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The Southampton Initiative for Health: a complex intervention to improve the diets and increase the physical activity levels of women and children from disadvantaged communities

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Abstract

The 'Southampton Initiative for Health' (SIH) is a training intervention with Sure Start Children's Centre staff designed to improve the diets and physical activity levels of women of child-bearing age. Training aims to help staff to support women in making changes to their lifestyles by improving three skills: reflection on current practice; asking 'open discovery' questions; and goal setting. The impact of the training on staff practice is being assessed. A before and after non-randomised controlled trial is being used to evaluate the effectiveness and cost-effectiveness of the intervention in improving women's diets and increasing their physical activity levels.

Keywords

diet; physical activity; reflexive practice; goal setting; self-efficacy; intervention, disadvantage

Introduction

Background to the intervention

Findings from the Southampton Women's Survey (SWS) have shown that women who are disadvantaged by leaving school with few or no educational qualifications have less varied and balanced diets than women with qualifications (Robinson et al. 2004). The SWS has also demonstrated a link between the quality of mother's diet and the diets of their children: those with the least healthy diets were found to be less likely to follow guidance on optimal patterns of infant feeding (Robinson et al. 2007). Data from the SWS have shown that women living in disadvantaged areas of Southampton are less likely to take part in regular strenuous exercise that would be beneficial to their health (http://www.southamptonhealth.nhs.uk/publichealth/briefings/).

Focus groups and surveys carried out with women from Southampton have shown that those who have the poorest quality diets feel they lack control over food choices they make for themselves and their families, feel less positive about the potential benefits of eating healthily, are less interested in food shopping, preparation and consumption, and have less social support for eating healthily than women with better quality diets (Barker et al. 2008;Lawrence et al. 2009). A general sense of control over life appears to be a particular determinant of the quality of diet of women who have lower levels of educational attainment

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– a marker of disadvantage (Barker et al. 2009), which suggests that interventions to improve sense of control in this population could have significant effects on their diet.

A recent King's Fund systematic review examined the content and effectiveness of interventions targeted at changing health behaviours, including diet and physical activity, in low-income groups (Michie et al. 2009). The review highlighted the lack of good quality research in this area. Based on the studies identified in the review, authors concluded that providing information on health behaviours, together with goal setting may be effective in changing health behaviour in low-income groups. Consistent with these findings, a review of existing systematic reviews carried out to inform the development of the intervention described in this paper, suggested that providing information on the risks and benefits of particular health behaviours is most likely to be effective, particularly if continued support is provided after the initial intervention (Baird et al. 2009).

The intervention outlined in this paper is designed to address this gap in behaviour change intervention research in disadvantaged women. It focuses on staff training to ensure sustainability, and with this in mind, has been developed in close collaboration with Southampton City PCT and City Council.

Theoretical underpinning

The notion of control and its role in determining the quality of women's diets is suggestive of the role self-efficacy plays in Bandura's social cognitive theory of the socio-environmental and personal determinants of health (Bandura 1986;Bandura 1998). Self-efficacy is a central construct in this theory, and describes an individual's belief that he or she is capable of carrying out a specific behaviour, which implies that he or she also has the knowledge and skills to do so. In this case, it would describe a woman's belief that she was able to feed herself and her family a healthy diet, based on her knowledge of healthy eating and her confidence and skill in preparing healthy food. Interventions that increase self-efficacy have been shown to lead to increases in fruit and vegetable consumption (Steptoe et al. 2004). Higher levels of self-efficacy have been found to predict women's ability to increase their levels of physical activity (Luszcznska & Haynes 2009). Bandura suggests that a strong sense of self-efficacy is required for someone to exercise control (Bandura 1998), and that individuals only feel in control of a situation if they believe they have the ability to carry out the action required of them. In this analysis, self-efficacy is a prerequisite for a sense of control, and experience of exercising control in turn builds up a sense of self-efficacy (Bandura 1995). It is this increase in self-efficacy and control which enables people to make changes to their lives. This is the premise on which the intervention described in this paper is based.

Patients as experts

Building self-efficacy and giving control over their condition back to patients are the primary aims of the Department of Health's Expert Patient Programme. This is a self-management intervention programme intended to provide knowledge and skills to empower patients to manage their own conditions. In the Expert Patient Programme, patients become key decision-makers in the treatment process and gain control over their lives through improved confidence, resourcefulness and self-efficacy (Department of Health 2001). . Evaluation of this type of disease self-management programs has shown them to be more effective than standard patient education in improving clinical outcomes and enhancing physical and psychological well-being in chronic conditions such as arthritis and asthma (Bodenheimer et al. 2002). Lorig and others conclude that such programmes are effective because they increase patients' self-efficacy (Abraham & Gardner 2009;Lorig & Holman 2003).

Groupwork and empowerment

This work on self-management suggests that empowering patients to take control of their condition is key to improving outcomes. It has been suggested that the process of empowerment demands a very different style of group work than the process of education which it is replacing (Anderson & Funnell 2005). Fundamental to this new approach is acceptance that communicating information about an issue and the benefits of change may be part of an effective intervention but are not enough on their own to change behaviour. If patients have information needs, then they have to be encouraged to identify these themselves. To empower them patients to manage their own illness and solve their own problems they need to be supported in defining and achieving their own goals rather than those of the professional. In practice, this means encouraging patients to reflect, problem-solve and set goals, and to use the group for support and encouragement. The success of this type of group work is reflected in changes in self-management behaviour of newly diagnosed diabetics, including improved quality of diet, and in reductions in body mass and total cholesterol (Arundel et al. 2003).

The intervention

The skills of reflection, problem solving and goal setting, key to this approach, are all recognised behaviour change techniques known to encourage self-efficacy (Michie et al. 2008). Embedding training in these skills has been shown to be successful in improving health behaviours of people with chronic disease. Our intervention is based on an acceptance that knowledge is not sufficient to change behaviour. It takes the empowerment model used in programmes that encourage the self-management of chronic conditions and applies it to a non-clinical population. These programmes have shown that acknowledging people as ‘experts’ in their own lives and supporting them to come up with solutions to their own problems significantly improves outcomes, though until now this has only been demonstrated in the management of clinical conditions. Our intervention applies this approach to a healthy population and is designed to improve disadvantaged young women’s sense of self-efficacy and control, both general and specific to health behaviours, and will do this by increasing the self-efficacy and behaviour change skills of staff who work with these women.

Existing programmes in Southampton

The majority of activities aimed at improving the diets and physical activity levels of young women living in disadvantaged areas of Southampton are delivered by Sure Start Children’s Centres. Sure Start Children’s Centres (formally Sure Start Local Programmes) provide a range of support services to families from disadvantaged and low-income populations, with the express purpose of enhancing the health and development of children under five years, and so preventing the transmission of inequalities in health, poverty and social exclusion (Belsky et al. 2006). There are 14 such Centres in Southampton with the ‘core’ centres located in the most disadvantaged parts of the city identified as priority areas for intervention. These areas hosted the earliest and largest purpose-built Children’s Centres in Southampton.

Mapping and observation of activities being delivered by Sure Start staff, found examples of approaches that research suggests might be effective in changing health behaviours (unpublished data). However, few of these activities were being evaluated and it was clear that many opportunities to address issues with diet and physical activity were being missed. We used an existing taxonomy of behaviour change techniques to classify what was already being done during these activities to support women change their diet and physical activity behaviour (Abraham & Michie 2008). Though staff appeared to be highly motivated and skilled at engaging the women, we found them to be largely unaware of what might be most

effective in bringing about behaviour change and there was rarely discussion of current healthy eating or exercise recommendations. As a consequence, the observers concluded that (1) there was potential to introduce Sure Start Children's Centre staff to a range of techniques proven to be effective in motivating, encouraging and sustaining positive behaviour change; (2) they could benefit from learning strategies for discussing and problem-solving on issues to do with following healthy eating and exercise recommendations; and (3) encouraging staff to reflect on what is being delivered, why and how it might make a difference would be a useful starting point.

These observations on current practice within Children's Centres, evidence of the barriers to health behaviour change among women in the intervention areas, and the views of Primary Care Trust and Children's Centre staff, form the basis for our training intervention.

Disadvantaged women in Southampton

Southampton is a relatively deprived city in the affluent south of the country. It is one of the top 100 most deprived local authorities in England. We have developed strong links with the City Council and the Primary Care Trust and close collaboration with those working in Children's Centres in Southampton. It is fair to say that without this level of engagement, it would have been impossible to mount the intervention.

The target population for the intervention we describe here is women who attend the 14 Sure Start Children's Centres in the city of Southampton. Local Sure Start data suggest that 70% of the city's children under the age of five are registered with a Children's Centre. These children tend to come from families living in the 'core areas' defined by their poor health profile as being priority areas for intervention (Wilkinson & Inskip 2006). Little is known about the 30% of children not registered. However, this group is likely to include some of the least advantaged children in the city, commonly described as the 'hardest-to-reach' because they come from families and communities who do not as a rule access services . There is anecdotal evidence that the activities of Sure Start in Southampton have shrunk the hard-to-reach population, through a successful programme of outreach into these communities. The fact remains that engaging disadvantaged communities in interventions is difficult (Parliamentary Office of Science and Technology, 2007) and that Sure Start Children's Centres successes come on the back of years spent building relationships in local communities. For this reason, they represent an ideal way for us to access and influence our target population, despite possible biases in the nature of the group attending. As our observation of Sure Start Children's Centre activities revealed, many of the staff have frequent contact with women from our target population, and these contacts represent opportunities to have interactions that might initiate a process of behaviour change. These interactions could be made more effective if staff had more skills at their disposal. As a consequence, it was decided to mount a training intervention to improve the behaviour change skills of staff working in Sure Start Children's Centres, with the intention of improving the diets and physical activity levels of disadvantaged women in Southampton.

'Healthy conversation skills' training

The intervention is to train Children's Centre staff in skills that will enable them to hold effective 'healthy conversations' with women attending Children's Centres and thus improve the self-efficacy and perceived control of both staff and women. These conversations are intended to explore barriers to, and opportunities for, eating healthily and being physically active. The first phase of the training intervention is nine hours of discussion and reflection in three sessions each lasting three hours and spread over five weeks. The aim of the training is for staff to achieve the "Healthy Conversation Skills" competencies described in Table 1. These competencies are designed to reflect the trainees'

development of three core skills: reflective practice, asking ‘open discovery’ questions, and goal setting.

We provide a range of activities to encourage reflection. Participants are asked to explore their expectations of the training course, their beliefs about aspects of human behaviour such as how and when people change, their understanding of key nutrition and physical activity messages and whether these are useful in supporting change. Opportunities are provided throughout all the sessions for participants to reflect on the training, new learning and their use of new skills in between the sessions.

All activities, including those encouraging reflection, require the facilitators to model the use of ‘open discovery’ questions. Open discovery questions are specific types of open questions that explore an individual’s life and circumstances, and are asked in order to support change. These questions normally begin with ‘how’ or ‘what’, are non-judgemental, and require the recipient to reflect on their issue of concern. As well as modelling their use, participants are given the opportunity to observe them being used and practise using them in small groups.

At the end of every session, participants are asked to complete a “Reflection and Next Steps” sheet, which guides them through setting a SMARTER goal for review at the next session. SMARTER goals are Specific, Measurable, Action-oriented, Realistic, Timed, Evaluated and Reviewed. Making a specific plan to change a given behaviour, and allowing time to reflect on the outcome and processes involved in making such a change, enables participants to understand about the process of planning and change.

Training is delivered by a team of psychologists and health practitioners experienced in group work and behaviour change. Each session is led by two facilitators and includes a range of activities. Groups consist of four to twelve participants, and dependent on the size of the group, different activities are undertaken by the whole group, in two groups, in groups of three to four, and in pairs. A detailed account of the background and content of the training, and the evaluation tools are given in the training manual and participants’ workbook.[1] Outlines of the content of each of the three training sessions are provided in Table 2. Facilitators abide by three guiding principles:

- Modelling – using the skills they want to see in others
- Exploring – finding out about another person’s world view, being genuinely curious
- Empowerment – believing in the ability of others to come up with their own solutions.

Abraham & Michie’s Behaviour Change Taxonomy was used by the training team to identify the different techniques used to influence “Healthy Conversation Skills” competencies (Abraham & Michie 2008). Table 2 indicates how the behaviour change techniques (BCTs) classified and described in the taxonomy relate to the activities undertaken during the training sessions. For example, in using the “Reflection & Next Step” sheets in their workbooks, participants make a plan for change between sessions, which is reviewed at the start of the next session. This process involves the following behaviour change techniques: prompt intention formation, prompt barrier identification, prompt specific goal setting, prompt review of behavioural goals, prompt self-monitoring of behaviour, provide feedback on performance, agree on behavioural contract, prompt practice, provide opportunities for social comparison, plan social support/social change. In

[1]The training manual and particpant workbook are available from the authors on request.

exploring what resources or support participants need now to ensure new skills become embedded in their usual practice, the following BCTs are used: prompt intention formation, prompt barrier identification, prompt practice, plan social support/social change, prompt identification as role model, relapse prevention, and time management. This approach has the potential to increase participants' skills in all five of the competencies.

Some behaviour change techniques were not appropriate to use in this intervention because they do not fit with the non-didactic ethos of this intervention. For instance, some information is provided in the participant workbook on the link between behaviour and health (BCT 1) and on the consequences of changing health behaviours (BCT 2). However, during the sessions facilitators seek to explore participants' own beliefs and understanding about these issues rather than merely providing information.

The three training sessions are followed by a follow-up telephone call approximately one month after session three, a follow-up workshop of three hours approximately three months after session three, and another phone call a month after the follow-up workshop. Follow-up phone calls are made to each training participant at pre-arranged times using a standard protocol and are digitally recorded. Participants are asked to recall an example of a conversation they have had, telling the story of the scenario. The facilitator has a range of prompts that can be used if required. The purpose of the follow-up phone calls is two-fold. Firstly, they support the implementation of new skills into practice. Talking about the skills they learnt, opportunities to use them, and thinking about how to get round any barriers to using them helps embed new practice and encourages participants to use the skills at every opportunity. The second purpose of the follow-up phone calls is to enable the collection of evaluation data about changes people have made to their conversations with women attending Sure Start facilities since the training. The purpose of the follow-up workshop is to enable participants to reflect on the training and if and how their practice has changed in the intervening time. They are introduced to the idea of peer observation and feedback as a method of sustaining and improving use of the new skills for both observer and observed. The use of peer observation and feedback is based on four beliefs:

1. that workers need to practise new skills to develop them;
2. that observation by others can help a person think about what they do, and what they could do differently;
3. that it helps both the person being observed and the observer to think about how they are using new skills; and,
4. that the observer does not need to be an expert in the skills being observed.

The follow-up workshop also provides an opportunity for participants to plan how to further embed healthy conversation skills in their every day practice. It is followed a month later by the second of the two follow-up phone calls.

Table 3 describes the numbers of staff from each staff group employed by or affiliated to Sure Start in Southampton who had been trained, or who were in the process of being trained, as of December 2009. All staff groups working within Children's Centres are being offered training. The managers of some staff groups have chosen to make the training mandatory, whilst others have not. This is reflected in the higher proportions of playworkers and community development workers receiving training. Overall, these figures indicate that about two thirds (64%) of all Sure Start Children's Centre staff will have received training in healthy conversation skills by the end of the intervention.

Evaluation

The intervention is expected to have an impact at two levels: first on Sure Start Children's Centre staff practice and second on diets and physical activity levels of women attending Children's Centres. The evaluation therefore takes two forms. Staff practice and use of behaviour change skills are being assessed before, during and after training, and through a period of follow-up. Changes in women's diet and physical activity levels are being assessed using a before and after non-randomised controlled trial to evaluate the intervention's effectiveness and cost-effectiveness over a two-year follow-up period.

Evaluating change in staff practice

In our intervention, demonstrating change in staff practice is a necessary precursor to improving diets and increasing physical activity levels in young women. For this reason, we have an extensive set of qualitative and quantitative measures to assess the reach of the training, the changes in both practice and attitudes to these changes, change in competence and in staff knowledge. The evaluation of change in staff practice is based on the Kirkpatrick Evaluation Model, a widely used model describing four levels of evaluation specifically adapted for the evaluation of training programmes (Kirkpatrick 1998). We are therefore assessing (1) reaction, the initial response from staff participating, (2) learning, their knowledge of the new skills they are being trained in, (3) behaviour, their use of the new skills in practice, and (4) whether the new skills actually change behaviour in the women they work with at Children's Centres. Evaluation of the impact of training on staff practice is carried out at a number of time points. The process is described on the timeline given in Figure 1.

Staff self-efficacy and use of open discovery questions

Before they begin the first training session, staff are asked to complete a short questionnaire comprising five questions, asking them to rate on scales of one to ten how confident they feel about having conversations with parents about eating healthily and being physically active, how important and how useful they think these conversations are. These questions are intended to reflect staff self-efficacy in talking to parents about diet and physical activity and their attitudes to having these conversations. They are also asked to write down responses to four statements (given in Table 4) about the difficulties of changing patterns of diet and exercise, all of which have come directly from conversations with women in Southampton. Responses are coded into one of six categories that were generated by two members of the research team double coding data from the pilot workshops. The categories of responses used are (1)'closed question', (2) 'open discovery question', (3) ' other open question', (4) 'in my experience', (5) 'telling or suggesting', and (6) 'empathy or reflection'. These codes reflect differences in style of response: didactic and information giving (categories 1, 4 and 5) as opposed to exploratory and supportive (categories 2, 3 and 6). Empathy on the part of the practitioner is important, but is not the focus of this training. Staff are asked to complete this questionnaire again at the end of the third and last training session, usually five weeks after the first; they are also asked whether they feel more or less confident about having conversations with parents since the beginning of the training. Seeing any change in levels of confidence between the two time points is indication that the training is having an effect on staff self-efficacy, though we might expect staff to lose confidence as they become aware that their current practice might not be effective, and before they feel skilled in using healthy conversation skills. Their written responses to the four statements are coded using the same categories as at the end of the first session. If the training is being effective in helping staff see the value of using more open discovery questions in empowering behaviour change then we would expect to see more being asked at this time point. This would be described on Kirkpartrick's scale as level 2, evaluation of staff learning. Figure 2 shows the results of this evaluation exercise carried out with the first

48 staff members who completed the training. It is clear that at the very least, the three sessions have demonstrated to staff how to respond in theory to statements by parents about diet and physical activity by using an open discovery question.

At the end of the third training session, we also ask staff to answer three questions asking for feedback about their experience of the training course. This is an evaluation at level 1.

Using new behaviour change skills

Staff knowledge and use of behaviour change skills in practice, a level 3 evaluation in Kirkpatrick's schema, is assessed against five competencies set out in Table 1. These reflect the key skills that the training is intended to communicate and the ability of the staff to recognise opportunities to use these skills. These are assessed by the research team during the follow-up phone calls held with each staff member a month after the last training session and again a month after the follow-up workshop, and also as part of an observation task carried out three to four months after completion of training. Follow-up phone calls are recorded and transcribed. Transcripts are then coded independently by two of the research team for evidence that the member of staff used any of the five competencies given in Table 1, and rates how well they had done this against a pre-defined rubric.

We are also recording barriers in using healthy conversation skills using a modified version of Yardley's Problematic Experiences of Therapy Scale (PETS) (Yardley & Kirby 2006). Staff are asked to complete this at the follow-up workshop. The questionnaire asks them about the acceptability of using healthy conversation skills in their workplaces, difficulties in using the skills, and practical issues that may have stopped them applying the skills. At the same time, staff are asked whether and how often they manage to use their healthy conversation skills. Because we know where each staff member is based, we will be able to use this as an indication of how much women attending the Sure Start Children's Centres are being exposed to healthy conversation skills.

At the follow-up workshop, participants explore how they might proceed with an observation task to provide more evidence as to whether healthy conversation skills are being used in practice. Three to four months after the completion of training, either a pair of trainees arranges to observe one another in carrying out a healthy conversation, or a member of the research team observes a sample of trained staff carrying-out healthy conversations at the Children's Centre. In either event, the process is similar. During the observation, use of open discovery questions and SMARTER planning is recorded. After the conversation, the observer notes how the staff member identified the opportunity for the conversation, makes brief notes about the situation and conversation, indicates how much time the women spent talking relative to the staff member, and how much time was spent asking open discovery questions. All this is recorded on a short proforma designed for the purpose. The observer is also asked to provide the staff member with some very brief feedback notes.

We are also planning a comparison between staff practice in Southampton Sure Start Children's Centres with staff practice in a control area. This will probably take the form of a survey which will assess staff knowledge of effective behaviour change techniques and key nutrition and physical activity messages. We expect to conduct this survey six months after the training intervention has been completed.

Evaluation of impact on the diets and physical activity levels of young women and their children

The level four evaluation as defined by Kirkpatrick is to assess the impact of healthy conversation skills training of Sure Start Children's Centre staff on the diets and physical activity levels of the population they serve. We are using a before and after non-randomised

controlled trial, to evaluate the effectiveness and cost-effectiveness of the training scheme in changing diet and physical activity levels over a two-year follow-up period. We carried-out a cross-sectional survey of 500 women at baseline in the intervention and in the control areas, and will be repeating this at 18 months and two years. We aim to follow up a cohort of 300 of these women to assess longitudinal changes in diet, physical activity and wellbeing. This type of design using a combination of cross-sectional and cohort studies to measure population and individual-level changes has been used in evaluation of cardiovascular programmes such as Heartbeat Wales (Tudor-Smith et al. 1998). Though we had originally intended to randomise individual Children's Centres within Southampton to intervention or control conditions, we discovered that there was too much staff movement between Centres for them to be considered discrete units. We are therefore comparing outcomes in women across the whole of Southampton with those in a control group of women attending Children's Centres in Gosport and Havant, which are areas with very similar demographic features to Southampton.

Our main outcomes are being assessed using validated questionnaires. Diet is assessed using a food frequency questionnaire (FFQ) developed by the MRC Epidemiology Resource Centre and validated as a measure of dietary quality with women of childbearing age. Data from the FFQ will be used to produce a score which reflects dietary quality using methods developed as part of the Southampton Women's Survey (Crozier et al. 2009). Physical activity is being assessed using the General Practice Physical Activity Questionnaire (GPPAQ) (National Institute for Health and Clinical Excellence 2006). This was chosen following pilot studies of the GPAQ, International Physical Activity Questionnaire (IPAQ) (Craig et al. 2003) and the Recent Physical Activity Questionnaire (RPAQ) (Ekelund U. et al, Unpublished), which demonstrated that the GPPAQ had the best face validity for this population. We are also measuring levels of self-efficacy and perceived control in the women using validated instruments (Bobak et al. 2000;Schwarzer & Jerusalem 1995). Responses relating to women's self-efficacy and perceptions of control will enable us to assess changes in the barriers to health behaviour change. We would expect to see increases in general self-efficacy and specific self-efficacy for eating healthily and exercising if our intervention is being effective, as we also expect to see improvements in diet and physical activity levels. There will also be qualitative follow-up including focus group discussions with the women in the cohort to explore their attitudes and beliefs about diet and physical activity, and to discuss any changes they may have made to these behaviours. In order to avoid confounding of our findings by experimental effects, we will also be running focus groups in the control areas.

We will record the frequency with which women have attended Children's Centre activities during follow-up in order to identify any dose-response relationship between the intervention and behaviour change. We will use a validated questionnaire to collect information about the extent to which participants feel they have been able to change their diet and physical activity, and if they have been unable, the reasons why (Yardley & Kirby 2006).

One advantage of our intervention is that it is at one remove from the population whose behaviour we are attempting to change. As a consequence, women in Southampton are largely unaware that they are part of an intervention to change their health behaviour. This is helpful in excluding experimental effects that are known to confound effects of public health interventions (Hardeman et al. 2009). The difficulty of this approach is in assessing its impact. The diffuse nature of the intervention means that it will be difficult to attribute to it any changes seen in women's diets and physical activity levels..

Monitoring

We are monitoring staff uptake and use of training, and their views on the acceptability of training through observation of practice and using focus groups. As part of our monitoring of the process of mounting the intervention, we are recording all aspects in order to ensure reproducibility and sustainability. We are also intending to ask the women attending Sure Start Children's Centres for their views on the nutrition, physical activity and well-being advice and projects they have received from Sure Start Children's Centre staff, in order to assess acceptability. Again we plan to do this through focus group discussions.

Cost-effectiveness

Costs will be assessed in terms of cost per unit change in quality of diet score or physical activity level in a sub-set of women who change their health behaviour by at least the anticipated level (as defined in power calculations for primary outcomes), using questionnaires and interviews. This approach will generate insights into processes of behaviour change as well as avoid questioning large numbers of women whose behaviour has not changed. There will be three elements to the assessment: cost of the intervention; costs incurred by any changes in food expenditure and participation in physical activity; and notional costs of increases in time spent preparing food or taking part in physical activity.

Mapping of environmental influences on diet and physical activity

In order to address issues of confounding by changes coinciding with the intervention, we are mapping changes in the food and physical activity environments (e.g. supermarkets, leisure centres) of the women in the intervention and control areas at baseline, eighteen months and two years. We will take account of any environmental changes in our analyses. During the baseline, eighteen month and two-year surveys we have asked and will ask the women to describe the locations where they work, where they do most of their shopping and where they take physical activity. This information will enable us to direct our mapping work appropriately. We are also monitoring policy and practice changes as they affect the work of Sure Start Children's Centres.

Expected analyses

A sample size of 500 at baseline, one and two years follow up will give 90% power to detect a difference of 0.2 SD in the main outcomes between women in the intervention and control groups. Allowing for a correlation of 0.75 between individual women's results before and after the intervention, at a 5% significance level, a sample size of 200 in the cohort at baseline, eighteen months and two years will give 80% power to detect a change of 0.2 SD in dietary quality score between baseline and follow-up, and 80% power to detect a 0.275SD difference in the change in outcome.

Analysis of data from the cross-sectional surveys will identify population changes in diet, physical activity and psycho-social factors, whereas analysis of data from the cohort will identify longitudinal changes in these outcomes. We will compare dietary quality scores, physical activity levels and scores on scales measuring psycho-social variables of the women in the intervention and control groups at baseline, eighteen months and two years using t-tests. Changes in outcomes over time in the cohort will be assessed using paired t-tests. We will control for the influence of confounding factors using multivariate regression modelling. Cost-effectiveness will be assessed in terms of cost per unit change in quality of diet score or physical activity level. Focus group data will be analysed thematically using constant comparative methods and coded according to emerging themes.

Conclusion

The design of this training intervention was based on research that has identified Sure Start Children's Centres and their staff as key supports to women of disadvantage in Southampton. We have completed the development phase of the work, as specified by the MRC guidelines for developing and evaluating complex interventions, and are simultaneously piloting and evaluating the effectiveness of the intervention (Craig et al. 2008). Our innovation is in applying an approach known to be effective in improving health behaviours in clinical populations to a target group within the general population. The advantage of a staff training intervention over a programme that works directly with our target population is that it is likely to be more efficient and more sustainable to enhance existing resources than to put in additional resources. We are not asking staff to undertake any new activities, but are equipping them with skills to make their existing activities more effective in supporting behaviour change in the people with whom they work. Our early data suggest we are being effective in this. City Council and PCT staff in Southampton have been very engaged in this initiative. One of the aims of our on-going support of staff is to develop 'champions' – staff members who will take on the training of new staff in healthy conversation skills. This is key to the sustainability of the intervention and will be an important part of our work going forward.

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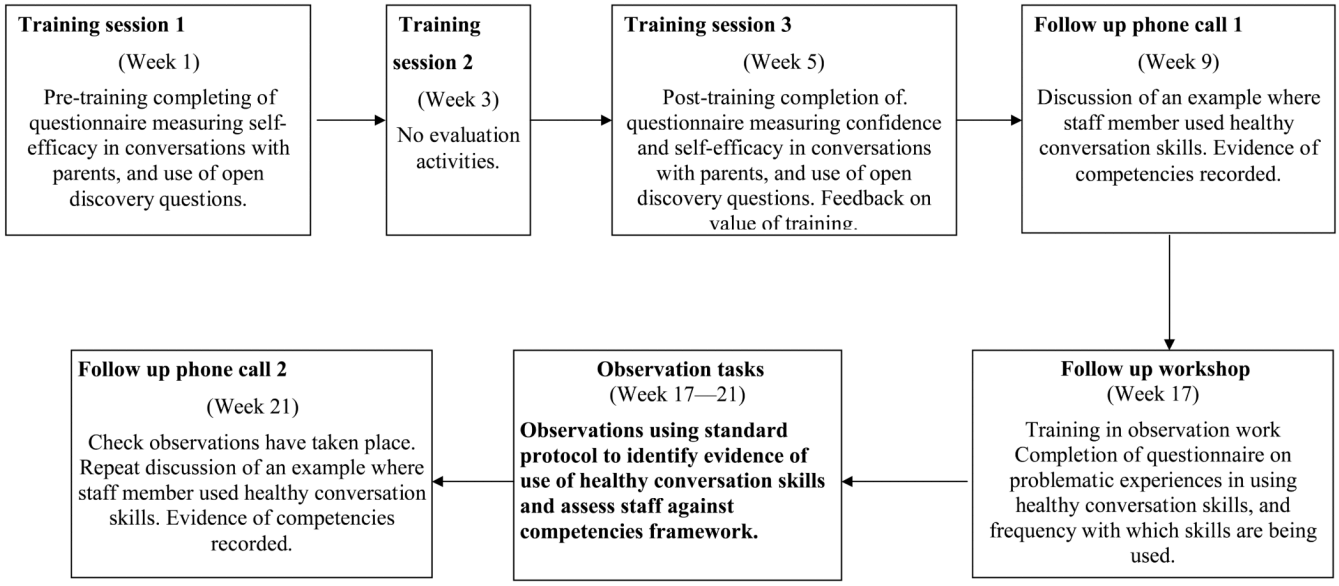

Figure 1. Timeline describing each stage in the process of evaluating the impact of the training on staff practice

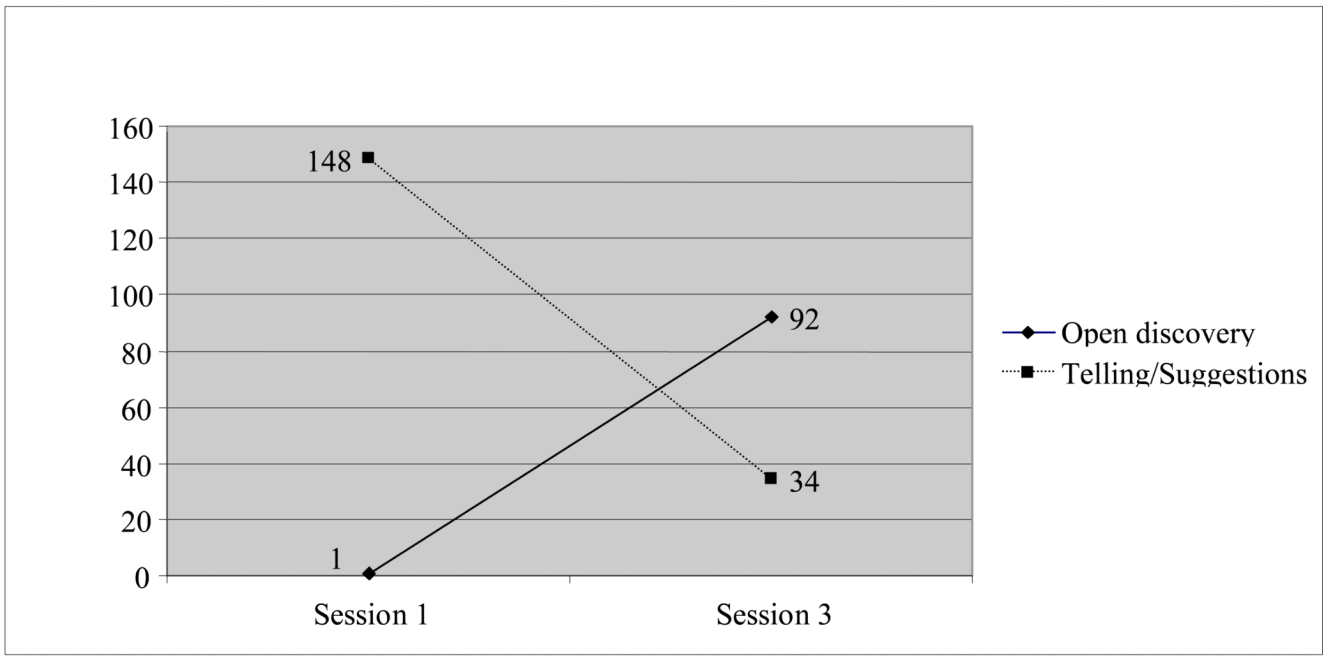

Figure 2. Showing numbers of open discovery questions asked in response to statements from parents before the first training session and after the last training session.

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Table 1

Competencies for trained staff

As a result of this training, I am able to:

- Use open discovery questions in a manner that helps others explore and reflect on what they do, why they do it and whether there is potential for change.
- Identify key (timely) opportunities for the use of healthy conversation strategies.
- Reflect on my own practice in relation to both my beliefs regarding key messages and ability to engage women/families in ‘healthy conversations’.
- Spend more time in a conversation asking open ‘discovery’ questions rather than giving information.
- Use a structured goal setting approach (incorporating SMARTER action planning) when the woman I am talking to has identified a need to change.

Table 2

Outline of content of training sessions including behaviour change techniques (BCTs) used in each activity

(Numbers next to BCTs refer to the numbers given in Abraham and Michie, 2008.)

Session 1	Session 2	Session 3	Follow-up workshop
Welcome and introductions *(BCT 19, BCT 9 'used throughout the three sessions)* **1** Our beliefs and participants' expectations of the training **2** Nutrition & physical activity key messages – explore participants' beliefs *(BCT 5)* **3** Exploring beliefs about people **4** Reflection on session inc. real play where facilitators model two conversation styles. **5** Changing a health behaviour – SMARTER goal-setting *(BCT4, BCT 5, BCT 10, BCT 16, BCT 17)*	**1** Review of changing a health behaviour *(BCT 5, BCT 11, BCT 13)* **2** Having a discussion – Talker, Listener, Observer *(BCT 17)* **3** Developing better responses – open discovery questions Real play – facilitator & 1 participant have a "healthy conversation" *(BCT 17)* **4** Having a different discussion – listening and using open discovery questions *(BCT 17, BCT 10)* **5** Reflection on session **6** Practising new skills – SMARTER goal-setting *(BCT,4, BCT 5, BCT 10, BCT 16, BCT 17)*	**1** Review experiences of practising new skills *(BCT 5, BCT 11, BCT 13)* **2** Creating opportunities for "healthy conversations" *(BCT 5, BCT 15, BCT 17)* **3** Real play – 2 participants have a "healthy conversation" *(BCT 17)* **4** Embedding new skills into practice – SMARTER goal-setting *(BCT ,4 BCT 5, BCT 10, BCT 16, BCT 17)* **5** What do participants need now? Designing resources and support *(BCT 4, BCT 5, BCT 20, BCT 21, BCT 23, BCT 26)* **6** Reflect on expectations at beginning of course *(BCT 4, BCT 5)* Set dates for follow-up	Reflection on experience of practising "healthy conversations" *(BCT 5, BCT 11, BCT 13)* Completion & review of "Healthy Conversation Scale" *(BCT 5)* Peer observation work: Watch a video example Observe each other, complete observation sheets and plan how to use peer observations *(BCT 4, BCT 5, BCT 17, BCT 20)* Giving constructive feedback *(BCT 13)* Reminder of SMARTER goal-setting

BCT 4 prompt intention formation

BCT 5 prompt barrier identification

BCT 9 model/demonstrate the behaviour

BCT 10 prompt specific goal setting

BCT 11 prompt review of behavioural goals

BCT 13 provide feedback on performance

BCT 15 teach to use prompts/cues

BCT 16 agree on behavioural contract

BCT 17 prompt practice

BCT 19 provide opportunity for social comparison

BCT 20 plan social support/social change

BCT 21 prompt identification as role model/ position advocate

BCT 23 relapse prevention

BCT 26 time management

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Table 3

Numbers of staff from each group who had been trained, or who had signed-up for training, as of December 2009.

Staff group	Number of staff trained or signed up for training	Total numbers of staff in each group
Play and development workers and play supervisors	65	72
Community Development Workers	17	21
Nursery nurses and sessional nursery workers	10	26
Family support workers and co-ordinators	8	23
Administrative staff	5	19
(Senior) Project Support Workers	5	7
Oral Health / Dental Therapists	3	7
Others (inc. Sure Start co-ordinators, community health nurses, employment and training advisors)	7	10
Total	120	185

Table 4

Four statements made by women attending Sure Start Children's Centres.Training participants are asked for their responses to these statements before and after training.

' *There are lovely vegetables outside the shops, but I don't know what they are.* '
' *I can't afford for us to join a gym.* '
' *It's more never being taught what to eat, cook or whatever.* '
' *I just don't seem to have time to do any exercise.* '