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An integrated method of therapeutic lifestyle change for older adults with dyslipidaemia

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ABSTRACT

Objectives: To evaluate the effect of therapeutic lifestyle change with a non-pharmacological intervention method in older adults with dyslipidaemia.
Study design: Stratified randomized trial.
Methods: Participants with dyslipidaemia ($n = 214$) aged ≥60 years were randomized to the conventional guide group, the educational course (EC) group, the telephone call (PC) group or the PC + EC group for 24 weeks. Total cholesterol, triglyceride, low-density lipoprotein cholesterol, high-density lipoprotein cholesterol and the knowledge, attitude and practice score for serum lipids were measured at baseline (T1), mid-intervention (week 12, T2) and post-intervention (week 24, T3).
Results: Except the conventional guide group ($n = 62$), the PC group ($n = 56$), the EC group ($n = 49$) and the PC + EC group ($n = 47$) showed significant intra-group differences in serum total cholesterol, low-density lipoprotein cholesterol, triglyceride, high-density lipoprotein cholesterol and knowledge, attitude and practice score after the intervention. The improvements were most prominent and sustained over time in the PC + EC group at post-intervention.
Conclusions: The PC + EC method is more efficient for improving serum lipids and enhancing health awareness than any single programme in older adults with dyslipidaemia. This overlapped therapeutic lifestyle change method may serve as a cost-effective adjunct and ensure the continuity of high-quality health services for patients with dyslipidaemia.

Introduction

Dyslipidaemia (hyperlipidaemia) refers to abnormal levels of plasma cholesterol or triglycerides (TGs), or a low level of high-density lipoprotein (HDL). It is among the main cardiovascular risk factors in older adults. Pharmaceutical therapy can be successful in the prevention and control of morbidities and mortalities of some diseases such as atherosclerosis, coronary heart disease and ischaemic stroke,[1,2] but polypharmacy increases the metabolic burden and psychological pressure on older patients.[3]

Over the past decades, non-pharmacological methods that focus on building a healthy lifestyle have become more

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popular for the prevention of primary and secondary cardiovascular disease, which is essential for these target populations.[4–8] Therapeutic lifestyle change (TLC) is a multifaceted method using daily life adjustment or regularity to enhance the influence of an individual's knowledge, attitude and behaviour towards diseases. Poor lifestyle behaviours such as smoking, drinking, lack of physical activity and unhealthy diet lead to obesity and may increase the burden on the body leading to metabolic disorder. Furthermore, older adults with cardiovascular disease report higher levels of stress due to uncertainty regarding disease progression, and lower levels of awareness and treatment.[3]

Although much is known about TLC and its predictors in patients with dyslipidaemia, the inconsistencies of TLC in terms of the quality, duration and frequency of healthcare interventions have led to varied outcomes between countries, regions, research methods, observation times and so forth. Research findings are limited in terms of exploring the whole TLC process and its effect on older people with dyslipidaemia. This study aimed to establish a standard TLC-based healthcare programme that combined comprehensive educational courses with supportive telephone calls as follow-up for elderly Chinese patients with dyslipidaemia.

Methods

Setting and design

This study was conducted at Fujian Provincial Hospital following ethical approval by the hospital ethics committee. All participants signed the informed consent form and were randomized to the conventional guide (CG) group, the telephone call (PC) group, the educational course (EC) group or the PC + EC group for a 24-week intervention. Demographics were gathered and serum lipid samples were taken after an overnight (≥8 h) fast. Total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), TG and HDL cholesterol (HDL-C) levels were determined at baseline (T1), mid-intervention (week 12, T2) and post-intervention (week 24, T3). Knowledge, attitude and practice (KAP) scores for serum lipids were also collected.

Participants

This study was conducted from September 2013 to March 2014. All participants were aged ≥60 years, living in the local community, and recruited from the Health Examination Centre of Fujian Provincial Hospital. The inclusion criteria were as follows: able to communicate in Chinese or another local native language; mild or moderate dyslipidaemia measured by a blood test after an overnight (≥8 h) fast; and diagnosed with dyslipidaemia before the study. Diagnoses of dyslipidaemia were made in accordance with the diagnostic criteria determined by the China Adult Dyslipidaemia Prevention Committee in 2007[9] for the following serum levels: hypercholesterolaemia (TC ≥ 5.18 mmol/l), hypertriglyceridaemia (TG ≥ 1.7 mmol/l), high LDL-C (LDL-C≥3.37 mmol/l) or mixed hyperlipidaemia (TC ≥ 5.18 mmol/l and TG ≥ 1.17 mmol/l).

Potential participants were excluded if they had been diagnosed with hypothyroidism, nephrotic syndrome, Cushing syndrome, anorexia nervosa or cognitive dysfunction accompanying mental illness. In addition, candidates were excluded from the study if they had taken any drugs that could affect their metabolism over the preceding 4 weeks, such as corticosteroids, immunosuppressants, antipsychotics, thiazolidinedione, statins, fibrate, non-steroidal anti-inflammatory drugs or calcitonin.

KAP questionnaire regarding blood lipids

All participants completed a KAP survey, designed by Huang and Huang,[10] to evaluate and assess the relevance of their KAP towards serum lipid health. The questionnaire consisted of three parts: nine items (multiple choice) concerning knowledge about lipid health, four items (single choice) regarding personal attitude towards hyperlipidaemia and 10 items (single choice) about current lifestyle practices. The reliability and validity of the questionnaire was measured before it was applied in the study (Cronbach's $\alpha = 0.743$). The knowledge part of the questionnaire (nine items, maximum possible score 37) concerned risk factors for dyslipidaemia, and the effects of blood lipids, food, foods with high levels of cholesterol or fat, smoking and drinking, physical activity and treatments on dyslipidaemia. The attitude part of the questionnaire (four items, maximum score 9) aimed to determine patients' beliefs regarding whether dyslipidaemia can be prevented, the number of times it should be tested each year, whether a change in lifestyle can influence the condition, and cooperation with the study. The practices part of the questionnaire (10 items, maximum score 16) concerned the latest blood lipid results, smoking and drinking habits, intake of tea and foods (cereal, vegetables, fruit, meat), duration and quality of sleep and duration and number of physical activity sessions each week.

Conventional guide

The participants received health guidance from a health provider as standard care. Basic recommendations were offered regarding a healthy diet and lifestyle. The providers determined the participants' perceived susceptibility, their perception of its severity, and the relevant main barriers or difficulties regarding improvement when faced with dyslipidaemia. Several educational pamphlets were provided for lowering blood cholesterol entitled 'Read ingredient labels to identify food high in cholesterol', 'Eat omega-3 rich food and dietary fibre (fresh fruits and vegetables)' and 'Hold your mouth, move your legs'.

Educational course

The educational course included six lectures that were advised by six multidisciplinary experts. A typical 80-min session included a 30-min class, with topics as follows:[11–14] 'What is dyslipidaemia and how to recognize it?', 'The epidemiology of dyslipidaemia worldwide', 'The hazard and prevention of high cholesterol', 'How to build a healthy diet and physical activities', 'Dyslipidaemia and traditional