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Influence of coronary nursing management follow up on lifestyle after acute myocardial infarction

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Abstract

***Objective*—To examine the ability of a secondary prevention programme to improve the lifestyle in myocardial infarction patients aged 50–70 years.**

***Design*—Habitual physical activity, food habits, and smoking habits were assessed from questionnaires at admission to hospital and at the one year follow up. Initially, all patients were invited to join an exercise programme and were informed about cardiovascular risk factors. Four weeks after discharge from the hospital, 87 patients were randomised to follow up at the coronary prevention unit by a special trained nurse (the intervention group), and 81 to follow up by their general practitioners (the usual care group). After randomisation, the intervention group was educated about the effects of smoking cessation, dietary management, and regular physical activity. The intervention group also participated in a physical training programme two to three times weekly for 10–12 weeks.**

***Main results*—89% of the patients referred to the intervention group improved their food habits compared with 62% of the patients referred to the usual care group (P = 0·008). Furthermore, 50% of the smokers referred to the intervention group stopped smoking compared to 29% in the usual care group (P = 0·09). Changes in physical activity did not differ between the groups.**

***Conclusions*—This secondary prevention programme based on a nurse rehabilitator was successful in improving food habits in patients with acute myocardial infarction. Initiating the smoking cessation programme during the hospital stay followed by repeated counselling during follow up might have improved the results. The exercise programme had no advantage in supporting physical activity compared to usual care.**

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Survivors of acute myocardial infarction are at a considerably increased risk of suffering further cardiac events.[1–3] The development of secondary prevention programmes is therefore an important task. In the past, most patients who had had a myocardial infarction in Sweden were referred to their general practitioners for follow up. However, secondary prevention programmes are currently in progress at several hospitals and health centres. Such programmes may be conducted by medical professionals, but also by special trained nurses and paramedical personnel.[4]

At the Malmö University Hospital, a secondary prevention programme conducted by a registered nurse rehabilitator and supported by cardiologists was established in October 1989. The programme was designed to identify and modify coronary heart disease risk factors and to improve physical fitness and psychological wellbeing.

The aim of this study was to examine the ability of this programme to improve the lifestyle of its participants. More specifically, we studied the impact of the programme on food habits, smoking habits, and physical activity during one year follow up of patients aged 50 years and older following acute myocardial infarction.

Methods

The study group comprised consecutive patients aged 50 years and older admitted to the coronary care unit, department of cardiology, Malmö General Hospital, Sweden for acute myocardial infarction between 23 October 1989 and 30 April 1992. The diagnosis was established by raised serum creatinine kinase and its subunit MB, plus characteristic chest pain or electrocardiographic changes, according to WHO standards.[5]

During the first three weeks after discharge from the hospital, all patients were enrolled in a follow up schedule including two visits at a nurse and one visit at a cardiologist. They were informed about coronary artery disease risk factors and the effect of lifestyle changes on the prognosis. During the same period all patients were invited to join an exercise programme led by a physiotherapist under supervision of a nurse from the rehabilitation team. At each occasion, the exercise programme included information about the positive effects of physical activity and 45 minutes of easy interval training.

Four weeks after discharge from the hospital, patients fulfilling the inclusion criteria were randomly allocated to follow up at the secondary prevention unit (the intervention group) or to usual care which included two to three visits to their general practitioners during the first year after the randomisation (the

usual care group). The figure provides details of the flow chart.

Patients were excluded from randomisation in the case of unstable angina, that is, new chest pain at rest or ECG changes in the character of the angina, ST depression of more than 3 mm during an exercise test in two chest leads or more than 2 mm in two limb leads, or signs of congestive heart failure.

In the end, 168 patients out of a total of 273 were eligible for randomisation, made in groups of 20. An equal number of patients in each randomisation group was randomly allocated to the intervention group or to the usual care group.

INTERVENTION BY NURSE

After randomisation, the intervention group patients participated in an education programme over a three month period. This programme included visits to the secondary prevention unit where patients were educated both individually and in group sessions. The total time for this counselling was approximately nine hours for each patient, allocated as follows: smoking cessation, 1·5 hours; dietary education 5·5 hours; physical activity, 2 hours. Dietary education was undertaken both with the individual patient and the spouse, and in a group session including other patients. The education was extended during the follow up year by the nurse rehabilitator. Information regarding the effects of smoking cessation and diet on the prognosis was given orally and in writing.

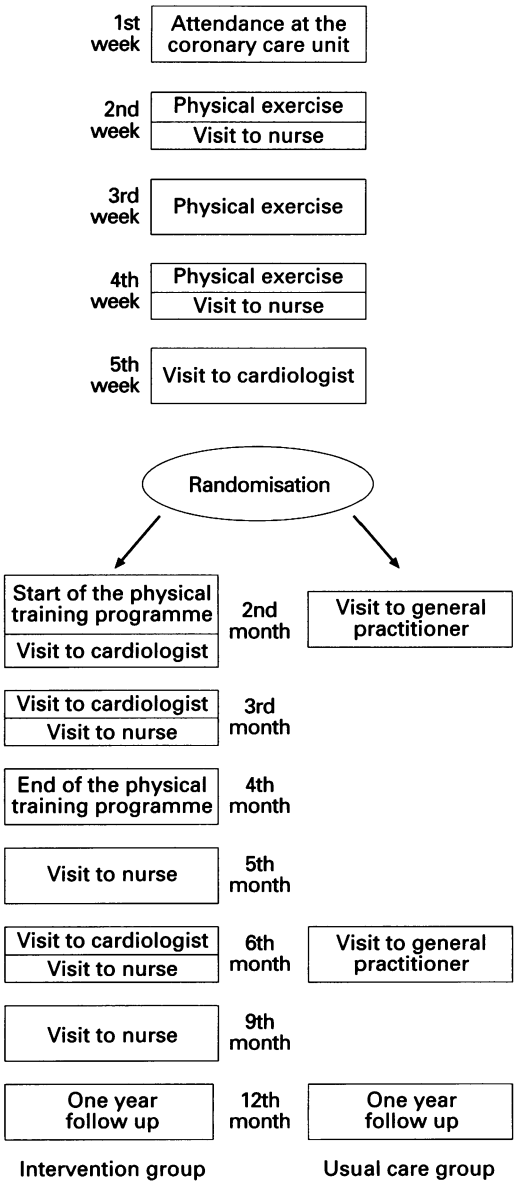
EXERCISE TRAINING

After randomisation, the intervention group patients participated in continued exercise training sessions of 40 minutes' duration, including interval training with cycling and jogging, two to three times weekly for 10–12 weeks. Individual training schedules were provided to maintain the effects of the exercise beyond the discharge from the secondary prevention unit.

QUESTIONNAIRE

Habitual physical activity, food habits, and smoking habits were assessed from questionnaires at admission to the hospital, and at the one year follow up. Physical activity was assessed in five levels: (1) sedentary, (2) walking or bicycling daily with minimum 30 minutes duration, (3) sport activities in average once weekly, (4) sport activities in average twice or more weekly, (5) vigorous physical training. When the physical activity question was dichotomised, subjects assigned to level 1 were classified as sedentary and subjects assigned to levels 2 to 5 were classified as physically active.

Food habits were also estimated by five alternatives: (1) not caring about food habits at all, (2) avoiding fat, (3) preferring fibre-rich foods, (4) avoiding fat and preferring fibre-rich foods, (5) following diet instructions against diabetes or hyperlipidaemia. When the food habit question was dichotomised, item number 1 was applied to subjects not caring about food habits and the other items were applied to subjects caring to some extent about their food habits.



Follow up schedule for the intervention group and the control group.

The question concerning smoking habits included: (1) never smoked, (2) ex-smoker, (3) ex-smoker who had stopped smoking within a period of three months, (4) smoking at parties only, and (5) present smoker. When smoking habits were dichotomised, items 1, 2, and 3 constituted the non-smokers, and items 4 and 5 the present smokers.

STATISTICAL METHODS

The questionnaire items on smoking habits, food habits, and habitual physical activity were dichotomised as described above. Changes of the variables during follow up were assessed as the proportion of subjects available for a change who indicated they had changed, for example the proportion of present smokers at admission to the hospital who indicated they were non-smokers at the one year follow up questionnaire. Significance levels for the differences between the intervention group and

the control group were assessed by χ^2 tests. Statistical significance was assumed at $P < 0.05$.

The study was approved by the local ethics committee, Lund University.

Results

Table 1 summarises basic characteristics for randomised and excluded patients. Eighty seven patients were allocated to the intervention group and 81 to the usual care group. Four patients allocated to the usual care group were lost during follow up. For clinical reasons, 105 patients were excluded from randomisation. The sex and age distribution, and the prevalence of hypertension and angina pectoris, were similar in the intervention and usual care groups. Thrombolytic treatment during the hospital stay had more often been given to patients allocated to the intervention group (61%) than to the usual care group (55%), and compared to the excluded patients (49%).

Table 2 reports smoking, food, and exercise habits on admission to the hospital and at the one year follow up. Data on smoking habits were complete for 78 patients in the intervention group and for 72 patients in the usual care group. On admission to the hospital, 32 (37%) of the intervention patients and 35 (43%) usual care patients were smokers. In the intervention group, 16 patients—50% of the present smokers—stopped smoking compared to nine (29%) in the usual care group. The difference was not statistically significant ($P = 0.09$; table 3).

Data on food habits were complete for 77 patients in the intervention group and for 71 patients in the control group. On admission to the hospital, 36 intervention patients (4%) and 41 usual care patients (51%) did not care about their food habits. In the intervention group, 32 patients—89% of the patients not caring about their food habits before admission to the hospital—started caring about their food habits, compared to 23 (62%) in the usual care group. The difference was statistically significant ($P = 0.008$; table 3).

Data on habitual physical activity were complete for 77 patients in the intervention group and for 71 patients in the usual care group. Before admission to the hospital, 18 (21%) of the intervention patients and 14 (17%) of the usual care patients were sedentary. In the intervention group, 14 patients—78% of the sedentary patients—started physical training during the follow up year, compared to eight (67%) in the control group. Among patients who stated they were physically active before admission to the hospital, seven (12%) from the intervention group and 10 (17%) from the usual care group were sedentary at the one year follow up. None of these differences was statistically significant (table 3).

Table 1 Basic characteristics for patients of the study

	Intervention group (n = 87)	*Usual care group (n = 81)*	*Excluded (n = 105)*
Sex (female/male) (n)	22/65	20/61	27/78
Mean age	62·2	61·9	61·1
ASAT, peak value (mmol/l)	3·26	3·21	2·93
Thrombolytic treatment (%)	61	55	49
History of:			
Hypertension (%)	47	48	40
Angina pectoris (%)	29	28	50

ASAT, aspartate aminotransferase.

Table 2 Smoking, food, and exercise habits measured by questionnaires at admission to the hospital and at the one year follow up

	At admission to the hospital				*At the one year follow up*			
	Intervention group		*Usual care group*		*Intervention group*		*Usual care group*	
	No	*%*	*No*	*%*	*No*	*%*	*No*	*%*
Smoking habits:								
Non-smoker	47	54	43	53	57	66	47	58
Present smoker	32	37	35	43	21	24	25	31
Data missing	8	9	3	4	9	10	9	11
Food habits:								
Caring about food habits	41	47	36	44	72	83	52	64
Not caring about foods	36	41	41	51	6	7	19	24
Data missing	10	12	4	5	9	10	10	12
Physical activity:								
Regularly training	60	69	63	78	67	77	57	70
Sedentary	18	21	14	17	11	13	14	17
Data missing	9	10	4	5	9	10	10	12

Table 3 Changes in lifestyle from hospital admittance to the one year follow up. Percentages are calculated on the patients available for changes, that is, only present smokers can stop smoking, etc. All patients with complete data on physical training, food habits, and smoking habits respectively are included

	Intervention group		*Usual care group*		
	No	*(%)*	*No*	*(%)*	*P*
Stopped physical training	7	12	10	17	0·43
Started physical training	14	78	8	67	0·50
Started caring about food habits	32	89	23	62	0·008
Stopped smoking	16	50	9	29	0·09

Discussion

In general, cardiac rehabilitation programmes offer education about the heart and risk factors for coronary artery disease. The reported effects of such programmes differ considerably. Some studies have reported positive results of formal patient education on behavioural factors, for example exercise, smoking cessation, coping, and resumption of sexual activity.[6] The studies were small and differed in design as well as time of follow up.[6–10]

Other studies have reported no or minor effects of rather ambitious educational programmes.[11–13] Only a few have validated a nurse monitored secondary prevention programme. One study,[14] reported better return to work and a better smoking status with counselling sessions given by a nurse rehabilitator. In contrast to that study, another study[15] found no beneficial effects on the psychosocial outcome from a nurse rehabilitator intervention and suggested that special counselling programmes may not be useful.

However, the present nurse monitored secondary prevention programme was successful in improving food habits as measured by questionnaire at the one year follow up. Some earlier studies have also noticed positive effects of dietary education during the hospital stay[16] and when using a mail-out intervention without visits to a prevention unit.[17]

The present programme obtained 50% smoking cessation in the intervention group. One earlier study obtained 61% smoking cessation during one year follow up after acute myocardial infarction.[18] In that study the smoking cessation intervention was initiated already during the time in hospital and thereafter maintained primarily through telephone contact. Contrary to that study, we did not have a smoking cessation programme during the hospital stay. Our patients were informed about the effects of smoking as part of the general risk factor education.

Another study also used repeated telephone counselling monthly up to one year post discharge from hospital in order to persuade patients to stop smoking. At 12 months the cessation rate was 70%.[19] Thus initiation of a smoking cessation programme during the hospital stay and repeated counselling during follow up may improve the results.

In summary, after the initial education about coronary risk factors given to all patients, the extended prevention programme described in this study attained an additional effect on diet habits. Initiating the smoking cessation programme during the hospital stay, followed by repeated counselling during follow up, might have improved the result. The exercise programme had no advantage in supporting physical activity compared to usual care.

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