



International Journal of Nursing and Health Care Science

Review Article

Hawk S and Allen H. J Int J Nurs & Health Car Scie 03: 2023-218

Dietary Goal Adherence: How It Interfaces With Fitness

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Submission Date: 20 February, 2023

Accepted Date: 09 March, 2023

Published Online: 14 March, 2023

How to cite this article: Hawk S, Allen H (2023) Dietary Goal Adherence: How It Interfaces With Fitness. Int J Nurs & Health Car Scie 03(06): 2023-218.

Introduction

Promoting adherence to healthy habits is a challenge in both the medical and fitness fields. Lack of patient adherence to prescribed medications, dietary and lifestyle changes, and other treatments may account for more than 125,000 deaths per year in the United States alone [1]. Additionally, non-adherence to medical treatment regimens contributes to an increased disease risk, decreased quality of life, and a significant financial burden upon the healthcare system, as it has been correlated with increased hospital readmission and length of stay [1,2]. Yet adherence to changes in both nutrition and fitness are linked to improved health outcomes as noted recently in prostate cancer survivors [3]. Studies have shown that adherence rates do not appear to be correlated with factors such as socioeconomic status, education, sex, race, or ethnicity. This indicates that non-adherence is a widespread issue, and one that is not unique to the medical field [1].

In addition to low adherence to medical regimens, adherence to both physical activity and dietary recommendations is severely lacking among Americans. Of interest is the link between a lack of adherence to a healthy diet and exercise regimen in the development of chronic diseases. A 2012 study found that approximately 10% of Disability Adjusted Life Years could be attributed to dietary risk factors and sedentary behaviors [4]. Furthermore, approximately 80% of cases of Type II Diabetes, cardiovascular disease, and stroke could be prevented if poor diet and lack of exercise, and other risk factors such as cigarette smoking, could be eliminated [5]. Recent studies even show that adherence to dietary recommendations after one year can increase the odds of improving body weight in women with breast cancer [6].

The health risks associated with poor diet alone are numerous. Diets low in whole grains, fiber, and omega-3 fatty acids are associated with an increased risk of developing type II diabetes, colorectal cancers, and ischemic heart disease, respectively [4]. Additionally, diets that do not adhere to the fruit, vegetable, and fish consumption recommendations are associated with an increased risk of obesity and mortality worldwide [7]. It is estimated that upwards of 5.6 million premature deaths globally may be ascribed to a low consumption of fruit and vegetables [8]. Conversely, diets that adhere more closely to fruit and vegetable intake guidelines are associated with improved weight management and a decreased risk of developing cardiovascular disease, certain cancers, and all-cause mortality [8,9]. A diet rich in vegetables and fruits is also associated with improved psychological well-being as well as a decrease in BMI, waist circumference, and fasting serum insulin [10,11].

Despite the risks associated with non-adherence, Americans are failing to meet most of the dietary guidelines. The typical American only meets the dietary guidelines for meat, total grains, and beans. They tend to consume far too much saturated fat, trans fat, added sugar, and sodium [12]. Cav-allo et al. found that only 2% of 1197 participants regularly met the 2010 Dietary Guidelines for Americans (DGA) [10]. Regarding specific food groups, Krebs-Smith et al. concluded that, among men and women aged 19-30, over 80% fell short of the recommendations for fruit, vegetable, and milk consumption. Greater than 99% did not regularly consume adequate amounts of whole grains [11]. Similarly, Larson et al. found that young adults only consumed approximately half of the recommended servings of produce [13]. These and similar studies demonstrate the high degree of discrepancy between the DGA and actual dietary habits of Americans. These discrepancies are not attributable to a single cause. Rather, a multitude of environmental and psychosocial factors may contribute to a lack of adherence to dietary recommendations and healthful eating patterns. Among the environmental factors, a perceived lack of time due to family, work, and school obligations is a frequently reported hindrance to fruit and vegetable consumption and healthful eating overall [7,14-17]. This has been shown to be true across ethnicities and genders. However, older adults do not tend to perceive a lack of time as a barrier to healthy eating as frequently as younger adults. Unsurprisingly, women who reported time as a perceived barrier to consuming healthful foods were more likely to eat fast food and less likely to ingest adequate amounts of fruits and vegetables [17].

Low socioeconomic status and a perceived high cost of healthy foods are additional barriers to adherence to the DGA, especially among older adults. Yet, although low socioeconomic status is associated with poor adherence to dietary guidelines (especially regarding fruit and vegetable consumption), some people with low incomes are still able to meet the dietary guidelines. Some women who were classified as low socioeconomic status had cooking skills, adequate nutrition knowledge, high self-efficacy regarding food, and they planned meals and shopping trips ahead of time. Thus, they were more likely to eat healthful diets despite their limited budgets [18].

A perceived lack of access to and unavailability of healthful foods, particularly fresh fruits and vegetables, is an additional contributing factor to a lack of adherence to a healthy diet. This has been reported across ethnic groups, but especially among Hispanic immigrants and African Americans [9,15]. Additional environmental factors that are correlated with unhealthy eating habits include the political environment and food advertisements [19].

Psychosocial factors can also act as barriers to adherence to national dietary guidelines. Common psychosocial barriers among individuals include a perceived lack of motivation or lack of desire to change [14,20]. Kearney et al. found that 15% of adults surveyed did not wish to change their diet, with a low level of education being a primary influencer of this attitude [14]. This lack of desire to change eating habits may be due to inadequate knowledge of how typical eating habits negatively impact health, or simply due to ambivalence.

Furthermore, a perceived lack of willpower is associated with a lack of adherence to dietary recommendations [16,20]. A 1999 attitudinal survey revealed that 18% of those surveyed believed a lack of willpower to be a barrier to healthful dietary behaviors [20]. The results of a similar study showed that 44.6% of participants perceived a lack of willpower as a barrier to healthy eating [16]. In these studies, those who perceived a lack of willpower as a barrier were more likely to consume fast food two times or more per week, consume sugar-sweetened beverages, and eat fewer fruits and vegetables, and less meals cooked at home [16]. In an umbrella review, Sleddens et al. stated that dietary behaviors are in part influenced by an individual's perceptions of control and efficacy. The results of the review revealed that the psychosocial factors of self-efficacy, perceived behavioral control, motivation, and self-regulation were related to dietary behaviors [19].

Considering the low adherence to dietary recommendations among Americans, it is vital for those who are in a position to influence eating behaviors to take advantage of opportunities to promote adherence to the DGA. Approximately 70% of exercise professionals surveyed reported that their clients adhere to their recommendations at least a quarter of the time, supporting the idea that personal trainers are perfectly poised to 1) help clients recognize and overcome barriers to healthy eating, 2) educate the population about the DGA, and 3) promote adherence to the DGA [21,22]. Most personal trainers feel that to be successful, they must provide nutrition assistance and education [23]. However, recent research shows that personal trainers are venturing outside of their scope of practice in an attempt to improve client nutrition and adherence [22-26]. According to Ohio's "Unauthorized Practice of Dietetics," exercise professionals should only provide general, non-medical nutrition guidance that is in line with national recommendations [26]. Studies have revealed that upwards of 75% of personal trainers of various educational levels provide nutrition advice that is outside their scope of practice [23-25]. Even more alarmingly, approximately half of the personal trainers surveyed in a similar study admitted to providing specific nutrition advice regarding the management of chronic diseases [27]. Mckean et al. found that many exercise professionals had essentially provided medical nutrition therapy regarding heart disease (51%), diabetes and blood glucose control (48.3%), food allergies and intolerances (34.6%), and eating disorders (31.8%) [25].

Not only are a large portion of fitness professionals venturing outside of their scope of practice to provide nutritional guidance, but the advice they provide is rarely in line with the DGA. Many personal trainers consider these recommendations to be impractical or not applicable to their clients [23]. For example, one personal trainer stated that "...the guidelines are incorrect in that they promote too much cereal grains and not enough fats" [23]. This qualitative study found that, in general, personal fitness trainers are not giving evidence-based nutrition advice to their clients. Rather, many are giving dietary advice based on anecdotal evidence or popular diet trends [23]. Another study found that over half of personal trainers believed that recommending 1 gram of protein per kilogram of body weight per day was appropriate, and that dehydration was indicated by a loss of body mass of 10% or more [21]. Taken together, these studies reveal that personal trainers are largely misinformed about basic nutrition principles and recommendations. When personal trainers step outside their scope of practice by offering dietary advice, serious consequences can arise. For example, in the case of *Capati v Crunch Fitness*, incorrect nutrition advice from a personal trainer resulted in the death of a client [24].

Despite the alarming trend of fitness professionals providing nutrition advice that breaches their scope of practice, there are several strategies that they can be safely utilized to help promote adherence to healthy eating behaviors. Of these various strategies theory-based interventions are more successful at promoting long-term adherence to healthy behaviors than atheoretical interventions [28,29]. Successful interventions for long-term maintenance of a healthy diet tend to be based on the Social Cognitive Theory (SCT), The Transtheoretical Model (TTM), or the Self-Determination Theory (SDT). Of these, the SDT appears to be the least-studied approach [27].

The TTM, established by Prochaska and DiClemente, is based on the theory that individuals experience five stages during the change process. These stages consist of pre-contemplation, contemplation, preparation, action, and maintenance. The process of progression from stage to stage can be described as either cognitive or behavioral, depending upon the stage. Underlying this progression are the concepts of self-efficacy, which is the belief in one's ability to perform the desired behaviors required to meet a goal, and decisional balance, which is the process of weighing the costs and benefits of a change in behavior [28].

The SCT, developed by Bandura, explains that both personal and environmental factors interact to influence behavior change. Similar to the TTM, the SCT places high importance on self-efficacy and self-regulation in the process of behavior change.

The SDT proposes that behavior is the result of the type or quality of motivation. Motivation quality can range from complete amotivation, to extrinsic motivation to intrinsic motivation. Intrinsic motivation is the most likely to promote autonomy and produce lasting behavior change, while extrinsic motivation is less likely to result in desirable behavioral change outcomes [28]. When human needs for relatedness, competence, and autonomy are supported, the SDT proposes that higher quality motivation can be achieved, resulting in improved goal attainment and adherence [30]. Implementation planning, which is the process of developing strategies for goal achievement, often develops spontaneously among those with high quality intrinsic motivation. This may be one link between experiencing motivation to reach a goal and actually adhering to the necessary behaviors [31]. In 2010, Webber et al. found that a larger ratio of autonomous (intrinsic) to controlled (extrinsic) motivation was predictive of greater adherence to self-monitoring of behaviors and greater weight loss among 66 women, supporting the claims of the SDT [32]. Specific constructs of these various theoretical approaches that have been associated with long-term adherence to healthful eating patterns include a focus on self-efficacy, the quality/type of motivation, and person-centered, autonomy-supportive counseling [29,33].

Within a personal trainer's scope of practice, constructs from self-determination theory may be used in conjunction with implementation planning to promote client adherence to the DGA. Personal fitness trainers can promote quality motivation by meeting the human needs of relatedness, competence, and autonomy. By forming a personal connection with their clients, they can satisfy the need for relatedness. By teaching skills and providing opportunities to succeed, they can fulfill the need for competence. Finally, by allowing clients to make their own decisions and set their own goals, personal trainers can foster a sense of autonomy within their clients.

Future research should focus on specific constructs of theory-based interventions and their impact on adherence to healthy eating habits. More specifically, studies should prioritize seeking out methods that can be utilized by fitness professionals to positively influence client dietary adherence while remaining within their scope of practice.

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