any college health program. College health professionals may face difficulties in finding cost-effective, reliable, and valid holistic wellness measures specifically written with the college-aged client in mind. The purpose of this study was to further validate the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory (BMS-WBCI) a wellness measure specifically designed for the college-aged client. Hettler's Six Dimensions of Wellness Model was used to guide this inquiry.

Literature Review

In the extant literature researchers have utilized various wellness instruments to measure holistic health. The TestWell Wellness Inventory,[10] Perceived Wellness Survey,[11] and Five Factor Wel[12] are examples of wellness measures that have been empirically tested. Of the three aforementioned measures, only the TestWell has a specific version for college-aged students.

Hettler's Six Dimensions of Wellness model is the conceptual base for the TestWell Wellness Inventory.[10] The National Wellness Institute (NWI) developed the TestWell Wellness Inventory College Edition, a 100-item Likert-type scale that contains 10 subscales representing the six original dimensions of wellness proposed by Hettler. The TestWell inventory measures the extent to which lifestyle behaviors reflect potential or actual health risks. It is a lengthy measure and often cost prohibitive to researchers or college health professionals.

In the college population, the TestWell College Edition has been utilized as a pre-test/post-test measure to compare the effects of cognitive (lecture) and activity-centered (fitness) instruction techniques on wellness levels.[13] It has also been used descriptively to assess gender-based differences in the wellness levels of young adults.[14] Specific literature on the reliability and validity of the college edition was not found.

The reliability of the TestWell High School Edition was tested by means of Cronbach's alpha (α) in one study.[15] Initial data revealed that the 10 subscale scores had acceptable internal consistency reliability (α = .67 to .89) with the exception of the self-care subscale which had only marginally acceptable internal consistency reliability. Stewart and colleagues assessed the TestWell noting that it lacked a simple factor structure.[15] A major critique of the measure is the lack of

content validity and an unclear understanding about whether attitudes, behaviors, or knowledge were being measured. Given this assessment and similarities between the high school and college editions, further reliability and validity testing of the college version may be needed prior to widespread use.

The Wheel of Wellness Model (WoW) is a conceptual model that defines the attributes of and theorizes relationships among dimensions of healthy functioning including, but not limited to: physical, emotional, cultural, spiritual, community, and global aspects of health.[16,17] The WoW is the theoretical foundation for the original Wellness Evaluation of Lifestyle and subsequent Five Factor Wellness Inventory [5F-Wel].[18] The 5F-Wel has been tested in a broad age sample of 3,043 individuals with reported internal consistency reliability scores (α = .61 to .89) considered marginally acceptable to acceptable.[19]

The original 5F-Wel contained 91 survey items within 17 subscales. The five factors included the creative self, coping self, social self, essential self, and physical self.[20] The 5F-Wel was administered to 3,993 volunteers over a four-year period.[12] After the initial study the researchers deleted 35 ambiguous items for a new total of 56 items and the number of factors was reduced to four: cognitive-emotional wellness, relational wellness, physical wellness, and spiritual wellness.[12] In initial studies of the revised instrument only a third of the sample was categorized as a college student.[19] Further reliability testing of this instrument in the college population is necessary prior to use.

Another theoretical perspective in the literature is perceived wellness. The Perceived Wellness Survey (PWS) was created based on the view that health perceptions may be predictive of future health behaviors or outcomes.[11] The PWS consists of six subscales that represent interrelated dimensions of wellness including: physical, spiritual, psychological, social, emotional, and intellectual dimensions. The subscale scores are calculated by combining both the magnitude (mean) and balance (standard deviation) among the subscale scores to determine the composite wellness score based on perceptions rather than on behavioral variables.[21]

The construct validity of the PWS was assessed in six separate groups of volunteers (n = 1,077) including college students (n = 281), hospital employees (n = 238), and corporate employees (n = 558). Adams and colleagues found that in all but three of the analyses, the highest and lowest perceived wellness group means were significantly different, indicating a high degree of construct validity. The PWS scale, although demonstrating promise in both reliability and validity was not written specifically with the college student in mind.

In the present study, wellness behaviors were measured by means of the Body-Mind-Spirit Wellness Behavior and Characteristic Inventory (BMS-WBCI) developed by Hey, Calderon, and Carroll.[22] The instrument was developed in response to a need for a cost-effective and comprehensive wellness measure for college students. The data obtained from the present study was used to estimate internal consistency of the instrument thus providing an additional foundation for reliability. Cronbach's alpha scores were calculated for the mind, body, and spirit subscales and for the entire scale. The data from the current study was collected as part of a larger study of student wellness and health risk behavior appraisal. The validation of the BMS-WBCI in a different population of college students gives further evidence to support the use of this measure. The following research question was used to guide this inquiry: What is the reliability as internal consistency of the BMS-WBCI when used to measure wellness behaviors in this population?

Methods

Study Sample

The purpose of the study was to describe wellness and to further validate the psychometric properties of the BMS-WBCI in a sample of college students from the southwest United States. This was a descriptive, cross-sectional, exploratory study in which data was collected at a single point in time. A non-probability convenience sample was recruited from a population of 2,316 students enrolled in small liberal arts, faith-based institution in the southwest. The inclusion criteria included being an undergraduate student over the age of 18, currently enrolled at the institution. Students pursuing graduate degrees were excluded.

Protection of human subjects was ensured throughout the study. Prior to data collection, approval to conduct the study was obtained from the Institutional Review Board (IRB) at the facility where data was collected and the principle investigator (PI) was employed, as well as from the institution in which the PI was enrolled in doctoral studies. Permission to collect data in front of the student union building was obtained from the dean of students and building manager prior to data collection.

Research assistants (RA) carried out the data collection. RAs were thoroughly trained by the PI as to how to obtain informed consent and procedures for collecting the data. The activities of the research assistants were fully monitored by the researcher. As no identifiers were collected on any of the research instruments, responses were anonymous. Informed consent to participate was collected prior to participation. Signed consent forms were collected and stored apart

from completed survey instruments. As an incentive for participating each participant received a $5.00 StarbucksÒ gift card and a nutritional bar of their choosing. The participants received the gift card and nutritional bar whether they completed the surveys or not.

Instrumentation

The BMS-WBCI consists of 44 items divided into three subscales. The subscale labeled as "body" consists of nine items (items 1 – 9) relating to risk behaviors including personal safety, physical fitness, and dietary intake, encompassing the physical domain of wellness. The second subscale labeled "mind" consists of 20 items (items 10 – 29) representing the intellectual, social, emotional, and occupational domains of wellness. The third subscale "spirit" consists of 15 items (items 30 – 44) spanning the spiritual, emotional, and occupational domains of wellness.

Hey et al. used the BMS-WBCI instrument in two different studies in the southeast region of the United States. Each study reported an estimation of internal consistency as reliability. Cronbach's alphas for each subscale were high indicating a substantial and acceptable degree of internal consistency. Values obtained in the first study were: mind (α= .88), body (α = .81) and spirit (α = .91). These values compared favorably to those obtained in the second study: mind (α= .75), body (α = .87) and spirit (α = .92). They also reported a positive correlation between all three subscales.[22]

Each of the 44 items asks the participant to respond on a 3-point Likert scale where 1 indicates "rare/seldom," 2 indicates "occasionally/sometimes," and 3 indicates "often/always." Possible scores for the entire scale range from a minimum of 44 to a maximum of 132. Higher scores indicate a higher level of participation in positive health behaviors and agreement with characteristics that contribute to overall well-being.[22]

In this study the entire instrument was used to operationalize wellness. Score totals for the entire scale were interpreted as the need for action; 44 – 73 indicates an immediate need to change behavior to improve wellness lifestyle; 74 – 103 indicates that the respondent is on the way to a wellness lifestyle but would benefit from change in certain areas; 104 – 132 is interpreted that the individual has a high frequency of behavior that support a healthy lifestyle.[22]

Data Collection Procedures

The RAs approached potential participants with informational flyers announcing the study. Interested candidates were escorted to tables outside the university cafeteria, university cafe, and university campus mall. The RA then completely explained the purpose of the study and the extent of participant involvement. Candidates were asked to read and sign the consent form and all questions were answered. The signed consent forms were collected by the RAs and placed in a large envelope. For convenience and privacy, the participants were given research consent, BMS-WBCI, and demographics questionnaire on a clipboard. Completed packets were returned to the RAs and placed in a separate envelope from the consent forms. At the conclusion of the collection period all consent envelopes and research instruments were returned to the PI.

Statistical Analyses

In order to determine that the wellness score variable was normally distributed, histograms with the normal curve line imposed were visually inspected. Additionally, the Kolmogorov-Smirnov (K-S) statistic was considered; a non-significant value ($p > .05$) supported normality. Values for skewness and kurtosis were generated; values approximating zero indicated distribution normality.

The sample was described from data collected on the demographic questionnaire and analyzed by the use of descriptive statistics. The mean, standard deviation, and range were reported for the wellness scores. Scores were grouped according to the scoring grid developed by Hey et al. to discern the overall wellness behaviors in the sample. In order to ascertain the reliability as internal consistency of the BMS-WBCI, Cronbach's alpha was calculated for each subscale and the entire scale. Criteria used to identify poorly functioning items included (a) an item-total correlation of <.50 and (b) an increase of more than .10 in the total reliability when the item was deleted.[23]

Results

Prior to statistical analysis, accuracy of data entry was checked by first summing all scales manually. Responses to each of the 44 items were entered into the Statistical Package for the Social Sciences [SPSS] version 16[24] and then computer summed. Subtraction of the computer sums from the manual sums with no remainder was accepted as evidence of accuracy.

One hundred and six individuals participated by completing the research instruments. Three BMS-WBCI surveys were partially incomplete and were excluded from some or all of the psychometric analysis. The sample included men ($n = 44$, 41.5%) and women ($n = 62$, 58.5%). The participants ranged in age from 18 to 39 years ($M = 20.18$, $SD = 3.40$). Marital status was reported; 99 (93.4%) were single while six (5.7%) were married and one (.9%) was divorced. All participants provided information on their year in school (freshmen, $n = 40$, 37.7%; sophomores, $n = 14$, 13.2%; junior, $n = 16$, 15.1%; senior, $n = 36$, 34.0%). The majority ($n = 90$, 84.9%) lived on campus in dormitories; 13 (12.3%) lived with others, and only three (2.8%) lived at home. Table 1 provides a summary of the ethnicity and religious affiliations of the sample.

The scores for the total BMS-WBCI scale were screened for outliers by several methods. The histogram for the total score on the scale for BMS-WBCI evidenced at least four outliers located at the extreme lower end of the scale: 63, 64, 76, and 79. The scores were converted according to the procedure outlined by Tabachnick and Fidell.[25] The outliers were changed to one unit smaller than the next most extreme score in the distribution, which was 86. Therefore, these scores were each changed to 85. In this way the outlying cases remained deviant, but not as deviant as they were. After all outliers were managed, the raw scores were converted to z-scores, the histograms were re-plotted and skewness and kurtosis were examined. All scores on the BMS-WBCI fell under the normal curve within 3 SD. The z-score of skewness was 1.32; the kurtosis z-scores were 1.44. All values were less than 1.96 (< 1 SD) and indicated that the scores were normally distributed. Lastly, to determine if the distribution as a whole deviated from a comparable normal distribution the Kolmogorov-Smirnov (K-S) test was computed for BMS-WBCI scores ($K\text{-}S = .09$, $p = .05$). These non-significant values indicate that the distribution of the sample was not significantly different from a normal distribution. Homogeneity of variance was assessed by means of Levene's test. The Levene statistic for BMS-WBCI (.01, $p = .93$) was non-significant indicating roughly equal variances.

In this study, wellness was operationalized by the score on the BMS-WBCI. Non-adjusted scores ranged from 61 to 130 ($M = 108.73$, $SD = 12.41$). Following the guidelines for interpretation the scores were re-coded into three categories. Scores ranging from 44 – 73 became 1; scores ranging from 74 – 103 became 2; and scores ranging from 104 – 132 became 3. Table 2 provides the frequency distribution based on these re-coded values.

To determine internal consistency Cronbach's alpha was calculated for all subscales and the entire scale of the BMS-WBCI. The results of the item analysis and internal consistency are presented in Table 3. Criteria used to identify poorly functioning items included (a) an increase of more than .10 in the total reliability when the item was deleted and (b) a correlation of <.50 between an item and the subscale score. The only item considered for deletion was item one. Deletion

of this item increased the alpha of the Body scale to .73. However, the alpha for the original entire 44 item scale was .91 and remained the same with the deletion of item one. Therefore item one was retained and the entire 44 items were used in computations.

Implications of Findings

The purpose of this study was to describe wellness in a sample of young adult college students and to further examine the psychometric properties of the BMS-WBCI. The identification of deficiencies in any dimension of wellness will allow for the design of interventions tailored to the unique needs of the student population served by campus wellness services. Since health behaviors continue to be formed during this stage, interventions may have a lasting impact on health promotion and disease prevention.

The psychometric properties of the BMS-WBCI were tested in this study. This data adds to the evidence that the BMS-WBCI is a valid measure of wellness for the college student population. The overall alpha of the BMS-WBCI was .91, which was well over the traditional accepted value of .70 and therefore, found to be internally consistent. The alpha scores for the subscales in this study were: body (a = .69), mind (a= .87), and spirit (a= .88).

In their first study utilizing the BMS-WBCI, Hey and colleagues obtained the following alpha scores: mind (α = .88), body (α = .81) and spirit (α = .91). They found that the values compared positively to those obtained in their second study: mind (α = .75), body (α = .87) and spirit (α = .92).[22] In this study the body subscale had a lower alpha than had been previously reported. While deletion of item one positively affected the alpha for the Body subscale, it did not alter the alpha for the entire scale and was retained. Researchers considering using the instrument based on the subscales instead of the total composite should consider item one of the body subscale.

College students in this sample had a high level of wellness. In past studies, moderate levels of wellness were discerned.[14,19,26] In initial studies of the BMS-WBCI, Hey et al. found that the average scores were 108.2 and 110.3 indicating high levels of wellness in their samples.[22]

There were several limitations to this study, including the small sample size. In this study almost all the participants identified themselves as Caucasian and over three quarters of the sample lived on campus limiting the generalizability of the results to the entire campus population and to other campuses. In comparison to the institutional population

demographics, the sample was slightly over-representative of the percentage of males attending the university, students living on campus, and students citing a formal religious affiliation. The sample was slightly under-representative of the percentage of females as compared to the campus population as a whole. The sample was representative of the number of students in the population identifying themselves as Caucasian. In past studies utilizing the BMS-WBCI, the study populations identified themselves predominantly as Caucasian with an almost equal numbers of female and male participants.[22]

This study adds to the evidence that the BMS-WBCI may be a reliable measure to assess wellness in the college population. Further studies should focus on larger populations of diverse students in different areas of the United States. The BMS-WBCI is a cost-effective and reliable measure available for college health professionals. Further use and testing in larger and more diverse populations will continue to add evidence of reliability and validity.

Conclusion

It is vital to promote the health and well being of young adult college students. Risky health behaviors in youth can be carried forward into adulthood, leading to debilitating chronic diseases later in life. For college health professionals, addressing the leading health indicators and measuring wellness is of utmost importance. More research on college campuses could allow health professionals to better understand the general health needs of their populations and to plan interventions designed to address the highest priority needs of the student body. Utilizing a cost-effective succinct measure such as the BMS-WBCI can assist college health professionals in identifying key areas of wellness that require intervention.

References

1. United States Department of Health and Human Services. (2001). *Healthy people 2010* (2nd Ed.). McLean, VA: International Medical Publishing.
2. American College Health Association. (2000). *Healthy campus 2010*. Retrieved from http://www.acha.org/Info_resources/hc2010.cfm.
3. American College Health Association. (2008). American College Health Association national college health assessment spring 2007 reference group data report. *Journal of American College Health, 56,* 469-482.

4. Centers for Disease Control and Prevention. (2006). Youth risk behavior surveillance- United States, 2005. *Morbidity and Mortality Weekly Report, 55(*SS-5).
5. Rozmus, C. L., Wysochansky, M. ,& Mixon, D. (2005). An analysis of health promotion and risk behaviors of freshmen college students in a rural southern setting. *Journal of Pediatric Nursing, 20*(1), 25-33.
6. Von Ah, D., Ebert, S., Ngamvitroj, A., Park, N., & Kang, D. (2004). Predictors of health behaviors in college students. *Journal of Advanced Nursing, 48*, 463-474.
7. Gores, S. E. (2008). Addressing nutritional issues in the college-aged client: Strategies for the nurse practitioner. *Journal of the American Academy of Nurse Practitioners, 20*, 5-10.
8. Hettler, W. (1979). *The six dimensions of wellness model*. Retrieved from: http://hettler.com/history.
9. Hettler, W. (1984). Wellness: Encouraging a lifetime pursuit of excellence. *Health Values, Achieving High Level Wellness, 8*, 13-17.
10. National Wellness Institute. (1999). *The TestWell: Wellness inventory-college edition*®. New York: Brown & Benchmark Publishers.
11. Adams, T., Bezner, J. ,& Steinhardt, M. (1997). The conceptualization and measurement of perceived wellness: Integrating balance across and within dimensions. *American Journal of Health Promotion, 12*, 380-388.
12. Myers, J. E., Luecht, R. M. ,& Sweeney, T. J. (2004). The factor structure of wellness: Reexamining theoretical and empirical models underlying the Wellness Evaluation of Lifestyle (WEL) and the Five-Factor Wel. *Measurement and Evaluation in Counseling and Development, 36*, 194-208.
13. McClanahan, B. (1993). The influence of an undergraduate wellness class on student lifestyle behaviors: A comparison of a cognitive-based and an activity-based course. *Wellness Perspectives, 9*(4), 33-46.
14. Fair, S. (2004). A comparison of the self-wellness of female and male student in one entry-level physical therapy program. *Journal of the Section of Women's Health, 28*(3), 15-21.
15. Stewart, J., Rowe, D., & LaLance, R. (2000). Reliability and validity evidence for the TestWell Wellness Inventory High School Edition. *Measurement in Physical Education and Exercise Science, 4*, 157-173.
16. Myers, J. E., Sweeney, T. J., & Witmer, J.M. (2000). The Wheel of Wellness counseling for wellness: A holistic model for treatment planning. *Journal of Counseling and Development, 78*, 251-266.
17. Witmer, J. M., Sweeney, T. J. ,& Myers, J. E. (1998). *The Wheel of Wellness*. Greensboro, NC: Authors.
18. Myers, J. E., Sweeney, T. J., & Witmer, J. M. (1996). *The Wellness evaluation of lifestyle*. Palo Alto, CA: MindGarden.
19. Hattie, J. A., Myers, J. E., Sweeney, T. J.. & Sweeney, T. J. (2004). A factor structure of wellness: Theory, assessment, analysis, and practice. *Journal of Counseling and Development, 82*, 354-364.

20. Myers, J. E., & Sweeney, T. J. (1999). *The Five Factor Wel* (WEL-J). Greensboro, NC: Authors.
21. Adams, T., Bezner, J., Garner, L., & Woodruff, S. (1998). Construct validation of the perceived wellness survey. *American Journal of Health Studies, 14*, 212-219.
22. Hey, W. T., Calderon, K. S., & Carroll, H. (2006). Use of body-mind-spirit dimensions for the development of a wellness behaviors and characteristic inventory for college students. *Health Promotion Practice, 7*(1), 125-133.
23. Nunnally, J. (1978). *Psychometric theory*. New York: McGraw Hill.
24. Statistical Package for the Social Sciences, Inc. (2007). *SPSS Version 16*. Chicago: SPSS, Inc.
25. Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics*. Needham Heights, MA: Allyn & Bacon.
26. Hermon, D. A. ,& Davis, G. A. (2004). College student wellness: A comparison between traditional and nontraditional age students. *Journal of College Counseling, 7*(1), 32-39.