

Stages of change analysis of smokers attending clinics for the medically underserved

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KEY POINTS FOR CLINICIANS

Smokers planning to quit smoking within 6 months scored higher on statements that are consistent with quitting smoking than did smokers who claimed they were not planning to quit within 6 months. Concerns about the negative aspects of smoking were more important to smokers planning to quit than to smokers not planning to quit, whereas statements assessing positive aspects of smoking were rated the same.

Smokers attending clinics for the underserved should be counseled to quit smoking in the same manner as smokers from the general population.

- **OBJECTIVE:** To determine whether smokers at clinics providing care for the medically underserved can be characterized according to the transtheoretical stages of change model.
- **STUDY DESIGN:** Prospective, descriptive study.
- **POPULATION:** Smokers in the waiting rooms of clinics providing care for the medically underserved.
- **OUTCOMES MEASURED:** Standardized questionnaires that assessed stages of change, processes of change, decisional balance, and self-efficacy and temptation.
- **RESULTS:** The smoking rate of subjects interviewed at 4 clinics was 44%. Two hundred current smokers completed the questionnaires. Smokers claiming that they planned to quit within 6 months scored higher on experiential process statements that are consistent with quitting smoking than did smokers who claimed they were not planning to quit within 6 months. They also scored higher on behavioral statements related to quitting. Concerns about the negative aspects of smoking were more important to smokers planning to quit

than to smokers not planning to quit, whereas the statements assessing positive aspects of smoking were rated the same. Fifty-five percent of the smokers were smoking a pack or more each day and reported smoking more during negative situations and from habit than did smokers who smoked less than a pack a day.

- **CONCLUSIONS:** Smokers planning to quit who still smoke at least a pack a day may benefit from counseling to decrease smoking for specific reasons or from pharmacologic aids. Smokers at the clinics who planned to quit smoking reported experiences and behaviors that were consistent with their stated desire to quit and should be counseled in the same fashion as smokers from more traditional practices.

key words Smoking cessation; models (theoretical); medically underinsured. (J Fam Pract 2002; 51:1018)

Cigarette smoking is a modifiable behavior and the chief preventable cause of illness and death in the United States.^{1,2} The rate of smoking dropped from 40% to 25% between the mid-1960s and 1997, but this decrease was not uniform across all segments of the population.^{3,4} In 1997, college graduates had a smoking rate of about 12%, whereas high school graduates had a smoking rate of 28%, and those with less than a high school education had a smoking rate of 35%.⁴ If these differences continue, a significant social divide will develop in this country with smoking, and the diseases resulting from smoking, found predominantly among the more poorly educated and socioeconomically disadvantaged members of society.⁵

Epidemiologic data indicate that approximately 70% of smokers want to quit and about 40% try to quit each year.⁶⁻⁸ Federal guidelines stress the importance of providing counseling to every smoker at every office visit.^{8,9} A growing area of research concerns the kind of information that should be provided to these patients, and whether information should be tailored to individual or group characteristics.^{10,11} An area that could be targeted is willingness to modify behavior according to the stages of change construct from the transtheoretical model.^{12,13} According to this model, smokers in the precontemplation stage do not intend to quit smoking within 6 months, contemplators are thinking about quitting within the next 6 months, and smokers in the preparation stage intend to quit within 30 days and have made a quit attempt at some time in the past. This model also proposes processes, derived from a comparative analysis of leading theories of psychotherapy and behavior change, that people use when they think about smoking.^{13,14} These constructs (processes of change, assessment of the pros and cons of smoking, and efficacy and temptation) are characteristically associated with smokers at different stages of change. For example, a crossover in assessment of the pros and cons of smoking across the stages of change is observed in cross-sectional studies so that the pros of smoking outweigh the cons for smokers in the precontemplation stage, but the cons outweigh the pros for smokers in the preparation stage.¹²

Proponents of this model argue that information should be tailored to match an individual's stage of change and that the processes of change characteristic of the different stages should be used to move people to a more forward stage and, ultimately, to behavioral change.^{13,14} The model proposes that people may make progress to a more forward stage of change but also may relapse (eg, quit smoking and then start again), and that information should be provided to the patient's current stage. These proponents argue that using this model, rather than applying an action approach to all smokers, regardless of their willingness to consider changing their behavior, leads to increased behavioral change.^{13,14} In response to this model, concern has been raised about the theoretical validity of the model,¹⁵ whether stage of change is the best predictor of future behavioral change,^{16,17} and whether the identified processes can be used to predict forward stage progression.¹⁸ From a practical point of view, the model is clinically appealing, and suggestions for incorporating the model into counseling approaches are beginning to appear in the literature.¹⁹ Research continues to focus on the issue of whether information that is matched to individual or group characteristics, including stages of change, is more effective than information that is not, and, although preliminary, the research to date supports the idea that tailored information is more effective.^{10,20}

As the effectiveness of tailored information continues to be tested, an important issue that remains to be addressed is

whether the identified constructs associated with the stages of change also hold in socioeconomically disadvantaged groups of people. The term medically underserved is used to describe people with a low socioeconomic status who have reduced access to health care and a higher prevalence and worse prognosis of disease, including preventable diseases.²¹ Smoking within this population occurs within a framework of social inequalities that may affect morbidity and mortality more directly and may lead to problems that are more immediate or require more complex management^{22,23}; however, the presence of these medical problems should not preclude the provision of preventive health care, including smoking cessation advice. If the transtheoretical model is increasingly used as the basis for developing smoking cessation guidelines for use with all smokers, then it should first be determined whether the processes of change that are characteristic of smokers in the general population are also characteristic of smokers who are medically underserved.

■ MATERIALS AND METHODS

Subjects

People older than 18 years were interviewed at 4 clinics providing care for the medically underserved in Northeast Ohio over a 6-week period. Medicaid covered 20% of the patients at 1 clinic and 8% of the patients at another clinic; 1 clinic did not accept payment of any kind and the other 3 accepted fees on a sliding scale. Approximately 20% of the funding in 1 clinic was from private insurance. Two of the clinics excluded patients with income exceeding 200% of the Federal Poverty Guideline. Two female, Caucasian medical students employed for a summer fellowship conducted one-on-one interviews in English. Eligible subjects included patients and those accompanying patients in the waiting rooms of these clinics. None of the people approached appeared acutely ill to the medical students. This study was approved by the Institutional Review Board of the Northeastern Ohio Universities College of Medicine and informed consent was obtained.

Questionnaires

Subjects were asked demographic questions, questions about their smoking histories, current smoking habits, whether they lived with people who smoked, and whether their health care provider had ever advised them to quit smoking. Measures based on the transtheoretical model (short form versions) that have been widely used and validated were used to assess subjects' stages of change,^{12,24} processes of change,²⁵ decisional balance (pros and cons of smoking),²⁶ and level of temptation and efficacy about smoking cessation.²⁷ The decisional balance questions were not designed to assess which pros and cons of smoking were most important to patients, but whether cons of smoking were rated as more important than pros of smoking by patients stating their willingness to quit smoking and whether the reverse was true in patients who stated they would not quit smoking in the near future. A detailed overview of the transtheoretical model, development of the questionnaires, and the questionnaires themselves are available at the University of Rhode Island's Cancer Prevention Research Center Web site.²⁸

Analysis

Data were recorded by the interviewers on Trans-Optic forms and then scanned into an ASCII database. Data analysis was performed with SAS software (SAS Institute, Cary, NC). Ten experiential processes questions, 10 behavioral processes questions, 6 decisional balance questions, and 9 self-efficacy/temptation questions were asked. Subscale scores were generated for the processes of change (5 subgroups each for experiential and behavioral processes), decisional balance (2 subgroups, pros and cons), and self-efficacy/temptation (3 subgroups: social situations, negative situations, and habit). Individual item scores ranged from 1 to 5, with increasing numbers indicating that the process was of greater importance. A 2-way analysis of variance was conducted to measure differences among smokers in the precontemplation, contemplation, and preparation stages and how those responses differed between those who smoked a pack or more each day and those who smoked less than a pack a day. The interaction effect between stages of change and amount smoked was also included in the model. Post hoc analyses were conducted with the Tukey-Student range test.

■ RESULTS

Subjects

A total of 523 people were approached by the interviewers. Sixty-six (13%) refused to participate (66% were female). Of the remaining 457 people, 173 (38%) had never smoked, 39 (9%) quit smoking more than 5 years previously, and 245 (54%) were current smokers or had quit within the past 5 years. Four cases were lost due to incomplete collection of information. The percentages of patients in each stage of change are presented in the **Figure**.

The final study sample consisted of 200 current smokers: 16% were in the preparation stage, 47% were in the contemplation stage, and 38% were in the precontemplation stage.

Characteristics

There were no differences in sex, race, and age of smokers or in the responses to questions about their smoking across the precontemplation, contemplation, and preparation stages **Table 1**. Ninety smokers smoked less than a pack a day; 110 smoked at least a pack a day. Less than a third of the smokers who were not planning to quit (precontemplation) smoked less than a pack a day (31%), whereas most smokers planning to quit within 6 months (contemplation) smoked less than a pack a day (58%). However, within the group of smokers who claimed that they were going to quit within 30 days (preparation), only 41% smoked less than a pack a day.

Experiential processes

Smokers planning to quit (contemplation and preparation) reported that they had experiences that were consistent with quitting more often than did people who were not planning to quit within 6 months (precontemplation; **Table 2**). There were no significant differences between subjects who claimed they planned to quit within 30 days and those planning to quit within 6 months (contemplation vs preparation).

Behavioral processes

Smokers planning to quit (contemplation and preparation) scored higher on statements related to quitting than did people who were not planning to quit within 6 months **Table 3**. There were no significant differences between subjects in the contemplation and preparation stages.

Pros vs cons of smoking

There were no differences in the response of smokers who were (contemplation and preparation) or were not (precontemplation) planning to quit on how important the pros of smoking were to their decision to smoke **Table 4**. In contrast, smokers who were planning to quit rated statements about the cons of smoking as more important to their decision to smoke than did smokers who were not planning to quit.

In relative terms, the pros of smoking were more important than the cons of smoking to smokers who were not planning to quit (precontemplation group, pros vs cons, $t = 3.8$, $P < .001$). This effect was reversed in smokers planning to quit. Smokers planning to quit within 6 months reported that the cons were slightly, but significantly, more important than the pros of smoking (contemplation group, pros vs cons, $t = 2.2$, $P < .03$). This reversal was even more pronounced in smokers claiming they would quit within 30 days (preparation group, pros vs cons, $t = 3.5$, $P < .002$).

Self-efficacy and temptation

Subjects who planned to quit were significantly more likely to claim they were tempted to smoke in social situations than were people who were not planning to quit within 6 months ($F = 4.69, P < .02$). There was no effect of intention to quit on claims that negative situations tempted subjects to smoke, and there was no effect of intention to quit on claims that subjects smoked from habit.

Amount smoked per day

Responses within each category also were examined as a function of the number of cigarettes smoked per day. Smokers who smoked a pack or more a day claimed that they were more tempted to smoke when they were angry ($F = 8.8, P < .005$) or frustrated ($F = 5.6, P < .02$) than did smokers who smoked less than a pack a day. Smokers who smoked a pack or more a day had higher scores on the habit statements than did smokers who smoked less than a pack a day. They were more tempted to smoke when they first got up in the morning ($F = 16.1, P < .001$), over coffee ($F = 9.1, P < .003$), and when they realized they had not smoked for awhile ($F = 8.6, P < .005$).

Smokers who smoked more than a pack a day reported that the pros of smoking were more important to them than did smokers who smoked less than a pack a day ($F = 5.56, P < .02$). This effect was due primarily to the heavier smokers reporting that they were relaxed and therefore more pleasant when they smoked ($F = 9.08, P < .003$). There was an interaction effect as smokers who were planning to quit but still smoked more than a pack a day rated the pros of smoking the same as those who smoked less than a pack a day ($F = 3.3, P < .05$). There was no effect of number of cigarettes smoked each day on the statements relating to the cons of smoking.

The scores on the questions related to behavioral processes that are consistent with quitting were higher for those who smoked less than a pack a day ($F = 9.45, P < .003$). This was due primarily to those smokers scoring higher on the statements that they “think about something else” or “do something else” instead of smoking ($F = 7.95, P < .01$). There was no difference between those who smoked more or less than a pack a day on any statements related to the experiential processes involved in quitting.

■ DISCUSSION

The smoking rates of people attending clinics providing care for the medically underserved were higher than national figures for people with less than a high school education (44% vs 35%).⁴ In agreement with previous findings, however, the majority of the smokers had tried to quit smoking at some time in the past or wanted to quit at some point within the next 6 months **Table 1**.⁶⁻⁸ Only 75 of 245 people who were current smokers or had quit within the past 5 years stated that they were not planning to quit within 6 months **Figure 1**. Most patients therefore were interested in smoking cessation, which may serve as reinforcement for the physician to continue to provide smoking cessation counseling. Approximately 60% of the current smokers reported that they had ever been counseled to quit smoking **Table 1**, which is similar to figures reported in larger scale studies (approximately 50% of smokers who visited a physician during the previous year received smoking cessation advice),^{29,30} but this counseling rate is less than optimal. Constraints inherent in primary care practices that limit the time available for preventive services are recognized,³¹ but additional constraints may be operating in the provision of health care for the medically underserved. Health care providers may be hesitant about providing smoking cessation advice because they believe that the underserved have more immediate health care needs that have to be met and have a different outlook on smoking that precludes them from responding to a brief intervention about smoking.^{21,23} Data from this study, however, suggest that patients attending these clinics are responding to the information provided and should be counseled about smoking cessation.

The distribution of smokers in the stages of change was similar to figures in previous studies, suggesting that approximately 40% of smokers are in the precontemplation stage, 40% are in the contemplation stage, and 20% are in the preparation stage.²⁴ People who reported that they were planning to quit in the near future (within 30 days or within 6 months) differed consistently from people who claimed that they would not quit within 6 months. They were more likely to report having experiences that are consistent with quitting (both experientially and behaviorally) than people who were not planning to quit. They recalled information they had been given about the benefits of quitting and reacted emotionally

to the warnings about smoking, reported that they got upset and felt disappointed in themselves when they thought about smoking, were embarrassed to have to smoke, and were aware that their smoking bothers other people. These are all areas that can be used as the basis for providing counseling advice. In contrast, smokers in the precontemplation stage responded to many questions in a manner that indicated they were accepting of their smoking and that their smoking did not bother others (**Table 2, Table 3, Table 4**). These findings would appear consistent with the transtheoretical model in identifying a group of people resistant to the idea of behavior change. Research is needed to determine which processes will best motivate precontemplators to change their assessment of their behavior, so that they become more willing to contemplate change.

People planning to quit reported that statements concerning the cons of smoking were more important to them than were statements concerning the pros of smoking. This effect has been seen in almost all studies and appears to represent a reliable difference between people in the precontemplation stage and those in the preparation stage.¹³ There were no differences, however, in the response of smokers who were and were not planning to quit on the assessment of the pros of smoking. It may be that the positive aspects of smoking are more accepted. This possibility suggests that interventions should focus on reinforcing the negative aspects of smoking. Although this study provides examples of statements that these smokers agree with **Table 4**, further work should be conducted to determine whether there are specific negative aspects of smoking that may have more relevance to people from this population (eg, health consequences rather than social consequences).

There were no clear-cut differences between people who claimed they would quit within 30 days and people who claimed they would quit within 6 months. There may not have been a strong distinction between within 1 month and within 6 months in this group, and further research may provide information as to whether the time frames currently used in the transtheoretical model represent real differences to smokers or whether cutoffs of 30 days or 6 months are arbitrary.¹⁵ It may be that the idea of quitting within the near future (within 6 months) vs not quitting is of primary importance.

A variable that may contribute to high smoking rates in this population is the number of cigarettes smoked each day. Almost half (46%) of the people who claimed that they planned to quit within the near future were still smoking more than a pack each day. Heavier smokers in this study were more tempted to smoke when they were angry or frustrated and from habit. Level of addiction (which includes amount smoked each day) is a strong predictor of quit attempts.¹⁶ Perhaps the level of addiction should be addressed separately from willingness to quit smoking within this population. Pharmacologic aids or counseling in using other strategies to decrease smoking from frustration or habit may enable smokers to act on their decision to quit smoking and make smoking cessation attempts. Further advances in smoking cessation practices that are dependent on pharmacologic agents should take into account the ability of this population to obtain these aids.

A limitation of this study is the small geographic area represented. Further work should be conducted with other groups of medically underserved smokers (more rural and more urban populations) to determine whether these results can be generalized.

Research is currently being conducted on the degree to which tailored information enhances the effectiveness of smoking cessation advice.^{10,11,32} Federal guidelines focus on distinguishing between smokers who are and are not willing to quit,⁸ and they provide suggestions for counseling. However, identifying salient characteristics of subgroups that can be used to design information to increase smoking cessation has great appeal. Examples include reinforcing the negative consequences of smoking for people in the precontemplation stage, suggesting mechanisms other than smoking to cope with stress for people in the contemplation stage, providing concrete suggestions or pharmaceutical help for people in the preparation stage, and encouragement for people in the action stage. Part of the driving force for this research is the possibility that the information can be used in a variety of formats, including computer-generated tailored messages.^{33,34} Data from this study suggest that smokers attending clinics for the medically underserved are processing information about smoking in a manner similar to that of the general population. Although there may be some differences in the specific type of information that has relevance to this group, these smokers should be able to profit from research that identifies which processes are most effective in motivating subgroups defined by their willingness to

consider quitting smoking. Smokers in this population may present with problems that require immediate and comprehensive management, but they should also be provided with preventive health care counseling.

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