

# GPs' assessment of patients' readiness to change diet, activity and smoking

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## ABSTRACT

### Background

The Stages of Change Model is increasingly used for lifestyle counselling. In general practice, the use of algorithms to measure stage of change is limited, but for successful counselling it is important to know patients' readiness to change.

### Aim

To assess the accuracy of the assessment of patients' readiness to change fat consumption, physical activity, and smoking by GPs and general practice registrars.

### Design of study

Cross-sectional questionnaire-based survey.

### Setting

One hundred and ninety-nine patients at elevated cardiovascular risk aged 40–70 years, 24 GPs, and 21 registrars in Dutch general practices.

### Method

Patients were asked to complete an algorithm to measure their motivation to change fat consumption, physical activity, and smoking. GPs and registrars were given descriptions of the stages of change for the three lifestyles, and were asked to indicate the description that matched their patient. Cohen's  $\kappa$  was calculated as measure of agreement between patients and GPs/registrars.

### Results

Registrars' patients were younger, and less often overweight and hypertensive than GPs' patients. Cohen's  $\kappa$  for smoking was moderate (0.50, 95% confidence interval [CI] = 0.34 to 0.67 for GPs and 0.47, CI = 0.27 to 0.68 for registrars). Agreement for fat and activity was poor to fair. No differences in accuracy were observed between GPs and registrars ( $P = 0.07$ – $0.83$ ).

### Conclusions

Low accuracy indicates that counselling in general practice is often targeted at the wrong people at the wrong time. Improvements can possibly be achieved by making registration of lifestyle parameters in patient records common practice, and by simply asking patients where they stand in respect to lifestyle change.

### Keywords

cardiovascular diseases; counselling; cross-sectional survey; lifestyle risk reduction.

## INTRODUCTION

The Stages of Change Model is frequently suggested as a basis for tailored intervention programmes.<sup>1–3</sup> The model was originally developed for smoking cessation, but since then has also been used for many other health behaviour change programmes, such as condom use, giving up cocaine, mammography screening, diet, and physical activity.<sup>4</sup> The Stages of Change Model postulates that individuals can be classified in one of five stages of readiness to change health behaviour. Longitudinal studies have shown that behaviour change is not a linear movement through these stages. Instead, it is either progressive, regressive, spiralling or static. People may skip one or more stages, or they may be in one particular stage for extended periods of time.<sup>5,6</sup> In the precontemplation stage, people do not intend to change their behaviour in the next 6 months because they are unaware of the problem behaviour or because they are demoralised by unsuccessful previous behaviour change attempts. In the contemplation stage, people are aware of the need for behaviour change. They intend to take action within the next 6 months, but lack commitment to

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actually start changing. In the preparation stage, people have decided to take action in the immediate future, usually measured as the next month. They often have a concrete plan of action, such as taking up sports, joining a health education programme, or buying a self-help book. In the action stage, people have made specific overt modifications in their lifestyle within the past 6 months. In the maintenance stage, people have shown the desired behaviour for over 6 months and are working to prevent relapse. Theoretically, people can only be in the action and maintenance stages if they have made behaviour changes that are sufficient to reduce risks for disease.<sup>7</sup> The classification of the stages of change therefore depends heavily on a person's self-perception. Unfortunately, this self-perception is often inaccurate. For dietary fat intake, for example, studies have shown actual intake levels to be much higher than self-perceived intake levels.<sup>8</sup> This makes the stages of change reflect people's perception of their current behaviour and their motivation to change, rather than their actual behaviour.<sup>9</sup>

The Stages of Change Model can help identify patients who are positively interested or, on the other hand, absolutely unwilling to change their health behaviour.<sup>3</sup> The effectiveness of interventions can be increased by tailoring counselling to individuals' levels of knowledge, awareness, and motivation, in other words, their stage of change.<sup>10-12</sup> Ideally, the Stages of Change Model provides a framework in which there is an suitable approach to engage even the most unmotivated people in behaviour change. However, as Ashworth<sup>3</sup> also argued, there are many behaviours which may be the focus of intervention in general practice and people may have different levels of motivation for each of the possible health behaviour changes. Known time constraints in general practice limit GPs' possibility to focus on all behaviours simultaneously. The concept of readiness to change may therefore help GPs to prioritise counselling efforts; for example, start by focusing on smoking cessation before focusing on physical activity.

To use the Stages of Change Model as a basis for counselling, it is necessary to accurately assess individuals' readiness to change. In research, this is often done using single question or multiple-item algorithms that are filled in by patients.<sup>13-15</sup> In practice, however, the use of these algorithms is limited and it is reasonable to assume that GPs often act upon their perception of patients' readiness to change. GPs likely use their background knowledge and the content of the consultation to determine whether or not the patient would be interested in and benefit from lifestyle advice. In many countries, GPs are healthcare coordinators and the gatekeepers to other types of health care, such as dieticians and

## How this fits in

Tailoring lifestyle counselling messages to patients' individual motivational characteristics increases program effectiveness. It is therefore important to accurately assess patients' motivation, especially as GPs are not only an important source for lifestyle counselling themselves, but also the gatekeeper to many other sources. This cross-sectional study shows moderate accuracy for smoking cessation and large systematic errors for reduction of dietary fat intake and increase of physical activity. Higher levels of accuracy can possibly be achieved by simply asking patients for their motivation.

diabetes counsellors.<sup>16,17</sup> The importance of GPs' accurate assessments of motivation for lifestyle change is evident, as inaccuracy would lead to referrals of unmotivated patients.

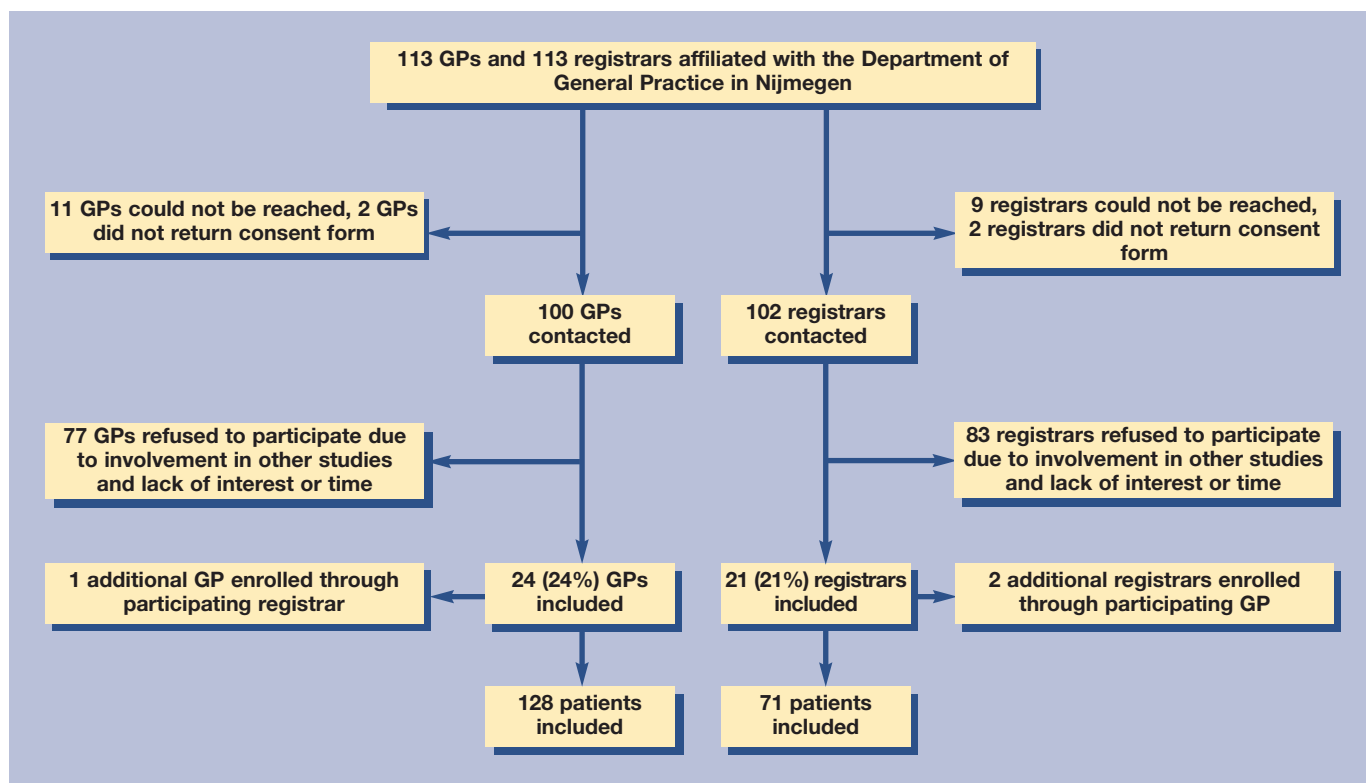
To our knowledge, nothing is known about the accuracy of GPs' assessment of patients' readiness to change. Our study among Dutch home care dieticians showed a striking overestimation of patients' readiness to change.<sup>18</sup> The relative success of a structural stages-of-change-approach in comparison to usual care in family practice suggests that GPs also overestimate patients' readiness to change.<sup>10-12</sup>

The current study was designed to evaluate the accuracy of GPs' assessment of their patients' readiness to change dietary fat intake, physical activity, and smoking behaviour. We hypothesised that prolonged GP-patient interaction within the continuity of care framework of general practice would increase the accuracy. Therefore, we also included general practice registrars who have had little time to build on their relationship with the patients, in our study. As a result of their experience and long-term contact with the patients, we expected the GPs to have a higher accuracy than the registrars.

## METHOD

### *Study population and procedure*

One hundred and thirteen GPs and 113 registrars affiliated with the Department of General Practice of the University Medical Centre Nijmegen in The Netherlands were invited to participate in the current cross-sectional study. Despite repeated follow-up by the research team, 11 GPs and nine registrars could not be contacted, and two GPs and two registrars never returned their consent forms. Seventy-seven per cent of the GPs and 81% of the registrars refused to participate, mostly because of lack of interest or time (Figure 1). All practitioners (both GPs and registrars) were asked to invite a maximum of 10 of their patients (aged 40-70 years) who were at increased risk of cardiovascular disease to join the study. Only patients who came in for a consultation



**Figure 1. Recruitment of GPs, general practice registrars, and their respective patients with elevated risk of cardiovascular disease.**

during the study period were invited for participation. Increased cardiovascular risk was defined on an operational level as one or more of the following: type II diabetes mellitus, hypertension, dyslipidemia, obesity, and a personal or family history of cardiovascular diseases.

For each individual patient, the practitioners were provided with a set of patient and practitioner questionnaires with matching identification numbers. At the end of the consultations, patients were asked to report their sex, age, height, weight, and the number of years they had been registered in the general practice. They were also asked to fill in stages of change algorithms for dietary fat consumption, physical activity, and smoking. The algorithms were a translation into Dutch from the algorithm by Curry *et al.*<sup>19</sup> Slight changes were made to make questions applicable to each of the individual health behaviours. The patients were asked to fill in the questionnaire immediately after the consultation, and to hand it in to the receptionist in a sealed envelope.

The practitioners also filled in their questionnaire immediately following the consultation. They were asked to record the presence of the risk factors used to define increased cardiovascular risk. Using a 5-point scale reflecting the stages of the Stages of Change Model, they were also asked to assess their patient's readiness to change dietary fat consumption, physical activity, and smoking. Finally,

they recorded whether or not general dietary habits, dietary fat consumption, physical activity, and smoking had been discussed during the consultation. For the GPs and registrars, information on age, sex, number of years working/in training was collected. Additional information on the number of patients registered in the practice of each of the GPs was obtained from the database of the Department of General Practice, Nijmegen.

**Statistical analysis**

Descriptive statistics were used to describe the population of patients, GPs, and registrars. Cohen's  $\kappa$  was calculated to assess the accuracy of GPs' and registrars' assessment of patients' readiness to lower their fat intake, to increase their physical activity levels, and to give up smoking.<sup>20</sup>  $\kappa$  readings ranging from 0–0.19, 0.20–0.39, 0.40–0.59, 0.60–0.79, and 0.8–1.0 indicate poor, fair, moderate, substantial, and almost perfect agreement, respectively.<sup>21</sup> We also tested for differences in  $\kappa$  between the GPs and registrars. The presence of any systematic errors in GPs and registrars assessments of patients' readiness to change was assessed using Wilcoxon's Rank Order Test.

Only complete sets of questionnaires were used in analyses. Analyses for physical activity and smoking cessation were based on a lower number of observations as we excluded patients who were unable to perform physical activity because of

physical limitations, and patients who had never smoked. All analyses, except for the agreement between registrars and patients with respect to smoking cessation included sufficient observations to calculate Cohen's  $\kappa$  (more than twice the squared number of response categories, that is  $>50$ ).<sup>22</sup> The analyses were conducted using the SAS system and  $P$ -values  $<0.05$  were considered significant.

## RESULTS

### Study participants

The recruitment of GPs and registrars, and their patients is shown in Figure 1. Twenty-four GPs (79% male) and 21 registrars (86% female) were included in the study. The mean age of GPs was 50 years. GPs had been working in their field for a mean of 20 years and practice sizes varied between 1500 and 3100 patients. Fifty-two per cent of the registrars were in their first year of training; the others were in their third (final) year. One hundred and twenty-eight patients were recruited into the study by GPs and 71 patients by registrars. Patient characteristics are described in Table 1. Patients recruited into the study by GPs were significantly older (58 versus 53 years) and more often overweight (45% versus 26%) than patients recruited by registrars. Hypertension was also more prevalent (70% versus 56%). For dietary fat reduction and smoking cessation, most patients were in the maintenance stage. For increasing physical activity, however, most patients were in the precontemplation stage.

### Agreement between GPs and registrars, and patients

For dietary fat reduction as well as for increasing physical activity, and for both GPs and registrars, Cohen's  $\kappa$ s were below the cut-off for moderate agreement (0.40) (Table 2). Agreement for smoking cessation was moderate. No significant differences were observed between GPs' and registrars' assessment of patients' readiness to change ( $P = 0.07$  for reduction of dietary fat intake;  $P = 0.68$  for increase in physical activity;  $P = 0.83$  for smoking cessation). Registrars systematically underestimated patients' readiness to reduce their dietary fat intake. Both GPs and registrars systematically overestimated patients' readiness to increase their physical activity. There was no systematic error in the estimation of patients' readiness to give up smoking.

## DISCUSSION

### Summary of main findings

This cross-sectional study in Dutch family practices showed poor to moderate agreement between patients' self-reported, and GPs' and registrars' assessment of patients' motivation to change dietary

**Table 1. Personal characteristics of patients with increased risk of cardiovascular disease in consultations with GPs and general practice registrars.**

	GPs mean $\pm$ SD <sup>a</sup> (n = 128)	Registrars mean $\pm$ SD <sup>a</sup> (n = 71)	P-value
Age (years)	58 $\pm$ 10	53 $\pm$ 10	0.002
Sex (% male)	43	52	0.30
Self-reported body mass index (kg/m <sup>2</sup> )	29.1 $\pm$ 5.3	28.4 $\pm$ 5.9	0.40
Risk factors for cardiovascular disease (%)			
Type II diabetes mellitus	23	23	1.0
Hypertension	70	56	0.05
Dyslipidemia	34	29	0.54
Overweight	45	26	0.008
Family history	21	27	0.40
Registration in the general practice (years)	19.7 $\pm$ 14	17.7 $\pm$ 12	0.32
Stage of change for dietary fat reduction (%)			
Precontemplation	19	26	0.34
Contemplation	8	3	
Preparation	11	5	
Action	12	15	
Maintenance	50	51	
Stage of change for increase of physical activity (%)			
Precontemplation	41	37	0.92
Contemplation	12	16	
Preparation	19	22	
Action	5	5	
Maintenance	23	20	
Stage of change for smoking cessation			
Precontemplation	12	30	0.26
Contemplation	30	18	
Preparation	5	6	
Action	7	9	
Maintenance	46	37	

<sup>a</sup>Unless otherwise specified SD = standard deviation.

**Table 2. Agreement between GPs and general practice registrars for motivation to reduce dietary fat intake, to increase physical activity, and to give up smoking.**

	Under-estimation (%)	Correct (%)	Over-estimation (%)	$\kappa$ (CI)	P-value <sup>a</sup>
Reduction of dietary fat intake					
GPs	31	46	23	0.25 (0.14 to 0.36)	0.07
GPRs	51	31	18 <sup>b</sup>	0.10 (-0.03 to 0.22)	
Increase in physical activity					
GPs	18	36	46 <sup>c</sup>	0.16 (0.06 to 0.26)	0.68
GPRs	25	38	37 <sup>c</sup>	0.20 (0.05 to 0.34)	
Smoking cessation					
GPs	17	67	16	0.50 (0.34 to 0.67)	0.83
GPRs	18	61	21	0.47 (0.27 to 0.68)	

<sup>a</sup>P-value for difference between  $\kappa$  for GPs and GPRs. <sup>b</sup>Systematic underestimation of patients' motivation to change. <sup>c</sup>Systematic overestimation of patients' motivation to change. GPR = general practice registrar.

fat consumption, physical activity, and smoking behaviours. As the 3 years vocational training programme for GPs in the Netherlands is

comparable with, for example, the NHS vocational training for general practice in the UK, our results most likely apply in other countries as well. Our study among Dutch home care dieticians also showed disagreements between patients' and health workers' assessment.<sup>18</sup>

#### **Strengths and limitations of this study**

To our knowledge, this is the first study looking at the assessment of motivation to change in general practice. This study therefore contributes significantly to the existing knowledge on lifestyle counselling in family practice. It also suggests an easy-to-implement strategy for clinicians to improve the effectiveness of their lifestyle counselling efforts.

Response rates among GPs and registrars were low at 24% and 21%, respectively. This includes one GP and two registrars who were not included in the original recruitment but contacted the research team and requested to participate in the study. Participating GPs and registrars were possibly more interested in lifestyle and more involved in lifestyle counselling than non-participants. Previous research has shown that such a positive attitude towards the role of GPs in prevention is associated with increased frequency of body weight checks and the discussion of lifestyle habits.<sup>23</sup> Furthermore, it is certainly possible that GPs and registrars selected a sample of patients whose lifestyle they were relatively familiar with for participation. This leads us to the assumption that the levels of agreement found in our study overestimate the true agreement in everyday general practice.

#### **Comparison with existing literature**

For all three lifestyles, agreement failed to rise above the level of substantial agreement (0.60). The striking difference in agreement between smoking, and dietary fat consumption and physical activity, may partly be explained by the fact that the Stages of Change Model was originally developed based on people's experiences with smoking cessation.<sup>4</sup> It may also be caused by the fact that only smoking status is generally recorded in patient charts.<sup>24</sup> Registration is positively correlated with the frequency of preventive activities such as: body weight checks, and the discussion of smoking habits and physical activity.<sup>23</sup> Increased frequency of preventive activities may lead to increased knowledge of patients' motivation to change. We hypothesise that practitioners' view on patients' smoking cessation motivation was based on knowledge rather than estimation. Careful analyses in our study failed to show a difference in agreement between consultations in which the lifestyles were discussed as opposed to consultations in which they

were not discussed (data not shown). However, small numbers of patients, particularly in the registrars group, limit the reliability of these outcomes, and care should be taken in interpreting these findings.

In contrast to our expectations, there was no difference between GPs' and registrars' assessment of patients' readiness to change. Even in patients in earlier risk stages for cardiovascular disease, registrars were able to achieve similar levels of agreement. A prolonged practitioner-patient relationship may therefore not necessarily lead to accurate assessments of patients' motivation to change. Previous research has shown that female physicians discussed lifestyle more often than male physicians.<sup>23</sup> It is therefore also possible that the high number of female registrars masked the effect of prolonged practitioner-patient relationship in favour of the predominantly male GPs.

Stage of readiness to change reflects people's perception of their current behaviour and their motivation to change in the future.<sup>9</sup> Low agreement may thus be caused by a difference in perception of patients' current behaviour. Previous research showed that patients have an inaccurate self-perception; they frequently underestimate their dietary fat intake and overestimate their physical activity levels.<sup>8,25</sup> As national data that continue to show these phenomena are readily available in the Netherlands,<sup>26</sup> we expected practitioners to have a more realistic view of patients' behaviour in reference to the guidelines. This would lead to low numbers of patients being classified in the action and maintenance stages by their practitioners, and a systematic underestimation of patients' motivation to change. For dietary fat consumption, the registrars indeed showed a systematic underestimation and a similar, yet not significant, effect was observed for the GPs. For increasing physical activity, however, a systematic overestimation of patients' readiness to change was observed. It is unclear what caused this effect. We speculate that insufficient acknowledgement by practitioners of the likelihood of relapse in lifestyle change may be part of the reason.

#### **Implications for clinical practice**

Primary care practitioners acknowledge and support the potential role of lifestyle in primary prevention.<sup>27</sup> Yet, as Yarnall *et al*<sup>28</sup> stated, 'time constraints limit the ability of physicians to comply with preventive services recommendations'. Tailoring interventions to individuals' levels of knowledge, awareness, and motivation may help to make best use of the limited time and resources available. However, the low accuracy of practitioners' assessment of patients' motivation to change, shows that current procedures are insufficient as a basis for tailoring. In the future,

asking patients rather than assuming where they stand with respect to lifestyle change may lead to large improvements. Structural repeated registration in patient records may also improve the level of preventive services and the accuracy of the motivational assessment, particularly for diet and physical activity behaviours.

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### Ethics committee

Ethical approval for the PhD studies of Marieke Verheijden was obtained from the Human Research Ethics Board of Queen's University (Kingston, Canada) and the Medical Ethical Committee of Wageningen University, The Netherlands. The current study required no further ethical approval

### Competing interests

None

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