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Stress and Health Behaviors: ZOE Transformation Challenge Findings

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MSN Capstone Presentation

Stress and Health Behaviors: ZOE Transformation Challenge Findings

For NRSG-594

MSN Capstone

Southern Adventist University

School of Nursing

Stress and Health Behaviors: ZOE Transformation Challenge Findings

Introduction

Description of the problem

The impact of stress and diet on a person's health can lead to detrimental effects. Stress alone, chronically can lead to an inadequate immune system response, which in turn sets the individual up for infection, illness, mood change, and cardiovascular disease. College students are a population in which stress is consistently evident. For the Zoe transformation challenge, college students were given a 28-day challenge to implement diet, exercise and spirituality into their daily routines to evaluate the contributions diet, exercise and spirituality have on reducing the effects of stress.

Definition of Terms

Diet

The transformation challenge requirements for diet included only whole-foods. No added sugars or refined sweeteners were allowed. However, Tofu and 100% grain breads were allowed. The primary beverage was water, but 100% juices and unsweetened soy/nut milks could be used as well.

Exercise

Exercise was not a manipulated variable, but rather a subjective component that each participant self evaluated by completing an International Physical Activity Questionnaire pre and post transformation challenge.

Stress

Stress was not a manipulated variable, but rather a subjective component that each participant self evaluated by completing a Perceived Stress Scale (PSS) pre and post transformation challenge.

Spiritual experience

Participants were given a copy of Dr Samaan's book "Christ's Way to Pray", and were sent encouraging Bible scriptures daily via email.

Theoretical Framework

The ZOE study follows Betty Neuman's theoretical framework. Neuman believes that a person is made up of multiple components, which must work harmoniously to create a status of wellness. The harmony consists of the psychological, physiological, spiritual, sociocultural and developmental components. Whenever the harmony of components is interrupted the stressor involved can alter a person's state of health. Each action of an internal or external stressor causes a reaction within the body, which can alter one's state of health by improving or worsening it. Neuman added perspective to the role of nursing by adopting the roles of primary, secondary and tertiary interventions to assist the person in maintaining inner harmony. The ZOE transformation challenge followed Neuman's theoretical health framework by evaluating the primary, secondary and tertiary interventions for alleviating stress to help one maintain harmony within, or try to re-obtain a harmonious state of health.

Purpose Statement/PICO Question

According to the IRB submission, the purpose of the study was to "determine the effects of a 28-day whole-food plant-based diet on the resting metabolic rate (RMR), plasma cortisol level, C-reactive protein, lipids, and PLAC values of university students. The focus of this

presentation is to take the stress ratings, as measured by the Perceived Stress Scale (PSS) in a group of college students, and evaluate the change over a period of 28 days to see if the health behavior modifications of a plant based diet and spiritual exercises impact a college student's perception of personal stress.

Literature Review

The importance of living a healthy lifestyle has been studied for many years. Many studies have been conducted to evaluate the benefits of certain health promotion behaviors and decreasing stress to improve overall health, and decrease comorbidities. One population, who has been in the eye of researchers are college students. College students are a population under tremendous stress and are also a population in which good health habits have not always been established. The college student is one who has probably left to comforts and adult supervision of their parent's home, and is now responsible for maintaining their own health behaviors without constant supervision. The stress in the college student's life secondary to role change increased structured educational demands and maintaining healthy behaviors have contributed to the necessity to evaluate this population for their ability to thrive, as well as the factors potentially inhibiting their ability to thrive. Some factors studied to impact stress maintenance are health promotion behaviors, such as diet, exercise, religiousness, spirituality and meditation. For the next portion of this presentation, I will share a review of literature that supports the impact of change in stress levels by adopting certain health promotion behaviors to decrease the comorbidities associated to stress.

Health Behaviors

Bryer, Cherkis and Raman (2013) conducted a cross-sectional descriptive study of health promotion behaviors of undergraduate nursing students. They compared health promotion

behaviors between traditional and nontraditional students enrolled fulltime in a Northeastern, Associate Degree nursing program. Traditional was defined as 24 years of age or less, enrolled full-time, white, female with English as a first language and no children. Nontraditional was defined as “25 years of age or older, commuter, enrolled part-time, male, member of an ethnic and or racial minority group, speaks English as a second language, and has dependent children”(Bryer, Cherkis, & Raman, 2013, p. 410). Through their literature review they summated that college students, especially traditional students, partake in risky health behaviors leading to declination of overall heath, such as tobacco use, alcohol abuse, inactivity and unhealthy diet. They also found that nontraditional students encountered a different set of health barriers, such as, inactivity, lack of time, employment and care of dependents. Both groups shared a lack of time and inactivity.

After receiving IRB (institutional review board) approval, a convenience sample of 143 undergraduate AD nursing students was obtained, and consent received. The instruments used in this study were the Barriers to Health Promoting Activities (BHPA), and the revised Health Promoting Lifestyle Profile (HPLP) II. Both instrument’s internal consistency was computed using SPSS (Statistical Package for the Social Sciences) version 17.0. The BHPA resulted Cronbach’s alpha “coefficients of .755, .812, and .710”(Bryer, Cherkis & Raman, 2013, p. 412), and the HPLP II resulted Cronbach’s alpha coefficients ranging .824 to .892, and overall .939 (Bryer, Cherkis & Raman, 2013, p. 412).

This study concluded that traditional nursing students were more apt to conform to health promoting behaviors, as compared to nontraditional nursing students. Limitations of this study were its small sample size and lack of geographical range, but overall suggested that focusing in the nontraditional nursing students health promotion behaviors could be beneficial. The

significance of this study to the current presentation is that the authors found that stress management was a key result of modifying health behaviors. They abstracted this from the HPLP II tool, which addressed stress management.

Werch et. al (2007), conducted a study of 155 college students attending a major southern university, to assess the use of brief interventions of positive goal images related to fitness, in order to positively influence changes in multiple health behaviors. The study was IRB approved and participants of varying ages and ethnicities, which were currently enrolled at the university, were recruited through the use of posters, flyers and verbal announcements. For the purposes of this study, the participants were randomly provided with a treatment packet and given a computer-assisted questionnaire. The participant's packet contained one of three intervention regimens: "1) contract with calendar log, 2) consultation, or 3) combined intervention consisting of a consultation plus contract with calendar log"(Werch et al., 2007, p. 578). To increase the strength of the study, the intervention packets were equally distributed, randomly. The tools used were the Fitness Behavior Screen, Behavior-Image Model, Microsoft's PowerPoint program and SPSS version 13.0.

The results of Werch, et. al showed that the group who received the consultation component, whether alone or in conjunction with the contract, appeared to more often and consistently use stress management techniques for achieving health behavior goals. It was also concluded that increased alcohol consumption interfered with the successful utilization of health behaviors, whereas consistent physical activity regimen improved the utilization of health behaviors. Limitations to this study included small sample size, specification of university, and did not include a non-treatment control. The authors feel that additional longitudinal research would be beneficial.

Aldwin, Jeong, Nath, and Park (2014), explored the definitions and effects of religiousness and spirituality on health and health behaviors, from past studies, in order to develop their own model to explain this phenomenon. Many with slight differences of opinion defined spirituality. Overall, consensus was that spirituality could be generalized as a concept related to a person's intrinsic relationship with God, "feelings of closeness to God and self-transcendence and/or as engagement in practices such as meditation or mindfulness"(Aldwin, Jeong, Nath, & Park, 2014, p. 9). The consensus of defining religiousness was that it is "often assessed through simple measures of affiliation or service attendance"(Aldwin et al., 2014, p. 9), and considered a more extrinsic factor. The authors alluded to the fact that religiousness and spirituality were not the only factors involved in a change in health or health behaviors, but that the concepts of self-regulation and religious alienation also needed to be factored in. Their findings were fairly broad, but most of the literature suggested that spirituality, without religiousness could provide a person with better self-regulation, thus leading to decreased problems resulting from an inflammatory state, such as cholesterol, hypertension, atherosclerosis, and better regulation of the hypothalamic-pituitary-adrenal and sympathetic adrenal medullary axes. The authors proposed a model of religiousness, spirituality, self-regulation and health. This model "makes two assumptions. First, that religiousness and spirituality, while related nonetheless have different pathways to health outcomes, and second that these effects are mediated by different aspects of self-regulation"(Aldwin et al., 2014, p. 16). Aldwin et al continues, by stating, "we hypothesize that religiousness, understood in its institutional sense, has its primary impact on health through behavioral self-regulation, whereas spirituality has its impact on health outcomes through emotional self-regulation"(p. 16, 2014). It

was concluded that the atmosphere of America is ripe for further studies in this area and that more investigation is necessary for their model to become a clinical intervention.

Stress

Chernomas and Shapiro (2013) conducted a cross-sectional descriptive exploratory study of 437 enrolled nursing students at a Midwestern Canadian university, concerning the effects of stress, depression and anxiety. Using Survey Monkey, online data was collected from the completed depression anxiety stress scales (DASS). “The reliability coefficients (Cronbach’s alpha) of the DASS in this study sample were found to be 0.97 for depression, 0.969 for anxiety, and 0.967 for stress”(Chernomas & Shapiro, 2013, p. 257). Data obtained were entered into SPSS version 18 for computing analysis. They concluded, “increased stress was reflected as well in several quality of life indicators such as inadequate sleep, reduced leisure time, and inadequate nutrition”(Chernomas & Shapiro, 2013, p. 262). The study also raised concern for a lack of access to mental health clinics for the number of students in need.

Larzelere and Jones (2008) constructed an article defining stress and health, as well as mentioning three studies correlating coronary artery disease with stress. The principles the authors discuss lend evidence to Neuman’s health value of harmony. The authors discerned “stress is any situation in which environmental or perceived demands force significant psychologic or biological change upon an organism, to preserve homeostasis or ensure survival”(Larzelere & Jones, 2008, p. 839). Larzelere and Jones continue their discussion on how stress can lead to an increase in disease risk. Whether the stress is acute or chronic, physical or psychological, or traumatic or daily, influences the effects of stress on one’s health. Through explicit explanation, Larzelere and Jones discuss the negative association between stress and its impact on the endocrine system, gastrointestinal system, cardiovascular system, immune system,

psychiatric health and health behaviors. They further define there can be increased atherosclerosis, depression, irritable bowel syndrome, peptic ulcer disease, ulcerative colitis, visceral adiposity, insulin resistance, decreased memory and information processing, and decreased ability to fight off other disease processes. They also mention three studies, which significantly link coronary artery disease and stress negatively, INTERHEART, ONSET and SHEEP studies. Therapeutic maintenance of stress is necessary in decreasing its harmful effects. Larzelere and Jones suggest primary care providers use the pneumonic PRAISES to assist patients in developing life balance. PRAISES is an acronym for physical, recreational, artistic, intellectual, spiritual, employment, and social. They conclude that physical activity, a well balanced diet and use of meditation can be of great benefit in controlling the adverse effects of stress.

In 2013, a cross-sectional, single method designed study was conducted at a midsized university in the southern region of the United States, to investigate “the relationship between spiritual well-being (SWB) and various aspects of health-related quality of life (HRQL) of college students”(Anye, Gallien, Bian, & Moulton, 2013, p. 414). This study was comprised of 225 college students ranging in age 19-25 years old, multiple ethnicities and gender. This study correlated with some of the literature reviewed, showing “individuals who scored high in spirituality were shown to have higher self-ratings of their health, were closer to their ideal body weight, and had lower blood pressure than those who scored lower in spiritual wellness”(Anye et al., 2013, p. 414). The tools used to conduct this study consisted of the Spiritual Well-Being Scale (SWBS), which has demonstrated test-retest reliability, questions from the Centers for Disease Control and Prevention’s scale for HRQL, and SPSS version 20.0 for running descriptive statistics. A majority of the student’s scores indicated a high sense of spiritual well

being. It was predicted, “students more involved in religious-type activities were more likely to report higher HRQL scores and more healthy days”(Aney et al., 2013, p. 417). The authors hypothesized the “possibility that spirituality is just one among several factors that affect HRQL. Other factors may include level of physical activity, proper diet and nutrition, mental factors such as outlook of life, ability to cope with stress, self-esteem, and self –efficacy, and environmental factors such as pollution and sanitary conditions”(Aney et al., 2013, p. 419). There were several limitations to the study, it was a small sample at a university within the “bible belt” of the United States, consisted of self-reported data and therefore the results were not able to be generalizable.

Li and Lindsey conducted a study in 2008 to “gain a better understanding of health promotion practices among college students and the relationship of stress and the practice of various health behaviors”(Li & Lindsey, 2008, p. 437). The study consisted of 319 college students from a mid-sized university. The design was a cross-sectional survey, using the Health Promotion Lifestyle Profile II (HPLP II) and the Perceived Stress Scale (PSS) to obtain data, which were then entered into SPSS version 16.0 where Chi squares, were used. This study explored the factors of health responsibility, physical activity, nutrition, spiritual growth, interpersonal relations, stress management and perceived stress. The results showed that females seem to have a higher level of stress than males. They also found the participants to be rather active in health promotion already, which led them to believe they had administered the study too early in the school year and before midterms, thus creating a less stressful time to evaluate. Proposed implications for practice, related to the low scores obtained from the female population in the study, are to provide and emphasize “practices from the clusters of Spiritual Growth, Stress Management, and Personal Relations”(Li & Lindsey, 2008, p. 445).

Salandy and Nies (2012) conducted a sub-study of an existing longitudinal study, consisting of 167 freshmen college students, between the age of 18 and 25 years old, at a public southeastern United States university, who had consumed alcohol in the last 90 days. The sub study was based on Pender's Health Promotion Model. The purpose was to "determine the degree to which college freshmen engage in health promoting lifestyles, the ways in which college students' health behaviors change over their first 6 months of college, and the demographic factors that contribute to a health promoting lifestyle. Specifically, this study assessed the effects of physical activity on the participants' interpersonal relationships, stress management, and alcohol consumption"(Wilson-Salandy & Nies, 2012, para. 4). Participants were provided the HPLP-II and the Daily Drinking Questionnaire (DDQ) at baseline, 3 months and 6 months. The data were entered into Microsoft Excel, and then transferred to SAS 9.2 statistical software. The conclusion was made that there was no statistical significance for physical activity, as evidenced by, "OR=0.49, 95% CI=[0.24, 1.01], and OR=0.52, 95% CI=[0.25, 1.29]"(Wilson-Salandy & Nies, 2012, table 2 & 3). However, the latter lack of statistical significance seems to be related to the sample size.

VanKim and Nelson (2013) conducted a study of 14,804 undergraduate students from 94 4-year colleges in the United States, "to examine cross-sectional associations between vigorous physical activity, mental health, perceived stress and socializing among 4-year college students"(VanKim & Nelson, 2013, p. 1). The participants were extracted from a database used for an earlier study, then randomly emailed a Web-based survey and invitation to enroll in the study. The survey administered was the Youth Risk Behavior Survey, a mental health survey using Short Form-36 (SF-36), as well as a shortened version of the Cohen Perceived Stress Scale. Data were analyzed with SAS version 9.2, while utilizing PROC GENMOD model

approach. The findings “indicate that among college students, vigorous physical activity is positively associated with better mental health and lower perceived stress” and “suggests that part of the benefits of vigorous physical activity on mental health and perceived stress occur through a socializing pathway”(VanKim & Nelson, 2013, p. 8).

King et. al (2012), conducted a study of 485 students of a Midwestern U.S. university, who were given several surveys to complete concerning perceived benefits, barriers and cues to effective stress management techniques. The participants were chosen randomly from 30 different general college courses on campus. The surveys, based on the health belief model, were completed by the students during their class and turned in confidentially. The data were analyzed by using SPSS software, version unknown. The results of the study showed 61% of the students rated themselves as having high levels of stress. The three most effective stress management techniques were found to be “running or exercising, listening to music, and talking to someone to vent”(King, Singh, Bernard, Merianos, & Vidourek, 2012, p. 200). Another conclusion was the most frequent “perceived barriers preventing students from using effective acute stress management techniques as: getting caught up in the moment, not having enough time to use the techniques, and thinking the techniques would not work”(King et al., 2012, p. 200). A recommendation of online stress management interventions was suggested to increase college student’s awareness of different stress management techniques and how to implement them into their daily schedules.

Summary

The review of literature identifies health behaviors play a significant role in the management of stress. The literature supports the thought that stress can cause negative health comorbidities. Consistently, the theme was clearly shown that positive health behaviors would

assist an individual in stress management and helps bring back or maintain an individual's internal harmony. The focus of this review of literature was to 1) define what stress is, 2) define health promotion behaviors, and 3) analysis of stress management within the college student population.

Methodology

Design

The ZOE transformation challenge was a 28-day transformation. The study that was done during the ZOE challenge utilized a Quasi-Experimental pretest-posttest design.

Sample

This study accrued a sample size of 77 college student participants at a faith-based university. Any registered student attending Southern Adventist University, as of March 16, 2014, was permitted to participate in the study. Exclusion criteria consisted of if the student was not currently registered at the time of the start of the study, March 16, 2014. The sampling was obtained via response to a broadcasted email invitation to all registered students at Southern Adventist University, or during a recruitment seminar verbally presented by FNP student researchers during the program launch at Hulsey Wellness Center. The number of students recruited either by email or by presentation is unknown. There were 77 participants (N=77) enrolled in the study and 50 participants completed the study. One participant did not complete a pre-test, and 27 of the participants did not complete a post-test.

Tools

Resting Metabolic Rate (RMR) was obtained on some participants prior to and at the conclusion of the study. Participants were sent to the SAU Human Performance Lab, which was

supervised by Dr. Harold Mayer. The RMR test was not an invasive test and consisted of the participants lying down on a table for 20 to 30 minutes, during which the Parvo Medics TrueOne 2400 Metabolic Measurement System was used to obtain results for RMR.

At the beginning of the study, each participant had blood work drawn by graduate family nurse practitioner students. The blood drawn was a fasting sample to evaluate plasma cortisol level, C-reactive protein, lipids, and PLAC test. The blood samples were taken to the University Health Services and processed by PathLab. One week after the conclusion of the study, fasting blood samples were obtained and processed in the same manner as previously stated.

A *Dietary Screener Questionnaire* was administered to the participants prior to and at the conclusion of the study to compare diet selection changes impacted by the 28-day transformation program. The intent of the questionnaire was to obtain information about the participant's diet: food selection and frequency.

The *International Physical Activity Questionnaire* (IPAQ) was used pre and post challenge, to determine the participants' physical activity level using 7 questions, which cover moderate to vigorous activity levels.

The *Perceived Stress Scale* (PSS) was completed by the participants prior to and at the conclusion of the transformation challenge, to evaluate the individual's level of stress. The scale contains 14 items to measure responses to specific stressors.

The *Daily Spiritual Experience Scale* is a 16 item self-reported measure of an individual's spiritual experience. It measures daily spiritual experiences, demonstrating that these experiences are part of an individual's everyday life. This tool was administered pre and post transformation challenge.

Graduate student researchers conducted interviews of the participants to explore their spiritual experience, using the *Spiritual Experience Reflections* questions developed by the student researchers. The interviews were recorded in private individual sessions on campus, the week following the completion of the challenge. Letter-identifiers were used instead of names to provide further privacy.

Ethics

Informed consent was obtained from all participants prior to being issued surveys. There were potential physical and psychological risks related to lab work; social and spiritual risks were considered to be minimal. No personal identifiers were obtained for this study. Identifiers were translated to a numerical code, which was used throughout the study on the surveys and audio recordings.

Analysis

The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 22.0.0 64-bit edition, and included descriptive statistics and correlations between Likert-scaled variables using Spearman's r . A p value of 0.05 was considered statistically significant.

Results and Discussion

As a research assistant for the ZOE transformation challenge, I took the data obtained during the study and input it into IBM's SPSS statistical analysis program. I created variables for the PSS pre and posttest results, and then input the corresponding data associated to each variable. After inputting data into the SPSS program, I then ran statistical analysis of the data. Data was searched for outliers and for normalcy by conducting box and whisker's plots, as well as kurtosis and skewness numbers. The later tests concluded that there were no gross violations

of data normalcy. Next, an independent t-test was used to determine any differences between the control and experimental groups on pre-test and post-test. The independent sample t-tests yielded no significant difference in the groups on either pre-test or post-test, thus determining stress levels between the two groups did not differ from one another, which was indicated by PrePSS $p= 0.562$, and postPSS $p= 0.873$. Paired sample t-test were run on both the experimental and control group to determine if the ZOE transformation challenge caused any change in the individual's results from pre- to post-test. The control group with $n=13$, showed no change from pre- to post-test, by $p= 0.115$. However, the experimental group with $n=31$, showed a significant reduction in stress from pre- to post-test with $p= 0.003$.

Evaluation

Overall, the ZOE transformation challenge showed a reduction in perceived stress after the implementation of health behavior modifications. The study offers evidence that healthy behaviors, such as, well-balanced whole food diet, spirituality, exercise and the omission of alcohol and preservative filled foods play a part in the reduction of stress. A larger study should be performed to include other colleges and universities to broaden the collegiate student population. The later could provide data for a wider spectrum of diversity for the college student population.

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