Improving the health and wellbeing of parents and children during the perinatal period: an introduction to behaviour change interventions

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Changing behaviour
This is the first in a series of occasional articles looking at the effectiveness of educational and support interventions during the perinatal period aimed at improving health and wellbeing for parents and their children. As an introduction to this topic, this article considers:

- Concepts and theories related to explaining and changing behaviour
- Recent studies and evidence-based guidance in this area
- Implications for maternity services, health professionals and NCT practitioners

Background
Pregnancy is a time when mothers and babies use the health service regularly for several months and when women and their partners are often highly motivated to address issues affecting their health in order to give their baby a good start in life. As well as the chance to improve the outcome of the pregnancy, it has often also been targeted as a time when the long-term health and wellbeing of the baby and others in the family can be influenced, particularly for the most vulnerable or disadvantaged families where the benefits are likely to be greatest.

Opportunities to intervene by providing support to change health-related behaviours arise when the woman and her partner attend antenatal care. Antenatal education may also provide an opportunity for improving the health and wellbeing of women, their partners and their babies. The usual timing of antenatal classes is late in pregnancy and, with the emphasis on preparing for labour and babycare, may mean that opportunities for promoting health improvement are limited. Attention could, therefore, usefully be given to what kinds of discussion, information, support or signposting are likely to be most beneficial and what might be a waste of time or even harmful.

This article aims to provide some general evidence-based information about changing health-related behaviours. It is not a systematic review, but instead sets out key terms, concepts and theories related to explaining and changing behaviours that contribute to health, and summarises findings from some key reviews of evidence and recent guidance about generic approaches to changing health-related behaviours. This article frames and underpins future articles about improving the physical and mental health and wellbeing of parents and their children during the perinatal period.

Method
Although this is not a systematic review, key sources of information were searched to identify relevant documents:

- Clinical Evidence (BMJ Publishing Group)
- Cochrane Database of Systematic Reviews
- MEDLINE searched via PUBMED
- NHS Evidence
- Turning Research into Practice (TRIP database)
- Website of the National Institute for Health and Clinical Excellence (NICE)
- Website of the Department of Health

Search terms used were Behav$ and Chang$ ($ denotes truncated terms) combined with AND. If the number of titles returned was too great to look through, filters were used, where available, to refine the search, for example restricting returned publications to reviews or guidelines. This restriction was used because this overview aims to summarise findings from key reviews of evidence and recent guidance in this area. Documents were retrieved if they explained theories and concepts related to changing health-related behaviour or if they made generic recommendations about how best to

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**Figure 1: An example of a socio-ecological model: Dahlgren’s and Whitehead’s 1991 model of the main determinants of health.**

Models and theories about health-related behaviours

There are many models that aim to understand and explain behaviours that contribute to health and wellbeing. There are also many theories on how behaviours change over time and can be changed. A report aimed at government social researchers provided a descriptive account of over 60 models of behaviour and theories related to behaviour change. These theories and models have been developed by people from different disciplines and they therefore approach the explanation of behaviours that contribute to health from different ideological positions.

Socio-ecological models

Some models that aim to explain health and behaviours that contribute to health were designed from a public health or population viewpoint. These so-called socio-ecological models emerged during the 1990s. They explicitly set out the role of external factors in determining health, including socioeconomic factors, cultural and environmental conditions, living and working conditions, and other social and community factors (figure 1).

They highlight that many factors outside the control of the individual have a major impact on health: they may directly affect health or affect individual behaviours that impact on health. Such behaviours are, therefore, not necessarily a free choice and may not be easily or directly amenable to change by an individual. Although it is important and necessary for practitioners to provide support with regard to changing behaviour, it is useful to recognise that external conditions make change difficult for many families.

An example of such a model is the theory of reasoned action, which states that attitudes and social norms combine to form behavioural intentions. The theory of planned behaviour takes this further by adding in the concept of behaviour control, which is composed of external influences inhibiting or facilitating an action and the individual’s self-efficacy or confidence in performing a behaviour.

An example of a model of individual behaviour specifically related to health and wellbeing is the health belief model (figure 2). This states that whether an individual carries out an action to reduce a threat to their health depends on:

- The perceived threat (composed of the individual’s evaluation of the risk of the condition and its consequences)
- Their expectations of carrying out the action (composed of the individual’s evaluation of the benefits of and barriers to carrying out the action and their confidence or self-efficacy carrying it out). This is all also influenced by sociodemographic factors, such as education and age, and cues to action, such as advertising or prompts from family members.

Behavioural models can help practitioners to explain and understand the complex interaction of factors that influence people’s particular behaviours. There are, however, several criticisms of such models that should be taken into account including:

- They have usually been developed in specific contexts with specific behaviours in mind and may not transfer well to other behaviours or contexts.
- They oversimplify or cannot fully explain very complex issues.
- They do not divide the population sufficiently to take account of different factors having different weights with different groups of people.
- They do not give sufficient weight to the impact of external factors that are beyond an individual’s control.
- They describe factors that influence behaviour but do not consider the process of how behaviour changes and is changed.

Models that attempt to explain how behaviours change and can be changed

Following on from the criticism that it is not sufficient to simply describe factors that influence behaviour, there are theories about how behaviours change over time and can be changed. There are several types of models based on these theories, for example diffusion models (which show how behaviours diffuse through a society) or learning-based models (where change is considered in terms of learning new behaviour patterns). The type of

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**Figure 2: The health belief model**

![Diagram of the health belief model](Image)

model that is most widely applied to behaviour change among individuals in healthcare settings is stage-based, describing change as progress through a series of stages.\(^1\)

The best-known stage-based model is Prochaska and Di Clemente's trans-theoretical or stages-of-change model.\(^1\) The model describes behaviour change as comprising six stages with people progressing through:

- Pre-contemplation
- Contemplation
- Preparation
- Action
- Maintenance
- Termination

The model is represented as cyclical [figure 3].\(^1\) The cycle shows individuals moving out when they have changed and cope with high-risk situations, but it also allows for relapse back to the initial stages.

Broadly speaking, all stage-based models theorise that one intervention does not suit everyone at all times because the barriers that are encountered are different at different stages.\(^3\) An intervention will therefore be most effective when it is adapted to an individual's stage in the progression.\(^6\) Smoking is often used to illustrate how interventions may need to be adapted to an individual's stage-of-change. For example, 56 focus groups were conducted across seven countries, including the UK, to explore European smokers’ responses to messages on cigarette packs.\(^7\) Messages about the long-term health effects of smoking were found to be more salient to smokers in the contemplation stage because they were more willing to personalise those messages. In contrast, smokers in the pre-contemplation stage made no attempt to personalise health messages. Instead, they adopted a defensive stance to such messages, dismissing them as distant or unlikely.

Although it has been frequently used, there have been several criticisms of the stages-of-change model. The success of interventions based on the model depend on being able to make an accurate assessment of the stage an individual is at, but this can be very difficult because the stages are necessarily shorthand constructs of complex realities.\(^6\) The applicability of the model to adjusting the level of an activity rather than aiming for total abstinence, for example consuming fewer calories, has also been questioned.\(^1\) Finally, some critics have questioned whether such a model is appropriate at all, suggesting that an intervention at any stage can be successful and that the pressure to change should be applied according to what individuals can tolerate rather than their stage in a process of change.\(^1\) This final point seems particularly relevant for practitioners who are considering intervening within a specific time-limited period, such as pregnancy or early childhood.

**What is the evidence?**

This section examines reviews of evidence that considered whether any theory or model was effective at explaining or promoting health-related behaviour change across a range of situations, that is whether any model or theory could be generically recommended to assist with behaviour change or designing behaviour change interventions. Reviews are considered in the order that they were published.

The stage-based model of behaviour change is one approach that has been examined in a number of scientific studies. In 2002, a Health Technology Assessment review asked ‘How effective are interventions using a stage-based approach in bringing about positive changes in health-related behaviour?’\(^5\) Thirty seven randomised controlled trials were included in the review, addressing a variety of behaviours, most commonly (n=13) smoking cessation followed by the promotion of physical activity (n=7). Twenty of the 37 trials compared stage-based and non-stage-based interventions and 23 compared stage-based interventions with no intervention or usual care (some compared more than two groups). The results favoured the stage-based intervention in only ten of the 37 trials. The methodological quality of the trials was very mixed, but there did not seem to be any relationship between quality and the effectiveness of the intervention. The authors concluded that there was little evidence to suggest that stage-based interventions were generally more effective than the alternative approaches used in the comparison. Interestingly, studies including participants of low socioeconomic status were least likely to report effects, although there were no specific conclusions or recommendations related to this.

In 2006, a review-of-reviews was undertaken on behalf of NICE with a view to developing guidance on the most appropriate generic and specific interventions to support behaviour change.\(^5\) One of the aims was to assess how effective the health belief model, the theory of reasoned action, the theory of planned behaviour and the stages-of-change or trans-theoretical model were at predicting health-related behaviour change.\(^5\) Based on the evidence available (from 25 meta-analyses or systematic reviews), the authors concluded that the individual models of behaviour could predict a substantial degree of the observed variance in health behaviours in adult populations. The predictive power of the theory of planned behaviour was greatest, followed by the theory of reasoned action, and the health belief model was the weakest predictor of health behaviour. The available evidence suggested that, in countries like the UK, the theory of planned behaviour could account for 20-30% of the variance in reported adult health behaviour, for example explaining 29% of the variance in physical activity in one review.\(^9\)

Even though a model may explain differences in behaviour, it may not be useful when

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**Figure 3: Prochaska and Di Clemente’s trans-theoretical (or stages-of-change) model of behaviour change.**

intervening to change behaviour. The theory of planned behaviour had not often been used to design interventions at the time of the review, but effect sizes were small where this had been done.\(^9\) Even stages-of-change-based interventions, despite their focus on the process of change, were found to be no more likely to be effective in achieving change than other interventions.

The authors of the review also reflected that none of the models were set out in such a way that external social, economic or environmental factors would necessarily be taken into account or even recorded when researching behaviour change. As a result of this omission, they felt that important structural determinants of behaviour might be ignored. This, in turn, might increase inequalities by focusing attention on people from more advantaged groups who are better placed to change their attitudes and beliefs, factors which are central to these models.

Also in 2006, another review of reviews was carried out to evaluate the most effective intervention to change knowledge, attitudes and health behaviours.\(^9\) The focus this time was on what works for different behaviours, for example smoking or drinking alcohol, but the authors also considered whether some interventions were effective across a range of health behaviours and the effectiveness of the different models and approaches used in those interventions. Overall, 92 reviews were included and most were high quality (90 met 6 or more of 12 quality criteria).

For individuals, the authors found that:

- Physician advice or counselling was effective for smoking cessation, reducing alcohol consumption and promoting healthy eating.
- Counselling interventions appeared to be effective in smoking cessation and reducing alcohol consumption.
- Referencing the 2002 Health Technology Assessment review, stage-based approaches were generally no more effective than alternative approaches for smoking cessation or promoting physical activity.

The authors also considered the impact of interventions on particular groups of people, including pregnant women. They concluded that interventions aimed at pregnant women showed some evidence of effectiveness, lending support to the idea of pregnancy being a ‘teachable moment’. For example, they found good quality evidence that a wide range of intervention types helped pregnant women to reduce or stop smoking,\(^9\) and there was also good quality evidence that interventions with an educational and counselling component were effective in promoting pregnant women’s knowledge of a healthy diet\(^10\) (although improved knowledge does not necessarily translate into behaviour change). Subsequent articles in this series will describe in more depth those interventions that have been found to be effective at improving the health and wellbeing of parents and their children during the perinatal period.

What is the current guidance?

In 2007, based in part on the two reviews of reviews published in 2006, NICE published guidance on behaviour change at population, individual and community levels.\(^11\) They highlighted the inconsistent research evidence evaluating the relevance and use of individual models of health behaviour and behaviour change, for example poor study designs and studies that failed to take account of all confounding factors. Having considered the most commonly used models, the NICE Programme Development Group concluded that the available evidence did not support any one particular model. For this reason, rather than recommending specific models or types of interventions, NICE recommended that professionals delivering behaviour change interventions should be trained to:

- Critically evaluate evidence for different approaches to behaviour change.
- Design valid and reliable interventions that take account of the social, environmental and economic context of behaviours.
- Identify and use clear and appropriate outcomes measures to assess changes in behaviour.
- Employ a range of methods and approaches, according to the best available evidence.

In terms of planning behaviour change interventions and programmes, the NICE guidance recommended that policy makers, commissioners, service providers and practitioners should work with individuals, communities, organisations and populations.\(^13\) The resulting plan should:

- Include an assessment of the needs or knowledge of the target audience.
- Take account of the circumstances in which people live.
- Involve the target group in development, evaluation and implementation.
- Set out which behaviours are to be targeted and why.
- Clearly justify any models used.
- Assess potential barriers to change.
- Describe the intervention that will be used.
- Include provision and clear plans for evaluation.

At an individual level, NICE recommended that commissioners, service providers and practitioners working with individuals should select interventions that motivate and support people to:\(^12:\)

- Understand the consequences of their health-related behaviours for themselves and others.
- Feel positive about the benefits of changing their behaviour.
- Plan changes in easy steps.
- Recognise how relationships and social context affect behaviour and plan for situations that might undermine changes.
- Plan explicit ‘if-then’ coping strategies to prevent relapse.
- Make a personal commitment to change by setting clear goals and sharing those goals with others.

Similar to the concept of a teachable moment, the NICE guidance highlighted that significant events or transition points in people’s lives, such as becoming a parent, present an important opportunity for intervening because it is then that people
review their own behaviour and contact services. The guidance recommended, therefore, prioritising interventions and programmes that intervene at key life stages or times when people are more likely to be open to change, such as pregnancy.

Conclusions
This paper has described key concepts and theories used to understand and explain health-related behaviour and behaviour change before summarising recent reviews of evidence and evidence-based guidance in this area.

There are many models that were developed from a psychological standpoint that aim to understand behaviour and how it changes and can be changed. Such models can help practitioners to think about personal factors that may influence behaviour and how individuals view change, but the available evidence does not support the general use of any single model or theory when designing interventions to change health-related behaviours.

Instead, NICE recommends that practitioners develop the skills to critically evaluate the evidence for different approaches to behaviour change and use a range of methods and approaches according to the best available evidence for any given circumstances. Higher education course leaders, service commissioners and managers will need to ensure that practitioners are given the time and opportunity to acquire and use such skills. NICE does, however, make some practical recommendations about how best to motivate and support people to change and practitioners should make use of those strategies.

The transition to parenthood is considered to be a ‘teachable moment’, a key opportunity to intervene to change health-related behaviours when women and their partners have enhanced motivation to behave differently. To assist practitioners, future articles in this series will consider in more depth the evidence and guidance about working with parents during the perinatal period to change behaviours that affect physical or mental health and wellbeing to determine whether any recommendations can be made about the use of specific interventions for behaviours among particular groups of women.

Finally, it is important for practitioners to understand that change may be difficult for many people because circumstances beyond their control contribute to health-related behaviours and affect their ability to make changes. Further articles in this series will examine how best practitioners can support parents to make changes during the perinatal period, even in difficult circumstances.

References
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