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Change in patient nutritional knowledge following coronary artery bypass graft surgery

L. van Rooy[*], *Yoga Coopoo*

Department of Sport and Movement Studies, Faculty of Health Sciences, University of Johannesburg, 37 Nind Street, Doornfontein Campus, 2092, Johannesburg, South Africa

ARTICLE INFO

Article history:
Received 15 September 2015
Accepted 9 January 2017

Keywords:
Coronary artery disease
CABG
Nutrition
Cardiac rehabilitation
Lifestyle modification

ABSTRACT

Introduction: In order to reduce coronary artery disease (CAD) risk, moderate physical activity should be combined with other lifestyle modifications, such as proper nutrition, to have a dramatic impact. This necessitates educational and preventative measures, which should begin in childhood and continue throughout life.
Aim: The aim of this study was to measure the change in nutrition knowledge of coronary artery bypass graft patients by implementation of a lifestyle intervention programme.
Methods: The Hawkes and Nowak Nutrition Knowledge Questionnaire (1998) was administered to 18 coronary artery bypass graft (CABG) patients to assess the change in nutrition knowledge.
Results: Significant improvements were noted in the nutrition knowledge score (18.9 ± 3.4 −23.2 ± 4.5; $p = 0.000$). Although all components measured exhibited improvements in knowledge, cholesterol reduction knowledge (5.3 ± 1.8−7.2 ± 1.8; $p = 0.0066$), low fat food knowledge (3.8 ± 2.3−5.1 ± 2.7; $p = 0.011$) and high fibre food knowledge (4.1 ± 1.4−4.7 ± 1.1; $p = 0.022$) exhibited the highest and most significant improvements.
Conclusion: Notably, these significant improvements in nutrition knowledge points toward effective education being delivered during the intervention. Cardiac rehabilitation has proved to be effective in changing lifestyle habits in a holistic way and this study further shows an improvement in nutritional knowledge based on sound educational principles.

1. Introduction and background

Cardiac rehabilitation can be defined as a comprehensive programme based on physical activity that represents multifaceted interventions aimed at improving prognosis by means of healthy lifestyle modifications. Programmes such as this, combined with nutrition, appropriate lifestyle modification and risk reduction play a major role in the management of cardiac conditions and have been shown to be highly beneficial in coronary artery bypass graft (CABG) patients as fundamental knowledge about lifestyle habits, such as nutrition, can contribute tremendously to an individual's level of wellness, including the enhancement of health and vitality (Durstine, Moore, Lamonte, & Franklin, 2008; Jay, 2010; Lavie, Arena, & Franklin, 2016; Robbins, Powers, & Burgess, 2005). Studies conducted on Korean and Chinese university students

* *Corresponding author.*
E-mail address: lynnvr@uj.ac.za (L. van Rooy).
Peer review under responsibility of Johannesburg University.
http://dx.doi.org/10.1016/j.hsag.2017.01.002

examined the relationship between nutrition knowledge and nutritional status, and have shown that good nutrition knowledge have positive effects on eating habits and food selection (Nti, Pecku, & Opare-Obisaw, 2015). Despite substantial evidence and health knowledge pointing toward the protective nature that an adequate intake of fruit, vegetables and high fibre foods has against obesity, hypertension, cardiovascular disease, and diabetes South Africa still displays the classic signs of a population that is well established in nutrition-related non-communicable diseases (NCD's) (Abdulrahman & Hazzaa, 2012; Buist, 1995; Shisana et al., 2013). With malnutrition being strongly associated with overweight and obesity, one factor in South Africa which has contributed to this pandemic is the frequency of meals being consumed outside of the home i.e. street foods, restaurant and fast food and take-away outlets (Ma et al., 2003; Shisana et al., 2013).The South African National Health and Nutrition Examination Survey (SANHANES-1) reported that 29% of their sample (individuals of all ages living in South Africa, except those living in educational institutions, old-age homes, hospitals, homeless people and uniformed-service barracks) ate outside the home on a monthly basis, and 28% on a weekly basis (Shisana et al., 2013). These statistics further have a negative impact on cardiac risk, as well as morbidity and mortality, as it remains evident that many South Africans are consuming more foods which are rich in total fat and saturated fat, energy-dense, micronutrient-poor snacks and sweetened carbonated beverages, which are all insufficient to meet micronutrient needs (Vorster, Badham, & Venter, 2013).

In a study conducted on women attending sport centres in Turkey, 17% of respondents stated that their preferred method of weight loss would be dietician-guided (Kozan & Aktas, 2014). Although consulting a registered dietician is preferred regarding appropriate portion sizes and total calorie recommendations, improving nutrition knowledge through media and scientific literature may be beneficial regarding healthy and harmful foods and realistic ways to change bad eating habits. Faghri and Buden (2015) hypothesized that a negative relationship exists between nutrition knowledge and physical activity, and body mass index (BMI), implying that those with lower knowledge scores will have higher BMI values. Furthermore, increases in knowledge regarding nutrition may promote healthy weight loss behaviours (Laz, Rahman, Pohlmeier, & Berenson, 2015). The transtheoretical model (TTM) of health behaviour change is a six stage model aimed at addressing these issues by interpreting behaviour change as a calculated process that unfolds over time (Prochaska, 2013). The underlying issues regarding behaviour change is the lack of comprehension regarding the health consequences of a particular behaviour. Research has indicated that many individuals find themselves in the first stage of TTM, the precontemplation stage, due to this lack of awareness (Prochaska, 2013). Although, nutrition knowledge alone may not be an adequate determinant of maintaining a healthy diet, knowledge can positively influence beliefs and facilitate healthier food intake practices (O'Brien & Davies, 2007; Shisana et al., 2013). On the other hand, a study conducted by Pettigrew, Moore, Pratt, and Jongenelis (2015) on evaluation outcomes of a long-running adult nutrition education programme, concluded that the nutrition education programme improves the nutrition-related knowledge of participants as well as their behaviours.

At the outset, age, gender, genetics, occupation, lifestyle, family and cultural background have been acknowledged as factors that affect an individual's daily food choice (Shaw, 2004). An excessive dietary intake of fat and cholesterol has very strong and consistent epidemiological evidence supporting the association between nutrition and coronary artery disease (CAD) (Brubaker, Kaminsky, & Whaley, 2002; Gordon & Gibbons, 1991). Moreover, nutrition knowledge may also be influenced by cultural norms and beliefs regarding obesity; a problem affecting adults and children alike, as well as privileged and under-privileged communities (Puoane & Tsolekile, 2008; Shisana et al., 2013). Although evidence suggests that disadvantaged individuals may be most vulnerable in terms of health knowledge since they do not have means of accessing health information, there is clear evidence that the majority of South Africans, regardless of their financial status and education level, have inadequate health knowledge (Shisana et al., 2013). For this reason, appropriate strategies aimed at improving health knowledge need to be directed towards the affluent and under-privileged communities' (Shisana et al., 2013).

2. Problem statement and objective

Cardiac rehabilitation has proved to be a very effective means of targeting health-related challenges in a holistic manner, since cardiac rehabilitation has evolved from prescribing simple exercises for the purpose of safe return to work or sport, to a multidisciplinary team approach incorporating a wide range of health care practitioners. Mampuya (2012) has emphasized that although the importance of primary prevention measures is aimed at delaying or preventing the onset of cardiovascular disease, cardiac rehabilitation mainly involves secondary prevention which relies on early detection of the disease process and the application of interventions such as education, counselling and behavioural strategies to further prevent the progression of disease, promote lifestyle change and modify risk factors. Clinical trials have proven that such strategies can retard, stabilize or even modestly reverse the progression of atherosclerosis and reduce cardiovascular events (Mampuya, 2012). Thus, the objective of this study was to measure the change in nutritional knowledge of CABG patients by implementation of a lifestyle intervention programme.

3. Material and methods

3.1. *Research design*

This study was a prospective intervention study. The questionnaire utilized was quantitative in nature, and explored the effects of exercise programmes, with particular emphasis on nutrition knowledge in CABG patients.

3.2. *Site of study and sampling*

The research was conducted at two private Biokinetic practices in Johannesburg as majority of Biokinetic practices in