



IMPLICATIONS FOR PRACTITIONERS

## Improving Physician-delivered Counseling in a Primary Care Setting: Lessons from a Failed Attempt

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**ABSTRACT Background:** *The high prevalence of behavioral risk factors for cardiovascular diseases demands innovative approaches to achieving behavior change. Primary care physicians are in an ideal position for offering such interventions.*

**Purpose:** *To evaluate whether training of primary care physicians in counseling skills based on the Transtheoretical Model (TTM) leads to motivational and behavioral changes in their patients.*

**Method:** *Seventy-four primary care physicians in Germany were randomly assigned to either an intervention condition (one day of training in TTM-based counseling plus brochures matched to their patients' "stages of change") or a control condition (usual care). Baseline and 12-month follow-up data were collected from 305 of their patients who signed up for a health check-up.*

**Outcome measure:** *Patients' movements across the stages of change for smoking, diet, exercise and stress management.*

**Results:** *After 12 months, patients of physicians in the intervention group did not show more movement through the stages of change for any of the behaviors than did patients of control physicians. Additionally, there were no differences between groups in counseling frequency, counseling intensity, or patient satisfaction with counseling.*

**Conclusions:** *A high dropout rate at follow-up and resulting "power" problems limit the possible conclusions. The high numbers of patients in early stages of change and the minimal improvement over time underline the need for improving motivational counseling skills of primary care physicians in Germany. In our study the dissemination of these strategies failed. We offer lessons we feel can be learned from this outcome. Further studies should focus on ways to enhance the process of educating physicians for implementing counseling strategies in primary care settings.*

**KEYWORDS** *Counseling, physicians, primary care, prevention, transtheoretical model.*

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## Introduction

Considering the high prevalence of high dietary fat intake, smoking, and sedentary lifestyles, the importance of effective methods for enhancing changes in risk behaviors seems obvious. Theoretical frameworks, such as the Trans-theoretical Model (TTM) (Prochaska & Velicer, 1997), have been used to guide systematic intervention approaches for risk behavior modification. The TTM identifies individuals' readiness for behavior change ("stages of change"). Individuals are categorized into precontemplation (PC), contemplation (C), preparation (PR), action (A), and maintenance (M), each describing a stage in the behavior change process. Progression through the stages of change for risk behaviors can be seen as a positive outcome of counseling interventions. Integrating the stages of change with the strategies for movement along the behavior change process ("processes of change") allows interventions that are tailored to patients' individual needs.

The effectiveness of TTM-based, tailored interventions has been well documented for various behavior areas (e.g. Snow *et al.*, 1994; Steptoe *et al.*, 1996; Marcus *et al.*, 1998; Velicer *et al.*, 1998; Harlow *et al.*, 1999; Howarth, 1999; Velicer & Prochaska, 1999). The possibilities of TTM-based counseling on a primary care level have been discussed (Marcus *et al.*, 1995; Goldstein *et al.*, 1998). Research in this area has just begun and has shown promising results for the areas of smoking cessation (Goldberg *et al.*, 1994; Wang, 1994; Goldstein *et al.*, 1998) and physical activity (Calfas *et al.*, 1996; Pinto *et al.*, 1998; Sims *et al.*, 1998). Finally, in a controlled study by Steptoe *et al.* (1999) on multiple behaviors, nurses delivered TTM-based behavioral counseling of patients with cardiovascular risk factors. It resulted in moderate behavioral changes which, however, did not transfer into significant changes in physiological parameters.

The present study evaluates whether the efficacy of German primary care physicians' counseling for behavior change can be improved by teaching them the basic principles of the TTM. Their patients' movements across the stages of change serve as primary outcome criteria.

## Methods

### *Procedure*

From a pool of 223 primary care physicians in the regions of Hessen and Thuringen (Germany), 120 agreed to participate in this study. Of those, 74 were chosen, based on geographic criteria. They were randomly assigned to intervention or control conditions. Eleven physicians did not recruit any patients, did not record useful information, or dropped out and were excluded from the analysis.

Physicians in the intervention group participated in a one-day (eight-hour) interactive workshop focusing on the TTM and general counseling strategies for behavior modification. The training included role-plays and exercises for stage-

tailored counseling. Physicians were provided with a short training manual and with detailed stage-specific patient brochures for the areas of smoking, diet, exercise and stress management. The study protocol required them to counsel patients based on their readiness to change and to hand out a stage-matched brochure at baseline, and subsequent brochures during follow-up visits. Physicians in the control condition received neither training nor brochures. They were asked to continue their usual care treatment. Physicians in both groups were asked to document all visits and interventions during a 12-month follow-up period.

Patients were assessed at baseline and after 12 months. The assessment included a physical examination, blood parameters, and questionnaires. The results of the physiological measures will be reported elsewhere (Baum *et al.*, 1998). Here we focus on changes in the stages of change over time.

### *Instruments*

The stages of change for diet, exercise, smoking and stress management were determined through short staging algorithms consisting of a question (e.g. "Are you currently exercising at least three times per week for more than 20 minutes?", "Are you currently smoking cigarettes?") and stage-defining answer categories: "No, and I do not intend to start in the next six months" (PC), "No, but I intend to start in the next six months" (C), "No, but I intend to start in the next 30 days" (PR), "Yes, for less than six months" (A), and "Yes, for more than six months" (M). For diet, we also assessed an estimate of patients' diet quality based on a 16-item food frequency list. Patients in the A or M stages for a healthy diet who did not reach the cut-off score for that behavior were restaged into PC, C or PR stages, based on an additional question. The validity of the German instruments for assessing the TTM constructs were previously established (e.g. Basler *et al.*, 1999; Jäkke *et al.*, 1999; Keller *et al.*, 1999).

### *Sample*

Patients who participated in a health check-up between June 1995 and March 1996 were eligible for the study. Primary care physicians routinely conduct biannual check-ups, which are fully covered by the German health care system. Inclusion criteria were newly discovered or previously untreated cardiovascular risk factors. Patients were excluded if cardiovascular disease or other serious diseases were known or if they had received a cardiovascular risk factor intervention in the past.

A total of 592 patients (274 intervention group—IG—318 control group—CG) fulfilled all inclusion criteria. Overall, the recruitment rate was considerably lower than expected. Of all included patients, only 305 (124 intervention group, 181 control group) attended the one year follow-up assessment (48% dropout). The following analysis is based on this group (Table 1). Due to the high dropout

**Table 1.** Baseline characteristics of intervention group (IG) and control group (CG)

	IG ( <i>n</i> = 124)	CG ( <i>n</i> = 181)
Age/mean (SD)	48.7 (7.9)	50.2 (7.9)
Gender/% female	42.8	44.2
Highest education (%)		
no formal education	0	1.1
lower level secondary	47.9	56.3
higher level secondary	29.4	27.0
university degree	20.2	14.4
other	2.5	1.1
Occupation (%)		
employed	67.2	63.1
in training	1.6	3.4
unemployed	9.8	11.7
retired or disability	12.3	12.3
housewife/-husband	7.4	7.3
other	1.6	2.2
Married or other stable relationship (%)	91.9	90.4

rate, a thorough analysis of differences between dropouts and study subjects was undertaken. The patients attending the follow-up assessment did not differ from dropouts with regard to sociodemographic variables, risk factors, or motivational variables (Baum *et al.*, 1998).

## Results

The majority of all subjects at baseline were in the PC and C stages for smoking cessation, exercise and stress management, indicating a low readiness to change these risk behaviors (see columns  $\Sigma_b$  in Tables 2–5). The higher proportion of subjects in the PR stage for diet at baseline can be explained by the staging procedure: about one third of all subjects staged themselves in the A or M stage without showing a sufficiently healthy diet and were restaged into the PR stage. Chi-squared tests revealed no significant differences in stage distribution between intervention and control group in any of the four risk factors at baseline.

Tables 2 to 5 show in detail the movements across the stages of change between baseline and follow-up for intervention and control groups. Overall, these tables show that while the majority remained in their baseline stage within each behavior, progression into higher stages and regression into previous stages were also found across all behaviors.

**Table 2.** Movement across *stages of change* for *smoking cessation* between baseline and follow-up in intervention group (IG) and control group (CG)

			12-month follow-up					
			PC	C	PR	A	M	$\Sigma_b$
Baseline	PC	IG	12	6			3	21
	CG	20	2	3	1	4	30	
	C	IG	8	7				15
	CG	7	7	6	1	1	2	17
	PR	IG		1			1	2
	CG	2	2	2	1		1	6
	A	IG		1			1	2
	CG			2			1	3
	M	IG		1			27	28
	CG	2	1		1	29	33	
$\Sigma_{f-u}$	IG	20	16			32		
	CG	31	13	5	3	37		

Notes: Limited to subjects who ever smoked cigarettes ( $n = 157$ ). PC = precontemplation, C = contemplation, PR = preparation, A = action, M = maintenance.  $\Sigma_b$  = stage distribution at baseline,  $\Sigma_{f-u}$  = stage distribution at follow-up.

**Table 3.** Movement across *stages of change* for a *healthy diet* between baseline and follow-up in intervention group (IG) and control group (CG) ( $n = 256$ )

			12-month follow-up					
			PC	C	PR	A	M	$\Sigma_b$
Baseline	PC	IG	15	4	3		1	23
	CG	20	7	7	1	5	40	
	C	IG	5	8	7	2	2	24
	CG	10	17	13		8	48	
	PR	IG	5	5	21	3	6	40
	CG	4	4	29	2	6	45	
	A	IG	1		1		1	3
	CG			2		1	3	
	M	IG		1	1	1	11	14
	CG	1	1	3	1	10	16	
$\Sigma_{f-u}$	IG	26	18	33	6	21		
	CG	35	29	54	4	30		

Notes: PC = precontemplation, C = contemplation, PR = preparation, A = action, M = maintenance.  $\Sigma_b$  = stage distribution at baseline,  $\Sigma_{f-u}$  = stage distribution at follow-up.

**Table 4.** Movement across *stages of change* for *exercise* between baseline and follow-up in intervention group (IG) and control group (CG) ( $n = 244$ )

			12-month follow-up					
			PC	C	PR	A	M	$\Sigma_b$
Baseline	PC	IG	29	6		4	2	41
		CG	67	9		2	6	84
	C	IG	9	7	1	2	5	24
		CG	12	13	3	2	2	32
	PR	IG	1	3	2	1	2	9
		CG		2	3	1	1	7
	A	IG	2	1	1	1	1	6
		CG	2		1	1	2	6
	M	IG	3	2	3		10	18
		CG	3	1	1	2	10	17
	$\Sigma_{f-u}$	IG	44	19	7	8	20	
		CG	84	25	8	8	21	

Note: PC = precontemplation, C = contemplation, PR = preparation, A = action, M = maintenance.  $\Sigma_b$  = stage distribution at baseline,  $\Sigma_{f-u}$  = stage distribution at follow-up.

**Table 5.** Movement across *stages of change* for *stress management* between baseline and follow-up in intervention group (IG) and control group (CG) ( $n = 274$ )

			12-month follow-up					
			PC	C	PR	A	M	$\Sigma_b$
Baseline	PC	IG	26	5	1	2	6	40
		CG	48	6		5	6	65
	C	IG	3	6	2	4	4	19
		CG	17	3		6	8	34
	PR	IG	1	1		1	5	8
		CG	3		1	2	1	7
	A	IG	1	4	1	1	3	10
		CG	1	2		2	9	14
	M	IG	6	1	2	3	19	31
		CG	12	5	1	5	23	46
	$\Sigma_{f-u}$	IG	37	17	6	11	37	
		CG	81	16	2	20	47	

Notes: PC = precontemplation, C = contemplation, PR = preparation, A = action, M = maintenance.  $\Sigma_b$  = stage distribution at baseline,  $\Sigma_{f-u}$  = stage distribution at follow-up.

**Table 6.** Overall movement across *stages of change* between baseline and 12-month follow-up for four behaviors in intervention group (IG) and control group (CG)

Behavior	Group	Stage movement (%)			Difference between IG and CG
		<i>Regression</i>	<i>Stable</i>	<i>Progression</i>	
Diet	IG	19	51	30	$\chi^2 = 0,99$ ; df = 2; n = 267; ns
	CG	16	48	36	
Exercise	IG	26	50	24	$\chi^2 = 5,25$ ; df = 2; n = 248; ns
	CG	16	65	19	
Smoking cessation	IG	16	68	16	$\chi^2 = 0,39$ ; df = 2; n = 157; ns
	CG	19	63	18	
Stress management	IG	21	48	31	$\chi^2 = 1,62$ ; df = 2; n = 274; ns
	CG	28	46	26	

To assess differences in overall movement through the stages, subjects were categorized into regressors (moved at least one stage backwards between baseline and follow-up), stable (remained in the same stage) or progressors (moved at least one stage ahead between baseline and follow-up). As can be seen in Table 6, chi-squared tests revealed no differences in stage movement, indicating that being in the intervention group did not result in added progress through the stages of change.

Additional analyses revealed that during the follow-up period patients of both groups did not differ significantly in the number of counseling sessions they received (approximately three sessions over 20 minutes, approximately five sessions under 20 minutes) or in their satisfaction with their physicians' counseling ( $M = 4$ ,  $SD = 1$  on a scale from 1 (= very dissatisfied) to 5 (= very satisfied)). The primary topic of counseling was dietary behavior (approximately 68%), followed by exercise and smoking (approximately 50%; based on current smokers only), and finally stress management (approximately 40%).

## Discussion

The goal of this project was to improve the effectiveness of physicians' counseling by introducing a structured guideline based on the TTM. This goal was not achieved with regard to motivational and behavioral variables—as measured in this study—or with regard to physiological variables (Baum *et al.*, 1998). While we have to acknowledge some major limitations, we feel that several important observations can be drawn from our experience with this project.

One limitation certainly lies in the low recruitment rate and in the high dropout rate, a phenomenon that has been reported previously for primary care settings (Steptoe *et al.*, 1999). In our study, the most likely reason for the lower than expected recruitment rate is that physicians in both groups did not systematically include every patient who signed up for a health check-up and, thus, violated the study protocol. It remains unclear whether this led to a selection of patients with certain characteristics, e.g. a higher proportion of “difficult” patients. Regarding the dropout rate, a bias cannot be excluded even though there were no significant differences in the studied variables between remainders and dropouts at baseline. We see the main source of the high dropout rate as the physicians’ difficulties motivating their patients for the follow-up assessment. Possible reasons for these problems could be that (a) patients did not receive any incentives except for an early, free, follow-up check-up, (b) the incentives for the physicians were not high enough; they received only a comparatively small fee for including and documenting study patients, or (c) structural changes in the German health care system during the study, which significantly increased the physicians’ work load and diminished the priority of the study for many of them. As a result, some physicians dropped out of the study completely, which in turn reduced the number of follow-up patients.

Both of these effects on the sample size diminished the statistical power of our analysis and produced a number of empty cells in the analysis of stage movement. Since our initial power calculations were based on at least 600 subjects, we cannot exclude that a Type II error applies to our findings and we are overlooking small but clinically significant differences between the two study groups. This could be especially true for smoking. Here the sample size is even smaller than for the other behaviors. Unfortunately, budget limitations did not allow us to extend subject recruitment further, which would have increased the power of the study—a familiar phenomenon for many researchers.

Another limitation lies in the dissemination of the intervention method. First, the training session of eight hours (some of which focused on the study protocol and not on counseling issues) may not have been long enough to enable the physicians to counsel in accordance with the TTM approach. To adopt a model like the TTM can mean a paradigm shift for practitioners, many of whom were trained according to rather different philosophies. Second, there were no differences in counseling frequency, overall counseling time, or satisfaction with counseling between the two groups, indicating that the training did not result in any changes in the intervention group physicians’ counseling patterns. Finally, because of inconclusive records we have no clear evidence that the physicians in the intervention group handed out the correct brochures to their patients at the appropriate time. The observations of our study monitors indicate that the structural changes in the German health care system led to deviations from the study protocol in both groups—*de facto* resulting in an analysis of a “usual care treatment” in both study groups.

Despite these limitations we feel that we can learn several important lessons from this study.

This is one of the first studies to simultaneously assess the distributions across the stages of change for various risk behaviors in a German sample. The stage distributions shown in Tables 2–5 indicate that a high proportion of subjects who participate in a health check-up have a low motivation for behavior change, even though they have an elevated risk for cardiovascular disease. For vigorous exercise, smoking, and stress management, for example, more than half of all subjects who currently show risk behaviors can be found in the PC and C stages. The results for diet are somewhat more favorable due to a different staging algorithm, but even here about one half of all subjects had no immediate motivation to follow a healthy diet (PC or C stage).

Previous research indicates that the movement across the stages of change for risk behavior is a valid measure of progress (Velicer *et al.*, 1998). To evaluate the differential effects of interventions as measured by changes in the stages of change, higher numbers of participants than in our study are necessary—especially to study a combination of risk behaviors.

Even if we take into account that the study is underpowered, we feel it is safe to conclude that behavioral counseling by German primary care physicians in both groups did not lead to *clinically relevant* changes in their patients' *readiness to change* and/or their behavior. This is alarming, especially considering the high prevalence of these risk factors and the fact that this may be a positive selection of physicians who are interested in counseling. There is obviously a need to improve German primary care physicians' skills in motivating their patients for behavior change. Besides insufficient skills, structural deficits, such as an inadequate reimbursement system and time pressure, may make counseling a challenge for primary care physicians.

We conclude that a one-day workshop is far from sufficient for a successful dissemination of a complex theoretical framework like the TTM and not sufficient for training in TTM-based counseling strategies, especially if we can't build upon existing, effective skills. A more intensive teaching approach is necessary, preferably integrated into general medical education. Skills-oriented teaching should complement knowledge-focused education in order to overcome the current deficit in behavioral counseling. This includes the need for physicians to become familiar with methods for effectively informing and motivating patients. Additionally, physicians should be encouraged early to seek collaboration with other professionals and understand health counseling as an opportunity for interdisciplinary cooperation.

Future studies should focus more on the dissemination process. To interpret the effect of a TTM-based intervention, physicians must understand the theoretical background, accept the counseling method, and apply it according to the study protocol. Close monitoring of the study protocol and behavior tests in real-life counseling situations seem like needed strategies for reaching this goal.

We remain confident that the TTM provides a valuable base for

structured motivational counseling, tailored to patients' readiness to change. The previous results of TTM-based interventions with various risk behaviors are convincing and they outnumber the unclear findings in our study. We still consider movement across the stages of change to be a sensitive measure of progress in behavioral counseling. Therefore, we find it is too early to dismiss this approach. Our strongest conclusion is that the problems lie in the dissemination process. With this experience we are not alone. In a similar design, Pill *et al.* (1998) also found no convincing intervention effects of a counseling approach on selected physiological parameters in patients with Type II diabetes. Although the counseling training was received enthusiastically by the professionals, after two years only 19% of them applied the methods systematically. These findings underline the need for more intensive research on dissemination and implementation strategies for innovative counseling approaches in primary care settings. Bringing the medical and behavioral sciences closer together in order to develop more effective treatment approaches remains a challenge for the future.

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