

Nurse-mediated serum cholesterol reduction and health locus of control — a device for targeting health promotion?

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SUMMARY

Varying intensities of nurse-mediated health education advice were administered to subjects over a three-month period. Mean serum total cholesterol was calculated for each group at the outset and completion of the study. A multidimensional health locus of control (MHLC) scales questionnaire was self-completed by subjects at the outset. A highly significant association between internality and reduction in serum total cholesterol in the high-intensity intervention group was observed. The completion of a MHLC scale questionnaire may assist health professionals in identifying which subjects may most benefit from high-intensity health education advice when raised serum total cholesterol is prevalent.

Keywords: health education; cholesterol; questionnaires.

Introduction

RECENT studies have provided further evidence of the benefits of lowering serum total cholesterol in reducing the incidence of coronary heart disease.¹ The government has targeted heart disease as an action area for improving health and has suggested focusing on 'healthy settings', such as schools or the workplace, to improve overall health by effectively working in partnership with other professionals.² Raised serum cholesterol has been noted to be prevalent among Northern Irish students and non-students.³

Practice nurses trained in the organization of cardiovascular risk prevention can significantly improve patient care.⁴ Given government proposals to use scarce National Health Service (NHS) resources in priority areas,² one approach would be to initially target the more receptive patients. One method of identifying such subjects is to use the concept of health locus of control (HLC), which attempts to explain how perception of control in individuals' lives influences their behaviour. The multidimensional health locus of control (MHLC) scales are designed to determine whether individuals are internalists, classified as internal health locus of control (IHLC) — they perceive that they control their own health — or externalists, classified as powerful others health locus of control (PHLC) — they believe that other powerful or influential figures, such as doctors or nurses, have control over their health — or classified as chance locus of control (CHLC) — they believe that what happens to them occurs more by accident or chance.^{5,6}

The aim of this pilot study was to assess any relationship

between MHLC scales and the outcome of varying intensities of nurse-led serum cholesterol reduction advice among students and non-students.

Method

Subjects were identified by random number selection from 19- to 22-year-old patients ($n = 832$) registered at Mountsandel Surgery, Coleraine, and invited to participate in a heart disease prevention project. The initial written invitation was followed up by a further letter four weeks later. The patients were either students who attended the University of Ulster at Coleraine or non-students who were not involved in any form of tertiary level education.

Following stratification for age, sex, student and non-student status, and level of pre-trial serum total cholesterol, subjects were randomly allocated to one of three trial groups: a high-intensity intervention group, a low-intensity intervention group, and a control group.

Subjects in all groups were interviewed by a single research nurse who had no special training in health promotion techniques. Strict protocols for data recording, questionnaire completion, and the delivery of standardized health promotion advice were followed by the nurse.

High-intensity group subjects, when interviewed, had a venous blood sample taken to estimate the pre-trial total cholesterol and completed a MHLC questionnaire themselves. Participants were given personalized and detailed advice on cholesterol reduction and were reviewed monthly by the nurse. Low-intensity group subjects had an identical interview but received only minimal advice about cholesterol reduction. Control group subjects completed a pre-trial questionnaire and a blood sample was requested. No further information or advice was given by the nurse. Subjects in all groups had a post-trial serum total cholesterol estimated after three months.

Results

Of the 156 young adults, 35 had left the practice, three were excluded because of possible secondary hypercholesterolaemia, and seven subjects declined to participate. The remaining 111 (71.2%) subjects (students $n = 63$, non-students $n = 48$) were randomly allocated to each of the three groups.

No significant difference was noted in the distribution of age, sex, students and non-students, social class, females using hormonal contraception, and mean weekly consumption of alcohol between trial groups. There was no significant difference between groups in the mean IHLC, PHLC, and CHLC scores. There was no significant difference in pre-trial serum total cholesterol between groups, but a significant difference was noted by the end of the trial ($P = 0.01$, Table 1).

Using a stepwise multiple regression analysis, HLC variables were used as predictors of decrease in mean cholesterol (tables supplied by authors on request). Only for the high-intensity group was the multiple regression significant ($P = 0.0002$). Within this group there was a highly significant association

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Table 1. Mean values (95% CI) of serum total cholesterol and results of applying analysis of variance between groups.

Mean cholesterol (mmol/l)	Low intensity group (n = 37)	High intensity group (n = 39)	Control group (n = 35)	P-value (between groups)
Pre-trial	5.28 (4.97–5.59)	5.59 (5.35–5.83)	5.48 (5.21–5.75)	0.29
Post-trial	5.23 (4.99–5.47)	5.34 (5.10–5.58)	5.78 (5.47–6.09)	0.01

between the IHLC variable and a reduction in mean serum total cholesterol level ($P = 0.0001$).

Discussion

The most significant outcome was the association between inter-nality and a reduction in mean total cholesterol in the high-intensity intervention group. Although there is still debate about the link between the uptake of health promoting activity and HLC variables, this finding is similar to that obtained from other coronary heart disease intervention programmes.^{7,8}

The need to prioritize resources within the NHS when attempting to reduce coronary heart disease risk is recognized. The government has identified schools and institutions of learning as healthy settings for the establishment of such programmes,² but there is little evidence to indicate how this task might be carried out most efficiently. Nurses and other primary care professionals will need to be employed.

Our results suggest that the completion of a MHLC scale questionnaire, which takes only a few minutes to self-complete and score, may identify those subjects who might most benefit from intensive health education advice on serum cholesterol reduction. The effect of a more prolonged period of nurse-mediated intervention in this and other age groups needs to be undertaken to ascertain whether the results from this pilot are reproducible.

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