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Dietary Change

The Evidence Base and Future Research

Needs

**A Food Standards Agency Seminar
Thursday 20th January 2005**

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Introduction

The Food Standards Agency, through its *Food Acceptability and Choice R & D Programme*¹, commissioned the British Nutrition Foundation to produce a written critical review of the literature on the psychosocial basis of food choice, identifying factors that influence positive food choices, examples of positive interventions and gaps in the evidence base. The scope of the review excluded specialist areas such as slimming and sensory analysis, and focussed on evaluations (published since 1990) of interventions in the general free-living population (excluding those with special dietary needs and underlying medical conditions), within the age range 5-65 years. A lengthy comprehensive report (700 pages) and a separate user-friendly summary, which draws together the findings, are available from the Agency's library (Dr Elsie Widdowson Library and Information Services, Food Standards Agency Tel: 020 7276 8181/8182 or email: library&info@foodstandards.gsi.gov.uk).

1. Welcome

Rosemary Hignett (Head of Nutrition Division, Food Standards Agency), welcomed the audience to the meeting and said the critical review was a starting point for discussion to help identify key influences and settings, which may inform future areas for research activity.

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www.food.gov.uk/science/research/researchinfo/nutritionresearch/foodacceptability/n09programme/

2. Presentation of review findings

Dr Judy Buttriss (BNF) outlined the **aims of the day**, which were for attendees to:

- (a) learn from the various interventions reviewed
- (b) relate findings from the review to their own experiences and particular interests/needs and
- (c) make some practical recommendations for the FSA to consider. She noted that the emphasis of the review had been to identify factors that influence positive food choices, examples of positive interventions and gaps in the evidence base, highlighting UK studies and successful interventions. In the appraisal of the interventions, significance was placed on studies that included an outcome measure of dietary behaviour or diet-related physiological measures, rather than only measured nutritional knowledge.

Various speakers from the BNF then presented the review findings, highlighting the successes, barriers and gaps in the evidence base. Slides of the presentation can be found in Annex A (page x). Findings were classified under a range of different settings:

- Interventions undertaken in a school, college or university setting
- Nutrition education interventions carried out in the workplace
- Interventions in a primary care setting
- Community-based studies (at both national and local level)
- Interventions targeting couples, parents and families
- National food labelling programmes
- Point-of-purchase interventions in supermarkets
- Environmental interventions in catering settings
- Pricing strategies
- Improving access to healthier choices by point-of-purchase labelling and marketing schemes
- Peer-led intervention studies
- Computerised individually tailored nutrition education

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In summary, of the approximately 250 intervention studies reviewed, many common problems of study design were identified, few studies used validated measurement tools and few ran for long enough to be effective or to allow for proper evaluation of sustainability.

Successful approaches were tailored to the target audience, used covert approaches for complex issues such as reduction of fat or salt, operated in a supportive environment, used small targeted programmes rather than mass media awareness campaigns and employed an inclusive approach in the community. Future research could usefully include: the effect of refreshing existing healthy eating messages, the role of women and school children as agents of change in the community/family; longer term interventions; minority groups, cost analysis; whole family approaches and feasibility and acceptability of computerised, tailored nutrition education.

3. Workshops Session 1 - Priority settings and target groups for future research

Participants were divided equally into four groups to discuss perceived gaps and identify priority settings in the context of the review's findings. Each group was asked to provide a list of four settings that would inform considerations on categories to take forward for discussion in the second session of workshops. A summary of the discussions is provided below.

General points relating to R&D included the need to:

- acknowledge that in reality settings do not work without some form of individualism
- recognise that target groups vary depending on setting and not all settings are relevant for all risk groups
- clarify whether we are looking for settings where it will be possible to conduct and evaluate RCTs or possible interventions with the 'right/ appropriate' messages for the target group.

3.1 Community & family setting

Some people felt 'community' is a very broad concept and needs to be further defined. The importance of the community setting, interactions of the whole town in shaping people's shopping habits and encouraging healthier eating was acknowledged. Participants discussed how primary care works in the community. Community interventions could impact through workplaces, schools, catering and industry so there is a need for interventions that can be translated into communities effectively. There is also a need to look at food provided through the *meals on wheels* service. Strengths of community-based interventions include: potential for sustainability, can use existing local food networks, could tie into established, on-going initiatives (e.g. Sure Start); can enhance inclusivity and can target disadvantaged communities. Drawbacks include: lack of evaluation and dissemination, RCTs not always appropriate, disproportionately attract self-

selected motivated people, short-term funding leading to difficulties with sustainability and limited scope for publishing findings (i.e. in academic journals).

3.2 Workplace setting

Workplace interventions may provide incentives to action for businesses providing the lead (front runners) - bearing in mind issues such as the dietary health of the workforce being on 'the agenda' and corporate responsibility for the health of their workers. Large companies and organisations that have networks across the country e.g. public service, can connect with large numbers and a wide variety of people. Moreover, a workplace intervention developed as a whole company policy will have a wider influence than just a canteen intervention. It was noted that a novel approach is needed to overcome participation fatigue. Including family in a workplace setting would help to reinforce the messages and aid programme success. Workers can motivate each other, and also take influences home. In some settings workforce could be a specific population group, for example, young men working on a building construction site. In addition, the intervention could form some partnerships in the community. Disadvantages include potential lack of interest from small firms because they cannot afford interventions but it was suggested that smaller firms could benefit most. It was also suggested that some of the many programmes that have been implemented in the US could be adapted for the UK setting.

3.3 Catering

The catering sector was discussed in its broadest sense – work place, cafés, restaurants etc. and was considered to be the weakest link in the 'chain'. A covert approach can easily be used in catering since small changes may not be noticed. Catering interventions have a potentially massive effect since many people are eating out. It was suggested that any interventions should start where people eat out most such as staff canteens, garage forecourts and sandwich shops. Intervention could have many levers, for example pricing. It could provide opportunities for requiring nutrition education in catering, but this can be

problematic because of rapid staff turn over, and it can target specific groups. Disadvantages include potential problems in collecting data because most food services are very busy. Swipe cards might provide a solution to this. If covert changes are made, people do not receive any healthy eating education and caterers are reticent to inform customers of healthy choices. A key area to address was suggested to be a good study on pricing strategies and cost effectiveness. Other issues mentioned included: the 'Heartbeat' award and lack of public awareness/ recognition and the launch of the national catering award in Scotland. A suggestion was made that this could be used in both a Welsh and English setting.

3.4 Supermarkets

Participants discussed issues such as the use of supermarkets as a vehicle for change - e.g. an initiative where a Supermarket chain is reinforcing the healthy eating message/ positive impact of choices. Supermarkets have useful links with the community and there is a need for information on economics – the cost to industry of nutritional changes to products. It was suggested that nutrition economics could be explored in a similar way to health economics. A disadvantage is that there is too much 'noise' in supermarkets for nutrition to make a real impact. Mention was made of the 'audio booths' used in the US in supermarkets to promote nutrition messages as these were seen to be effective. It was suggested that the impact of sign posting could usefully be considered in this environment.

3.5 Other settings with potential to impact dietary choices:

Dental setting – It is important that whoever is involved with delivery should have a sound knowledge of nutrition. The best person for the setting should be utilised to deliver the intervention and they could use dental links into the local network/ community.

Working men's clubs and women's nail bars, which could function as one-to-one and small group settings, were thought to be potentially successful sites for delivery of nutrition information.

Young people could be accessed through **sports or social clubs**, using community grass roots to promote messages. 5-a-day work in Scouts clubs in the US was mentioned as a good model.

Prisons and the Armed Forces are areas where particularly men (but also women) could be targeted and these should be explored.

Hospitals – look at food provided for patients, workforce and visitors.

Pre-school was identified as an area to consider; *Sure-Start* and health visitors were deemed to be particularly relevant partners to be involved.

Peer-led projects were also considered to be an important means that could be expanded upon; projects such as 'Starting well' and the Agency's Food Choice project on peer support for infant feeding were mentioned.

3.6 Potential Priority Target Groups

It was suggested that the focus should be on groups with poor nutritional status as identified by the National Diet and Nutrition Survey (NDNS). Participants acknowledged that ongoing work on reformulation of products, profiling and nutrient analysis will influence nutrition status. Some points raised during discussions on how to target future work to provide the best effect were:

- how to identify who will be most at risk or be more receptive to a particular intervention

² Public Health White Paper: CHOOSING HEALTH – Making healthy choices easier
Published by Department of Health (16/11/2004) Series number: CM 6374

- how to engage those that are most at risk and to target them
- who are those who are already seeking advice? It would be useful to look at the enquiries that the Agency gets.

It was noted that it is important to access people when they are most amenable to dietary change – at the time of life changing events for example pregnancy, children starting secondary school; young people going to university (currently only two small UK studies on this, providing no real evidence base).

Suggestions for classifying potential target groups were discussed. Some groups could be classified on the basis of their low micronutrient intake and status. For example, children and young people, men in their 30s and young women with low iron status. Young adolescents (e.g. girls aged 14 to 16 years) are also an important target group because as future mothers they will make an impact on people's diets/ eating habits. Relevant community settings for them, such as nail bars, could be used for promoting healthy eating messages. It was noted that 8-9 year old children are now exhibiting and exercising food choice habits that can be tracked into adulthood. In Scotland young adults of working age and young girls have already been identified as target groups.

Young men are a key group to be targeted, although they are a high-risk group in terms of likely success since they put health low on their list of priorities. It would be interesting to investigate possible changes in lifestyle when this group co-habits. There are opportunities for further exploration of the attitudes of this group to gain information that could move them from the pre-contemplation to the contemplation stage of dietary change. Some participants noted that young men can become barriers to change by others; campaigns/ information targeted at 22 year olds are often picked up by younger groups such as 15 year olds and this needs to be taken into consideration when planning a campaign or intervention. Other views were expressed that this may no longer be true.

Low-income groups/ ethnic minority groups are high priority for the Government. We need to try and distinguish between the different factors that may be influencing these groups. Should they be considered separately or are there areas of overlap? What are the key influences and how can these be explored?

The socially excluded – the question was raised on how to access the unemployed and excluded children.

New/ first time parents are usually very receptive to nutritional messages. Perhaps this is more important than the pregnancy stage because during pregnancy many may not be in the right mood to be receptive. May be good to link into 'Healthy Start' schemes.

Could target those that are attending **health screening programmes** and feed appropriate nutritional messages into these groups (e.g. breast cancer, cervical cancer, colorectal cancer etc.).

Stages of change – Some gaps identified were: (a) There are various theoretical models but how does one choose the most effective method of behaviour change? (b) Is the intervention transferable at a local level? (c) Look into whether there is information on the reasons why people want to lose weight or change their diets. It was noted that research has looked at various reasons behind people's desire to change their diets but people's concerns/ motivators for change have not been identified. For example, we can use a model to identify motivation but not look at the weight/ focus for each individual.

Target the **overweight/ obese in the community**. It was suggested that those who visit a doctor need experienced advice from this source because they usually believe their doctor is the best authority. Could be compared with the model of smoking cessation advice given by doctors. The Choosing Health White paper may impact on primary/ public health care, in which case the Food Standards

Agency could prioritise research with respect to obesity. But the problem of undernourishment, especially in children should not be forgotten. On the issue of obesity, it was noted that preventative approaches to obesity must emphasise that the aim is weight management and not slimming. Weight management is also a key issue for under-nourishment.

A list of **priorities for discussion in the second session** as provided by the participants are given below:

- Catering sector
 - especially those with large numbers of regulars e.g. workplace/ schools etc.
 - look at where most vulnerable groups eat
 - look at where most people go e.g. pubs, fast food establishments
- Community
- Work place linked to community
- Educators - for example, in primary health care; the emphasis should be on developing an evidence base to establish 'who' is best at delivering 'what' message.
- Food manufacture and retailing (industry/ supermarkets)
- Computerised interventions using web sites
 - Including use of media such as pop up web pages, text messaging etc.
- Schools and community – not a lot done on this (would be helpful to find out how current interventions have moved out from schools to community).
- Whole school approach – aspects of this have already been addressed by the FSA and will continue to be a high priority area.

3.7 Priority areas for further discussion to inform future research

During the lunch break, participants were invited to register to attend a second workshop to discuss priority areas for research arising from the morning workshop discussions. The following settings had been identified:

- Community and Family

- Food Manufacture and Retailing – Barriers to Change
- Catering in the non-workplace setting
- Workplaces including catering

Full summaries of discussions from the workshops are provided in the next section.

4. Workshops Session 2 – Four Priority Areas to Inform Future Research

4.1 Community and Family

This group's discussions focussed on flaws in research that need to be addressed, gaps in the evidence base and how to address these gaps. Primarily, there was thought to be a lack of use of theoretical frameworks and of validated appropriate tools for evaluating projects. Questions that need addressing are: (i) how are existing frameworks used to inform the setting up and running of dietary interventions? (ii) What is(are) the appropriate framework(s) for designing /scoping /running interventions. To date very different methods have been employed by researchers so impossible to make comparisons.

The following issues around the nature of evidence and methodology were discussed:

- appropriate timescales, to allow for personal changes and to determine sustainability over many months rather than weeks
- forethought about costs and other requirements for long-term sustainability
- recruitment and retention of sample
- self-selection of sample
- reliance on volunteers to deliver could be a strength or a weakness, and could result in under estimation of costs to sustain intervention in the long term
- lack of qualitative information to enlarge on and back up harder points
- generalisability of interventions. E.g. can a small number of schools in one city or area be a model for others
- use integrated/inclusive/ within community growth, not top-down approach
- build on existing groups and structures within a community or on work that already exists
- need for a validated non-invasive measure of dietary intake (relevant toolkit)

- personnel working in communities don't have research expertise and need support
- lack of centralised support service, but is this for FSA? Could the mechanics of coordinating and supporting these projects generally be explored?
- Suitability of biomedical approach to methodology and evaluation in the community setting and, if not, which approach to use for evaluation. Could the Agency fund a research project to test if this is feasible?

Another question raised was whether there are 'model' communities. In answer to which two examples - 'Have a Heart Paisley' (Scotland) and the Peckham Place Project (Southwark, London) were suggested. But there is no centralised database of community/ family based interventions.

A point was made that comparisons of community/ family based nutrition interventions are difficult because they are not all focused on the final outcomes e.g. disease/ well-being and that the FSA may need to make connections with these other determinants of health. Others objected that this approach may not be useful under the Agency's N09 and N14 R&D programmes since a change in dietary behaviour is the important outcome for these programmes. How this impacts on disease is for another programme, funding is insufficient for this long-term outcome and perhaps needs a range of Agencies/ Departments to take it forward. A proposal was made for the FSA to consider a rolling programme of research that would involve discussion and involvement of bigger funders of research.

Ideas for the Agency's research programme in addressing the Key Gaps

- Need to look at how N09 has influenced work in the wider community
- Need for coordination of community-based evidence
- Need to facilitate and support existing systems

- Interactive programmes – to look into computer access, use and desire to use among target communities. Look into the possibilities of building on existing work as well as that of engaging young men.
- IT tool for assessing food access.
- Integrating social capital – social cohesion networks etc. resulting from local food projects.
- The challenge of how to draw attention of poor dietary choices to the consequences so that immediacy of consequences is highlighted.
- Importance of taste experience – examine whether the amount of exposure has an impact on food choice.
- The nature of rewards - in the workplace people can be rewarded with bonuses etc. but may be difficult to identify appropriate rewards in the community.
- Use of drivers such as cholesterol levels to provide feedback - e.g. salt dipstick study.
- Linking initiatives in communities - feasibility work. Would people be prepared to work together?
- Using advertising/ marketing positively - principles of social marketing. Though concepts look exciting, little has been done so far in the UK.
- Investigate the level of obesity at which people will accept intervention measures. It would be helpful if the triggers for obesity management are known so that there would be a chance to plan some interventions.

4.2 Food Manufacture and Retailing – Barriers to Change

The future of retailing in the long term should be considered. For example, 10 years from now most people may be using the Internet as well as shopping through TV. Internet shopping could be used to conduct research on what consumers are buying /looking at. Also in 10 years time sustainable development will be very important and we will have to build this into research. It would also be useful to consider research that manufacturers /retailers could do themselves as well as to encourage industry to share their research/ information gathered. Could FSA build on existing work such as the Nuffield Institute's till receipt work?

Issues around product/ 'healthy foods' promotion discussed included: the need to know how effective the positioning of products /retail promotions are; examine duration of promotion and the effect on behaviour; as well as the mixed messages where one promotion somehow offsets another. The Agency could consider qualitative research into the why/ how of consumers' behaviour when shopping since this depends on who they shop with, time of day etc. This could be an incentive for retailers when consumers realise that they can trust that particular retailer. There was also a suggestion that the Agency might carry out research using 'mock stores' to see if people would notice a promotion. A start has been made in this area through funding of an N09 project to promote healthy eating in a rural area through village shops.

It was suggested that the Agency looks at whether we can access the data which large retailers /manufacturers already have. It would be useful for retail and marketing research to be linked into nutritional /academic research or for researchers to buy from retailers. Also supermarkets could use the smart card to look at profiles of the customers and their changes in behaviour.

Pricing, self labelling and package labelling all have gaps with respect to public health or nutrition and there may be potential to develop initiatives in these 3 areas

so long as it doesn't eat into industry's profits. A suggestion was made to investigate something like a smart card that provides feedback whilst recognising the difficulty of having a database with nutrients for all products. A pilot study in various supermarkets /retail outlets could be carried out (on promotions) keeping all options open and looking at long-term. Promotion could be due to reformulation - e.g. New Zealand's 'The Tick' Programme³; that was responsible for food suppliers and manufacturers removing thirty-three tonnes of salt from everyday foods in one twelve month period. Manufacturers and retailers need to increase or promote pilots in the long-term. It may be likely that fruit & veg do not give as much profit as high fat /sugar foods; has this been examined? Research shows that size of text on labels is too small for most people over 45 years to read easily and they usually don't bother, which would limit product labelling promotions.

It was suggested that the Agency should look into sponsoring community partnerships with retailers which include health professionals. For example, work involving village shops that have an online system of co-ordinating shopping for elderly in a partnership. Some ideas, such as geographical mapping - looking at where shops are and mapping with PCTs; working with health professionals on one-to-one (personalised) interventions, were discussed. Education/ awareness feedback could be promoted by e.g. taking the practice nurse out of the surgery and into the supermarket.

The group agreed that some changes with manufacturers – (e.g. salt, fat, sugar) seems to be the way forward. Barriers discussed included taste; where substitution of a 'more healthy nutrient' for fat/ sugar/ salt etc. could compromise taste. However, with persistence and increased awareness of nutritional quality, consumers may adjust to new tastes. Another barrier could be information overload where there is too much information on 'healthy' eating which may be conflicting and confusing. A challenge is how to promote foods positively rather than, for

³ www.nhf.org.nz/index.asp?PageID=2145820218

example, say 'don't eat sugar'. The need to examine portion sizes and whether manufacturers can reduce them was raised, but the Agency has already commissioned research (due to finish in September 2007) to investigate the contribution made by food portion size to food energy intake.

There was a futuristic suggestion that the Internet could use functional genomics to come up with a personalised shopping list for groceries.

The group made some suggestions, listed below, that could strengthen studies funded by the Agency:

- calling for proposals that are piloted with the aim to lead onto long term trials.
- use of multi expertise work - expertise in other disciplines that can be drawn upon to investigate consumers, food buying behaviour
- requests for proposals need to be specific and tailored to what can give the FSA useful data
- partnerships with retailers and market researchers, community, health professionals etc.
- could link studies into relevant EU work.

It was noted that the issue of making calls for proposals either specific or general could be tricky. There are also issues around the feasibility of working with retailers - depends on who is where, incentives for manufacturers/ retailers (e.g. to get inside knowledge of consumers' attitudes and help them get ahead of their competitors) etc. Therefore it would be useful to put out calls for pilots (to study feasibility) that will lead to longer-term follow up work. For example, Canada has done pilots to inform - 3 years with 2 years evaluation.

It was also suggested that some of the review's findings could be looked at in a meta-analysis.

4.3 Catering in the non-workplace setting

There was some initial discussion to clarify what setting the group was to consider. The following settings were identified and considered in terms of existing work and potential approaches. It was agreed that settings should be considered in terms of 'the biggest hitters' and 'disadvantaged groups'. Research that covers both areas should be looked at.

- schools
- social services
- prisons
- sandwich shops
- fast food chains
- chain restaurants
- local authority services

Catering for health⁴ - future development.

It was noted that the catering industry is so disparate; there are different settings affected by different market forces. Any future training pack should be sector specific and have had an impact assessment.

Schools

Discussion centred around the addition of salt to foods cooked in schools. It was acknowledged that very little was known about this. It was agreed that this could be one area to look at. Any work carried out in this area could be used in different catering settings. It was agreed that covert changes have a role to play in changing nutrition status however their influence on making healthier choices needs to be explored. The group then went on to discuss how to approach education for school

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Catering for Health. A guide for teaching healthier catering practices. The Stationery Office, ISBN 0112430678, £5.00 (Tel: 01603 695526, Fax: 01603 695029)

meal providers. It was felt that research should look at developing a training pack for school cooks to enable them to prepare healthier food. This should involve a 'before' and 'after' study of schools involved in intervention and use of a control school. It was emphasised that hands on training was more important than 'education' for this group. The Agency and DfES are already developing a vocational qualification and training course for school cooks which is available from May 2005. Research to determine the effectiveness of training will be carried out once courses have been running for some time. The cost effectiveness and sustainability of pricing intervention needs to be explored further.

Chain restaurants

Not much work has been done in this area; qualitative research is needed to further our understanding of factors that influence consumer choice in this setting.

Local food providers and leisure centres

There is little known about small caterers who run sandwich bars, local cafés etc. Suggestions for future work included a scoping study to identify how big this sector is and what potential role they would play in providing healthier choices for customers. Use of local community networks was deemed to be essential to any projects/ research investigating these areas.

4.4 Workplaces including catering

Discussions within the group focussed on identifying promising areas for research and key target groups, looking at various approaches and filling in gaps in the evidence base.

A workplace health scheme using the outline of the system in Scotland was suggested. The healthy awards scheme was mentioned as an example to use for a whole food approach within the workplace. This would include vending, corporate events, computerised meals analysis, healthy recipes available in the canteen - recipes passed on for home use etc. However, there is no evidence base with regard to whether these kinds of initiatives influence food choice. There is a need for proper assessment of intake and the effect of economics.

It was proposed that workplace initiatives should aim to extend their influence to life outside the workplace, including family and education. For example, open days, work crèches, family events etc. It was noted that corporate social responsibility is becoming increasingly important on business agendas. Since it appears that men are sometimes a stumbling block to dietary change within family units, the workplace provides a good opportunity to target initiatives at this group of the population.

Sustainability is a big issue. It could be useful to consider combining healthier eating initiatives with other lifestyle features such as physical activity. A gap identified was pricing policies to encourage healthy eating and evaluation to assess its effect on food choices. The effect of sign posting in workplaces was also identified as a gap in the evidence base but could be difficult to evaluate because of issues regarding accuracy of feedback obtained and rapid changes in menus.

It was noted that Catering for Health covers how to effect changes to cooking methods in addition to preparing healthier options.

Workplace healthier eating initiatives can be used to target some vulnerable groups such as blue collar workers whose needs may be distinct from managers. Some factors that may influence their dietary choices are costs (different allocation for different groups) and energy needs (different groups would have different requirements). Initiatives need to be economically viable.

Some of the approaches/ target groups that could be influenced by workplace healthier eating initiatives are:

- breakfast provision
- taste and cookery sessions - blue collar workers have more limited diets, so this must aim to broaden tastes and skills to encourage them to prepare a broader range of foods in the home.
- use of marketing concepts
- portion control
- physical appearance
- contract caterers
- shift workers

Patterns of eating within the workforce may also influence food choices. That is, what proportion take a lunch break, 'graze' throughout the day, do not take a lunch break at all and the significance of these patterns for food choices and dietary intake.

Companies could form links with community initiatives but this should be less of a priority for workplace healthy eating initiatives because they need to get their own house in order first.

Computer based nutrition advice could be very useful in the workplace. This could include an evaluation/ assessment component with feedback that would be potentially more honest since people enter information onto their own computer and

so have no fear of being judged. It would be useful to develop an interactive computer programme for self-assessment to provide tailored advice and act as an audit tool.

The group suggested that the Agency test a range of initiatives for future research needs in the workplace to promote uptake of healthy options - probably a lot has already happened, but has not been evaluated. Some of these could be:

- product placement and pricing policies.
- calculating whole change in the workplace to produce good practice guidance.
- buying into whole organisation from the top to bottom – management has to commit and staff also need ownership of food policies through focus group work/ working group/ steering group etc.
- training of caterers in addition to food hygiene certificate.
- how do you evaluate whether individuals who are trained are giving accurate, consistent messages?
- procurement - catering suppliers.

Key Points feedback to Plenary from Workshops

Communities

- Development of validated evaluation tools
- Use of evidence from existing projects
- Effectiveness of delivery / education models
- Interactive computer programmes
- Catering – impact of covert changes

Food Manufacturing and retailing

- Research partnerships with retailers
- Longer term interventions preceded by pilots to test tools / techniques
- Pricing promotions
- Product promotion by use of packaging, positioning, leaflets
- Effect of covert vs overt changes in food products
- Portion sizes (FSA already addressing)
- Tools to track food purchases

Catering in non-workplace setting

- Target the biggest customer bases and disadvantaged groups
- Evaluation of school caterer training
- Further understanding of factors influencing consumer choice in fast food setting
- Scoping study to identify size of small caterer sector and their potential role in providing healthier choices.

Workplaces including catering

- Develop simple desk-based computer dietary self-assessment tool.
- Test range of simple initiatives to promote healthy eating e.g. BIGIF, pricing policies
- Effectiveness of various environmental influences on healthier food choices
- Effect culture change in workplace

- Investigate attitude/ behaviour in relation to eating at work if do not use canteen.
- Link to corporate activities.

Summary by Chair

Rosemary Hignett closed the meeting by highlighting some of the broad and detailed suggestions, with both national and local themes, for Agency consideration that resulted from discussions throughout the workshop and plenary sessions. The specific settings identified for activity were community, workplace, retail/ industry, and catering. She mentioned some of the gaps in the evidence base identified, such as the lack of information on the effect of making covert/ overt changes to food products on consumer choices, evaluation of what has been done, sustainability of interventions, whether short-term studies involving few people was a sensible use of funds, price interventions, use of computers/ Internet and understanding of influences on people's choices.

The Nutrition Division will consider the suggestions from the seminar towards meeting targets of the Agency's Strategic Plan (2005 –10)⁵. Finally, Rosemary thanked participants and asked them to continue to feed any further suggestions after the meeting, to the Agency's policy staff.

⁵ ***Targets for changing people's diet include***

? By 2005 we will review existing evidence on influences on food choices to identify which are practical and effective and to see where there are gaps in our current knowledge

Annex A

Copy of slides for presentation of review findings

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**A critical review of the
psychosocial basis of food
choice and identification of tools
to effect positive food choice**

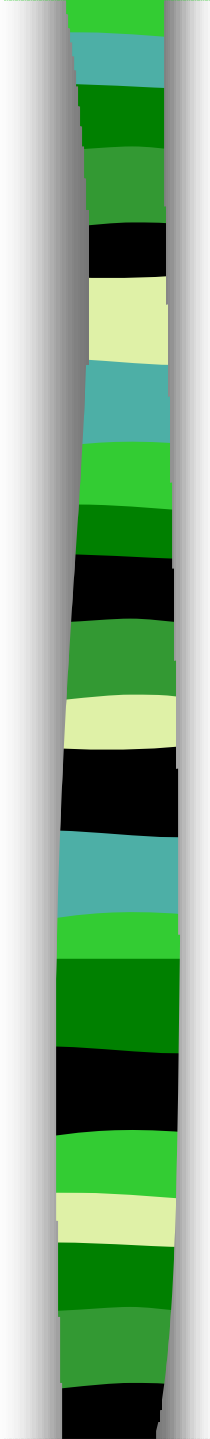
**Food Standards Agency Workshop
Thursday 20th January 2005**

British Nutrition Foundation



Aims of the day

- It is hoped attendees will:
 - learn something useful from the various interventions reviewed (for example, common problems encountered in various study designs)
 - relate findings from the review to your own experiences and particular interests/ needs
 - make some practical recommendations for the FSA to take forward



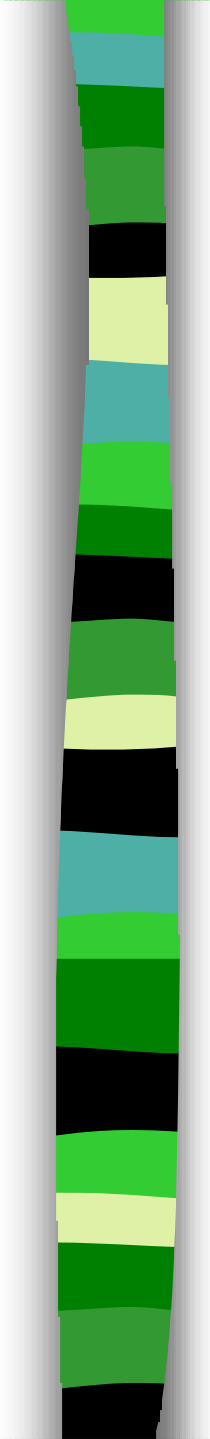
A critical review of the psychosocial basis of food choice & identification of tools to effect positive food choice

- Commissioned in Feb 2003 by FSA - *Food Acceptability and Choice Programme* (N09)
- **Emphasis: to identify factors that influence positive food choices, examples of positive interventions & gaps in the evidence base**
- 2 components:
 - Phase 1 - General literature review
 - Phase 2 - Critical appraisal of interventions **NOT** systematic
- In phase 2
 - best designed interventions, most successful/ strongest effects, flagged up UK studies, rate limiting steps, gaps & recommendations



Phase 1: General literature overview

- It aimed to identify key reviews of psychosocial factors influencing food choice and to provide examples of the scope of literature published since 1990
- The focus was on those aged 5-65 y, free-living & excluded those with special dietary needs/medical conditions and slimming
- **Particular emphasis on factors that have been targeted in intervention studies and those factors that the FSA might wish to consider as the subject of future research**
- The examples given are not exhaustive but provide a flavour of the work that had been undertaken in this area from a **nutritional** perspective



Phase 1: General literature overview (2)

- The initial intention was to present this information in the context of existing conceptual frameworks that have been developed for investigating the factors influencing food choice
- However, it soon became clear that much of the available information did not fit well with these frameworks. It was considered inappropriate to exclude information simply because it did not fit into a particular framework. It was also considered important to be as inclusive as possible, and to highlight the complex processes and influences involved in food choices

Phase 1: General literature overview (3)

Influences	Mechanisms	Other variables
Availability & access; cost	Food labelling	Biological & physiological signals
Beliefs & attitudes	Food presentation & packaging	Culture & ethnicity
Education & knowledge	'Food rules'	Emotions & mood
Family's influence	Life stages	Gender
Food preferences	Media communications	Meal pattern
Neophobia	Palatability	Religion
Social networks	Physical settings	Stress
	Satiety & satiation	
	Taste	



Phase 2: Appraisal of interventions

- Inclusion criteria agreed with the Agency
 - Post 1990 studies, English language, excluded slimming
 - 5-65y, general free-living population (excluded those with special dietary needs/ medical conditions)
- Extensive literature searches & hand searching
- Papers reviewed in a standardised and critical way
- Emphasis – studies included an outcome measure of **dietary behaviour** or **diet-related physiological measures**, rather than measured nutritional knowledge only
- Identified about 250 intervention studies
 - organised by setting



Research in different settings 1

- Interventions undertaken in a school, college or university setting
- Nutrition education interventions carried out in the workplace
- Interventions in a primary care setting
- Community-based studies (at both national and local level)
- Interventions targeting couples, parents & families



Research in different settings 2

- National food labelling programmes
- Point-of-purchase interventions in supermarkets
- Environmental interventions in catering settings
 - Pricing strategies
 - Improving access to healthier choices by point-of-purchase labelling & marketing schemes
- Peer-led intervention studies
- Computerised individually tailored nutrition education



Research in different settings 3

- ~ 250 intervention studies were reviewed
- Many common problems were identified in the design of the intervention studies:
 - lack of randomisation to study group
 - the use of self-selected study samples
 - small sample sizes
 - reliance on self-reported outcome measures
 - lack of information on cost effectiveness



What works?

- Tailored rather than 'One size fits all'
- Covert approaches & primary care interventions may be best for complex issues (e.g. fat and salt)
- Importance of supportive environment
 - Combination of education and environmental change/support e.g. vending, canteens
- Mass media – awareness rather than behaviour change
 - Need to be supported by environmental change and/or tailored advice
 - But small, targeted programmes are often better at changing behaviour



What works?... continued

- Different approaches for different target groups
 - Computer delivered (internet, multimedia; children & young adults)
 - Supermarkets (women compared with men)
 - Peer-led (children, ethnic groups, hard-to-reach)
 - Hands on approaches (children, low income groups)
- Co-operative approaches – involving whole community



Schools, colleges & universities ~ 85 studies

In brief because a lot of work is already underway



Schools, colleges or universities

- Theory-based food education lessons alone are unlikely to alter eating behaviour
- Most UK studies have focused on fruit & veg intake
- Barriers include cost, training, lack of admin support, lack of interest or parental consent, time, facilities *etc*
- Studies using peer-led interventions, whole school approach, tuck shops, multimedia (e.g. Food Dudes project) & novel methods (e.g. art & drama) have increased consumption of fruit & veg by around 0.5-1 portion/day



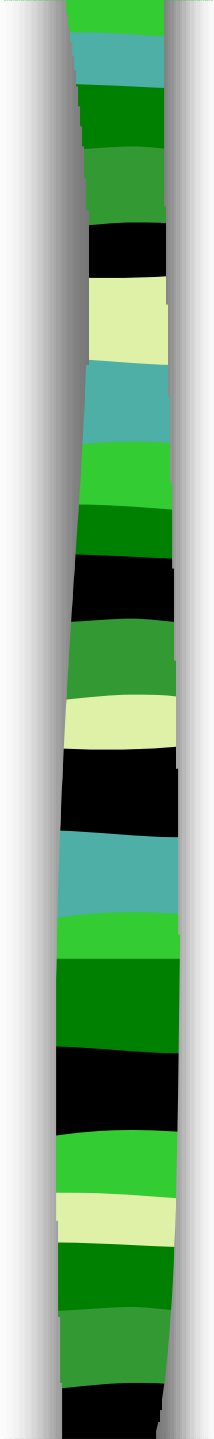
Schools, colleges or universities: successes

- Most successful interventions
 - those perceived by children to be novel & fun
 - cartoon characters,
 - use of multimedia or internet
 - ‘hands-on’ (e.g. growing foods, cooking classes)
- Covert canteen manipulations are most effective in reducing fat & salt (but will not educate about healthier eating choices)
- Regular communication & strong working links between all stakeholders required for sustainability



Schools, colleges or universities: research gaps

- Further research needed to:
 - evaluate the whole school approach in UK-based schools
 - compare single vs. multi-component interventions
 - assess the efficacy of culturally-tailored interventions
 - identify ways to target adolescents (particularly girls)
 - provide information about cost-effectiveness of different approaches



Workplace strategies ~ 50 studies



Workplace strategies

- Few UK studies
 - Use of computer system in worksite canteen to prompt improved meal selection (Balfour *et al.*, 1996)
 - Labelling healthier choices (e.g. Starstruck Scheme, Heartbeat award) positively received by employees but little evaluation of effect on eating behaviour
- Impact of the large multi-component trials, predominantly in US, generally poor (any improvement seen typically ~0.5 – 0.7 portions fruit & vegetables/d)
 - e.g. *Treatwell* and the *Working Well Co-op Trial*

Workplace strategies: Treatwell Program (US)

<u>Study</u>	<u>Subjects</u>	<u>Design</u>	<u>Description</u>	<u>Assessment</u>	<u>Limitations</u>	<u>Findings</u>
<p><i>Treatwell Program</i></p> <p>Sorensen <i>et al.</i>, 1999</p>	<p>Ethnically diverse group of employees of 22 community health centre. (n=1306 at f-u). 84% women, 23% Latino, 18% non-Latino Black respondents</p>	<p>RCT: worksite randomised to 1 of 2 interventions group or control after stratification by size</p> <p>Intervention 19.5 mo</p> <p>F-u: 1-3 m after intervention period</p>	<p>3 groups:</p> <p>(1) Minimal intervention control group.</p> <p>(2) Worksite intervention group.</p> <p>(3) Worksite –plus-family intervention.</p> <p>Intervention s used community-organising strategies & targeted multiple levels of influence</p>	<p>Data were collected by self-administered employee surveys before and after the intervention</p>	<p>Brief dietary assessment ; self-reported information; wide variety of intervention s makes it difficult to distinguish which one(s) had most benefit.</p>	<p>Total f & v intake ↑ 19% in worksite-plus-family group & 7% in worksite intervention group (p=0.05). These changes reflect ↑ of 0.5 servings/d among workers in worksite-plus –family group.</p>



Workplace strategies: Working Well Co-op Trial (US)

- 111 worksites (total workforce number of 28,000) randomly allocated (in matched pairs) to intervention or control
- Range of intervention activities (lasting 97-121 weeks) e.g. kick-off event, interactive activities, brochures, self-help materials, campaigns, contests, direct education through classes and groups, changes in food offered and/or nutrition education in cafeterias and vending machines
- Cross-sectional samples of different groups showed **- % E from fat by 0.37%** (p=0.03) in intervention vs. control sites & **- average fruit and vegetable intake of 0.18 servings/day** (p=0.0001) above control group
- The intervention improved perceived co-worker support for low-fat diets & perceived management concern about workers' nutrition. **Longer-interactive intervention efforts resulted in more positive outcomes than one-time activities or more passive efforts. Individuals in later stages of dietary change used or took advantage of more programme components than those in earlier stages**

(Sorensen *et al.*, 1996; Patterson *et al.*, 1997; Biener *et al.*, 1999; Glanz *et al.*, 1998)



Workplace strategies: Health-works for Women (US)

- 583 women (rural female blue collar employees, 58% African American, average BMI 29) from 9 work-places completed 3 self-administered questionnaires (at baseline, 6 m & 18 m)
- Workplaces randomly assigned to **intervention (2 computer-tailored magazines and a 'natural helpers' programme over 18 m)** or delayed intervention (1 tailored magazine after survey at 6 m)
- - **f & v intake by 0.7 servings/day**; a significant change in fat intake was observed at 6 months (e.g. the **mean dietary fat score decreased by ~ 3g among the intervention group vs. no change in the delayed group**) but not 18 months
- Limitations: brief measure of dietary intake, randomisation of worksites rather than individuals led to differences at baseline, multiple methods of obtaining follow-up survey information used, control group received partial intervention so difference in effect may have been attenuated

(Campbell *et al.*, 2002)



Workplace strategies: Buller *et al.* (1999)

- 695 labour & blue-collar employees from 10 public employers in Arizona identified & invited to take part
- Workplaces randomly assigned to **intervention (9 m peer education plus general 5 A Day) or general 5 A Day alone**
- - **f & v intake by 24 hour recall (0.77 servings/d) & FFQ (0.46), mainly as fruit (0.41 & 0.25)**
- **At 6-m follow-up total f & v consumption was still increased (0.41) when assessed by 24 hour recall but not by FFQ**
- Limitations: use of 24-hour recall from 1 day only; limited to non-managerial and labour and trade employees



Workplace strategies: successes

Successful approaches include

- **Including a family component** e.g. The Treatwell Study - increased fruit & veg intake by 19% (~0.5 servings/day) (Sorensen *et al.*, 1999)
- **Reducing price & increasing availability** of healthier items in worksite cafeterias & vending can increase sales of fruit/veg & low-fat snacks (e.g. Lassen *et al.*, 2004; French *et al.*, 2001)
- Increases in fruit & veg intake achieved using **computer-tailored nutrition education** (+0.7 servings/d) (Campbell *et al.*, 2002) and a **peer-led** initiative (+0.4-0.8 servings/day) (Buller *et al.*, 1999)



Workplace strategies: successes and research gaps

- **Screening** can motivate employees at high risk & overcome optimistic bias
- There is a need for **support** by top management, **involvement of employees** in planning, implementation & activities; & built-in sustainability
- **Research gaps** – need to determine:
 - the characteristics of successful interventions for different types of workplace & employees
 - factors that might facilitate & encourage participation
 - the level of intensity required
 - cost-effectiveness of different approaches



Interventions in Primary Care ~ 15 studies



Primary care: successful studies

- Behavioural counselling & tailored nutrition messages seem to be the most successful methods:
 - Behavioural counselling increased fruit & veg intake by 1.5 portions/day vs. nutrition counselling which increased intake by 0.9 portions/d (Steptoe *et al.*, 2003) (UK)
 - Campbell *et al.*, (1994) showed fat intake to fall (by 23%) in those receiving tailored nutrition information, while untailored information showed no benefit (US)
- Computer-assisted studies
 - Less fat consumption (2.35% less E from fat) & greater consumption of f & v (+1 serving/day) in intervention vs. control in study by Stevens *et al.*, (2002)
 - ↑ in fruit intake (+1.1 servings/day), ↑ in fibre intake (+4g/day) and a ↓ in intake of saturated fatty acids (-1.7% of energy) using an interactive, computer-controlled telephone system ('talking computer') (Delichatsios *et al.*, 2001)



Primary care strategies: Steptoe *et al.* (2003)

- RCT (parallel design) of 271 adults recruited from primary healthcare centre in inner city area in the UK survey
- 2 x 15 minute consultations 2 wks apart using either behavioural or nutrition education counselling to ↑ f & v
- At 12 m follow-up, f & v consumption ↑ from baseline by 1.5 & 0.9 servings/d in behavioural and nutrition education groups respectively. Plasma beta-carotene & a tocopherol ↑ in both groups but no change in ascorbic acid seen
- Limitations: no true control group; low recruitment response rate (12%); self-reported information, no information on ethnicity of subjects



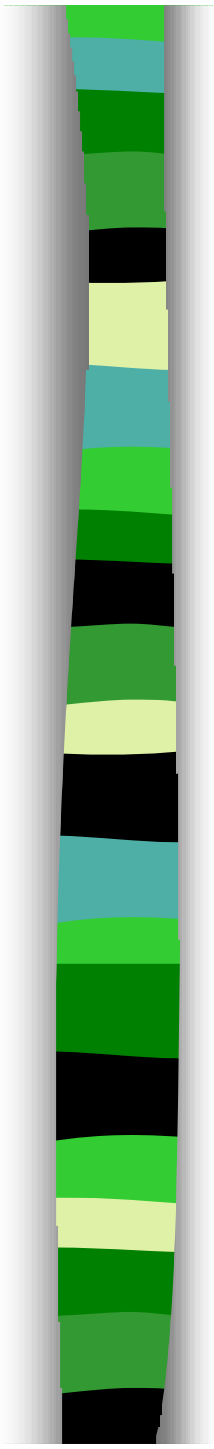
Primary care strategies: Campbell *et al.* (1994)

- RCT (parallel design) of 463 people visiting 4 primary care clinics in North Carolina
- **1-off mailed nutrition intervention** to ↓ fat which was **tailored** to stage of change, dietary intake & psychosocial information vs. non-tailored vs. control (no nutrition messages)
- Tailored messages were created using software and a library of messages developed to target characteristics (e.g. stage of change, barriers)
- **Total fat ↓ by 23% (10g) in tailored group vs. 9% (3.6g) in non-tailored and 3% (1.3g) in control group.** F & V consumption decreased by ~¼ serving/d in all groups
- Limitations: possible bias in tailored intervention group (stronger obligation to report positive changes), the brief dietary assessment may have missed significant sources of fat.



Primary care: barriers & gaps in evidence base

- Barriers identified include external (financial) incentives & reinforcement, lack of provider knowledge and skills & lack of tested cost-effective strategies
- Likely to be useful for those with regular contact with health care providers (e.g. pregnant women & elderly) but limited for most vulnerable groups
- Further studies required to compare different approaches, establish minimum amount of follow-up needed to maintain behaviour change & investigate opportunities in other primary care settings (e.g. pharmacies and dental practices)



Community-based studies ~ 48



Community-based strategies (national & local)

- Few carried out in UK, particularly amongst vulnerable groups (Anderson & Cox, 2000)
- Mass media, community-wide interventions raise awareness but small, targeted programmes are often better at changing behaviour
- It is not yet clear if adding an individual counselling component provides a cost-effective means of improving dietary behaviour further to whole community activities



Community-based strategies: a UK-based study (Take 5)

- 168 consumers eating <5 a day in a **RCT** in Glasgow & Reading (parallel design)
- 8-wk programme, follow-up at 1 year:
 - educational, motivational & behavioural strategies
 - advice on association of fruit and vegetables and disease
 - practical advice defining one portion and 5 a day target
- **Increased self-reported intake fruit and veg (557g/d v 324 g/d)**
- 65% of the intervention group met *5 A day* target.
- Identified barriers and successful strategies e.g. fruit as a snack
- Limitations: small study, no information on intervention components, possible seasonal effect, qualitative responses reported.

(Anderson & Cox, 2000; Anderson *et al.*, 1998; Cox *et al.*, 1998)



Community-based strategies: successful studies

- Successful approaches have:
 - provided tailored information (Gorbach *et al.*, 1990)
 - provided self-monitoring tools (issue of cost) (Chapman *et al.*, 1990)
 - promoted community ownership (Scheuermann *et al.*, 2000)
 - reinforced messages in different settings in multi-faceted interventions (Campbell *et al.*, 1999)



Successful strategies: tailored nutrition advice (Women's Health trial)

- 287 women aged 45-69 at **increased risk breast cancer**
- **RCT**, parallel design in 3 clinical settings
- 1-yr study, follow-up at 1 yr
 - Group sessions on nutrition information and skills needed to adopt low-fat eating habits (20% energy)
 - Sessions held monthly for 8 wks, bimonthly for next 6 months and monthly until 12 months
 - **2 individual sessions with a nutritionist**
 - Specific fat goals and encouraged to self-monitor and track intake
- Intervention group **reduced fat intake** (39-22% energy), **increased caloric intake from fruit** (28%) & had a **mean weight loss of 3.1 kg**
- 20-50% increase in nutrient (vitamins and minerals) density from foods
- Limitations: 'at risk' group, secular trends in controls



Successful strategies: self-monitoring tools (Great Australian Salt Challenge)

- 314 men and women aged 38-43 yr in a QED in two regions of Australia. Intervention group were **viewers of a TV health care series** who requested a booklet within 1 week of first programme
- 20 wk study, follow-up at 3 mths.
 - **4 intervention groups** but all watched a 20-wk TV healthcare mini-drama, which featured salt reduction
 - Grps 1-4: information booklets, Grp 2-4: cookbook, Grp 3-4: **home urinary Na monitoring kit**, Grp 4: education session
- Salt avoidance checklist (SAC) scores reduced in all groups
- **Self-monitoring kit had a marked effect: 51% of Grp 3 and 75% of Grp 4 had a >10% reduction in Na: K**
- Frequency of TV watching was positively related to SAC score
- Limitations: ctrl group had significantly higher SAC scores and Na:K at baseline. Intervention group 'ready-to-change'. Possible bias with SAC. Small control group.



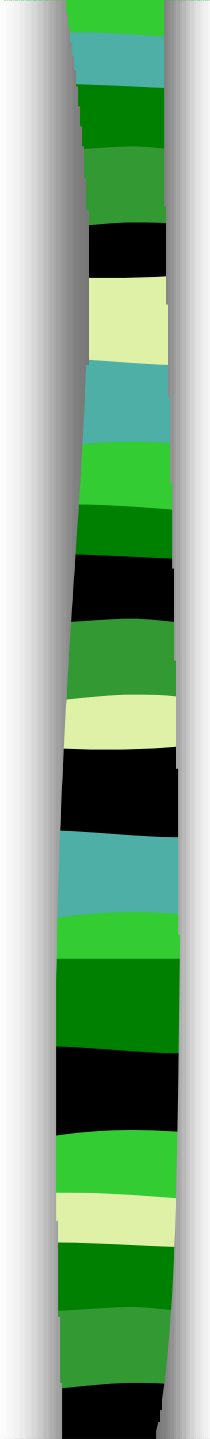
Successful strategies: community ownership (GCPP)

- 8248 Germans aged 25-69 y at baseline (7872 at follow-up) in a QED in **rural and urban areas** of Germany (non-randomised)
- 7 year programme to create a climate in community that is conducive to health :
 - Researchers initiate **local groups** (lay people and GPs) who then develop and implement health promotive activities
 - Focusing on positive aspects of a healthy lifestyle, not prevention. **Targets and activities were developed by the communities** according to own needs
 - Food activities included ‘prudent’ diet, healthy heart recipes, shopping lists, labelling, initiatives by bakers and butchers. Physical activity and smoking also included
- Reduction in smoking, systolic (134 vs. 132.9 mmHg) and diastolic (84.2 vs. 81.4 mmHg) blood pressure and in total cholesterol: HDL (4.48 vs. 4.25 mg/dl)
- Limitations: **No dietary assessments**, no reported lifestyle changes so impossible to conclude which factors influenced results most, involved a high degree of initiative



Successful strategies: multi-faceted interventions (Black Churches for better health)

- 2519 US adults from **49 churches** in a RCT in North Carolina, USA
- 8-wk programme, follow-up at 1 yr:
 - 20 month **multi-component intervention** to increase intakes of fruit, juice and vegetables
 - Included tailored print materials, direct education, lay health advisors and community coalitions. Activities tied with other church activities
 - Control group: delayed intervention
- **Increase in self-reported intakes of fruit, juice and vegetables (0.85 servings/day)**
- Greater effects with **fruit** (0.66 serving/d) than veg (0.19 serving/d)
- Less impact on 18-37 yr olds and single people
- Limitations: Exposure to intervention was not uniform



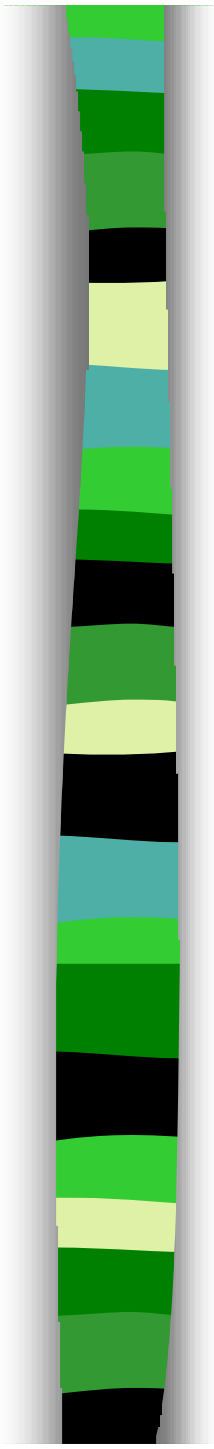
Community-based strategies: problems & gaps in the evidence

- Many community interventions are multi-component & the dietary interventions are not always separately evaluated
 - (Campbell *et al.*, 1999; previous study)
- Men, those on low-income & ethnic minorities are frequently underrepresented
- Multi-component strategies have highlighted the need for sustainability to be built into an intervention so that effects are long-term: long term follow-up is needed
- Underlying secular trends make it difficult to tease out intervention effects



Future research

- Consider how messages can be refreshed & reinvented, using novel approaches, to keep them attractive
- Increases in fruit & veg intake are often driven by improvements in the former and future studies could consider these food groups separately
- The role of women and also children at school as agents of change in the family & community needs to be explored further
- Multi-faceted interventions with dietary influences: dietary interventions need to be evaluated
- Longer term follow-ups
- Cost analysis
- Minority groups: culturally-sensitive interventions may be necessary
- Community ownership: explore for impact & sustainability of the intervention



**Interventions targeting
families, couples and
pregnant women
~ 11**



Family based interventions

- Most US-based, ongoing study in Newcastle
- Many studies in families have been part of larger initiatives *e.g.* school-wide
- Significant amount of work with new families (particularly new mothers)
- Many studies have relied on the use of peer educators
- Several studies have shown that targeting families can lead to small but significant changes in some food & nutrients



Family based interventions (Fitzgibbon *et al.*, 1996)

- Hispanic American families in a cancer prevention **RCT** involving 38 families. Mothers recruited from a literacy training programme
- 12-wk programme, follow-up at 1 wk post-intervention
 - Family-based, **culture specific 12 weekly 1 hr classes** (English and Spanish)
 - Sensitive to differences in ethnic foods and run in a familiar location
 - Focused on the incorporation of **ethnic foods** and **resistance by children** to eating healthy foods.
 - Control group : standard pamphlets on health behaviour (no nutrition)
- Intervention group: mothers reduced **dietary fat** (34-29% energy) and **saturates** (12-11%) (Controls: Fat, 36-37% energy, saturates, 13-14%)
- Positive correlation attendance and dietary changes.
- NSD for children, except for a positive correlation between knowledge and attendance.
- Limitations: 'ready to change group' lack of follow-up, small sample size



Family based interventions: gaps and opportunities

- Comparison of interventions in this setting using peer educators and others (e.g. health professionals), including a comparison of cost
- Longer follow-up periods to assess sustainability
- More 'whole-family' approaches, perhaps using more innovative techniques e.g. computerised delivery



National Food Labelling Programmes



National Food Labelling Programmes

- Pick the Tick (National Heart Foundation of New Zealand, since 1991)
 - Criteria are set for total fat, saturates, trans fatty acids, sodium, added sugar, fibre, calcium (soya milk only)
 - Young & Swinburn (2002) evaluated the impact of the scheme on formulation of new, & reformulation of existing, bread, breakfast cereals & margarine
 - between mid 1998-99 calculated that ~33 tonnes salt was excluded from products
 - Lack of information on consumer behaviour
- Folic Acid Campaign (ran by HEA between 1995-1998)
 - Multi faceted approach
 - unprompted awareness of need for folic acid among women of childbearing age increased from 9% in 1995 to 49% in 1998
 - A feature of the campaign was the introduction of a labelling scheme for folic acid fortified foods, launched in May 1997. By 1998, 13 companies (representing over 130 products) were committed to the scheme (HEA, 1998)



National Food Labelling Programmes

- Green Keyhole (GK) System (Sweden, since 1989) takes account of fat and fibre
- Larsson & Lissner (1996) assessed understanding & knowledge of the logo & behaviour in participants (38 – 78 yrs) of a prospective study
 - open ended questions in a health and lifestyle questionnaire, completed by small groups, included discussion
 - 62% of women questioned adequately understood the meaning of the symbol (significantly younger)
 - No major differences in total fat or total fibre intake (24hr recall) between women with less or more knowledge of the GK scheme
 - Those with better knowledge of the GK scheme had higher ratios of PUFA to SFA & higher fibre intakes per 100Kcal; and higher BMI
- Through questions in general health questionnaire and FFQ (83 items) Larsson *et al.*, (1999) found that:
 - Knowledge & understanding of the symbol resulted in a higher reported intake of GK-labelled fat reduced foods (men and women) and high fibre foods (women only)
 - In the least educated group – no association was seen



Interventions in Supermarkets and Food Service

Supermarkets ~ 29

Food service ~ 24



Interventions in supermarkets and food service

- Studies suggest effectiveness is sometimes hampered by competing promotions & campaigns, lack of awareness, lack of motivation to engage
- Need to be undemanding & to fit into current lifestyles (audio broadcasts vs. nutrition info in store)
- Studies indicate point of sale information only useful for those motivated to change
- Shop tours – some evidence of success (Sadler, 1999)
 - including use with high risk groups (Church & Drake, 1999);
 - potential for use with e.g. low income groups (Carson & Hedl, 1998)
 - Short follow-up; likelihood of optimistic bias
 - Other study limitations
- Pros and cons of value/budget ranges



Supermarkets: point-of-purchase

- Purchasing habits potentially influenced at point-of-purchase
- Most interventions in supermarket settings have been **modestly** successful at increasing awareness and some have increased knowledge/improved attitudes
- But no evidence from UK studies of any real behaviour change
- Elsewhere, most successful interventions involved computer methods or brief audio messages
 - e.g. RCT showed increased fruit & veg (0.5 servings/1000kcal using computer-tailored nutrition info (15 brief weekly segments) in store, maintained after 4-6month follow up (Anderson *et al.*, 2001)



Catering setting: UK studies

- Dietary behaviour improved via increased availability of healthy choices and covert changes to dishes
- UK studies:
 - Heartbeat Award evaluation in restaurants (Holdsworth *et al.*, 1997) (low awareness) and Starstruck scheme in worksite cafeteria (Williams & Poulter, 1991) – no assessment of behaviour change
 - 2 studies in UK universities – little impact and study limitations (Liddell *et al.*, 1992; Aaron *et al.*, 1995)
 - Few examples of successful labelling schemes; [2 **US** studies increased sales of dishes labelled as 'healthier' (Levin, 1996; Eldridge *et al.*, 1997)]
 - Award schemes not shown to influence choice of restaurant (so no motivation for caterers)



Catering setting: other studies

- Successes elsewhere:
 - *USA - Lunchpower Project!* (interactive activities), fat content of lunches fell by 39% & energy by 13%; but didn't monitor impact on children's choices (Snyder *et al.*, 1992) – large study, good design, elementary schools
 - Denmark, increased appeal and availability of fruit & veg through the '**6 a day**' *Worksite-Canteen Model Study* (Lassen *et al.*, 2004)
 - Pricing strategies, healthier vending in worksites and schools; 50% reduction in price of healthier snacks resulted in 93% increase in sales (French *et al.*, 2001)
- Need to consider extent to which achievements in workplace/schools can be translated to more commercial settings



Computerised tailored nutrition interventions 23 studies



Computerised tailored nutrition education

- Potentially mimics person-to-person nutrition counselling by providing personalised information & feedback (lacks direct social support/interaction)
 - can be tailored to stage of change
 - is generally more appreciated than general materials
 - has already shown promise re. smoking and physical activity
- Relatively cheap approach with broad dissemination potential; can retain many elements of a personal encounter
- Few UK studies, but evaluated elsewhere in various settings



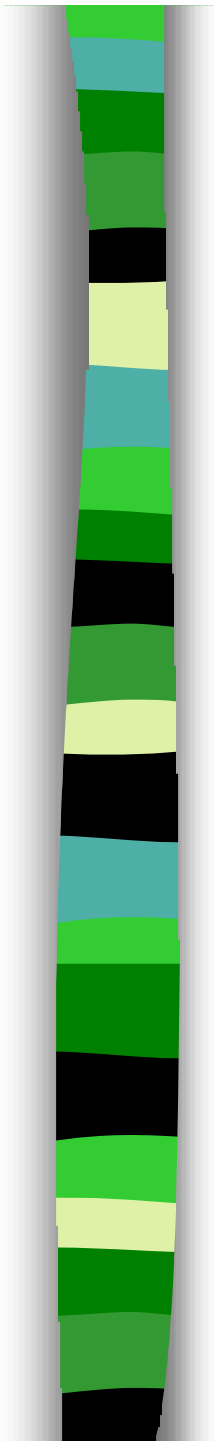
Computerised tailored nutrition: examples

- Computer system in US **supermarkets** increased fruit & veg intake by 0.5 servings/1000 kcals (Anderson *et al.*, 2001)
- Studies in **community** settings have shown small improvements in fat, fruit & veg intake
- Tailored computer 'magazines' increased fruit & veg intake by 0.7 servings/d amongst female blue collar **employees** in US (Campbell *et al.*, 2002)
- Increases in fruit & veg intake of >1 serving/d have been shown in a **primary care** setting (Delichatsios *et al.*, 2001; Stevens *et al.*, 2002)



Computerised tailored nutrition education: gaps in the evidence

- Need to disentangle the type & number of tailoring elements needed to promote behaviour change & whether this varies for different groups
- Interventions & study groups have varied
 - currently not possible to compare effectiveness in different settings or
 - identify which settings might be most beneficial for different groups
- Further studies are needed to assess feasibility and acceptability in UK



Peer-led interventions 15 studies



Peer-led interventions

- Common approach in the US. Little published data as yet from UK-based studies e.g. *The Food Show* (Parker 1996), a peer-based drama production used to promote healthy eating in schools
 - But small numbers, did not evaluate effect on behaviour change
 - FSA projects underway
- Peer-led interventions have increased fruit & veg intake (typically by 0.4-1 serving/d) in worksite (Buller *et al.*, 1999), school (Haire-Joshu *et al.*, 2003) & community (Cox *et al.*, 1996) settings
- US studies have shown decreases in fat intake of up to (~5% of energy) and saturates (~2% energy) & increases of 4-5g of fibre/d (Cox *et al.*, 1995; Cox *et al.*, 1996)



Peer-led interventions: common problems and research gaps

- Difficulties in the identification, training & retention of appropriate peer-educators, many of whom are volunteers (retention is important in sustainability)
- Limited research on the impact of peers as teachers of nutrition education and little known about the longer-term implications for behaviour change (whilst it appears to be time & resource intensive, it may be able to reach low-income groups)
- Need information about cost-effectiveness
- Research needs to compare effectiveness of professionals, paraprofessionals & lay people to deliver nutrition education & determine strengths/weaknesses of each



What next...

- Based on your personal experience, and findings from this research
 - Workshop 1: prioritise settings and target groups for future work
 - Workshop 2: In line with the settings and target groups identified as a priority, identify the research needs and recommendations for FSA



Further information

- Summary of findings & recommendations (38pp) www.nutrition.org.uk
- Paper published in December issue of Nutrition Bulletin (and on BNF website) & various other papers submitted or in draft form
- Full report (700pp) available from FSA library, Tel: 020 7276 8181/8182 or email: library&info@foodstandards.gsi.gov.uk

Annex B

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Dr Louis Levy	Food Standards Agency

Mr Tim Lobstein	Food Commission
Dr Margaret Lumbers	University of Surrey
Ms Brigid McKeivith	British Nutrition Foundation
Ms Sam Montel	Food Standards Agency
Dr Paula Moynihan	University of Newcastle upon Tyne
Ms Hilary Neathey	Food Standards Agency, Wales
Ms Kim Newstead	Scottish Community Diet Project
Dr Anne Nugent	British Nutrition Foundation
Mr Jacques Obringer	Danone UK
Dr Sandra Passmore	Birmingham Health Education Unit (ex-Health Education trust)
Ms Heather Peace	Food Standards Agency, Scotland
Dr Nicky Pearson	Regional Public Health Group, Government Office South West
Ms Sylvia Perwaiz	Greenwich PCT
Professor Robert Pickard	Member of Wales FAC
Dr Jenny Poulter	Free lance Nutritionist, (school meals research)
Dr Margaret Reid	University of Glasgow
Ms Nancy Robson	Chair of Consumer Committee
Dr Sarah Jayne Rowles	Food Standards Agency, Wales
Ms Rosalind Sharpe	City University, Dept of Health Mgmt & Food Policy
Dr Alison Stephen	MRC Human Nutrition Research
Dr Barbara Stewart-Knox	University of Ulster ex-N09 researcher
Ms Lynn Stockley	Free lance consultant

Dr Katy Tapper	Cardiff University, health research
Dr Alison Tedstone	Food Standards Agency
Mrs Lorna Thompson	Food Standards Agency, Wales
Dr Richard Watt	University College, London
Dr Ailsa Welch	The EPIC study, University of Cambridge
Mr Simon White	Broadcasting Policy, Department for Culture Media and Sport
Dr Jenny Woolfe	Food Standards Agency