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

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INTRODUCTION

The Stages of Change Model is frequently suggested as a basis for tailored intervention programmes.1–3 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.4 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.5,6 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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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
diabetes counsellors.16–17 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.18 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.10–12
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

actual 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.1 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.8 This makes
the stages of change reflect people’s perception of
their current behaviour and their motivation to
change, rather than their actual behaviour.4
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.8 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.10–12 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
Ashworth7 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.10–12 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
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. 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. \( \kappa \) 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. 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 $>50$). 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 precontemplation stage. For increasing physical activity, however, most patients were in the maintenance 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 $\kappa$ 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 fat consumption, physical activity, and smoking behaviours. As the 3 years vocational training programme for GPs in the Netherlands is...

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<th>Table 1. Personal characteristics of patients with increased risk of cardiovascular disease in consultations with GPs and general practice registrars.</th>
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<td>Self-reported body mass index (kg/m$^2$)</td>
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<td>Risk factors for cardiovascular disease (%)</td>
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<td>Type II diabetes mellitus</td>
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<td>Hypertension</td>
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<td>Dyslipidemia</td>
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<td>Family history</td>
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<td>Registration in the general practice (years)</td>
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<td>Stage of change for dietary fat reduction (%)</td>
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<td>Stage of change for increase of physical activity (%)</td>
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*Unless otherwise specified SD = standard deviation.

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<th>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.</th>
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$^*$-value for difference between $x$ for GPs and GPRs. *Systematic underestimation of patients’ motivation to change. *Systematic overestimation of patients’ motivation to change. GPR = general practice registrar.
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.10

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.21 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.4 It may also be caused by the fact that only smoking status is generally recorded in patient charts.20 Registration is positively correlated with the frequency of preventive activities such as: body weight checks, and the discussion of smoking habits and physical activity.21 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.20 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.3 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.4,5,6 As national data that continue to show these phenomena are readily available in the Netherlands,4,8 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.22 Yet, as Yarnall et al22 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 Mariele 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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REFERENCES