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TITLE: Advice on healthy eating and physical activity where it is needed most:
Empowering home-visiting Human Services to provide the right information at the right
time to vulnerable families.

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ABSTRACT

Background
Excessive weight gain adversely impacts on the health, social and economic wellbeing of children and families. The aim of this pilot study was to assess the feasibility of a practice change intervention to improve the physical activity and healthy eating support offered by staff of Human Service organisations during home visits.

Methods
The study employed a pre-post design. Sixty nine support staff and 29 managers from Human Service organisations from the Hunter New England Area Health Service (HNEAHS) region of NSW participated in the trial. Research officers provided staff with healthy eating and physical activity training, telephone support and resources, and encouraged managers to adopt a healthy eating and physical activity policy, and to support their staff in providing healthy eating and physical activity guidance to families.

Results
 Compared to pre-intervention, support staff of Human Service organisations were more likely to provide healthy eating and physical activity support to client families. The intervention was found to be acceptable to staff and managers.

Conclusion
The findings of this study suggest that a variety of supportive, practice change initiatives may be a feasible approach to increasing obesity prevention support provided to disadvantaged families by Human Service organisation staff.

INTRODUCTION

Overweight and obesity have a detrimental effect on a person’s health and wellbeing. Excessive weight substantially increases the risk of chronic diseases, and is associated with poor mental health and psychosocial problems (Deitz, 1998; Wolfenden et al, 2010). In developed nations the adverse effects of obesity are disproportionately borne by socioeconomically disadvantaged groups (Sobal and Stunkard, 1989, Wake et al., 2007). Excessive weight also adversely impacts on socio-economic resources (Puhl et al., 2006), and among individuals who are socio-economically disadvantaged, overweight and obesity contributes to a vicious cycle of poor health, low self-esteem and lack of opportunity (Wolfenden et al, 2010).

Obesity and its associated morbidities can be prevented through the consumption of a healthy diet and regular physical activity (WHO, 2003). While a number of factors influence dietary and physical activity habits of children and families, among the key influences are
characteristics of the home and family environment (Golan et al., 2004, Campbell et al., 2006). Creating a home environment which is supportive of obesity prevention, however, represents a considerable challenge for families. Parents often report that they lack the confidence or adequate nutrition knowledge and skills to prepare and provide healthy meals (Coveney, 2004, Omar et al., 2001), find the costs of fresh foods or organised sports prohibitive, or that accessing supermarkets or recreational facilities is difficult (Omar et al., 2001, Wang et al., 2007, Trost, 2005). Such barriers may be particularly prevalent among families with limited social and financial resources.

Reviews of the literature have demonstrated that home-visiting services are a valuable means to engage disadvantaged families (Kendrick et al., 2000) and are effective in supporting families to improve their circumstances and create an environment that promotes healthy development (Kendrick et al., 2000, Zercher and Spiker, 2004). While such services appear appropriate to assist disadvantaged families to eat healthily and be active, many appear ill equipped to do so, as shown in the study by Falkiner and colleagues, published in this issue of Developing Practice (Falkiner et al., 2010).

Given the willingness of non-government Human Service organisations to provide obesity prevention support, but the limited capacity of such services to do so, this pilot trial aimed to examine the feasibility of a practice change intervention in improving the physical activity and nutrition support provided to families by staff of Human Service organisations during home-visits. The trial was conducted in the context of a region wide child obesity prevention program, Good for Kids Good for Life.

METHODS

Design, Sample and Setting
The study employed a pre-post trial design. A summary of the trial can be seen in Figure 1. Managers of Human Service organisations and their staff were invited to participate in the study. To be eligible to participate, managers and staff must belong to Human Service organisations that; are non government organisations; provide home visiting services to families with young children (0-15); and operate within the Hunter-New England Area Health Service region of New South Wales (NSW), Australia. Additionally, to be eligible to participate, staff must, as part of their role, provide visitation services for families.

To identify eligible services and staff, the membership list of NSW Families Services Inc., a support service for Human Service organisations with voluntary membership from the sector,
was utilised. The managers of all eligible member services were contacted and assessed for eligibility. Managers and staff of eligible services were invited to participate in the study, and asked if they knew of other eligible services in the region. Nominated services were contacted and the procedure was repeated until no new services were identified.

**Intervention**

The intervention was developed by a multi-disciplinary Advisory Group with membership from key government and non-government organisations, with experience in working with disadvantaged families, managing Human Service organisations and planning, delivering and evaluating health promotion programs.

The intervention was delivered by HNEAHS research officers over a three month period, and consisted of strategies targeting both managers of Human Service organisations and their staff (see Figure 1). Specifically the intervention included the following components found to be effective in improving organisational practices (Oxman et al., 1995, Bero et al., 1998):

1. **Organisational policy and procedures.**

Managers of Human Service organisations were encouraged to demonstrate organisational leadership through the development and implementation of a policy promoting the provision of physical activity and healthy eating support to client families. To facilitate policy implementation, managers received two telephone support calls from research officers to support them initiate the change, and to problem solve issues that may have hindered the change process.

2. **Staff training**

All staff of participating organisations were invited to attend a half-day training workshop which aimed to provide staff with information to provide support, resources, role model healthy behaviours and refer clients for professional assistance when appropriate. The training was facilitated by a former Human Service organisation employee and a registered community dietician or nutritionist. The training included information and skills regarding the benefits and recommendations for healthy eating and physical activity, inexpensive ways for children to be physically active and to eat healthily, being an active role model, label reading, meal planning, shopping on a budget, referral points, and delivering health messages to families in an appropriate way. The content of the training was based on existing national guidelines (Department of Health and Ageing, 2009).

3. **Staff telephone support**
Staff attending training were invited to participate in two 15 minute telephone support calls, six weeks and twelve weeks post training. Calls were undertaken using the in-house CATI (Computer Assisted Telephone Interview) system, and delivered by trained interviewers. The support calls reinforced the messages delivered through the training session, monitored staff progress regarding healthy eating and physical activity support provided to families and helped staff problem solve barriers to providing such support.

4. Organisational Resources
Managers of each service received a comprehensive manual (in hard copy and CD) to be used to train future employees and staff who did not attend the training, and resources for their staff to engage and support families. Written resources were sourced directly, or adapted from resources available through NSW Health, HNEAHS, Samaritans (Coalfields Healthy Heartbeat), and Department of Health and Ageing. A telephone help-line to a dietician, and a program web site were also available to managers and staff for more information and assistance.

5. Performance feedback
Information provided by staff during the telephone support calls enabled research officers to identify areas where staff required additional assistance. Without identifying staff members, this information was provided to managers, during two telephone support calls from research officers. On these occasions opportunities for managers to provide staff with further support were identified and discussed.

Data Collection and Measures

1. Characteristics of staff
On the day of training, prior to its commencement, staff from participating organisations completed a brief pen and paper survey which included items assessing gender, age, highest educational qualification, time employed at the organisation and their average frequency of home-visits.

2. Provision of healthy eating and physical activity support by staff
Included in the pen and paper questionnaire were a series of questions to assess the healthy eating and physical activity support that staff had provided to families in the past three months. Staff responded, either yes or no, to items assessing if they had; discussed healthy eating and physical activity behaviours with a family; provided physical activity or healthy eating advice or guidance to families; provided physical activity or healthy eating resources to families; or referred a family member to a health professional for further support. Three
months post intervention staff were invited to participate in a follow-up telephone survey conducted by a trained telephone interviewer. The items in the follow-up telephone survey were identical to those at baseline.

3. Acceptability of the Intervention
Managers were invited to participate in a brief telephone survey conducted by a trained telephone interviewer three months post intervention. Managers were asked to respond to a series of statements assessing the acceptability of the specific intervention components on a four-point likert scale (strongly agree, agree, disagree, and strongly disagree). Similarly, during the follow-up telephone survey of staff, staff responded on a likert scale to a series of statements regarding the acceptability of specific intervention components.

Analysis
Data was analysed in SAS version 9.1 statistical software. Descriptive statistics were used to describe characteristics of participating staff and the provision of healthy eating and physical activity support that staff provided to client families during home visits. For assessments of program acceptability, strongly agree and agree responses were combined and reported as the number and proportion of managers and staff agreeing with each statement. To assess the effectiveness of the intervention in increasing the healthy eating and physical activity support provided by staff to families, a McNemar’s Test was used to compare paired values using pre and post intervention data collected from eligible staff participants at baseline and at follow up. All statistical tests were two tailed (alpha <0.05).

RESULTS
Characteristics of participating services and staff
A total of 49 Human Service organisational managers were contacted to determine eligibility to participate in the study. Twelve organisations did not provide a home visiting service to families, and one organisation was not a Non Government Organisation. These 13 services were therefore ineligible. Of the remaining 36 eligible managers of services, 29 (80%) agreed to participate in the study and sent staff who provide home visitation services to attend the intervention training session. The number of home visiting staff, and the total number of employed staff within participating organisations, ranged from 1 – 32, and 1 - 36 respectively. On average, each participating services employed 7 home visiting staff, and had accessed 224 families of children 0-15, in the past year.

Ninety staff from the 29 participating organisations completed the baseline pen and paper survey and participated in the training session. Of these, 69 (77%) participants completed the
follow-up telephone survey. Participants who did not complete the follow-up survey had either ceased employment (n=9, 10%), no longer had a role in their organisation which required home visiting (n=6, 7%), had taken extended leave (n=3, 3%) or refused to participate (n=3, 3%). The average age of the 69 participants providing both baseline and follow-up data was 43 (sd =9.8), the majority were female (93%), had a TAFE certificate or Diploma (52%) or a University degree (39%), and had been employed in the organisation for less than two years (64%). Those that did not provide follow-up data were younger than those that provided follow-up data (mean= 36, sd=12.6; versus mean=43, sd = 9.8; p=0.01). There were no other significant differences in the demographic characteristics of these groups.

Provision of healthy eating and physical activity support by staff

Responses to survey items assessing the provision of healthy eating and physical activity support by staff at baseline and follow-up are presented in Table 1. Prior to the intervention, less than half of all participants (13 to 36%) role modelled healthy eating or physical activity behaviours during family visits, helped parents prepare a healthy meal, helped parents plan a healthy shopping list, or referred family members to a health professional for further assistance. Following the intervention, a significant increase on all measures was observed (p<0.01).
<table>
<thead>
<tr>
<th>Survey Item</th>
<th>Baseline (n/N)</th>
<th>Follow up (n/N)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Healthy eating actions in the last 3 months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided resources to assist families with any unhealthy eating habits</td>
<td>38/68 (%56)</td>
<td>57/68 (%83)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Referred a family member to a health professional for assistance regarding an unhealthy eating behaviour</td>
<td>17/69 (%25)</td>
<td>30/69 (%43)</td>
<td>0.005</td>
</tr>
<tr>
<td>Discussed unhealthy eating habits with a family and provided some suggestions or advice</td>
<td>47/69 (%68)</td>
<td>65/69 (%94)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Role modelled healthy eating behaviour</td>
<td>25/69 (%36)</td>
<td>61/69 (%88)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Helped prepare a healthy meal</td>
<td>9/69 (%13)</td>
<td>22/69 (%32)</td>
<td>0.003</td>
</tr>
<tr>
<td>Helped with a healthy meal plan or a shopping list</td>
<td>13/69 (%19)</td>
<td>35/69 (%51)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Physical activity actions in the last 3 months</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provided resources to assist families increase their physical activity</td>
<td>24/69 (%35)</td>
<td>51/69 (%74)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Referred a family member to a health professional for assistance regarding physical activity</td>
<td>10/69 (%14)</td>
<td>27/69 (%39)</td>
<td>0.001</td>
</tr>
<tr>
<td>Discussed inadequate physical activity habits with a family and provided some suggestions or advice</td>
<td>42/69 (%61)</td>
<td>61/69 (%88)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Role modelled positive physical activity behaviours</td>
<td>18/69 (%26)</td>
<td>54/69 (%78)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Acceptability of the Program

The acceptability of the intervention to both staff and service managers is presented in Table 2. On all measures of acceptability 85% or more of staff and managers responded positively.

### Table 2 Acceptability of the intervention to staff and service managers

<table>
<thead>
<tr>
<th>Agree/ Strongly Agree</th>
<th>(n/N)</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff acceptability of intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would recommend the training, resources and telephone support intervention to other Human Service organisations</td>
<td>69/69</td>
<td>100</td>
</tr>
<tr>
<td>I thought that the intervention training that I attended was useful</td>
<td>69/69</td>
<td>100</td>
</tr>
<tr>
<td>I thought that the intervention resources that I received were useful</td>
<td>69/69</td>
<td>100</td>
</tr>
<tr>
<td>I thought that the intervention telephone support calls that I received were useful</td>
<td>64/69</td>
<td>93</td>
</tr>
<tr>
<td><strong>Management acceptability of the Intervention</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would recommend the GFK* program, which includes the training, support calls and resources, to other Human Service organisational managers</td>
<td>29/29</td>
<td>100</td>
</tr>
<tr>
<td>I thought that the telephone support calls that I received were useful</td>
<td>27/29</td>
<td>93</td>
</tr>
<tr>
<td>I thought that the GFK* resources that were provided were useful</td>
<td>28/29</td>
<td>97</td>
</tr>
<tr>
<td>I found that the example healthy eating and physical activity policy that was provided to our organisation was valuable</td>
<td>27/29</td>
<td>93</td>
</tr>
<tr>
<td>Staff have benefited from the training provided through the GFK* program</td>
<td>28/29</td>
<td>97</td>
</tr>
<tr>
<td>Staff have benefited from the resources provided through the GFK* program</td>
<td>28/29</td>
<td>97</td>
</tr>
<tr>
<td>Staff have benefited from the support calls provided to them through the GFK* program</td>
<td>25/29</td>
<td>86</td>
</tr>
<tr>
<td>Families accessing our service have benefited from our involvement in the GFK* program</td>
<td>28/29</td>
<td>97</td>
</tr>
</tbody>
</table>

* GFK is an abbreviation for the Good for Kids, Good for Life program
DISCUSSION

The findings of the pilot study suggest that providing staff of home visiting services with organisational support, training and resources may be a feasible means of assisting disadvantaged families to create a home environment more supportive of eating healthily and being physically active. Substantial increases (18-52%) in the provision of healthy eating and physical activity support to families by Human Service organisation staff were observed following the intervention. Such findings are important given the social, economic and health burden of obesity experienced by disadvantaged families (Dietz, 1998, Poulton et al., 2002) and the lack of existing home based obesity prevention support services.

Engaging managers in organisational change processes, utilising performance feedback to identify areas to improve the quality of service delivered, and providing staff with sufficient resources and training has been found to be an effective strategy in increasing the provision of health information and support by staff of hospitals (Wolfenden et al., 2005), schools (Knai et al., 2006, Mikhailovich et al., 2007), and workplaces (Licata et al., 2002). The findings of this study suggest that such a practice change model may also improve the physical activity and healthy eating support provided to client families by Human Service organisations. Furthermore, reports by staff and managers regarding the acceptability of the supportive practice change intervention were remarkably positive with all staff and managers participating in the intervention reporting that they would recommend it to other Human Service organisations. Such a positive appraisal of the intervention by staff and managers may, in part, reflect reporting bias among participants who may feel pressure to respond positively to such items. Nonetheless evidence suggesting that the intervention is both effective in improving staff support to families and considered highly acceptable by staff provides a convincing argument for the implementation of similar interventions by health and Human Service organisations with an interest in alleviating the burden of obesity on disadvantaged families.

While the intervention appears to be a feasible approach to increasing the support that staff provide client families with regard to physical activity and healthy eating, the translation of this support into changes in dietary and physical activity habits among disadvantaged families is unknown. Previous home visiting interventions have been found to be effective across a range of outcomes, including reduced postnatal depression (Armstrong et al., 1999), reduced incidents of domestic violence (Olds et al., 2004) and less child abuse and neglect (Holzer et al., 2006). Anecdotal reports by staff suggest that the intervention has been successful in improving a number of important dietary and physical activity behaviours of families. A more
A rigorous, experimental trial of the impact of the intervention on the healthy eating, physical activity and weight status of family members is warranted.

The primary limitation of the trial was its utilisation of an uncontrolled trial design. The possibility exists that the observed changes in care provision by staff were the result of temporal or other unknown confounding factors. Similarly, the trial was limited in its use of mixed methods in the collection of baseline (via pen and paper questionnaire) and follow-up (via telephone survey) data. Potentially staff may have felt more compelled to report positively on items assessing the provision of physical activity and healthy eating support to families following receipt of the intervention during a telephone survey. However, previous research has found that participant responses to pen and paper and telephone surveys are similar (Galobardes et al., 1998). Nonetheless, the magnitude of change in support provided to families following the intervention, and the consistency of this change across outcome measures suggest that an intervention effect did occur.

The burden of socioeconomic disadvantage is exacerbated by excessive weight gain. Without sufficient support, obesity will continue to represent a significant handicap to the health and well being of disadvantaged families. While the prevention of overweight and obesity is not the responsibility of any one organisation or professional discipline, Human Service organisations which provide home visiting services to families are in a unique position to provide basic opportunistic advice and assistance to promote healthy eating and physical activity of family members. The findings of this study suggest that collaborative, practice change initiatives between community service and health sectors may be a feasible approach to increase obesity prevention support to disadvantaged families. On this basis, we recommend that such partnerships are pursued by organisations of both sectors.

ACKNOWLEDGEMENTS

We would like to acknowledge the contributions of the members of the Good for Kids Vulnerable Families Advisory Group and wish to thank them for their valuable guidance. We acknowledge the funding contribution of NSW Department of Health, the Hunter New England Area Health Service and the Hunter Medical Research Institute.
References


**Figure 1: Summary of study sample, intervention and data collection processes**

**Intervention delivery Model**

1. **49 Human Service organisational managers contacted**
   13 organisations ineligible to participate
   (12 did not provide a home visiting service and 1 was not an NGO)

2. **36 eligible organisations invited to participate in intervention trial**

3. **29 Managers of above services agree to participate in the intervention trial (80%)**

4. **BASELINE DATA COLLECTION**
   90 staff from the above services completed a baseline pen and paper questionnaire

5. **INTERVENTION SUPPORT FOR STAFF**
   1. Training workshop facilitated by HNEAHS research officers with expertise in working with human service organisations, and nutrition
   2. Resources to facilitate the provision of healthy eating and physical activity support to families such as fact sheets, water bottles and referral options.
   3. Two support calls to reinforce information and skills developed during training and assist to problem solve barriers.

6. **INTERVENTION SUPPORT FOR MANAGERS**
   1. Two support calls from HNEAHS research officers to encourage organisational leadership and policy adoption, feedback staff performance and facilitate organisational change.
   2. Resources including a policy template; healthy eating and physical activity fact sheets, water bottles to distribute to staff and a train the trainer intervention manual and CD.

7. **3 MONTH POST INTERVENTION DATA COLLECTION**
   69 staff (77%)
   and 29 managers complete a post intervention telephone survey