A targeted approach to reducing maternal smoking

CHERYL HASLAM

SUMMARY

The Government White Paper, Smoking Kills, published in December 1998, set new and more ambitious targets for reducing maternal smoking. This is despite the fact that consecutive surveys have shown that the prevalence of maternal smoking has not changed since the 1992 targets (White Paper, The Health of the Nation). Based on current literature, including the author's own research on maternal smoking, this article argues that future research and community smoking cessation interventions should: encompass not just pregnant woman but also partners and close family members; pay particular attention to young, socially disadvantaged groups; and develop and evaluate stage-dependent antenatal smoking cessation materials (tailored to the user's level of intention to quit). By adopting these measures, researchers and primary health care professionals may finally reduce infant deaths and the numerous infant and child health problems related to maternal smoking and household tobacco exposure.

Keywords: smoking; maternity care; infant health; child health.

Introduction

SMOKING during pregnancy is a major challenge to infant and child health. Maternal smoking is associated with increased infant mortality and morbidity[1-7] and there is growing evidence that maternal smoking also has adverse effects on children's physical[8] and mental[9] development.

The 1992 White Paper, *The Health of the Nation*,[10] called for at least 33% of pregnant women to stop smoking at the start of their pregnancies by the year 2000. The Health Education Authority for England carried out seven surveys of maternal smoking between 1992 and 1997, which showed that the prevalence of maternal smoking and rates of stopping or cutting down have not changed since 1992. Around 35% of women smoke during pregnancy, around one in ten give up before becoming pregnant, and one in six give up during pregnancy,[10] which falls short of the *Health of the Nation* requirement. The recent 1998 White Paper on tobacco, *Smoking Kills*, set the target of reducing maternal smoking to 18% by the year 2005, with a fall to 15% by the year 2010.[12]

Social factors

Well established differences exist in the smoking cessation rates of pregnant women in different social class groups. While 50% of women in social class I quit smoking during pregnancy, the comparable figure for social class V is 17%.[13] Pregnant smokers tend to be unmarried and have had less education compared with non-smokers.[14] A high priority for maternal smoking research is to determine the role of social disadvantage in maintaining smoking during pregnancy. Research needs to examine the social and psychological factors that maintain maternal smoking and prevent socially disadvantaged women from quitting. Such research is essential to the development of effective interventions that take into account the needs of those who are currently most resistant to stopping smoking during pregnancy.

Several studies have shown that pregnant smokers tend to have partners who smoke and have high proportions of smokers among their families and friends.[14-16] This strongly suggests that research should focus not only on the smoking of the pregnant woman but also the smoking of partners and close family members (Recent research confirms that sudden infant death syndrome is associated with maternal smoking and household exposure to tobacco smoke.[17]). Smoking cessation interventions should target the family unit, as this will offer important support to the woman attempting to give up smoking and is particularly pertinent given the effects of passive smoking on the developing child.[18] Research should not be confined to the pregnant woman but should also focus on the dynamics between the pregnant woman's smoking and that of her partner and close family members.

Health beliefs

Haslam *et al*[14] conducted structured interviews with 200 pregnant women and found no differences in the levels of knowledge of smokers, ex-smokers, and never-smokers regarding the health risks. This suggests that smoking during pregnancy is not distinguished by ignorance of the health risks but is more a problem of translating knowledge into behaviour change. Haslam *et al* point out that awareness of the risks does not mean that the individual is convinced that these risks represent a real threat to their unborn child. A recent qualitative study[19] has revealed that pregnant smokers account for their smoking in a number of interesting ways. Pregnant smokers rationalised their continued smoking by citing previous uncomplicated pregnancies experienced by themselves and others and many perceived low birthweight as an advantage in terms of an easier labour.

Smokers may perceive antagonism between an appreciation of the health risks and a maintenance of smoking behaviour. Cognitive dissonance theory[20] states that people desire consistency between their attitudes and behaviour. Where inconsistency (dissonance) exists, the pressure for change should also exist. Dissonance, being psychologically uncomfortable, will motivate the person to reduce the dissonant state. In the case of smokers, they may: (a) change their actions, i.e. stop smoking; or (b) change their beliefs about the effects of smoking by misperceiving the information, denying the validity of it, or otherwise distorting it. The latter may be easier to achieve than behavioural change.

Some studies have shown that women who quit smoking following conception tend to have stronger beliefs in the harmful effect of smoking during pregnancy compared with women who continue to smoke.[21-23] But the evidence relating to the health beliefs of pregnant women is somewhat equivocal. Wakefield *et al*[16] found that out of four statements regarding health problems associated with the children of smokers only the statement 'children of smokers are more likely to get infections' showed a significant difference, with more quitters than smokers agreeing with the statement.

C Haslam, BSc, PhD, senior lecturer in psychology, Department of Human Sciences, Loughborough University, Leicestershire.
Submitted: 22 March 1999; Editor's response: 7 June 1999; final acceptance: 23 June 1999.

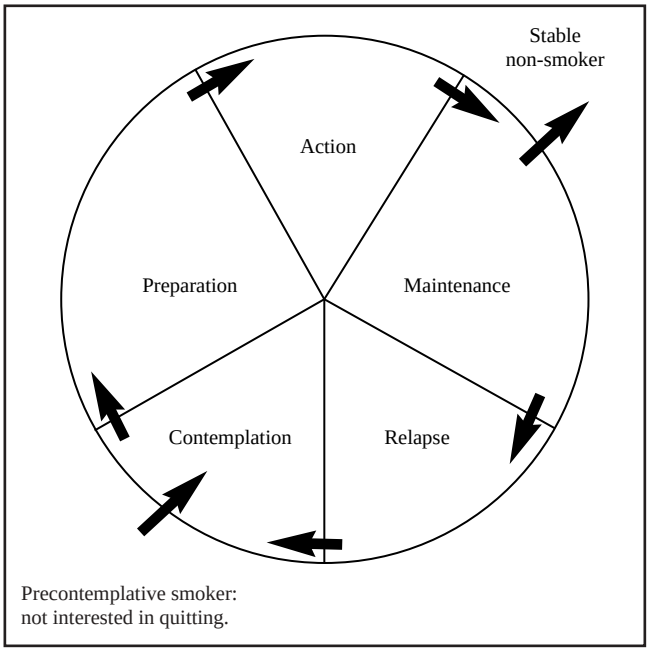

Figure 1. Stages of change.

Stages of change

In the last decade, Prochaska and DiClemente's stages of change model[24] has attracted great interest among researchers involved in the study of health-related behaviour, such as smoking. Central to the model is the notion that people who abandon health-compromising behaviour progress through predictable, well defined stages. The model assumes that behaviour change is a dynamic process involving five distinct stages. These stages are: precontemplation (not even considering changing one's behaviour), contemplation (thinking about changing), preparation (making definite plans to change), action (the individual has changed their behaviour), and maintenance (working to prevent relapse and consolidate the gains made) or relapse (Figure 1).

An individual's stage of change can be assessed by their responses to a few simple closed questions. Smokers are asked: 'Are you planning to quit smoking in the next month?' Those answering 'Yes' are assigned to the preparation stage. Those not planning to quit in the next month are asked: 'Are you planning to quit in the next six months?' and those who respond 'Yes' are allocated to the contemplation stage. Smokers who respond 'No' to both questions are considered to be in the precontemplative stage.

De Vries and Backbier,[25] in a survey conducted in The Netherlands, applied the stage of change model to study the motives of pregnant women who quit smoking or continued to smoke. They found that precontemplators had a more negative attitude towards quitting than the other groups and that those in the action stage (having quit smoking) had encountered more positive social influences for quitting.

Prochaska *et al*[26] state that a person's stage of change determines their receptiveness to different forms of health education. For example, people in the precontemplative stage are more influenced by the 'shock-horror' approach or consciousness-raising messages, whereas skills training interventions are more appropriate for those in later stages (those who have already decided to change). Proponents of this model argue that interventions need to 'place' recipients in terms of their stage and target information accordingly.

A recent study by Haslam and Draper[27,28] explored the health beliefs of pregnant women to determine if stage of change is related to risk assessment. A cross-sectional survey (employing a self-completion questionnaire) of 254 pregnant women in Leicestershire was conducted. A structured questionnaire assessed smoking stage of change and presented a series of statements about smoking during pregnancy, to which participants were asked to respond either 'strongly agree', 'agree', 'don't know', 'disagree', or 'strongly disagree'. Stage of change was related to both the number of health risks agreed with ($P<0.0001$) and the level of conviction ($P<0.001$). Women further along the cycle of change (i.e. those considering quitting and those preparing to quit) were more convinced about the dangers of smoking during pregnancy. This finding is of theoretical importance in terms of validating the stage of change model, in that acceptance of the health risks associated with maternal smoking varied according to a woman's stage of change.

These results are also of practical significance in terms of the development of effective smoking cessation interventions. The results support Prochaska *et al*'s[26] argument that smoking cessation interventions need to 'place' recipients in terms of their stage of change. Women in the precontemplative stage were less convinced of the health risks compared with women in the contemplative, preparation, and action stages. This suggests that those in the precontemplative stage require 'shock-horror' or consciousness-raising health information to convince them of the known health risks. Those in the contemplative and preparation stages showed a higher level of conviction regarding the health risks, so rather than information about the health risks, these women would benefit from skills training interventions. When a pregnant woman has already concluded that smoking is harmful to the health of her unborn child she then needs practical advice on how to quit smoking in order to move from the preparation stage to the action stage (quitting smoking).

The stage of change model of health-related behaviour has intuitive appeal but has recently been criticised on a number of counts. The algorithm used to classify smokers into contemplation and preparation has been described as arbitrary.[29] The model may impose artificial categorisation on what may be a continuous process and may be a more prescriptive model of ideal change than descriptive.[30] However, the present author believes that the stage of change model has several important strengths in terms of its potential application to community health. The model provides clear explanation of change in smoking and other health-related behaviour. Moreover, the model takes full account of the dynamic nature of attitude and behaviour change. Very importantly in terms of community health initiatives, the model is simple to apply, as a woman's stage of change can be easily assessed by asking a few simple closed questions. Finally, the model has emphasised the importance of acknowledging people's intentions when designing, implementing, and evaluating health interventions.

In developing and evaluating new antenatal smoking cessation materials for general practice settings (leaflets, audio and video tape, or even interactive, computerised multi-media systems), researchers need to prepare different materials for recipients in different stages of change. Graphic health education messages about the harm that maternal smoking causes to the fetus, infant, and child are required to move precontemplative women to the contemplative stage. Women in the contemplative and preparation stages require practical advice to help them move to the action stage. Antenatal smoking cessation leaflets currently available vary to some extent in terms of their emphasis but there is clearly scope to develop specific materials suitable for the different stages of change.

Stage-specific smoking cessation materials could be tailored to family units. When a pregnant woman commences antenatal care, her stage of change and that of her partner could be assessed and appropriate health information directed to both parties. If the pregnant woman and her partner were at different stages of change this would not present a problem for primary health care professionals if a range of stage-specific smoking cessation materials were available. Such a stage-dependent, family unit approach would reduce maternal smoking and household exposure to tobacco.

An important advantage of the stage of change model is the relative ease with which individuals can be categorised into stages. General practitioners or community midwives could easily ascertain the stage of change of pregnant women and their partners at the start of antenatal care and, where available, offer appropriate health information. Adopting a targeted health care approach in combination with wider initiatives in the community (health education in schools, media coverage, bans on cigarette advertising, and taxation) should reduce infant deaths and tobacco -related infant and child health problems.

Conclusion

Smoking among pregnant women, their partners, and close family members represents an important challenge to public health. By focusing on the family unit, paying particular attention to young, socially disadvantaged groups, and adopting a stage-specific approach, researchers and primary health care practitioners can contribute towards achieving the targets for reducing maternal smoking and make a real impact on this major cause of mortality and morbidity.

References

1. Able EL. Smoking and pregnancy. *J Psychoactive Drugs* 1984; **16:** 327-338.
2. Cnattingius S, Haglund B, Meirik O. Cigarette smoking as a risk factor for late fetal and early neonatal death. *BMJ* 1988; **297:** 258-261.
3. Kleinman JC, Pierre MB, Madans JH, *et al*. The effects of maternal smoking on fetal and infant mortality. *Am J Epidemiol* 1988; **127:** 46-55.
4. Malloy MH, Kleinman JC, Land GH, Schramm WF. The association of maternal smoking with age and cause of infant death. *Am J Epidemiol* 1988; **128:** 45-55.
5. Brooke OG, Anderson HR, Bland JM, *et al*. Effects on birth weight of smoking, alcohol, caffeine, socioeconomic factors and psychosocial stress. *BMJ* 1989; **298:** 795-801.
6. Lumley J, Astbury J. Advice for pregnancy. In: Chalmers I, Enkin MW, Keirse MJNC (eds). *Effective Care in Pregnancy and Childbirth*. [Volume 1.] London: Open University Press, 1989.
7. Brown HL, Watkins K, Hiett K. The impact of Women, Infants and Children Food Supplement Programme on birth outcome. *Am J Obstet Gynecol* 1996; **174:** 1279-1283.
8. Goldstein H. Factors influencing the height of seven-year-old children - results from the National Child Development Study. *Hum Biol* 1971; **43:** 92-111.
9. Olds DL, Henderson CR, Tatelbaum R. Intellectual impairment in children of women who smoke cigarettes. *Pediatrics* 1994; **93:** 221-227.
10. Department of Health. *The Health of the Nation. A Strategy for Health in England*. London: HMSO, 1992.
11. Owen L, McNeill A, Callum C. Trends in smoking during pregnancy in England, 1992-7: quota sampling surveys. *BMJ* 1998; **317:** 728-730.
12. Department of Health. *Smoking Kills*. [A White Paper on Tobacco. Presented to Parliament by the Secretaries of State for Health, December 1998.] London: The Stationery Office, 1998.
13. Office of Population, Census and Surveys. *Infant feeding 1990*. London: HMSO, 1992.
14. Haslam C, Draper ES, Goyder E. The pregnant smoker: a preliminary investigation of the social and psychological influences. *J Public Health Med* 1997; **19:** 187-192.
15. Quinn VP, Dolan Mullen P, Ershoff DH. Women who stop smoking spontaneously prior to prenatal care and predictions of relapse before delivery. *Addict Behav* 1991; **16:** 29-40.
16. Wakefield M, Gillies P, Graham H, *et al*. Characteristics associated with smoking cessation during pregnancy among working class women. *Addiction* 1993; **88:** 1423-1430.
17. Blair PS, Fleming PJ, Bensley D, *et al*. Smoking and the sudden infant death syndrome: results from 1993-5 case-control study for confidential inquiry into stillbirths and deaths in infancy. *BMJ* 1996; **313:** 195-198.
18. Ehrlich R, Kattan M, Godbold J. Childhood asthma and passive smoking: urinary cotinine as a biomarker of exposure. *Am Rev Respir Dis* 1992; **145:** 594-599.
19. Haslam C, Draper ES. An in-depth study of smoking during pregnancy. Submitted to *Psychology, Health and Medicine*.
20. Festinger L. *A Theory of Cognitive Dissonance*. Evanston, IL: Row & Peterson, 1957.
21. Quinn VP, Mullen PD, Ershoff DH. Women who stop smoking spontaneously prior to prenatal care and predictors of relapse before delivery. *Addict Behav* 1991; **16:** 29-40.
22. Wakefield MA, Jones WR. Cognitive and social influences on smoking behaviour during pregnancy. *Aust N Z J Obstet Gynaecol* 1991; **31:** 235-239.
23. Stacy RD, Greer DL, Haas S, Hellbusch J. Beliefs of pregnant women about smoking and maternal and infant health. *Health Values* 1994; **18:** 13-18.
24. Prochaska JO, DiClemente CC. Transtheoretical therapy: toward a more integrative model of change. *Psychother Theory Res Pract* 1982; **19:** 276-288.
25. De Vries H, Backbier E. Self-efficacy as an important determinant of quitting among pregnant women who smoke: The Ø-Pattern. *Prev Med* 1994; **23:** 167-174.
26. Prochaska JO, Norcross JC, DiClemente CC. *Changing for good*. New York: William Morrow & Co. Inc, 1994.
27. Haslam C, Draper ES. Stage of change in relation to smoking is associated with assessment of the health risks of maternal smoking among pregnant women. *Soc Sci Med*. In press.
28. Haslam C, Draper ES. Stage of change is associated with assessment of the health risks of maternal smoking among pregnant women. British Psychological Society, Health Psychology Conference, University of Bangor, July 1-3, 1998. *Proceedings of the British Psychological Society* 1999; **8(1):** 23.
29. Sutton S. Further support for the stages of change model? *Addiction* 1996; **91:** 1287-1289.
30. Sutton S. Can 'stages of change' provide guidance in the treatment of addictions? A critical examination of Prochaska and DiClemente's model. In: Edwards G, Dare C (eds). *Psychotherapy, Psychological Treatments and the Addictions*. Cambridge: Cambridge University Press, 1996.

Address for correspondence

Dr Cheryl Haslam, Department of Human Sciences, Loughborough University, Loughborough, Leicestershire LE11 3TU. E-mail: C.O.Haslam@lboro.ac.uk