



Physical activity and nutrition program for adults with metabolic syndrome: Process evaluation



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ABSTRACT

Introduction: The Vietnam Physical Activity and Nutrition (VPAN) program aimed to improve physical activity and nutrition for adults aged 50–65 years with Metabolic Syndrome in Vietnam. The VPAN program consisted of a range of resources and strategies, including an information booklet, resistance band, face-to-face education sessions, and walking groups. This process evaluation assessed the participation, fidelity, satisfaction, and reasons for completing and not-completing the VPAN.

Methods: Data were collected by mixed-methods from a sample of 214 intervention participants. Quantitative data were collected via surveys (n = 163); qualitative data via face-to-face exit interviews with intervention program completers (n = 10) and non-completers (n = 10), and brief post education session discussions.

Results: Most participants (87%–96%) reported the program resources and strategies useful, assisting them to increase their physical activity level and improving their diet. The education sessions were the most preferred strategy (97%) with high attendance (>78% of participants). The main reasons for withdrawal were work commitments and being too busy.

Conclusion: The evaluation indicated that the program reached and engaged the majority of participants throughout the six-month intervention. The combination of printed resources and face-to-face intervention components was a suitable approach to support lifestyle behavioural change in the Vietnamese population.

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1. Introduction

The World Health Organization estimated that almost three-quarters of deaths from non-communicable diseases (NCD) occur in low and middle income countries (World Health Organization, 2014). Unhealthy diets and physical inactivity are among the leading causes of NCDs (World Health Organization, 2014). About 3.2 million deaths annually can be attributed to insufficient physical activity (Lim et al., 2012), while diets with excess salt/sodium account for 1.7 million deaths from cardiovascular diseases

(Mozaffarian et al., 2014). Together with smoking and alcohol consumption, these behaviours support the development of key metabolic changes that increase the risk of NCD, namely, raised blood pressure, hyperglycemia, hyperlipidemia and overweight/obesity (World Health Organization, 2014).

With rapid economic growth over the last few decades, many developing countries in the Asia-Pacific region have experienced a dramatic transition in disease patterns, with the burden of NCD now overtaking traditional communicable diseases (Binns and Boldy, 2003). Similar to other countries in the region, the burden of NCDs is increasing in Vietnam (Nguyen, Pham, Lee, & Binns, 2015), accounting for 75% of the total disease burden in 2007 (Harper, 2011). Modifiable behavioural risk factors, such as physical inactivity and unhealthy diets, are strongly associated with the disease burden in Vietnam. It is estimated that 28.7% of Vietnamese adults are insufficiently active (<600 MET-min per week) (Harper, 2011). In addition, household food consumption patterns have rapidly changed (National Institute of Nutrition of

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Vietnam, 2010), with the energy intake from fat rising from 8.4% to 17.6% within the last two decades (National Institute of Nutrition of Vietnam, 2010).

Metabolic Syndrome (MetS) is a cluster of risk factors for cardiovascular disease and type 2 diabetes, including central obesity, impaired glucose metabolism, dyslipidaemia and hypertension (Alberti et al., 2009). Similar to other Asian-Pacific countries, MetS is considered a major public health issue in Vietnam, with an estimated 16.3% of Vietnamese adults exhibiting the syndrome, and Vietnamese aged 55–64 having the highest prevalence ($\approx 27\%$) (Binh, Phuong, Nhung, & Tung do, 2014).

The Vietnam Physical Activity and Nutrition (VPAN) program is a cluster-randomised controlled trial intended to enhance physical activity and dietary behaviours of adults aged 50–65 years with MetS in Hanam province, Vietnam. At the end of the six month intervention program, participants showed significant improvements in moderate intensity activity and walking, as well as reductions in the consumption of animal internal organs and cooking oil for daily meal preparation (Tran et al., 2016a).

It is important to monitor the implementation of community-based trials, so as to gain insights into why a program may succeed or fail (Blackford et al., 2016; Burke et al., 2012; Kennedy, Schenkelberg, Moyer, Pate, & Saunders, 2017; Wilson et al., 2009). Process evaluation offers an opportunity to determine how the program was conducted and the characteristics or mechanisms associated with its implementation, which potentially affected the outcomes (Aarestrup, Jørgensen, Due, & Krølner, 2014; Blackford et al., 2016; Burke et al., 2012; Wilson et al., 2009). Nevertheless, most outcome analyses are conducted without any assessment of program implementation (Saunders, Ward, Felton, Dowda, & Pate, 2006). The purpose of this article is to report the process evaluation of the participation, fidelity and participant satisfaction, and reasons for completing and not completing the VPAN program.

2. Methods

2.1. Setting and participants

The VPAN program was a 6-month community based cluster-randomised controlled trial targeting adults with MetS from 10 communes in Hanam province, northern Vietnam. The trial was registered with the Australia and New Zealand Clinical Trial Registry (ACTRN12614000811606). The research protocol (Tran et al., 2016b) was approved by the Curtin University Human Research Ethics Committee (approval number: HR139/2014).

Overweight adults aged 50–65 years with MetS living in the 10 communes were invited to participate in the study. Details of the recruitment and participant selection have been published previously (Tran et al., 2016b). MetS status was determined according to the National Cholesterol Education Programme Adult Treatment Panel III criteria of having three of the five risk factors

(Adult Treatment Panel III, 2002) and a large waist circumference (male ≥ 90 cm, female ≥ 80 cm) for Asian Populations (Alberti et al., 2009). A total of 417 participants were recruited into the program (intervention $n=214$; controls $n=203$). The intervention participants made up the sample for the process evaluation.

2.2. Intervention components

The intervention was underpinned by Social Cognitive Theory taking into consideration the individuals and their interaction with the environment (Bandura, 1997; Glanz et al., 2008). The VPAN program included a range of resources and strategies designed to promote participants to be physically active and to maintain a healthy diet. All healthy lifestyle information was taken from the WHO's Recommendations for Physical Activity (WHO, 2010), and the Food Based Dietary Guidelines in Vietnam (National Institute of Nutrition of Vietnam, 2013).

The VPAN intervention participants were provided with a resistance band and an information booklet containing advice and suggested activities on how to enhance physical activity and dietary behaviours. They were required to attend four 2-h education sessions at months 1, 2, 3 and 4, and participated in walking groups established at each commune for 6 months. The walking groups met twice a week for 6 months. The participants nominated a walk leader in each walking group. The walk leaders were trained at three 2-h training sessions and provided with a package containing the education materials, and a manual detailing how to manage the group walks. For example, walk leaders were provided with a prescriptive progressive weekly walking program but were able to modify the program to suit the needs of the group members. The walking group leaders attended all of the walking group meetings. They mobilised participants for walking and supported them in achieving their physical activity and diet goals. Trained program staff from the Hanam Provincial Preventive Medicine Centre, conducted the education sessions, and collected data from participants at baseline and post-test the program staff. Community health workers assisted in mobilising participants and organising education sessions. A detailed overview of the resources and intervention strategies has been described elsewhere (Tran et al., 2016b).

2.3. Data collection

Quantitative data were collected via self-administered questionnaires, and qualitative data gathered through brief post education session discussions and structured interviews. The participants were informed of the purpose of the survey/interview prior to commencing, and written informed consent was obtained. Table 1 shows the process evaluation components and their corresponding measurement approaches.

Table 1
Process evaluation components and measurements.

Variables and definition	Measurement approaches		
	Self-reported questionnaire	Brief post education session discussions	Exit interviews
Participation: The number of participants actively participating in the education sessions		x	
Fidelity: The extent to which implementation of the intervention occurred as planned	x	x	
Satisfaction: The satisfaction of participants with the intervention program	x	x	x
Reasons for completing the program: To what extent encouraged participants completed the program			x
Reasons for not-completing the program: To what extent stopped participants completed the program			x

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