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# Planning to change diet: A controlled trial of an implementation intentions training intervention to reduce saturated fat intake among patients after myocardial infarction

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**Abstract**

**Objective:** This article investigates the effects of a brief psychological intervention—implementation intentions training—on the reduction of saturated fat intake among patients after myocardial infarction (MI). **Methods:** One hundred fourteen patients who had experienced a first uncomplicated MI took part in the study. Data were collected at approximately 1 week after MI, 2 weeks after short-term Phase 2 cardiac rehabilitation (approximately 2 months after MI), and 6 months after rehabilitation (8 months after MI). After data collection at 2 weeks after rehabilitation, patients were randomly assigned to the control group or the intervention group (an individually delivered implementation intentions training). Daily saturated fat intake was used as the primary outcome; total fat intake and percentage of calories from fat were secondary outcomes. **Results:** Repeated-measures analysis of variance showed a significant Time×Group interaction: Compared to time before MI, patients in both groups reported a decrease in saturated fat intake at 2 weeks after rehabilitation. Those who participated in the implementation intentions intervention were able to further decrease saturated fat intake from 22.88 g at 2 months after MI to 19.71 g at 8 months after MI. Patients from the control group maintained the same level of saturated fat intake at 2 months after MI (mean=22.30) and 6 months later (mean=22.47). **Conclusions:** An individually delivered implementation intentions intervention may reduce saturated fat intake among patients after MI.


*Keywords:* Implementation intention; Intervention; Myocardial infarction; Saturated fat; Randomized trial; Self-regulation

## Introduction

Diet plays a key role in the initiation and progression of coronary heart disease [1]. A low-fat diet modifies cardiovascular risk factors with more favorable changes in total cholesterol and low-density lipoprotein cholesterol values than low-carbohydrate diets [2]. Randomized controlled trials have shown the effects of a change in fat intake on the reduction of mortality and coronary events among post-myocardial infarction (MI) patients. Results suggest that modification of fat intake, with reduction of saturated fat intake and increased use of foods rich in fatty acids other than saturated fatty acids, predicts better health outcomes [3–5].

Surviving an MI incident and enrolment in cardiac rehabilitation is often followed by an attempt to change one's lifestyle, including reduction of fat consumption. At 3–5 years after MI, patients have lower intake of fat and energy, compared to age-matched and gender-matched controls [6]. Although levels of fat consumption may remain lower than those among healthy individuals, levels of body lipids increase at 2 years after rehabilitation (regardless of whether recommended exercise is maintained), compared to levels at the end of rehabilitation [7]. These changes may represent the return to a less favorable fat intake.

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One of the options for improving cardiac rehabilitation is adding an individualized nutrition counseling component. However, compared to a standard rehabilitation program, additional extended individualized nutrition education resulted in no further changes in saturated fat indices on 6-week and 12-week follow-ups [8]. Research also suggests that some patients may have sufficient motivation to reduce fat consumption after MI even without the assistance of a formal treatment and try to change their diet by using self-help books [9]. However, these self-induced changes may only last for a short time after MI (i.e., 3–4 months) [7,9]. Additionally, almost a quarter of post-MI patients may incorporate no changes into their fat consumption [9].

Even if self-induced or rehabilitation-induced decrease in fat intake may occur after MI, majority of patients who turned into a more favorable diet still do not meet recommendations and, overall, consume more saturated fats than advised [8]. Hence, it is necessary to investigate whether any interventions that could be easily integrated into rehabilitation may induce further and longer-lasting changes in patients' fat consumption.

Many theories, such as the Theory of Planned Behavior [10], identify intention formation as an important prerequisite of any action. In addition to intention formation, making specific plans, including details of actions and circumstances of implementing these actions, helps to act upon one's own intentions [11,12]. Over 60 years ago, Lewin [13] made a distinction between an overall plan and a specific plan that facilitates goal attainment and suggested the importance of planning in the context of food choice. Among healthy individuals, implementation intentions (i.e., forming plans about when, where, and what type of food will be consumed) increase fruit and vegetable intake over periods of up to 2 weeks [14,15], lower the intake of food high in saturated fat for 5 days [16], and reduce fat consumption over a 1-month period [17].

As yet, however, the effects of forming plans have not been confirmed by studies conducted with patients and using longer follow-ups. Implementation intentions had no effect on undergoing prenatal screening if patients had already intended to participate in screening before forming plans [18]. Moreover, research has indicated that, among primary care patients with cardiovascular diseases, the longer-term (i.e., 3 months) effects of simply forming implementation intentions may be negligible for changes in fruit and vegetable consumption [19]. Prompting implementation intentions formation in nonstudent samples may require more than completion of a one-sentence form without assistance [18,19].

Implementation intentions interventions have typically invited participants to complete sentences specifying when and where they will perform specified actions [16–19]. Except for one study [20], implementation intentions interventions have been conducted without individual assistance and without any personal guidance or assistance. Consequently, we examined the longer-term potential of an individually delivered implementation intentions training to reduce saturate fat intake (and overall fat intake) among post-MI patients.

### *Aims of the study*

The study investigates the effect of implementation intentions training intervention on the reduction of saturated fat (and fat intake reduction) among post-MI patients who participated in Phase 2 cardiac rehabilitation. It was hypothesized that, compared to controls, patients enrolled in the implementation intentions intervention (at 2 weeks after a cardiac rehabilitation program) would have lower saturated fat intake on 6-month follow-up. Similar effects of the intervention were expected for daily fat intake and percentage of calories from fat in daily calories intake.

## Method

### *Participants*

One hundred thirty patients post-uncomplicated-MI were invited to take part in the study. All approached patients agreed to participate. Eleven patients dropped out on the second wave of data collection; three control-group participants and two intervention-group participants dropped out on the third wave of data collection.

The final sample consisted of 114 patients aged 39–67 years (mean=54.25, S.D.=6.85); 64% were male. The majority were post-first-MI-episode patients (95%); 70% of patients used β-blockers after MI. Directly after MI, the patients' mean total cholesterol level was 220.37 (S.D.=54.53), and body mass index (BMI) was 28.28 (S.D.=4.04). Eighty percent of respondents were married; 51% had completed high school education, and 21% had a university degree. The majority (67%) declared incomes within the range of average national income, 18% declared incomes below the average national income, and 15% declared incomes above the average national level.

### *Study design*

We conducted a randomized controlled trial in order to evaluate the effects of the implementation intentions training on saturated fat intake among patients after MI and cardiac rehabilitation. Besides preintervention and postintervention assessments of fat consumption (Time 2 [$T_2$] and Time 3 [$T_3$] measurements, respectively), a retrospective measure of patients' fat intake prior to MI (Time 1 [$T_1$] measurement) was taken. The intervention and control procedures took place directly after $T_2$ assessment.

### *Procedures*

The first wave of data collection took place 4–10 days after MI, when patients responded to questions regarding MI