BDA Research

4th December 2013

Novotel,
70 Broad Street
Birmingham,
B1 2HT

BDA events.

create.excite.innovate.

Contents

Dietitians New to Research

DO PEOPLE ORDER A LOWER CALORIE MEAL WHEN CALORIE INFORMATION IS PRINTED ON RESTAURANT MENUS? A SYSTEMATIC REVIEW OF THE EVIDENCE

[1]R. Allen, [2]Nicola Cooper
Faculty of Health and Life Sciences, Coventry University,Priory Street,Coventry, CV1 5FB
Email: rose_allen@btinternet.com, ab2758@coventry.ac.uk

Background
Obesity has reached epidemic levels globally and the proportion of overweight and obese people in the United Kingdom is increasing, which has potential health consequences for the nation. Eating out has been linked to obesity. Restaurant customers who have been informed of nutrient content of meals may be in a better position to make healthier choices as to content of meal ordered, thereby reducing number of calories ordered per meal. The aim was to establish whether people order a lower calorie meal when calorie information is printed on restaurant menus. The objective was to conduct a systematic review of evidence given in the literature.

Methods
Having gained ethical approval for a desk-based study from Coventry University, a sole investigator conducted a rigorous search of the literature. Only studies answering the research question, of restaurants where specific calorie information was printed on menus, were included. Study types other than randomised controlled trials, cross sectional surveys and cohort studies were excluded. A data collection form was adapted from Cochrane's data extraction form and completed for each study, to extract data and consider methodological quality in terms of randomisation, baseline imbalances, incomplete data outcome, selective outcome reporting, confounders, withdrawals and exclusions.

Results
Ten studies met the inclusion and quality criteria and were included in the systematic review. Five studies found a decrease in calories ordered per meal when calorie information was printed on menus, however the other five found an increase in calories ordered. Number of calories ordered per meal was aggregated across the ten studies and average calories ordered per meal, both with and without calorie information, calculated. The overall result was that that there was no average reduction in calories ordered when calorie information was printed on restaurant menus.

Discussion
There were however reductions in calories ordered per meal in some population sub-groups:
Child/adult differences: There was a significant reduction of calories ordered for children, particularly when parents had made choices for their children (Tandon 2010: 246).
Male/female differences: Whilst on average women did order a lower calorie meal when given calorie information, on average men ordered a higher calorie meal (Gerend 2009: 85).
Calorie education: Several studies stated that combining greater education regarding calorie information with nutritional labelling on menus might increase use of and/or effectiveness of printing nutritional information on menus (Dowray *et al.* 2013: 179).
Label types: There was significant benefit in providing physical activity information, such as miles required to walk, in order to expend the energy of the meal (Dowray *et al*. 2013: 179). A study of children found that printing a "healthy heart" symbol on menus led to children selecting lower calorie meal options (Stutts *et al*. 2013).

Conclusion
There is no strong evidence to support printing calorie information on restaurant menus. On average, people do not order a lower calorie meal when calorie information is printed on restaurant menus. These findings are consistent with those of the most recent systematic review (Swartz, Braxton and Viera 2011: 141). More robust studies and further research into the effect of calorie labelling on sub-groups of the population, different types of menu labelling and the effect of greater calorie education to increase understanding of energy content of foods are required. Further education to increase understanding of energy content of foods may increase effectiveness of printing calorie information on restaurant menus.

References
1. Dowray, S., Swartz, J., Braxton, D. and Viera, A.(2013) 'Potential Effect of Physical Activity Based Menu Labels on the Calorie Content of Selected Fast Food Meals'*Appetite*62.173-181
2. Gerend, M. A. (2009) 'Does Calorie Information Promote Lower Calorie Fast Food Choices among College Students?'. Journal of Adolescent Health 44 (1), 84-86
3. Stutts, M., Zank, G., Smith, K. and Williams, S. (2011) 'Nutrition Information and Children's Fast Food Menu Choices'. Journal of Consumer Affairs 45 (1), 52-86
4. Swartz, J., Braxton, D. and Viera, A. (2011) 'Calorie Menu Labeling on Quick-Service Restaurant Menus: An Updated Systematic Review of the Literature'. *The International Journal of Behavioral Nutrition and Physical Activity* 8, 135-135
5. Tandon, P., Wright, J., Zhou, C., Rogers, C. and Christakis, D. (2010) 'Nutrition Menu Labeling may Lead to Lower-Calorie Restaurant Meal Choices for Children'. Pediatrics 125 (2), 244-248

USE AND UNDERSTANDING OF FOOD LABELLING BY OLDER ADOLESCENTS AGED 16-17 YEARS; AN EXPLORATORY STUDY

M. Ankcorn, C. Wolfendale
Department of Nutrition and Dietetics, University of Chester, Chester, CH1 4BJ,
Email: 1002725@chester.ac.uk

Background

Nutrition information on food labels is considered to be a tool that helps reduce obesity risk by nudging people away from poor dietary habits towards healthy food choices (European Commission, 2007). To work it needs to be available when food is purchased, it has to be clear, easily understood and consumers need to use it. This study explores determinants of label use, lifestyle and dietary habits of 16-17 year old adolescents, and evaluates whether food labelling could be an effective vehicle for promoting healthy food choice in this underrepresented age group.

Method

Cross-sectional survey using a validated questionnaire (Mackison et al., 2010) adapted for use with 16-17 year old adolescents (n=179) from a comprehensive high school in Cheshire, UK. A census approach with option to opt out was used and all pupils present on the day (n=132; male: 65, female: 65, unspecified: 2) completed the questionnaire. Data was analysed using SPSS v20.0. Between group differences of demographic and lifestyle factors were determined for interest in healthy eating (independent-samples t-test and one-way independent analysis of variance), and label understanding (Kruskal Wallis and Mann-Whitney U tests). Categorical data was explored using chi-squared test for independence. A significance level of $p<0.5$ was used. The project was risk assessed and ethical approval granted by the Department of Clinical Sciences Ethics Committee at the University of Chester.

Results

Food labels were considered important by 87% of participants but less than one third (32%) self-reported frequent use of labels when buying food. Nearly three quarters (71%) answered more than half of the label understanding questions correctly; just over half (59%) had a high interest in healthy eating. Label understanding scores were lower for those with: lower GCSE grades in maths ($p<0.001$) and English ($p=0.03$); lower frequency of family meals ($p=0.04$); and higher frequency of fast food consumption ($p=0.03$) and snacking ($p=0.005$). Lower interest in healthy eating was associated with male gender ($p=0.004$), less physical activity ($p=0.04$), and more frequent snacking ($p<0.001$) and fast food consumption ($p<0.001$).

Discussion

A unique aspect of the study was the use of a census type approach that allowed the views of males, females, and those with various levels of interest to be equally represented. Many existing studies focussed specifically on label users or used a random sampling approach to recruitment that results in non-response bias. Those at increased risk of obesity due to dietary and lifestyle choices were found to be less likely to benefit from food labels as they have less interest in healthy eating (a marker for actual in store label use), and lower label understanding and self-reported usage. The association between low GCSE grades and low label understanding highlights a barrier to effective use. The low levels of interest and usage amongst males raises a question about whether the introduction of energy labelling in catering outlets could actually increase energy consumption in this group.

Conclusion

Food labelling may enable those desiring to eat healthily to exercise that choice but has limited influence on the dietary choices of those at increased risk of obesity in this age group.

References

1. European Commission (2007) *White Paper on a strategy for Europe on nutrition, overweight and obesity related health issues.* Available at http://ec.europa.eu/health/ph_determinants/life_style/nutrition/documents/nutrition_wp_en.pdf (accessed on 24th July 2013)
2. Mackison, D., Wrieden, W.L. & Anderson, A. S. (2010) Validity and reliability testing of a short questionnaire developed to assess consumers' use, understanding and perception of food labels. *Eur J Clin Nutr, 64,* 210-217.

A SYSTEMATIC REVIEW INVESTIGATING THE EFFECT OF INTERNET-BASED SOCIAL SUPPORT ON LONG-TERM WEIGHT MANAGEMENT IN ADULTS

C. Armstrong, A. Avery
Division of Nutritional Sciences, University of Nottingham, Sutton Bonington LE12 5RD
Email: charliearmstrong2@hotmail.com

Background

Obesity is recognised as being at the forefront of current 'lifestyle diseases 'and without appropriate interventions the prevalence levels are projected to increase (Government Office for Science, 2007).A major challenge in the treatment of obesity is maintenance of weight loss. (Wing et al, 2005).

The aim of this systematic review is to investigate the effectiveness of internet-based social support as a cost effective method for aiding long-term weight loss maintenance in comparison to traditional methods.

Methods

Three health related databases, Medline, Web of Science and Embase, were searched for studies, reported in the English language, published between 2002 and 2012. Inclusion criteria for the study population was adults >18years who had completed a weight loss programme and then provided with internet based social support for at least a 6 month duration. BMI and weight change data needed to be available. The type of internet support could vary eg e-mails, on-line discussion forums. The quality of each paper meeting the inclusion criteria was assessed using an adapted Newcastle- Ottawa scale (Wells et al, 2010); the highest score being 15. A second researcher independently assessed the selection and quality processes.

Results

Seven studies met the inclusion criteria (quality scores of 7-13); one showed a statistically significant effect of web-based social support in weight loss maintenance versus a traditional face-to-face approach ($p=0.05$). Three studies suggested a possible effect and three no effect. Attrition rates indicate that participant engagement in web-based programmes can be poor and that participant compatibility varied. The majority of subjects were women (1504/1959). Mean duration of follow up period for weight loss maintenance =55.1 weeks. The interventions included private and group e-mails, chat room and bulletin boards. It was suggested that web-based social support programmes could enhance traditional face-to-face communication methods, as opposed to replacing them.

Discussion

Given limited healthcare resources and obesity prevalence the internet could be a scalable vehicle for providing social support for weight loss maintenance. This review found mixed outcomes of the effectiveness of internet-based support. Different components of internet support may be more effective for different people. The studies were mainly comparing internet based support against traditional face-to-face support which is likely to be more costly.

Conclusion

Further research in this area is required. Areas to explore include; for whom this type of weight loss maintenance support would be most appropriate and what methods of delivery/components of internet based support are more effective. Also how can this support be used alongside traditional face-to-face methods to achieve the best long-term weight loss outcomes most cost effectively.

References

1. Government Office for Science:Foresight Report (2007) **Tackling Obesities: Future Choices-Modelling Future Trends in Obesity & Their Impact on Health** [online] Available at: http://www.bis.gov.uk/assets/bispartners/foresight/docs/obesity/14.pdf [Accessed 06.07.2013]
2. Wells, G.A.; Shea, B.; O'Connell, D.; Peterson, J.; Welch, V.; Losos, M. and Tugwell, P. (2010) **The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses.** [online] Available at: http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp [Accessed 06.07.2013]
3. Wing, R.R. and Phelan, S. (2005) Long-term weight loss maintenance. **American Journal of Clinical Nutrition** 82:222S-225S

SYSTEMATIC REVIEW OF THE EFFICACY OF PROBIOTICS FOR THE TREATMENT OR MAINTENANCE OF REMISSION IN UNCOMPLICATED DIVERTICULITIS AND DIVERTICULAR DISEASE

G. Ascione[1], S.Tanner[1], Dr J. Nichols[1], Dr M. Gibbs[1], L.J.Wedlake[2] , Dr B. Engel[1]
[1]Faculty of Health & Medical Sciences, Surrey University, Guildford Surrey; [2]Royal Marsden Hospital, London Email: joasci@outlook.com

Background
There is conflicting evidence regarding the efficacy of probiotics for the treatment of diverticular disease. A number of randomised controlled trials (RCTs) and controlled trials (CT) have been published regarding probiotic use alone and in combination with other interventions, however the general conclusions drawn from these studies suggest that more research in this area is needed.

Methods
A systematic review of published RCTs and CTs, was performed which included the use of probiotics / synbiotics for the treatment or maintenance of remission in diverticulitis and diverticular disease. This involved searching through the following electronic databases: The Cochrane Library, The Cochrane Central Register of Controlled Trials and The Cochrane Database of Systematic Reviews, PubMed, Medline and the Web of Science. No time limit was imposed on the search with the final search conducted in February 2013. Two reviewers working together decided on the inclusion criteria, extracted the data and assessed the quality of selected RCTs and CTs. The inclusion criteria comprised of: RCTs and CTs of probiotics or synbiotics, ingested orally as a sole intervention, in adult patients, male or female, with uncomplicated diverticular disease. Outcomes were assessed using symptom questionnaires and VAS scores for pain

Results
Initially 129 studies were identified from searches. These studies were examined in detail resulting in exclusion of all but 5 studies which appear to satisfy the criteria (RCT:0, CT:3 - compared treatments; antibiotics or anti-inflammatory vs probiotic, Trial: 2 - participants acted as own control) Studies 1 & 2 variously claimed improvements in symptoms and remission rates when patients were compared to previous periods of treatment not including probiotics. Studies 3-5 showed a comparable effect of probiotics and antibiotics and possibly a synergistic effect when both treatments were used

Discussion
All five of the studies investigated the effectiveness of specific bacterial strains in reducing the severity of symptoms or preventing recurrence of symptoms in uncomplicated, diverticular disease of the colon with favourable outcomes, though a more recent study showed no additional efficacy (Stollman et al 2013). These results are however confounded by considerable defects in study design; lack of a placebo (at least 40% of patients may not suffer symptoms without any treatment) (Chabok et al 2012), lack of proper randomisation and no blinding (patients or observers).

Conclusions
Probiotics may be as effective as antibiotics or anti-inflammatory medications with regards to symptom control and remission rates. Whether they are better than a placebo or other treatments such as a high fibre diet still needs to be ascertained by adequately powered, good quality, randomised controlled trials.

References

1. Chabok, A.*, et al* (2012) Randomized clinical trial of antibiotics in acute uncomplicated diverticulitis, *The British journal of surgery,* 99 (4), pp. 532-539
2. Stollman, N., Magowan, S., Shanahan, F. & Quigley, E.M.M. (2013) A Randomized Controlled Study of Mesalamine After Acute Diverticulitis: Results of the DIVA Trial, *Journal of clinical gastroenterology,* 47 (7), pp. 621-629

DIET AND THE DIETITIANS ROLE IN THE MANAGEMENT OF INFLAMMATORY BOWEL DISEASE: A PHENOMENOLOGICAL EXPLORATION OF PATIENTS' AND HEALTHCARE PROFESSIONALS' PERSPECTIVES

A. Burke, H. Ahmed
Faculty of Health, Social Care and Education, Kingston University and St George's, University of London, Cranmer Terrace, London SW17 0RE Email: aoife.burke@gstt.nhs.uk and h.ahmed@sgul.kingston.ac.uk

Background
Crohn's disease and ulcerative colitis are chronic relapsing-remitting inflammatory diseases collectively known as inflammatory bowel disease (IBD). Symptoms include abdominal pain, diarrhoea, blood in stools, fatigue and weight loss. Problems with nutrition are common and impact on patients' quality of life, nutritional status and general health (Lomer, 2011). Nutrition plays an important role in the management of patients with IBD. Dietitians work within a multi-disciplinary team of healthcare professionals to manage these problems. However poor dietetic service provision to IBD patients has been observed (IBD Standards Group, 2009). Reports on the nutritional problems experienced and how these problems are managed, have not been studied. The study aim was to explore IBD patients' and healthcare professionals' experiences of diet and the dietitian's role in the management of IBD.

Methods
A qualitative interpretive phenomenological approach was adopted using focus groups. Ethical approval was granted by the Research Ethics Committee, the Research & Development Department for the research site and the academic institution. Five participants who have seen a dietitian for their IBD were purposively sampled from the dietitians' records of a hospital in the East of England and two focus groups were conducted. Twelve healthcare professionals who manage diet and work with dietitians in IBD were purposively sampled from the same hospital. These were split into 3 focus groups: gastroenterologists (n=4), nurses (n=3) and dietitians (n=5). Focus group discussions were piloted, conducted in the researcher's workplace, tape recorded and moderated by the researcher using a topic guide. Discussions were transcribed verbatim and data analysis performed using interpretive phenomenological analysis (Smith and Osborn, 2008).

Results
The focus groups highlighted that dietary issues and management of IBD are varied, complex and had a significant impact on patients' quality of life. There was disparity between healthcare professionals in addressing the need for holistic management of diet, with only some participants recognising the importance of managing the physical, psychological and emotional dimensions of IBD. Despite this, both patients and healthcare professionals positively regarded dietetic support in helping patients gain control of their lives, for detailed advice and symptom control. Participants highlighted the need for increased dietetic awareness and healthcare team collaboration, with more time and earlier intervention to support IBD patients.

Discussion
Healthcare professionals need to recognise the impact of dietary interventions on patient's lives and work together to support IBD patients. They need to adopt a holistic philosophy to ensure the physical, psychological and emotional impact of diet on patient's lives is adequately addressed. This is consistent with results from Barr and Schumacher (2003) highlighting the need for a nutrition-related quality-of-life measure to understand the effect of nutritional interventions on patients' lives. With appropriate dietetic support and treatment, many concerns might be resolved, which is consistent with findings from Heitkemper *et al.* (2004). The differences in healthcare professionals' perceptions on holistic management in IBD need further research.

Conclusion
Service providers must recognise the need for increased dietetic service provision for IBD in line with recommendations for a minimum of 0.5 whole time equivalent dietitian dedicated to gastroenterology. This would help improve team communication and availability of dietitians to ensure earlier and more efficient interventions as required by IBD patients with improved patients' outcomes and quality of life.

References
1. Lomer, M. (2011) Symposium 7: Nutrition in inflammatory bowel disease. Dietary and nutritional consideration for inflammatory bowel disease. *Proceedings of the Nutrition Society,* 70, 329-335.
2. IBD Standards Group (2009). *Quality care. Service standards for the healthcare of people who have Inflammatory Bowel Disease.* Retrieved 12 November 2012 from http://www.ibdstandards.org.uk/default.asp
3. Smith, J. and Osborn, M. (2008) Interpretative Phenomenological Analysis, in Smith J.A. (ed.) *Qualitative Psychology; a practical guide to research methods.* 2nd edn. London: Sage Publications, 53-80.
4. Barr, J. and Schumacher, G. (2003) The need for a nutrition-related quality-of-life measure. *Journal of the American Dietetic Association,* 103, 177-180.
5. Heitkemper, M., Jarrett, M., Levy, R., Cain, K., Burr, R., Feld, A., Barney, P. and Weisman, P. (2004) Self-management for women with irritable bowel syndrome. *Clinical Gastroenterology and Hepatology*, 2 (7), 585-596.

KNOWLEDGE & PERCEPTION OF CONSEQUENCES OF TYPE 2 DIABETES: A CROSS-SECTIONAL STUDY

E. Capener and K. Gallimore
Centre for Nutrition and Dietetics, Cardiff School of Health Sciences, Cardiff Metropolitan University, Western Av, Cardiff, CF5 2YB Email: KGallimore@Cardiffmet.ac.uk

Background

Type 2 Diabetes (T2D) is rising in the UK and many seem unaware that obesity and lack of exercise may predispose the condition. Furthermore, poor knowledge of this and of health consequences of T2D coupled with apparent lack of concern about T2D appears to be widespread, resulting in less initiative to modify behaviour (BUPA, 2011).
The study aimed to investigate the knowledge and perception of T2D and its consequences in different population age groups.

Methods

A cross-sectional survey of adults aged 18 – 60 years was employed via face to face opportunist sampling of people known to the researcher – those with diabetes or close family/ friends with the condition were excluded. The questionnaire gathered qualitative and quantitative data whereupon qualitative data were grouped into 'Key Themes' and 'Sub Themes' utilising a grounded theory approach for analysis (Pope et al, 2000). Quantitative data were arranged for descriptive statistical analysis. Testing was performed for significance between population groups and trends using one-way ANOVA and Spearman's correlation respectively using SPSS 20.0. Ethical approval was granted by the University ethics panel prior to the study.

Results

Face to face sampling resulted in all 150 questionnaires being returned: 29% aged 18 – 32yrs (Age Group 1); 30% aged 33-47yrs (Age Group 2); 41% aged 48-60yrs (Age Group 3).
On a scale of 0-10 (10 = very serious), obesity was rated highly as having serious implications by all age groups (range 8.93 – 9.08) but no significant difference was found between them.
Participants were more aware of the microvascular (52%) than the macrovascular (21%) consequences of T2D, and a quarter (27%) were unable to list any consequences.
Perceived severity of health implications of T2D increased with age and was significant (P=0.025)
Age Group 1 was significantly less likely than Age Group 3 to perceive T2D as having serious health implications (ANOVA p=0.021)

Discussion

This study is limited in its generalizability due to sampling bias yet provides useful insights into understanding public perceptions. Findings indicate on average the youngest participant age group has a more ambivalent attitude towards T2D as also found by Weaver et al (2008). Younger adults tend not to worry about their health but become more conscious of it as they age due to peers becoming affected. This suggests that future health campaigns may be more beneficial if they focus on improving the younger populations' awareness of the health burden linked to conditions such as T2D.
Despite high awareness of obesity and implications for health, there was a lack of awareness of macrovascular consequences of diabetes, which is concerning since CHD, linked also with obesity, is a leading cause of mortality in those with T2D (WHO, 2012).
A quarter of respondents (27%) did not know of any consequences, possibly indicating that the UK public do not have adequate knowledge about T2D. Half of participants (52%) were aware of microvascular consequences, which may prompt a screening check for T2D. However, when individuals do not understand T2D or the severity of associated health consequences, they may not take action to prevent it. This could be contributing to the rising prevalence of diabetes.

Conclusion

In conclusion, this study highlighted some weak areas of knowledge and ambivalence towards health among younger adults. Health campaigns should aim to raise public awareness, particularly focusing on changing the attitude of the younger generation.

References

1. BUPA (2011) *International Healthcare Survey.* Available at: http://www.bupa.com/media/288798/bupa_health_pulse_report_2011.pdf [Accessed on 4 March 2013]
2. Pope, C., Zeibland, S. and Mays, N. (2000) Qualitative research in health care. Analysing qualitative data. *British Medical Journal*. **320** (7227) pp114-116
3. Weaver, N. F., Hayles, l., Unwin, N. and Murtag, M, J. (2008) "Obesity" and "Clinical Obesity" Men's understandings of obesity and its relation to the risk of diabetes: A qualitative study. BMCPublic Health, 8(311) Pp.1-8.
4. WHO (2012) World Health Statistics 2012. [pdf] France: World Health Organisation. Available at: http://apps.who.int/iris/bitstream/10665/44844/1/9789241564441_eng.pdf [Accessed on 8 March 2013]

THE PERCEIVED BARRIERS AND BENEFITS OF CONSUMING A PLANT-BASED DIET

R.K. Corepal and J. Copeman
Faculty of Health and Social Sciences, Leeds Metropolitan University, Leeds, UK
Email: RCorepal@gmail.com

Background
A plant-based diet (PBD) consists of 'an eating *pattern dominated by fresh or minimally processed plant foods and decreased consumption of meat, eggs and dairy products'.* (Lea, Crawford and Worsley, 2006). There is evidence to suggest that a PBD is one of substantial health benefits, and potential environmental benefits especially (Sievenpiper and Dworatzek, 2013). However, barriers to consuming a PBD have been identified such as needing more information about a PBD, and not wanting to change eating habits (Lea et al, 2006). This study aims to explore the publics' views on the perceived benefits and barriers of consuming a PBD in adults aged between 18-35 years.

Method
The survey was conducted on New Street, Birmingham over a day. Leeds Metropolitan University granted ethical approval. Participants (n=50) aged 18-35 years were recruited randomly using snowball sampling. Data was collected using a self-administered questionnaire. The frequency of participant responses was calculated, and cross tabulations (Pearson's test of significance) by gender, age and education were performed.

Results
The most frequently perceived benefits of a PBD included its ability to 'prevent disease' (90%), 'eat a greater variety of food' (86%) and 'eat more fibre' (86%), with benefit to 'the environment' (20%) considered least. The most frequently perceived barriers were that *'there is a not enough iron'* (88%), *'not enough protein'* in a PBD (84%) and 'it takes too long to prepare' (80%). More women perceived a PBD as a way to 'eat a more 'natural' diet' (P <0.01) as a benefit, whereas more men perceived 'humans are meant to eat lots of meat' (P <0.01), and 'I don't know what to eat instead of lots of meat' (P <0.05) as barriers. The youngest age group (18-23yrs) more than other age groups perceived a PBD would 'have plenty of energy' (P <0.05) as a benefit, the oldest age group (30-35yrs) were more likely perceive that 'it would not be tasty enough' (P <0.05) as a barrier.

Discussion
Gender differences found in this study reinforce the findings of Lea et al. (2006), indicating that perceptions of a PBD may differ according to gender, and therefore initiatives promoting a PBD may need to take this into account. Age differences found in Lea et al. (2006) and this study show that younger respondents may be more amenable to a PBD. In this study no significant differences were found between education levels, this is in contrast to current work in the area, which sees education as a more influential factor.

Conclusion
This is the first study examining benefits and barriers of plant-based diets in to UK, and has provided a platform for future research.

References

1. Lea, E.J., Crawford, D. & Worsley, A. (2006) Public views of the benefits and barriers to the consumption of a plant-based diet. *European journal of clinical nutrition*, 60 (7), pp.828–837.

2. Rozin, P., Hormes, J.M., Faith, M.S. & Wansink, B. (2012) Is Meat Male? A Quantitative Multimethod Framework to Establish Metaphoric Relationships. *Journal of Consumer Research*, 39 (3), pp.629 – 643.

3. Sievenpiper, J.L. & Dworatzek, P.D.N. (2013) Food and Dietary Pattern-Based Recommendations: An Emerging Approach to Clinical Practice Guidelines for Nutrition Therapy in Diabetes. *Canadian Journal of Diabetes*, 37 (1), pp.51–57.

COMPARISON OF NUTRITIONAL INTAKE OF FREE LIVING ADULTS AGED ≥75 YEARS RECEIVING HOME DELIVERED MEALS WITH DIETARY REFERENCE VALUES

M. Davies, L. Knowles

School of Life and Medical Sciences, University of Hertfordshire, Hatfield. AL10 9AB

Email: michelle-davies1@hotmail.co.uk

Background

House-bound older adults are at risk of malnutrition (Sharkley, 2008). However there is limited knowledge of dietary intake in this population in the UK. The 'meals on wheels' (MOW) service delivers meals to this population to help meet their nutritional requirements. This study aimed to compare the nutritional intake of older adults receiving MOW with dietary reference values (DRVs) and to consider the contribution that MOW provides to the daily intake.

Methods

The study recruited people aged ≥75 years, free from cognitive impairment to ensure consent was obtained, receiving MOW either as lunch service (LS) or lunch and tea service (LTS). Participants completed a 3-day un-weighed food and drink diary to reflect intake variation and participant burden. Data were analysed using descriptive statistics and were compared with population DRVs (Department of Health, 1991). Ethical approval was obtained from the University of Hertfordshire.

Results

Thirteen people agreed to participate and completed diaries were provided by five men and six women. Eight of these participants received LS and three received LTS

Table: Mean nutritional intake per day and mean contribution of MOW to total nutritional intake and DRVs.

	Total mean intake[a]	DRV[b]	Mean contribution of LS to total intake	Mean contribution of LTS to total intake
Energy (kcal)	Male (n=5) 2040 Female (n=6) 1453	Male 2100 Female 1810	28%	47%
Calcium (mg)	1034 ± 401	700	14%	37%
Vitamin D (μg)	4 ± 4.1	10	42%	61%
Folate (μg)	298 ± 75	200	45%	61%
Vitamin C (mg)	74.9 ± 24.0	40	54%	79%

[a]Mean ± SD; [b]Estimated average requirement (EAR) for energy; reference nutrient intake (RNI) for other nutrients, (Department of Health, 1991).

Discussion

Participants did not rely on MOW as their main food source and had good intakes of calcium, folate and vitamin C, which is in contrast to a recent study in Ireland (O'Dwyer *et al*, 2009), but similar to the findings of the National Diet and Nutrition Survey (NDNS) for adults >65 years (Bates *et al*, 2011). Despite the regular use of vitamin D fortification within MOW deserts, nine participants had poor intakes; a finding consistent with both these published studies. MOW provided foods rich in folate and vitamin C. MOW contribution to calcium and energy intake improved when both lunch and tea service were provided suggesting that foods served at tea provided a good source of calcium. Mean energy intakes were comparable to the NDNS and exceeded EAR when participants had both lunch and tea service, although the limitations of using the EAR need to be considered. Despite these findings, this study attracted the most able and cognitively well people within this vulnerable population.

Conclusions

The intake of most participants met DRV, except for vitamin D and energy, and was better amongst those consuming LTS than those with lunch alone. Contribution from MOW to the overall dietary intake varied between nutrients.

References

1. Bates, B., Lennox, A., Bates, C. & Swan, G. (2011). National Diet and Nutrition Survey - Headline results from years 1 and 2 of the rolling programme (2008/2009 - 2009/2010). Accessed on 18th May 2012 from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/152236/dh_128550.pdf.pdf.
2. Department of Health. (1991). Dietary Reference Values for food energy and nutrients for the United Kingdom - Report 41. London: The Stationary Office.
3. O'Dwyer C, Corish CA, Timonen V (2009). Nutritional status of Irish older people in receipt of meals-on-wheels and the nutritional content of meals provided. *J. Hum. Nutr. Diet.* 22; 521-7.
4. Sharkley, J.R. (2008). Diet and health outcome in vulnerable populations. *Ann. N.Y. Acad. Sci.* **1136**, 210-217.

THE ROLE OF BREASTFEEDING IN POSTPARTUM MATERNAL WEIGHT LOSS, BODY SATISFACTION, WELL-BEING AND CONFIDENCE LOSING WEIGHT

R Davies and A Avery
Division of Nutritional Sciences, University of Nottingham, Sutton Bonington campus, Loughborough, LE12 5RD
Email: Amanda.avery@nottingham.ac.uk

Background

Evidence shows that breastfeeding has a major role to play in public health, promoting health and preventing disease in the short and long-term for both mother and infant (NICE, 2006). In addition to the established benefits, exclusive breastfeeding is suggested as an effective method of weight loss during the postpartum period due to the increased energy costs of lactation (Hatsu et al, 2008).However this potential benefit is very dependent on the duration of exclusive breast-feeding. Breastfeeding may also be related to improved maternal mental well-being (Mezzacappa, 2004).

This aim of the study is to assess the role of breastfeeding in postpartum women on weight loss through self-reported weight measurements pre-pregnancy and current weights and to compare levels of mental well-being with those women who were not breastfeeding.

Methods

Postpartum women, who had given birth in the last year, were invited to complete an online SurveyMonkey questionnaire, live from 12/10/12 to 09/11/12, posted on pregnancy forums – selected because there was no charge attached to the posting. The questionnaire, including 84 questions, was developed from previous questionnaires written by the University of Nottingham MAGIC study team to explore the predictors of weight management in post-partum women. For this research responses to seven questions were analysed. An independent t-test was conducted to investigate the relationship of breastfeeding with weight change postpartum. A Mann-Whitney U Test used to analyse the relationship between breastfeeding and maternal body satisfaction, well-being and confidence returning to pre-pregnancy weight. This data was non-parametric and was scored on a scale with a mean score used to calculate statistical significance.

Ethical approval was obtained on the 18/5/2012 from the University of Nottingham School of Sociology and Social Policy.

Results

The sample of 1405 postpartum women ranged in age from under 20 years to 49 years with 50.9% breastfeeding and 49.1% non-breastfeeding. No statistical significance was found between breastfeeding and postpartum weight loss. Breastfeeding women were significantly more satisfied with their body ($p<0.01$) compared to those not breast-feeding. The study also found a positive correlation between breastfeeding and well-being. Breastfeeding women reported feeling more calm and peaceful ($p<0.005$). Breastfeeding women were significantly less likely to feel downhearted and low ($p<0.002$). But there was no statistical difference in energy levels. Breastfeeding women were significantly more confident about losing their gestational weight ($p<0.01$).

Discussion

Breastfeeding was not associated with improved postpartum weight loss but those women who were breast-feeding felt more confident about being able to lose weight and return to their pre-pregnancy weight compared to those women not breast-feeding. The study did find a positive correlation between breastfeeding and increased body satisfaction and maternal mental well-being. Study limitations are that the respondents were at different stages postpartum and the responses were not definite as to the duration of breastfeeding or its exclusivity. Also the pregnancy forums selected may have introduced some bias into the study sample and thus the findings may not be truly representative.

Conclusion

This research may help introduce new strategies to help promote breastfeeding as a positive experience improving mother's self-confidence and reducing depressive feelings. More research is required to further explore the links between breast-feeding and maternal self-esteem and self-worth. Being more confident about losing weight may be beneficial in postpartum weight management but this requires further study.

References

1. Hatsu I, McDougald D, Anderson A. 2008. Effect of infant feeding on maternal body composition *International Breastfeeding Journal*; 3 (1): page 18
2. Mezzacappa E. 2004. Breastfeeding and Maternal Stress Response and Health. *Nutrition Reviews:* 62(7); pages 261-268
3. NICE,2006. Promotion of breast-feeding,initiation and duration:evidence into practice briefing. www.nice.org.uk

A SYSTEMATIC REVIEW OF NON-CONTINUOUS VERSUS CONTINUOUS GASTRIC TUBE FEEDING AND RISK OF ASPIRATION PNEUMONIA, DELAYED GASTRIC EMPTYING AND DIARRHOEA IN ADULTS

S. Dawe, B. Tighe
Faculty of Health and Life Sciences, Coventry University, Priory Street, CV1 5FB
Email: dawes@coventry.ac.uk

Background

Enteral tube feeding (ETF), either continuous or non-continuous may be used to meet nutritional needs, but is associated with risks of aspiration pneumonia, delayed gastric emptying or diarrhoea. These can have serious consequences, particularly for patients who are critically ill or with swallowing disorders (DeLegge, 2002). The aim of this review was to compare the incidence of complications associated with non-continuous (N-CETF) versus continuous delivery (CETF).

Method

Databases MEDLINE, CINAHL, Cochrane Library, ProQuest, AMED and SCOPUS were searched between February 26th - March 8th 2013. Both the search and review were carried out by a single investigator. All study designs were considered that assist in answering the question. Outcome measures were aspiration pneumonia (AP), pulmonary aspiration, delayed gastric emptying and diarrhoea. Quality assessment was carried out on all included studies using a tool for quantitative studies (EPHPP 2009).

Results

7 studies were included: 4 randomized controlled trials (RCTs); 2 controlled clinical trials (CCTs); and 1 case study (total of 682 subjects). All trials commenced in hospital, 4 in general medical wards and 3 in intensive care. Of the 5 studies with AP as an outcome, none reported a significant difference between N-CETF and CETF. Of the 3 studies reporting the incidence of stool frequency and consistency 2 found no significant difference between N-CETF and CETF. However, 1 CCT reported a five-fold increased risk of diarrhoea with fibre-free N-CETF when compared to fibre-rich CETF. There was no statistically significant difference between the two modes of feeding with regard to delayed gastric emptying and pulmonary aspiration. Of the 4 RCTs 3 were rated to be of moderate quality and the remaining 4 studies were rated to be of weak quality.

Discussion

No strong evidence exists of clear benefit for one mode of delivery over another, which is consistent with previous review literature (Chen, 2009) and guidelines (Stroud, 2003). The lack of clear, good-quality evidence in ETF studies may in part be due to ethical considerations. The absence of an internationally standardized tool for assessing stool consistency and frequency undermines the validity and reliability of some of the stated results (incidence of diarrhoea).

Conclusion

This review does not provide conclusive evidence that the incidences of complications are different between N-CETF and CETF and is thus unable to make recommendations for a change in practice.

References

1. Chen (2009) Critical Analysis of the Factors Associated with Enteral Feeding in Preventing VAP: A Systematic Review*. J Chin. Med. Assoc.* 72 (4), 171-178

2. DeLegge, M. H. (2002) Aspiration Pneumonia: Incidence, Mortality and at-Risk Populations. *JPEN J Parenter. Enteral Nutr*. 26 (6) S19-24

3. Effective Public Health Practice Project (EPHPP) (2009) Quality Assessment Tool for Quantitative Studies [online] available from http://www.ephpp.ca/Tools.html [15th March 2013]

4. Stroud, M., Duncan, H. and Nightingale, J. (2003) Guidelines for Enteral Feeding in Adult Hospital Patients*. Gut* 52 Suppl 7, vii1-vii12

RELATIONSHIP BETWEEN HEIGHT AND ULNA LENGTH IN GIRLS AGED 4-17 YEARS FROM UTTARAKHAND, NORTHERN INDIA

J. Dray, A.M. Madden
School of Life and Medical Sciences, University of Hertfordshire, Hatfield, Herts, AL10 9AB.
Email: jennifer.dray1@gmail.com

Background

Assessing nutritional status of children in the Northern Indian state of Uttarakhand is important because the prevalence of under-nutrition is higher than in most other parts of India (Luthra *et al*., 2012). Assessment usually includes height measurement but this is not always possible, for example due to disabilities, so alternative methods of assessing height are required. Predicting height from ulna length has been studied in adults and children in different locations and evidence indicates the need for population specific equations due to anthropometric variations (Madden *et al*., 2012). To date, no studies of ulna length in Uttarakhand have been published. The aim of this study was to investigate the relationship between height and ulna length in girls in this area to evaluate whether data could be used to derive an equation to predict height.

Methods

Sixty-nine girls aged 4-17 years from an orphanage in Uttarakhand consented to participate. Height and ulna length were measured using standard procedures. The distribution of data was tested for normality. The relationship between the two variables was assessed using Spearman's rank for the whole group and Pearson's correlation coefficient for a subgroup aged ≥11 years (n=42) as data were only normally distributed in the latter. Linear regression was used to develop a prediction equation to estimate height from ulna length in the older girls. The mean difference between measured height and values predicted using the derived equation was examined using a paired sample T test. Ethical permission was obtained from the University of Hertfordshire.

Results

A significant positive correlation was identified between ulna length and height in all participants (r=0.935, p=0.001) and in those ≥11 years (r=0.803, p=0.001). The following regression equation was developed to predict height in those aged ≥11 years: *Height [cm] = 59.425 + (3.976 x ulna length [cm]).*

The mean difference between measured and predicted height was <0.1 cm (p=0.998).

Discussion

The results demonstrate a close relationship between height and ulna length in this population which agrees with previous findings from studies of adults in India and in Asian children in the UK (Gauld *et al*., 2004; Shah *et al*., 2012) but differs from those of Asian women in the UK where a weak relationship was found (Madden *et al*., 2012). The equation developed should be tested in another population in the same region to assess predictive validity and if it is a useful method for estimating height. The study limitations include its small sample size, uncertainty over the age of some girls and the potential for confounding due to earlier faltering growth in some participants.

Conclusion

Ulna length is closely associated with height in girls from Uttarakhand which has allowed an equation to be derived to predict height in those aged ≥ 11 years.

References

1. Gauld, L. M., Kappers, J., Carlin, J. B. & Robertson, C. F. (2004). Height prediction from ulna length. *Dev. Med. Child. Neurol* 46, 475-480.
2. Luthra, M., Kishor, S. & Jain, K. (2012). Epidemiology of under-nutrition in children between 0 and 5 years from rural areas of Dehradun. *Indian J. Community Health,* 21, 18-21.
3. Madden, A. M., Tsikoura, T. & Stott, D. J. (2012). The estimation of body height from ulna length in healthy adults from different ethnic groups. *J. Hum. Nutr. Diet.* 25*,* 121-128.
4. Shah, S. D., Saiyed, M. Z. G. & Patel, P. R. (2012). A study of relation of stature and percutaneous ulnar length. *Natl. J. Integrated Research Med.* 3, 73-76.

COMPLIANCE TO SUPERVISED AND HOME BASED DIET AND EXERCISE WEIGHT LOSS PROGRAMMES FOR OVERWEIGHT WOMEN WITH BREAST CANCER RELATED LYMPHOEDEMA

M Farragher[1], C Wright[1], D McMullan[2], S Forcan Wood[2], K Livingstone[2], M Pegington[2] M Harvie[2].
[1] Department of Clinical Sciences University of Chester. Parkgate Road, Chester CH1 4BJ, [2]Genesis Breast Cancer Prevention Centre, University Hospital of South Manchester, Southmoor Rd, Manchester.M23 9LT Email: .margaret.farragher@bfwhospitals.nhs.uk

Background
Weight loss can improve breast cancer related lymphoedema [BCRL] (Shaw et al. 2007), but is not routinely advised in clinical practice which just involves standard arm mobility exercises. We are determining whether supervised or home based diet and exercise weight loss programmes are effective for reducing weight and lymphoedema in a feasibility study This abstract presents preliminary data on compliance to the weight loss interventions.

Aims
To evaluate change in weight, body fat, waist circumference, dietary intake and physical activity in breast cancer survivors' with lymphoedema who were randomised to either a 12 week supervised or home based diet and exercise weight loss programme or two comparison groups.

Methods
Ethical approval was granted by North West 10 Research Ethics Committee – Greater Manchester North 11/H1011/2 .Fifty seven overweight breast cancer survivors' with lymphoedema were randomly assigned: Supervised group, diet and exercise weight loss advice delivered during weekly sessions at the research facility (*n*= 12); Home- based group, diet and exercise weight loss advice via fortnightly phone calls and tailored mailings (*n*=16); Comparison group 1, arm mobility and standard written weight loss advice group (*n*=12); Comparison group 2, arm mobility advice only group who did not receive any weight loss advice (*n*= 17).

Data analysis
Weight and body fat, measured via DXA and waist circumference were assessed at baseline and 12 weeks. Seven day diet and physical activity diaries were analysed for changes in energy intake and cardiovascular activity. Changes in variables apply last observation carried forward analysis. There were no planned statistical analyses in this feasibility study.

Results
Four participants from the home- based diet + exercise group and four from comparison group 2 dropped out of the study.
Table Change in anthropometry, dietary and physical activity measures from baseline to 12 weeks amongst participants with breast cancer related lymphoedema

	Supervised group (*n*=12)	Home-based group (*n*=16)	Comparison group 1 (*n*=12)	Comparison group 2 (*n*=17)
Body weight [kg] mean (95% CI)	-2.8 (-2.7 to -3.0)	-3.2 (-3.1 to -3.2)	-1.1 (-0.7 to -1.5)	-0.2 (0 to -0.4)
Body fat [kg] mean (95% CI)	-1.7 (-1.6 to -1.9)	-2.8 (-2.5 to -3.1)	-0.9 (-0.3 to -1.6)	0.3 (0 to 0.5)
Waist (cm) median (IQR)	-1.7 (-5.5 to 0.4)	-2.6 (-8.5 to 0)	-0.9 (-2.8 to 0.7)	0 (-1.5 to 0.9)
Energy Intake [kcal] mean (95% CI)	-254 (-243 to -261)	-396 (-333 to -436)	-263 (-199 to -306)	-71 (-27 to -103)
CV activity [minutes] median (IQR)	-25 (-155 to 80)	50 (-60 to 325)	0 (-25 to 20)	-27 (-110 to 69)

The supervised and home based groups had numerically greater reductions in body weight and body fat than the comparison groups. Changes in body fat and waist circumference represent real reductions in general and central adiposity, which are independent of any changes in weight and body water which may occur in patients with lymphoedema.

Discussion

The successful reductions in body weight and fat with the two lifestyle interventions show it is possible to reduce adiposity in overweight women with BCRL.

Conclusion

Further analysis from this pilot trial will assess changes in lymphoedema between the groups. The longer term adherence and success of the home based and supervised interventions would need to be tested in a larger randomised trial.

References

1. Shaw, C. et al. (2007) *Cancer*, 11,1868- 1874.

IDENTIFYING DIETITIAN'S EXPERIENCES AND VIEWS OF OTHER HEALTH PROFESSIONALS (HCPS) GIVING NUTRITIONAL ADVICE (2013)

C. Gee, J. McClinchy
School of Life & Medical Sciences, University of Hertfordshire, Hatfield, Herts AL10 9AB.
Email: charlotte.gee27@hotmail.co.uk

Background
There is an increase in dietary related long term conditions with insufficient numbers of dietitians to see all the patients requiring dietary advice. Previous research has highlighted that dietitians are uncertain as to the ability of healthcare professionals (HCPs) to give nutritional advice and that aspects such as training need improvements to increase the effectiveness of advice (Doherty et al., 2012). The aim of this study is to expand on this research by identifying the HCPs dietitians commonly work with, whether dietitians think it is suitable for these HCPs to give nutritional advice and the role of dietitians in facilitating HCPs giving advice and any barriers to this role.

Methods
An online questionnaire using the Bristol Online Survey Programme was developed. The participants were registered NHS dietitians in the Eastern Region. Verbal permission for the dietitians to participate was gained through their dietetic managers via a telephone call. Subsequent information and the questionnaire's link was then e-mailed to participants via their dietetic manager. In total 300 dietitians were recruited. The data collected was then analysed using descriptive statistics and categorisation into key themes (Dey, 1993 & LoBiondo-Wood and Haber, 2002).

Ethics
Ethics approval was gained from the University of Hertfordshire's Health and Emergency Professions Ethics Committee.

Results
84 dietitians responded (28% of those recruited), working in different dietetic settings alongside a wide range of HCPs, with the top 3 HCPs, the dietitians worked with, being diabetes nurses (69% respondents), General Practitioners, GPs, (64% respondents) and Speech and Language Therapists (66% respondents). Also, through the use of the "other" option, dietitians added addition HCPs such as health visitors, community carers, education programme leads (1% respondents). Overall, 91.7% of dietitians believed that HCPs giving advice is beneficial. The qualitative data gained highlighted two main themes; "HCPs involvement in first-line advice" and "implications of incorrect advice".

Discussion
Overall dietitians were positive about other HCPs providing first line nutritional advice. However concerns were raised with regards to incorrect advice being given by HCPs, due to barriers for dietitians in facilitating support such as limited time for training and high turnover of staff members. Dietitians were concern as incorrect, non-up-to-date information given to patients could have a negative impact on patients (Hankey, Eley, Leslie, Hunter and Lean, 2004). The dietitians' classification of HCPs was also unclear. The original HCP list was composed using the HCPC register with the addition of doctors and nurses; however some participants classed other advisory sources such as health programme trainers as HCPs. This questions whether dietitians are aware of all potential advisory sources giving nutritional advice and also questions whether these sources have appropriate nutritional training.

Conclusion
Overall, Dietitians believe that HCPs are beneficial when giving out first-line nutritional advice but were concerned with HCPs giving out more in-depth, complex advice. The dietitians' definition of an HCP was also unclear, questioning whether dietitians are aware of all sources of nutritional advice. This is therefore a potential area that could be explored through further research.

References
1. Dey, I. (1993). Qualitative data analysis: A user-friendly guide for social scientists, London: Routledge
2. Doherty, S., McClinchy, J., Gordon, L., Williams, J., Fairey, G., & Cairns, M., (2012) A multidisciplinary approach to providing nutritional advice: the views and experiences of allied health professionals and dietitians. Nutrition & Dietetics; 69 (suppl. 1): 72-164. (Abstract).
3. Hankey, C. R., Eley, S., Leslie, W. S., Hunter, C. M. and Lean, M. E. J. (2004). 'Eating habits, beliefs, attitudes and knowledge among health professionals regarding the links between obesity, nutrition and health', Public Health Nutrition, 7(2), 337-343.
4. LoBiondo-Wood, G. and Haber, J. (2002). Nursing Research: Methods, Critical Appraisal and Utilization (5th ed.), St. Louis: Mosby Inc.

AN INVESTIGATION INTO PATIENT ADHERENCE TO DIETARY ADVICE FOR TYPE 2 DIABETES MELLITUS

N Griffiths, J McClinchy
Room 2F323, Department of Nutrition and Dietetics, University of Hertfordshire, College Lane Campus, Hatfield, AL10 9AB. Email: nicolagriffiths410@yahoo.co.uk; j.1.mcclinchy@herts.ac.uk

Background
Dietary advice is the first line treatment for type 2 diabetes (Diabetes UK, 2011). There is research evidence that patients with chronic disease often do not adhere to recommended dietary advice (Desroches et al, 2011), however there is limited research investigating dietary adherence amongst people with diabetes. The aim of this study was therefore to explore the factors associated with dietary adherence in type 2 diabetes mellitus.

Methods
An internet-based qualitative research method was chosen, and following an internet search the 'Diabetes-Stories' website, containing verbatim transcripts of interviews exploring patients' experiences with diabetes, was selected on the basis of the potential to generate data to meet the aim of the research (Oxford Centre for Diabetes, Endocrinology and Metabolism, 2009). The most recent interviews were selected ('1980s+'), and those involving patients with type 2 diabetes only. Each transcript was then searched using the key words 'diet', 'food', 'nutrition' and 'dietitian' to identify data which related to the study. Eight interview transcripts were consequently obtained, consisting of interviews with four males and four females, and dating from the years 2004-2007. The data were analysed manually by one researcher using Thematic Analysis. Four emergent themes were reviewed and agreed by the research team. Consent for use of the transcripts was obtained from the website principal investigator, and all identifiable information was made anonymous.

Results
The four emergent themes were dietary advice and participant understanding, participant adaptations and adherence, participant struggles and feelings, and relations with healthcare professionals. All participants appeared to understand the dietary treatment of type 2 diabetes, and social support and education were reported as important in adherence. Most participants were non-adherent at times, and not acknowledging the longer term risks, and dislike of the recommended diet, were significant reasons. Two participants felt they were not treated as individuals by healthcare professionals, and one participant felt he was expected to be more enquiring about treatment decisions than he wanted to be.

Discussion

Many studies provide evidence that social support and education are associated with increased diabetes treatment adherence (Gomes-Villas Boas et al, 2010; Minet et al, 2010), therefore suggesting their importance in dietetic consultations. In addition to this, studies suggest that providing dietary treatment suited to a patient's personal circumstances, and preferred delivery of information (prescriptive or inclusive), is also likely to increase adherence (Hancock, 2012). Study limitations include the dates of the transcripts used, and the 'passive' analysis of secondary data from a single website.

Conclusion
This study provides a useful insight into the factors associated with dietary adherence in type 2 diabetes, and more current 'active' qualitative studies are therefore needed to strengthen existing evidence and enable appropriate changes.

References

1. Desroches, S., Lapointe, A., Ratté, S., Gravel, K., Légaré, F and Turcotte, S. (2011) 'Interventions to enhance adherence to dietary advice for preventing and managing chronic diseases in adults: a study protocol' BMC Public Health. [online] available from http://www.biomedcentral.com/1471-2458/11/111.

2. Diabetes UK (2011) Evidence-based nutrition guidelines for the prevention and management of diabetes. London Diabetes UK.

3. Gomes-Villas Boas, L.C., Foss, M.C., Freitas, M.C. & Pace, A.E. (2012). Relationship among social support, treatment adherence and metabolic control of diabetes mellitus patients. Revista Latino-Americana de Enfermagem [online], 20 (1), 52-58. Minet, L., Moller, S., Vach, W., Wagner, L. & Henrikson, J.E. (2010). Mediating the effect of self-care management intervention in type 2 diabetes: a meta-analysis of 47 randomised controlled trials. Patient Education and Counseling, 80 (1), 29-41.

4. Oxford Centre for Diabetes, Endocrinology and Metabolism. (2009). Diabetes Stories. Retrieved July, 5, 2012, from http://www.diabetes-stories.com/index.asp.

A RETROSPECTIVE AUDIT OF AN ENHANCED RECOVERY PROGRAMME FOR COLORECTAL SURGICAL PATIENTS, INCLUDING PATIENTS WITH DIABETES, AT A SOUTHWEST TRUST IN THE UK

J. Hanson, S. Brazier, L. Kent, L. McIntosh, T. Parkin
Colorectal Surgical Team Torbay Hospital Email: jade.handson357@gmail.com

Background
Enhanced recovery programmes (ERP) have been used in NHS hospitals since 2009 (NHS Improvement, 2012) and include provision of supplement drinks prior to surgery, contrary to traditional methods. This retrospective audit of an ERP aims to compare length of hospital stay (LOHS) and complication rates to reported standards (Lassen et al, 2009, Varandhan et al, 2010), which indicate a reduction in LOHS (of at least 2 days) and complication rates (50% reduction) following introduction of ERP. The secondary aim was to compare LOHS, complication rates and mortality of diabetic and non-diabetic subsamples.

Method
All patients who undertook the colorectal ERP between September 2005 and May 2013 were included in this audit (N=1,305). No exclusions were made for patients with comorbidities, BMI outside the normal range or type of surgery undertaken. Data was collected by the hospital and coded and analysed by the researchers, using IBM SPSS Statistics 20. Pearson's Chi squared tests were used to determine associations between number of supplements taken with LOHS and with survival rate and differences between complications and survival rates in patients with diabetes (n=135), compared to patients without diabetes (n=1170). A non-parametric independent samples test was used to determine differences in LOHS between patients with and without diabetes. ANOVA was used to determine differences between number of supplements taken prior to surgery and whether a complication was experienced post-operatively. Level of significance was set at $p \leq 0.05$. Ethics for the audit were obtained through the hospital Trust.

Results
Median LOHS was reduced by 3.0 days and no difference was found between LOHS in diabetic and non-diabetic subsamples. Complication rates were high, with 53.4% of patients experiencing a complication postoperatively. Although no difference was displayed in LOHS, patients with diabetes were found to have an increased complication rate (55%). Mortality rate was almost doubled in patients with diabetes, compared to patients without.

Table 1: comparison of number of supplements taken or diabetic status with outcome variables(LOHS, survival rate and complications)

	P value
Number of supplements taken & LOHS	1.00
Number of supplements taken & complications	0.10
Number of supplements taken & survival rate	0.04*
Diabetes versus no diabetes & LOHS	0.029*
Diabetes versus no diabetes & complications	0.043*
Diabetes versus no diabetes & survival rate	0.187

(*P≤0.05)

Discussion
LOHS met standards for reduction; similar results have been found by other studies (Teeuwen et al, 2010). Complication rates were higher than the standard, which may be explained by the inclusion of patients with comorbidities. It is interesting that LOHS was equal for diabetic and non-diabetic subsamples, as patients with diabetes are often excluded from ERPs (Noblett et al, 2006). The results of this audit support the continued use of the colorectal ERP within this NHS Trust.

Conclusion
This audit found the ERP at this Southwest Trust was meeting standards for reduction in LOHS by at least two days and that patients with diabetes who undertook this service did not experience an increased LOHS, but were at increased risk of experiencing post-operative complications.

References
1. NHS Improvement (2012). 'Fulfilling The Potential: A better journey for patients and a better deal for the NHS' NHS Enhanced Recovery Partnership.
2. Lassen et al; ERAS Group (2009). 'Consensus review of optimal perioperative care in colorectal surgery. Enhanced Recovery After Surgery (ERAS) Group recommendations', Arch Surg. 144 p961–969.
3. Varandhan et al (2010) 'The enhanced recover after surgery (ERAS) pathway for patients undergoing major elective open colorectal surgery: a meta-analysis of randomized trials', Clinical Nutrition. 29 (4) p434-440.
4. Teeuwen et al (2010). 'Enhanced Recovery After Surgery (ERAS) Versus Conventional Postoperative Care in Colorectal Surgery', Journal of Gastrointestinal Surgery. 14 (1), p88-95.
5. Noblett et al (2006). 'Pre-operative oral carbohydrate loading in colorectal surgery: a randomized controlled trial', Colorectal Disease. 8 (7). p563-569.

THE EFFECT OF EXERCISE ON THE ACCURACY AND RELIABILITY OF BODPOD™ AND SKINFOLD CALIPERS IN THE ASSESSMENT OF ATHLETE BODY COMPOSITION

L Helm, E Buffery, F Cook, N Gilbert
School of Biosciences, University of Nottingham, Sutton Bonington Campus, College Road, Loughborough, Leicestershire, CV11 6UL Email: helm.laura@yahoo.co.uk

Background
Analysis of athlete body composition often forms part of team/squad selection, and inaccurate measurements could have huge implications for teams and individuals. Currently there is no standard protocol for assessing athlete body composition with regard to the timing of measurements in relation to training sessions, yet assessment days are often based around training sessions. The appropriateness of BodPod™ for assessing athletic populations has previously been identified as an area for further investigation (Fields et al. 2005), though it is considered a valid tool for assessing female athlete body composition (Ballard et al. 2004). There is very little published research into the influence of exercise on the validity of skinfold calipers (SFC). The aim of this study was to investigate the effects of exercise on the accuracy and reliability of BodPod™ and SFC in assessing body composition of athletes, and the inter-rater variability in SFC measurements, to inform the development of a standard protocol.

Methods
The study was approved by the University of Nottingham (UoN) Medical School Ethics Committee. Members of University sports clubs were invited to participate in the study through the distribution of posters. Potential participants were screened against inclusion and exclusion criteria. The final sample comprised two males (triathlon and judo) and four females (rowing). Participants attended three test days at UoN, at which body fat percentage was assessed using BodPod™ and 4-site skinfold measurements - bicep, tricep, subscapular, suprailiac (all skinfold measurements were taken by two investigators), before and after a 45-minute cardiovascular exercise session. Intensity of the exercise was between 3-5 on the Borg RPE scale (1982), and activities included running, cycling, rowing and cross-training (to match the participants' typical training sessions). Averages of the data collected from the three sessions were used for analysis. Data was compared using t-tests to identify any differences between methods, between measurements taken before and after exercise, and inter-rater differences. Only P values <0.05 were considered significant. Pearson's correlation coefficients were used to assess the correlation between the two methods. Only P values < 0.01 were considered significant. A Bland-Altman plot was used to assess agreement between the two methods.

Results
BodPod™ and skinfold measurements were not significantly different before and after the exercise. The two assessment methods were significantly correlated before ($r=0.945$, $P<0.01$) and after ($r=0.945$, $P<0.01$) exercise. The Bland-Altman plot indicated that the difference between assessment methods (measurement bias) was 0.9%. The limits of agreement (average difference ±1.96 SD of the difference) were -6.9% and 5.1%. Significant inter-rater differences in skinfold measurements were seen before ($t=2.922$, $P<0.05$) and after ($t=2.810$, $P<0.05$) exercise.

Discussion
The results suggest that the accuracy and reliability of both BodPod™ and SFC are unaffected by cardiovascular exercise. These results are slightly unexpected, as the influence of body temperature and moisture has previously been demonstrated to impact upon the accuracy of the BodPod™ (Fields et al. 2004). Whenever possible the same assessor should measure an athlete over a period of time to minimise the risks of inter-rater differences. The small sample size and short time-frame greatly limit the ability to draw firm conclusions. Further research is required, and this should include different types of exercise, subjects from a wider variety of sports and of differing body composition. In particular, research is needed into the development of SFC equations for female athletes.

Conclusion
The data from this pilot study indicate that assessment days involving the use of BodPod™ or SFC can be set around cardiovascular training sessions without compromising the accuracy of the measurements.

References
1. Fields, D.A., Higgins, P.B., Hunter, G.R. (2004) Assessment of body composition by air-displacement plethysmography: influence of body temperature and moisture. Dyn Med, 3(1), 3 Fields, D.A., Higgins, P.B., Radley, D. (2005) Air-displacement plethysmography: here to stay. Curr Opin Clin Nutr Metab Care, 8(6), 624-9
2. Ballard, T.P., Farfara, L., Vukovich, M.D. (2004) Comparison of Bod-Pod and DXA in female collegiate athletes. Med Sci Sports Exerc, 36(4), 731-5

THE NUTRITIONAL CONTENT OF MAIN COURSE READY-MEALS AIMED AT CHILDREN AGED 12 MONTHS TO 3 YEARS.

J.T.L. Hoare, K. Austin and M. Maynard
School of Health and Wellbeing, Faculty of Health and Social Science, Leeds Metropolitan University, Leeds, LS1 3HE Email: jtlhoare@hotmail.com

Background
Rapid changes to dietary and lifestyle patterns have transformed the home and food environment with an increased trend towards convenience in home food preparation and ready-meal availability (St-Onge *et al*., 2003). Despite the widespread use of convenience foods, there is a lack of research into the nutritional quality of convenience foods for young children. This study examined the nutritional content of ready-meals for children aged 12 months to 3 years. The objectives of this study were to (i) investigate the nutritional quality of ready-meals, on sale in the UK market for children aged 12 months to 3 years, comparing their nutrition labelling information to dietary standards, (ii) identify the nutrition claims on the packaging of ready-meals for this age group, and (iii) determine whether the nutrition claims identified met European Union legislation.

Methods
A sample of main course ready-meals (n=38) marketed to children aged 12 months to 3 years from five brands, available in the UK, was assessed. One ready-meal represents only a proportion of energy and nutrients consumed per day, therefore dietary standards were obtained taking 30% of age-appropriate dietary reference values (DRVs). The energy, protein and sodium content of these ready-meals were compared to the calculated dietary standards using one sample t-tests. Descriptive analysis was performed on all nutritional information (energy, carbohydrate, sugars, protein, fat, saturated fat, fibre, sodium and iron) collected. Nutrition claims were validated against legislative requirements (EU, 1990; EU, 2006; EU, 2012).

Results
All ready-meals examined were significantly lower in energy ($p=0.000$) and higher in protein ($p=0.000$) compared to the dietary standards. Sodium was significantly higher than the dietary standard in three brands; brand 1 ($p=0.000$), 3 ($p=0.004$) and 5 ($p=0.03$) ($p<0.05$), with brand 5 containing only 65mg less than the DRV (500mg) for total daily allowance. Four of the nutrition claims made across the brands were assessed - “no added salt”, “no added sugar”, “low salt” and “source of iron”. Only brand 1 and 5 did not meet legislation for “no added salt” as the ready-meals contained more than the amount of sodium per 100g permitted. All other nutrition claims conformed to legislative requirements; however the majority of ready-meals from brand 1 did contain ingredients with added salt and/or sugar e.g. mustard or sun-dried tomato, despite claims of “no added salt/sugar” and this could misinform consumers.

Discussion
The ready-meals investigated did not meet calculated dietary standards and although the majority of nutrition claims displayed on the packaging did meet legislation, some claims did not and there were claims that could mislead consumers. There is paucity in research into the nutritional quality of convenience foods for young children and therefore comparisons between this study and other work cannot be drawn. Furthermore, since comprehensive dietary standards are unavailable for this age group, it is difficult to fully assess the nutritional adequacy of these ready-meals.

Conclusion
The development of nutritional standards and transparent nutrition claim legislation would enable practitioners to fully assess the adequacy of children’s diets and enable consumers to make healthier food choices.

References
1. Council of the European Union (1990) Council Directive of 24 September 1990 on Nutrition Labelling for Foodstuffs (90/496/EEC) *Official Journal* [Online], L276, 6th October, pp.40-44. Available at: <http://eur-lex.europa.eu> [Accessed 27 January 2013].
2. Council of the European Union (2006) Regulation (EC) No 1924/2006 of the European Parliament and of the Council of 20 December 2006 on Nutrition and Health Claims made on foods. *Official Journal of the European Union* [Online], L404, 30 December, pp.9- 25. Available at: <http://eur-lex.europa.eu> [Accessed 18 January 2013].
3. Council of the European Union (2012) Commission Regulation (EU) No 1047/2012 of 8 November 2012 amending Regulation (EC) No 1924/2006 with regard to the list of nutrition claims *Official Journal of the European Union* [Online], L310, 9th November, pp.36-37. Available at: <http://eur-lex.europa.eu> [Accessed 28 January 2013].
4. St-Onge M., Keller K. and Heymsfield S. (2003) Changes in Childhood Food Consumption Patterns: A Cause for Concern in Light of Increasing Body Weights. *American Society for Clinical Nutrition.* 78, pp.1068-73.

AN EXPLORATION OF THE FACTORS THAT INFLUENCE THE DECISION MAKING OF INDIVIDUALS WITH MOTOR NEURONE DISEASE (MND) REGARDING THE INSERTION OF FEEDING GASTROSTOMIES (2013)

A How [1], F Mccullough [2]
[1] Department of Nutrition and Dietetics, Nottingham University Hospitals, Nottingham, NG7 2UH [2]Division of Nutritional Sciences, University of Nottingham, LE12 5RD Email: Anne.how@nuh.nhs.uk

Background
American and European guidelines recommend use of early gastrostomy feeding in MND/Amyotrophic Lateral Sclerosis (ALS) patients with dysphagia (Anderson et al 2012, Miller et al 2009), despite limited evidence (Katzberg and Benatar 2011). Some sufferers may delay their decision, when the procedure is riskier.

The aim of this qualitative study was to explore the factors that influence the decisions on whether patients with MND choose to have a feeding gastrostomy.

Methods
A Qualitative research design was undertaken, using semi structured face to face interviews as a data collection method. Using purposive sampling, seven participants who had previously been advised to consider a feeding gastrostomy, were recruited from a MND Care Centre. All interviews were audio-taped, transcribed and analysed using Thematic Analysis.

Results
The main source of information about feeding gastrostomies was from the Care Centre, with participants finding little need to search elsewhere. Despite satisfaction, there were gaps, such as other options, burdens and post management. Participants were able to make their own decision about whether to have the treatment, however, in reality they felt that there was little choice. In addition, there seemed to be limited involvement with the carers. Influencing factors included the beliefs that the treatment was life prolonging and the degree of their symptoms. Technical factors, such as appearance and maintenance of the tube were also considered. Participants were generally positive about the tube.

Discussion
This study gave a valuable insight in the decision making experiences of those with MND. The participants reported a planned approach to the feeding gastrostomy as a treatment and were at the centre of the decision making process. Whilst there was strong evidence of autonomous decision making, there appeared to be limited involvement of family members and no obvious appreciation of the potential future impact on them. The participants generally felt that the timing of gastrostomy insertion was right for them and in some cases, participants reported milestones in their disease they needed to reach before acceptance of the tube. Despite having autonomous decision making, many felt that in reality they had little choice, reporting that having it would prolong their life. This suggests that participants may have had unrealistic expectations of the treatment.

Conclusion
There needs to be consideration of what information is important to those with MND and discussion of the wider implications of having the tube as well as discussing the expectations of the treatment and the potential burdens following insertion. Consideration also needs to be made on the impact on the carers and clinicians need to help facilitate this discussion.

References
1. Anderson, P., Abrahams, S., Borasio, G. et al (2012) EFNS guidelines on the clinical management of ALS–revised report of an EFNS task force. *European Journal of Neurology*, Mar, 19 (3), 360-375.
2. Miller, R., Jackson, C, Kasarskis, E. et al (2009) Practice Parameter update: The care of the patient with ALS. Drugs, nutritional and respiratory therapies, an evidence-based review. Report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology*, Oct, 73 (15), 1218-1226.
3. Katzberg, H., Benatar, M. (2011) Enteral tube feeding for ALS/MND. *Cochrane Database of Systematic Reviews*, Issue 1.

A METABOLIC SYNDROME AMONG HIV INFECTED OUTPATIENTS IN THE ERA OF HIGHLY ACTIVE ANTIRETROVIRAL THERAPY: PREVALENCE AND CONTRIBUTING FACTORS

Emma Howard[1], Dr. Anne Mullen[1] and Clare Stradling[2].
[1]Department of Nutrition and Dietetics, King's College London, [2]Heartland's HIV Service, Birmingham.
Email: emmajhoward90@aol.com

Background
Treatment of HIV infection with highly active antiretroviral therapy (HAART) has been shown to induce metabolic complications including lipodystrophy, dyslipidaemia and insulin resistance (Carr *et al*., 1998). Some metabolic complications have been more strongly associated with longer duration HAART and protease inhibitor (PI) based HAART (Grinspoon & Carr, 2005). Therefore, despite the drastically reduced morbidity and mortality conferred from immune reconstruction, HAART can significantly impact cardiovascular health (Triant *et al*., 2007). The aim of this study was to investigate associations between HAART regimen and the components of the commonly defined metabolic syndrome.

Methods
This was a cross-sectional study with a cohort of 100 HIV infected adults from Birmingham Heartland's Hospital HIV Service. Relevant anthropometric, biochemical and clinical data was collected as part of a national dietetics (DHIVA) audit and then extracted for the use of this research project. Metabolic syndrome and its components prevalence were examined against HAART regimen and duration among patients using the U.S. National Cholesterol Education Programme Adult Treatment Panel (ATP III) criteria.

Results
The prevalence of metabolic syndrome was 16% in both HAART patients (n=81) and those HAART naive (n=19). The prevalences and means of metabolic syndrome's components were also found to be similar in the two treatment groups. The only significant difference was between the prevalence of central obesity (68% HAART, 50% HAART naïve, p=0.035). No evidence was found of any difference in the prevalence of, or the means of, metabolic components in PI (n=33) and non-PI (n=48) based HAART treatment groups (p>0.05 for all). Similarly, no significant associations were found between duration of HAART and metabolic syndrome components (p>0.05 for all).

Discussion
Despite indications in literature, HAART was not associated with an increased risk of metabolic complications in HIV infected patients. It appears that since most of this research was conducted, more has been learnt about the causes and treatment of HAART associated metabolic complications, and strategies to prevent and treat it are continuing to evolve with success. However, weaknesses associated with the observational design of this study and the small sample size mean that reliability of the results is limited. Future prospective studies will help to uncover greater understanding behind the relationship between HIV/HAART with metabolic complications, including the development of metabolic syndrome, hopefully assisting in reducing co-morbidities like type 2 diabetes mellitus and cardiovascular disease in this patient group with extending life expectancies.

Conclusion
Clinical practice should focus metabolic management strategies on HIV infected patients, regardless of their treatment e.g. regular cardiovascular screening, appropriate dietetic referral and suitable pharmaceutical intervention for all.

References
1. Carr A, Samaras K & Burton S (1998) A syndrome of peripheral lipodystrophy, hyperlipidaemia and insulin resistance due to HIV protease inhibitors. *AIDS,* **12**: F51–F58.
2. Grinspoon MD & Carr MD (2005) Cardiovascular risk and body- fat abnormalities in HIV-infected adults. *N Engl J Med,* **352**:48-62.
3. Triant VA, Lee H, Hadigan C & Grinspoon SK (2007) Increased acute myocardial infarction rates and cardiovascular risk factors among patients with human immunodeficiency virus disease. *J Clin Endocrinol* Metab, **92**(7): 2506-12.

RELIABLE INDICATORS OF CANCER RELATED MALNUTRITION FOR AN OUTPATIENT ONCOLOGY NUTRITIONAL SCREENING TOOL IDENTIFIED THROUGH A SYSTEMATIC REVIEW

L. Humphreys, J. McClinchy, L. McGeeney.
School of Life and Medical Sciences, University of Hertfordshire, Hatfield, Herts AL10 9AB. Dept of Nutrition and Dietetics, Box 119, Addenbrooke's Hospital, Hills Road, Cambridge, CB2 0QQ.
Email: Louisehumphreys417@btinternet.com

Background
Cancer related malnutrition (CRM) is commonly observed yet is associated with poor response to intensive cancer treatments, increased risk of chemotherapy related toxicity, increased risk of post operative complications and also reduced survival times. (Hunman & Cunningham, 2005). Research suggests that these negative outcomes can be avoided through early nutritional intervention; hence the importance of identifying those at risk of CRM via prompt nutritional screening (Huhmann & Cunningham, 2005). Cancer treatment is often provided within an outpatient setting where nutritional screening procedures are inconsistent (Elia et al., 2005) and where few nutritional screening tools used have been formally validated in cancer patients (Huhmann & Cunningham, 2005). Therefore the aim of this study was to identify reliable indicators of CRM with the potential to be included within an oncology outpatient nutritional screening tool.

Methods
The databases Pubmed, Cinahal Plus and Open Grey **were systematically searched by a sole researcher.** The search procedure included the terms Indicators & Malnutrition along with the following additional search term combinations: Cancer, Oncology, Cancer & Outpatients, and Oncology & Outpatient. No date restrictions were imposed. Predetermined inclusion exclusion criteria were used. Selected studies **underwent quality assessment and data extraction.** Quantitative studies that reported on indicators and variables of adult CRM that were deemed suitable for a nutritional screening tool were included.

Results
From 217 studies, twelve all of observational methodology met the inclusion criteria; all lacked rigour in sampling. Five studies with a total of 6041 participants indicated unintentional weight loss (UWL) is common in cancer; four had a statistical significance. Six studies reported on body mass index (BMI), two suggested cancer was associated with a low BMI however four suggested that UWL was more prevalent than a low BMI and highlighted limitations of the measurement. Six studies reported on gastrointestinal (GI) cancer, a range of GI cancers were represented; all studies indicated an additional risk of malnutrition in GI cancer. Three studies reported on metastatic disease (MD), all suggested malnutrition and UWL was more prevalent in MD; two reported statistically significant results. Two studies suggested poor performance status (PPS) is associated with poor nutritional status; both studies were comprehensive; one was a large European study the other compared against a control. One study reported symptoms of anorexia and fatigue increased the risk of malnutrition within cancer.

Discussion
The overall quality of the research is poor yet this review helps consider the evidence collectively. This review suggests UWL could be a reliable indicator of malnutrition in cancer. In regards to BMI the review suggests relying upon BMI as an indicator of malnutrition is inadequate. This corresponds with other research and the consensus is BMI should only be used in conjunction with other nutritional markers (Elia et al., 2005). This review indicates additional risk of malnutrition within GI cancer, MD and PPS. Further evidence is required on the effects of anorexia and fatigue.

Conclusion
Although the evidence base is limited by observational study designs and methodological weaknesses, the results indicate UWL maybe a reliable indicator of cancer related malnutrition; BMI may be useful but has limitations within this population. Patients with GI malignancy, MD and PPS seem to have a higher risk of malnutrition.

References
1. Elia, M., Zellipour, L. & Stratton, R.J. (2005). To screen or not to screen for adult malnutrition?. Clinical Nutrition, 24(6), 867-884.
2. Huhmann, M.B. & Cunningham, R.S. (2005). Importance of nutritional screening in treatment of cancer-related weight loss. Lancet Oncology, 6(5), 334-343.

A SYSTEMATIC-TYPE REVIEW OF OBSERVATIONAL STUDIES AND CONTROLLED TRIALS EXAMINING THE EFFECT OF DAIRY PRODUCTS AND GLYCAEMIC LOAD ON ACNE VULGARIS

S. Jarvis, R. Mallinder and U. Philpot
Faculty of Health and Social Sciences, Leeds Metropolitan University, Leeds, UK
Email: Rosalyn.mallinder@gmail.com

Background
Acne vulgaris, a skin condition prevalent among teenagers and young adults, can be physically and psychologically detrimental to the sufferer's quality of life (Barankin and DeKoven, 2002). A common perception is that diet can cause or worsen acne symptoms (Heddon et al., 2008). In recent years there has been an emergence of studies looking at links between diet and acne symptoms, the primary focus of which has been dairy products and glycaemic load. Despite this, there are currently no dietary guidelines or recommendations surrounding treatment for acne. The aim of this study was to review the available evidence from both observational studies and controlled trials to determine the effect of dairy products and glycaemic load on acne vulgaris. It is the first systematic-type review since 2005 to consider the influence of dairy foods and glycaemic load on acne and/ or the quality of the studies in this area.

Methods
Search terms "Acne AND (Carbohydrat* or sugar or glycemic or glycaemic or Glucose or dairy or milk or lactose or diet*) were entered into seven databases, including Medline and Science Direct. Abstracts of papers published between January 2005 and January 2013 were screened for suitability by two researchers. Comprehensive inclusion and exclusion criteria, robust quality assessment criteria and associated quality ratings (2 =all or most criteria, 1= some criteria, 0=no criteria met) were applied (Centre for Reviews and Dissemination 2009).

Results
10 studies among adolescents and young adults, scoring 2 or 1 in the quality assessment, were identified and included in the review. Six studies, including two prospective cohort studies, three case controls and one cross sectional study examined dairy products and acne. Of these five found statistically significant independent positive associations i.e. increased consumption of dairy products was associated with greater risk of acne. Overall, the effect sizes for these associations (prevalence ratios and odds ratios), where stated, were modest ranging from 1.17-1.78 ($p<0.05$), but particularly evident for skimmed milk. Three studies reported the association between glycaemic load and prevalence of acne. Two case control studies showed significantly higher dietary glycaemic load among acne cases compared to controls ($p<0.05$). One prospective cohort study showed no significant association between glycaemic load and development of acne. Treatment of acne vulgaris with low glycaemic load diets was explored in three controlled trials. Two showed improvement in acne symptoms with a low glycaemic load diet over periods of 10 and 12 weeks, respectively. The third trial reported improvements in acne associated with both low and high glycaemic load diets but, with no baseline dietary data with which to assess change in the glycaemic load of diets since the start of the intervention, was methodologically flawed.

Discussion
Our review supports previous findings that a diet lower in both dairy products and glycaemic load may help prevent or improve acne. The studies included in the review had a number of strengths with large sample sizes and validated measurement tools, but also methodological weaknesses in some studies, such as poor assessment of diet or acne, and unknown causal direction of associations in the cross-sectional study. High-quality randomised-controlled trials of the effect of both dairy foods and glycaemic load on acne vulgaris are required to make the evidence base more robust before dietary recommendations can be proposed.

Conclusion
The message that a healthy, balanced diet, lower in glycaemic load may prevent or improve acne vulgaris in adolescents and young adults could help to improve the diets of teenagers. When considering restriction of dairy foods, however, calcium intake needs to be closely monitored and advice regarding this in relation to treatment of acne vulgaris should only be given by qualified practitioners.

References
1. Barankin, B. and DeKoven, J. (2002) Psychosocial effect of common skin diseases. *Canadian Family Physician*, 48, 712-716. Centre for reviews and Dissemination (2009) *Systematic Reviews: CRD's guidance for undertaking reviews in health care.* York, Centre for Reviews and Dissemination.
2. Heddon, L., Davidson, S. and Smith, C. (2008) Cause and Effect: The Relationship Between Acne and Self-Esteem in the Adolescent Years. *The Journal for Nurse Practitioners*, 4, 595 – 600.

A CLINICAL AUDIT AND SERVICE EVALUATION EXPLORING FLUID MANAGEMENT AND FACTORS AFFECTING NON-ADHERENCE IN HAEMODIALYSIS PATIENTS

O. Kearney, R. Lenderyou, S. Pascoe, B. Wade, A. Collinson, H. Sadler.
*School of Health Professions, Peninsula Allied Health Centre, Plymouth University, Plymouth, Devon, PL6 8BH E*mail: orla.kearney@students.plymouth.ac.uk

Background
Poor adherence to sodium and fluid restriction is consistently reported worldwide in haemodialysis patients resulting in undesirable clinical outcomes such as hypertension, peripheral oedema, pulmonary oedema and breathlessness (Durose et al, 2004). Adherence proves challenging as haemodialysis patients often report high preoccupation with thirst (Denhaeynck et al, 2007). The aim of this audit was to explore the relationship between fluid management and factors which influence non-adherence, and to evaluate the service provided to the haemodialysis patients in a SW Renal Unit.

Methods
The audit measured interdialytic weight gain (IDWG) against the European nutritional care of adult renal patients' standards (James & Jackson, 2012). The audit and service evaluation was conducted on eighty-five participants (65% response rate). Audit data, including IDWG, were collected from electronic medical records. The service evaluation was conducted using a piloted questionnaire which addressed four main areas: patient demographics; fluid advice; salt advice; and knowledge. Convenience sampling with specific eligibility criteria was employed. Data were analysed using SPSS, version 20. Statistical tests included: Student's t-test, Pearson's correlation coefficients, and one-way analysis of variance (ANOVA) was used with post hoc analysis with those that showed significance. Ethical approval was granted by Plymouth University, and approval gained from the Clinical Audit Department of the Trust.

Results
The present study demonstrated that 38% of patients did not meet the audit standard of a target range of 1.5 to 2kg IDWG. A significant difference was found between males (M=1.96, SD=0.99) and females (M=1.43, SD=0.88); $t(83)=2.43$, $p = 0.017$ with 44% of males exceeding the IDWG target range compared to 25% of females. There was a significant positive association between HbA_{1c} (N = 32; $r = 0.364$; $p = 0.040$); knowledge (N = 85; $r = 0.329$; $p = 0.002$) and IDWG. A highly significant positive association was found between IDWG and post-dialysis weight ($p < 0.001$). Bonferroni *post – hoc* analysis shows a significant difference ($p = 0.003$) between age-tertile one (28 to 63) and three (75 to 89). Patients aged 75 to 89 were more likely to meet the audit standard. The dietitian was more effective than nurses and consultants at addressing both fluid and sodium restriction advice with patients.

Discussion
The results of this study corroborate with the literature to suggest that a certain degree of non-adherence with diet and fluid restrictions is evident in the established renal failure population. Behaviour change techniques applied to patients, with particular attention to the younger age group (28 to 63), male patients, and those with poor diabetes control may improve adherence rates. The evidence has shown strategies such as those designed to address health belief factors such as perceived barriers and self-efficacy (Oh et al, 2013) or using cognitive behavioural therapy (CBT) (Sharp et al, 2005) may facilitate positive behaviour change, however, further research is required in this area.

Conclusion
Further studies are required for determining evidence-based treatment goals in this patient population, particularly the younger age group (28 to 63), male, and those with poor diabetes control. This service evaluation demonstrates that the dietitian is more effective at addressing both fluid and sodium restriction advice, therefore it is recommended that all members of the healthcare team are trained by dietitians in giving this advice.

References

1. Denhaerynck, K., Manhaeve, D., Dobbels, F., Garzoni, D., Nolte, C. & De Geest, S. (2007) 'Prevalence and consequences of nonadherence to hemodialysis regimens', American Journal of Critical Care, 16(3), pp. 222-235.

2. Durose, C.L., Holdsworth, M., Watson, V. & Przygrodzka, F. (2004) 'Knowledge of dietary restrictions and the medical consequences of noncompliance by patients on hemodialysis are not predictive of dietary compliance', Journal of the American Dietetic Association, 104(1), p. 35.

3. James, G. & Jackson, H. (2012) 'European guidelines for the nutritional care of adult renal patients', *EDTNA-ERCA Journal*, 29(1), pp. 23-43.

4. Oh, H.S., Park, J.S. & Seo, W.S (2013) 'Psychosocial influencers and mediators of treatment adherence in haemodialysis patients', *Journal of Advanced Nursing*. Sharp, J., Wild, M. R., Gumley, A. I. & Deighan, C. J. (2005) 'A cognitive behavioral group approach to enhance adherence to hemodialysis fluid restrictions: a randomized controlled trial', *American Journal of Kidney Diseases*, 45(6), 1046-1057.

DIFFERENCES IN DIET INDUCED THERMOGENESIS AND SATIETY WITH DIFFERENT PROTEIN LOADS

R. Kennedy, I. Davidson,
Queen Margaret University, Edinburgh, EH21 6UU Email: rachel_kennedy@live.ie

Background
Evidence supports the effect of protein to increase diet induced thermogenesis and satiety; promoting effective weight loss in the management of obesity (Westerterp 2004; Westerterp-Plantenga and Lejeune 2005). However, there is limited evidence to indicate the optimum protein source that will elicit maximum effects on diet induced thermogenesis and satiety. This study aims to investigate the effect of isocaloric meals containing varying protein sources on diet induced thermogenesis and satiety in healthy individuals.

Methods
The study applied a cross over design and recruited healthy individuals; both male and female via the university recruitment moderator email. Participants completed a screening questionaire and those with food intolerances to the meals provided, claustrophobia or metablic disturbances were excluded from the study. Participants attended two seperate testing sessions and completed 24 hour diet histories pre and post testing sessions. Participants were required to fast and refrain from vigorous physical activity for 12-14 hours respectively prior to testing. On their initial visit; weight, height and BMI were recorded. Resting energy expenditure using indirect calorimetry and appetite parameters using 10 mm visual analogue scales (VAS) were measured at each testing session. Participants were provided with a different meal at each session containing varying protein sources. Meal 1: Porridge and Milk (Kcals 267, P 15.4g, CHO 31.5g, Fat 9.6g), Meal 2: Scrambled eggs (Kcals 266, P 16.6g, CHO 20g, Fat 13.9g). Post meal consumption energy expenditure was recorded until resting values were re-established. Diet induced thermogenesis (DIT) was calculated using an area under the curve (AUC) calculation and a paired two tailed t test was used in order to determine differences in appetite parameters as well as caloric intake and typical intake post meal consumption. A significance level of $P \leq 0.05$ was applied. Ethical approval was granted from the Queen Margaret Universtiy Ethics Committee.

Results
10 participants, male to female ratio of 1:9, aged 22-29years and BMI range of 20-24Kg/M^2 completed testing. Energy Expenditure (EE) was found to be significantly higher post consumption of Meal 1 (P= 0.001). From this DIT was calculated. A greater DIT of 2691.5 AU was calculated for meal 1, porridge and milk, in comparison to 796 AU for the scrambled egg, meal 2.

Table 1.1. Results Summary of Energy Expenditure, Appetite Parameters (VAS 10mm scales) and Total Caloric Intake.

	Meal 1-Porridge and Milk (Mean +/-SEM)	**Meal 2- Scrambled Egg (Mean +/- SEM)**	**P value**
Energy Expenditure (EE)	1525.08 kcals (+/- 73.3)	1727.024 kcals (+/- 133.3)	0.001
Meal Palatability	7.21 mm (+/-0.23)	6.47 mm (+/- 0.84)	0.65
Hunger	3.08 mm (+/-0.57)	3.49 mm (+/- 0.62)	0.21
Fullness	6.25 mm (+/- 0.65)	5.81 mm (+/- 0.7)	0.38
How much you could eat	2.85 mm (+/- 0.49)	3.81 mm (+/- 0.61)	0.00019
Desire to eat	2.92 mm (+/- 0.56)	3.99 mm (+/- 0.79)	0.0054
Caloric intake	1944.9 kcals (+/-255.7)	1574.6 kcals (+/- 136.5)	0.14

Discussion
Meal 1 elicited significantly higher EE (P =0.001) and produced over 3 fold the levels of DIT to Meal 2. Meal 1 was significantly more satiating for 'How much could you eat' and 'desire to eat'. Evidence supports higher protein diets result in increased levels of EE and satiety in comparison to isocaloric diets consisting of lower protein quantities, or higher quantities of alternative macronutrients, however, limited research exists on individual protein sources (Lejeune et al. 2006). Limitations include: small cohort and differences in macronutrient quantities of meals.

Conclusions
This study demonstrated that different protein sources elicit varying degrees of diet induced thermogenesis and satiety in a group of healthy individuals, however, further research is needed to ascertain the optimum protein source to produce the most significant effects on DIT and satiety.

References
1. Westerterp, K.R. 2004. Diet induced thermogenesis. Nutrition and Metabolism 1(5), 1743-7075. Westerterp-Plantenga, M.S. and Lejeune, M.P.G.M. 2005. Protein intake and body-weight regulation. Appetite. 45 (2) 187-190.

EVALUATING THE FACTORS AFFECTING SERUM PHOSPHATE LEVELS, INCLUDING DIETARY PHOSPHATE-CONTAINING ADDITIVES, IN CHRONIC KIDNEY DISEASE.

[1]E. Koutroulis, [2]S.Underwood, [2]R. Fleming, [1]B. Engel,
[1]Faculty of Health & Medical Science University of Surrey, Guildford, Surrey, GU2 7XH [2]Kent & Conterbury Renal Unit Kent CT1 3NG Email: b.engel@surrey.ac.uk

Background
Hyperphosphataemia (serum phosphate>1.7mmol/L) in end stage renal disease is independently linked to higher rates of morbidity and mortality and effects 30% of haemodialysis (HD) patients in the UK (KDIGO,2009; Pruthi et al, 2011). Current dietary practices focus on reducing the intake of naturally sourced phosphate to 800-1000mg/day and highly nutritious foods are often limited. Phosphate-containing additives (PCA), of which there are 14 listed by the European Commission, may be contributing an additional 1000mg phosphate per day (Uribarri & Calvo, 2003); it is therefore important to have knowledge of this source of phosphate in the diet. The aim of the service evaluation was to assess the relationship between dialysis parameters, medication, dietary intake of phosphate and PCA on the management of hyperphosphataemia.

Method
24 established (>90days) adult HD patients were recruited from Kent & Canterbury Renal Unit. Intake of phosphate binders and dietary information were collected using a 3-day diet diary (not weighed) and a questionnaire to clarify intake of high phosphate foods and phosphate binders. Phosphate-containing additives were considered using the weight of processed foods containing at least one such additive, stated on packaging or online nutritional databases. In addition, efficiency of HD (Kt/V) and residual renal function, using glomerular filtration rate (GFR) and urine output, were considered. DietPlan6, and SPSS were used for data analysis. Statistical tests assessed data distribution, Pearson correlation and any differences in variables between patients with and without hyperphosphataemia (T-test). Ethical approval was granted by the University of Surrey, NHS ethics not required as it was a service evaluation.

Results
The average serum phosphate was 1.73±0.52mmol/L, 38% of patients had hyperphosphataemia (>1.7mmol/L) and 79% of patients were prescribed a phosphate binder. 19/24 patients returned the 3-day diet diary and questionnaire. Mean phosphate intake was 884±278mg/day with approximately 85% of patients consuming less phosphate, energy and protein per kilogram per day than recommended (Table 1).

Table 1: intake of phosphate, energy & protein	Mean (S.D.)	Recommended Intake
Phosphate per kg dry body weight (mmol/kg)	0.4 (0.1)	0.5-0.6
Energy/kg weight/day (kcal/kg/day)	19 (7)	30-35
Protein/body weight (g/kg)	0.8 (0.2)	1.2-1.4

Processed foods containing PCA were positively correlated to serum phosphate levels (r^2=0.234, p=0.036), however, correlation no longer existed once outliers were excluded (r^2=0.114, p=0.184). Serum potassium also correlated with the intake of processed food (r^2=0.326, p = 0.017). 47% of patients had inadequate dialysis (Kt/V<1.2) and 71% of patients produced less than 500ml of urine per day. Mean GFR was significantly lower in patients with hyperphosphataemia; 7.25ml/min vs 5.8ml/min (p=0.021).

Discussion
The outliers regarding the consumption of phosphate-containing food additives were largely due to high consumption of high phosphate soft drinks (eg cola). Overall intake, including phosphate, maybe underestimated as weighed food diaries were not used, however the fact that both serum phosphate and potassium correlate with intake of processed food has implications for dietary advice and recommendations. Inadequate dialysis may also be an important factor in hyperphosphataemia and needs to be addressed by the multidisciplinary team.

Conclusion
Maximising dialysis dose will improve both phosphate and potassium levels and should perhaps be considered before increasing dietary restrictions. Disclosure of phosphate and potassium content on food and drink packaging would help determine more accurately the impact of food additives on biochemistry levels in renal patients.

References
1. KDIGO (2009). 'KDIGO clinical practice guidelines for the diagnosis, evaluation, prevention and treatment of Chronic Kidney disease- mineral and bone disorder(CKD-MBD)-Chapter 4.1 : Treatment of CKD-MBD targeted at lowering serum phosphorus and maintaining serum calcium.'. *Kidney International* , 76, S50-S90.
2. Pruthi R, Pitcher D, Dawnay A (2011). UK Renal Registry 14th Annual Report: Chapter 9 Biochemical Variables amongst UK Adult Dialysis patients in 2010: National and centre-specific analyses. *The UK Renal Registry,* 183-218.
3. Uribarri J, Calvo MS. (2003). Hidden sources of phosphorus in the typical American diet: Does it matter in nephrology? . *Seminars in Dialysis* , 16 (3), 186-8.

AN INVESTIGATION OF THE RELATIONSHIP BETWEEN INDICES OF BODY COMPOSITION AND CARDIOVASCULAR RISK FACTORS IN ADULT FEMALES

H. Lewis, S. Smith
Queen Margaret University, Edinburgh, EH21 6UU Email: heidi@ixalon.net

Background
According to the World Health Organisation (WHO 2012) obesity is now a "global epidemic", ranking as the fifth most common cause of death worldwide. Obesity prevalence has more than doubled over the past two decades (Finucane et al. 2011), with particularly high levels in Scotland (NOO 2012). Obesity shows strong associations with cardiovascular disease (CVD), which is the largest single cause of death in the UK (IASO 2012); accounting for one in three deaths. Currently NICE (2006) recommend using body mass index (BMI) and waist circumference (WC) for obesity assessment. Recently Krakauer and Krakauer (2012) proposed the novel "a body shape index" (ABSI) for better predicting mortality hazard. This study aimed to investigate the relationships between BMI, WC, percentage body fat (%BF), ABSI and various cardiovascular risk factors in adult females.

Methods
The study was granted university ethical approval, had an observational cross-sectional design, and recruited through convenience sampling. International Society for the Advancement of Kinanthropometry methodologies were used to measure height, weight and WC. Single frequency bioelectrical impedance analysis enabled estimation of %BF. BMI (kg/m^2) was calculated by dividing weight (kg) by height squared (m^2). ABSI ($m^{11/6}$ $kg^{-2/3}$) was calculated by dividing WC (m) by $BMI^{2/3}$ (kg/m^2) $height^{½}$ (m) using an online calculator. Physical activity levels (PAL) and sitting time were estimated using the International Physical Activity Questionnaire, and self-reports of alcohol intake and alcoholic binges were also obtained. Vascular health was determined via: blood pressure (BP); carotid-femoral pulse wave velocity (PWV); and the augmentation index (AIx) using a Vicorder™ device. SPSS v.19 was used to determine Pearson product-moment correlation coefficients for normally distributed data (WC, ABSI, sitting time, systolic BP, diastolic BP, mean BP) and Spearman's correlation coefficients for all other data.

Results
29 healthy females aged 27±8years were recruited from Queen Margaret University. The average BMI was 23.3±4.2kg/m^2, %BF 23.4±7.4%, WC 73.8±8.7cm and ABSI 0.07±0.004$m^{11/6}kg^{-2/3}$. ABSI correlated weakly (r=0.1-0.3) and non-significantly (p>0.05) with all CVD risk factors. Established body composition indices revealed significant moderate-strength correlations (r=0.36-0.67), including: alcohol intake with BMI (p=0.04, r^2=0.15), %BF (p=0.04, r^2=0.14) and WC (p=0.02, r^2=0.20); alcoholic binges with BMI (p=0.03, r^2=0.16) and WC (p=0.01, r^2=0.24); sitting time with BMI (p=0.02, r^2=0.19); systolic BP with BMI (p=0.03, r^2=0.17); diastolic BP with WC (p=0.02, r^2=0.20); and mean BP with both BMI (p=0.04, r^2=0.15) and WC (p=0.02, r^2=0.19).

Discussion
In this small-scale study no evidence of a significant correlation was found between ABSI and the CVD risk factors investigated. Furthermore, several limitations were apparent: the sample was small and consisted of a particularly young healthy population, thus suggesting insufficient external validity; and it is debatable whether all participants fully complied with the pre-test protocol, which may have influenced the results.

Conclusion
Findings corroborate current recommendations for using established indices of body composition, particularly BMI and/or WC, for identifying early risks of CVD. However, definitive conclusions regarding whether or not ABSI can be used as a predictor for CVD risk cannot be made. Further work in a larger more diverse population involving multiple regression is warranted.

References
1. Finucane, M.M., et al. 2011. National, regional and global trends in body-mass index since 1980. *Lancet*, 377 (9765) Feb, pp.557-567. International Association for the Study of Obesity (IASO). (2012). *Estimating the association between overweight and risk of disease*, [online] London: IASO. Available at: http://www.iaso.org/policy/healthimpactobesity/.
2. Krakauer, N.Y. and Krakauer, J.C. (2012). A new body shape index predicts mortality hazard independently of body mass index. *Plos One*, [online] July. Available at: http://www.plosone.org/article/info%3Adoi%2F10.1371%2Fjournal.pone.0039504#s5.
3. National Obesity Observatory (NOO). (2012). *International comparisons of obesity prevalence*, [online]. NOO. Available at: http://www.noo.org.uk/NOO_about_obesity/international/.
4. NICE. (2006). CG43: Obesity, [online] London: NICE. Available at: http://www.nice.org.uk/nicemedia/pdf/cg43niceguideline.pdf. WHO. (2012). *Fact sheet no.311: obesity and overweight*, [online] May. WHO. Available at: http://www.who.int/mediacentre/factsheets/fs311/en/

STUDENT DIETITIANS' EXPERIENCES OF PATIENT DEATH WHILST ON PLACEMENT

J. Macdonald, B. Tighe
Faculty of Health and Life Sciences, Coventry University, Priory Street, CV1 5FB
Email: Macdona6@uni.coventry.ac.uk

Background
Evidence suggests that health care students experience a degree of trauma after experiencing a patient death (Warne and Hoppes 2009) and they keep their feelings and concerns about patient death to themselves (Oakland 1988). Rivers, Perkins and Carson (2009) suggest that students may be inadequately prepared to deal with patient death during their placements. The aim of this study was to explore dietetic students' experiences of patients dying whilst on placement.

Methods
A qualitative phenomenological approach was used to explore the experiences of 4th year undergraduate student dietitians. Recruitment was opportunistic and data was collected using semi-structured interviews with topic guide and field notes to capture non-verbal communication. Ethical approval was given by Coventry University's ethics committee and written consent was obtained from all participants. Interviews were audiotaped and transcribed verbatim using thematic analysis as guided by Braun and Clarke (2006). Peer review of findings was undertaken with the second author.

Findings
Three female students were interviewed. The main themes identified were: the reaction to patient death; support; personal experience; and personal beliefs. The reaction to patient death included feeling shock and upset, as the patient death was unexpected. Participants reported feeling unprepared for their patient's death. *'…he was palliative …I didn't really think… he is going to pass away… that was a really difficult one …'* P3. Support was obtained from debriefing to friends or educators or by formal reflection on their experience, which was aided by presenting the patient as a case study. *'…writing the case study…helped…it's kind of like you're thinking about all your actions...almost reflecting on what I'd done… it's nice to be reassured that I did everything that I should have done.'* P3. However, the students found it difficult to open up to their educators without being prompted to do so. Patient confidentiality was identified as a barrier to de-briefing to friends. Reflection was found to be helpful for participants who found it difficult to approach their educators. Participants felt that preparation could only be achieved through personal experience rather than class room discussion. *'I don't think the university can prepare you, it's more about life experience … it's something you can't learn in a class room ...'* P1. Personal beliefs helped some participants cope with the experience.

Discussion
Students reported being unprepared for death, which was partly due to a lack of experience and because they felt the death was unexpected. Students anticipated patient's death by the way the patient looked and acted, rather than using the clinical information which indicated the patients ill health; this was a strong contributing factor to the feeling of shock. Students preference for learning about death was through experience is in line with Rivers, Perkins and Carson (2007). The shock of patient death might be reduced by honest discussion by the educators of how ill patients are. The research is limited by a small sample size due to a low response rate, therefore data saturation is unlikely to have been obtained.

Conclusion
Students may require support from clinical educators when faced with a patient death but may find this support difficult to access. Clinical educators have a role in supporting students through debriefing, but students may find it difficult to show their feelings. Inviting the student to talk through their experience and offering reassurance may be helpful.

References
1. Braun, V. and Clarke, C. (2006) 'Using thematic analysis in psychology'. *Qualitative Research in Psychology* 3 (2), 77 – 101.
2. Oakland, M. J. (1988) 'Follow-Up Study of Recent Graduates: The Value of Death Education in their Curriculum'. *J Am Diet Assoc* 88 (9), 1096-1098.
3. Rivers, K. O., Perkins, R. A., and Carson, C. P. (2009) 'Perceptions of Speech-Pathology and Audiology Students Concerning Death and Dying: A Preliminary Study'. *Int J Lang Commun Disord* 44 (1), 98-111.
4. Warne, K. E. and Hoppes, S. (2009) 'Lessons in Living and Dying from My First Patient: An Autoethnography'. *Can J Occup Ther* 76 (4), 309-316.

GENDER DIFFERENCES AMONGST COVENTRY UNIVERSITY STUDENTS IN HOW PERCEPTION OF PALATABILITY CHANGES WHEN A FOOD IS DESCRIBED AS HEALTHY

S. Magee, K. Hennessy-Priest
Department of Health Professions, Coventry University, Priory Street, Coventry, CV1 5FB.
Email: magees@uni.coventry.ac.uk

Background
There is evidence to suggest consumers feel required to make compromises between enjoyability and healthfulness of food (Raghunathan 2006). Implicit in this suggestion is that "healthy" foods are not as enjoyable as "unhealthy" foods. Concurrently it is recognised that descriptors applied to food can influence acceptance (Lee 2013) and that men may have more negative associations with healthy food than women (Bublitz 2010). This research aimed to investigate gender differences in how perceptions of palatability change if yoghurt is described as healthy amongst Coventry University students.

Methods
Convenience sampling was used to recruit 85 (female n=44, 51.7%) Coventry University undergraduate and postgraduate students to take part in this pre-piloted single blind experimental study. Participants were provided with three 25g samples of yoghurt, two of which were identical, but described differently. Participants were presented with one sample of strawberry yoghurt at a time, with samples a, b and c verbally described as "a strawberry yoghurt", "a different strawberry yoghurt", "a healthy strawberry yoghurt" respectively. Samples a and c were the same.
After tasting each sample, participants were asked to rate how strongly they agreed with 6 statements using a 5 point Likert scale. Statements focused on taste, texture, expectation of taste, appearance, likelihood of purchase and overall enjoyment of the sample. They were also asked to rank the samples in order of preference. Results were analysed using Wilcoxon Signed Ranks test and Mann Whitney U tests. This research was approved by the Coventry University Research Ethics Committee.

Results
When the sample was described as healthy, female participants reported lower overall enjoyment ($Z= -2.743$, $p=0.006$) and enjoyment of taste ($Z= -3.084$, $p=0.002$) than when the sample was not described as healthy. They also agreed less strongly that they would buy the product in a shop ($Z= -2.296$, $p=0.022$) when the healthy descriptor was applied.
Male participants reported agreeing more strongly that the product tasted better than expected when described as healthy compared to when the product was not described as healthy ($Z= -2.340$, $p=0.019$).
There was a trend towards female participants being less likely to report preferring the yoghurt sample described as healthy over other samples than male participants ($U=725.5$, $Z= -1.807$, $p=0.071$).

Discussion
The results of this study were in contrast to both previous literature and expectations (Bublitz 2010). Male participants were less negatively affected by the yoghurt samples being described as healthy than females when it was hypothesised that they would be more influenced.
It is suggested that the results of this study may be influenced by increased female exposure to both foods described as healthy and to yoghurt.

Conclusion
Describing yoghurt as healthy negatively affected female participants' overall enjoyment of the sample, however, more research is required to establish whether this occurs in other population groups, or with different foods and descriptors.

References
1. Bublitz, M. G., Peracchio, L. A., and Block, L. G. (2010) 'Why did I Eat that? Perspectives on Food Decision Making and Dietary Restraint'. *Journal of Consumer Psychology* 20 (3), 239-258
2. Lee, W. J. C., Shimizu, M., Kniffin, K. M., and Wansink, B. (2013) 'You Taste What You See: Do Organic Labels Bias Taste Perceptions?'. *Food Quality and Preference* 29 (1), 33-39
3. Raghunathan, R., Naylor, R., Walker, and Hoyer, W.,D. (2006) 'The Unhealthy = Tasty Intuition and its Effects on Taste Inferences, Enjoyment, and Choice of Food Products'. *Journal of Marketing* 70 (4), 170-184

CATEGORISATION OF HEALTH RISK ASSOCIATED WITH EXCESSIVE BODY WEIGHT IDENTIFIED USING BODY MASS INDEX, A BODY SHAPE INDEX AND WAIST CIRCUMFERENCE

S Meredith, AM Madden

School of Life and Medical Sciences, University of Hertfordshire, College Lane, Hatfield, Hertfordshire, AL10 9AB.
Email: sammeredith@gmail.com

Background

The high prevalence of obesity in the UK is associated with a substantial risk of ill health (Butland *et al*., 2007). Prevention and management of this health risk requires accurate identification of obesity. Obesity is traditionally identified in individuals using body mass index (BMI) ≥30 kg/m^2 (WHO, 2000) but BMI does not reflect differences in adiposity and muscle nor the location of adipose tissue which may be an independent predictor of risk. An alternative method of identifying weight-related health risk which combines values for BMI with waist circumference (WC) has been proposed by Krakauer *et al*., (2012) and is described as 'a body shape index' (ABSI). The aim of this study was to investigate the agreement level of categorisation of health risk associated with excessive body weight in adults in England using BMI, ABSI and WC.

Methods

Data were obtained from the Health Survey for England 2010 for 14,112 individuals living in households in England. Data from individuals aged ≤17 years, pregnant women and those with measurements reported as unreliable, indicating under nutrition or outlying data were excluded leaving 4,662 adults in the study dataset. Extracted values were used to calculate BMI and ABSI. Each adult was then categorised for health risk in three ways using BMI (WHO 2000), ABSI (Krakauer *et al*., 2012) and WC (WHO 2011). The kappa-statistic was used to test for levels of agreement between risk categorization. Ethical permission was obtained.

Results

Categorisation by all three methods indicated a high proportion of risk of weight-related illness within the population (Table). Pairwise analysis using the kappa-statistic showed that there was a low level of agreement between ABSI and WC (k=0.217), and ABSI and BMI (k=0.062) with a moderate level of agreement found between BMI and WC (0.489). Table: Categorisation of health risk associated with excessive body weight in 4662 adults in England identified by three methods

	Low risk		Moderate risk		High risk	
	Cut-off	Number (%)	Cut-off	Number (%)	Cut-off	Number (%)
BMI (kg/m^2)	18.5-24.9	1518 (33)	25.0-29.9	1860 (40)	≥30	1284 (27)
ABSI (%)	<40%	1861 (40)	40-60%	929 (20)	>60%	1872 (40)
WC (cm)	≤94^M ≤80^F	1416 (30)	94.1-101.9^M 80.1-87.9^F	1202 (26)	≥102^M ≥88^F	2044 (44)

^{M}male; ^{F}female

Discussion

The similar proportion of individuals identified in risk categories by each of the methods suggests comparable utility at population level. However, the low agreement between methods at an individual level raises questions about their interchangeability. Refining the ABSI cut-off points may assist with this. However, if categorisation is to be useful, it must be linked to clinical outcome. ABSI has been shown to be an independent predictor of premature mortality in a USA population (Krakauer *et al*., 2012) but further studies are required to explore its predictive value in other populations. In addition, ABSI is calculated from measurements of height, weight and WC and requires a more complex equation than that used to determine BMI. These predictive and practical implications need to be explored before ABSI can be considered for routine use in clinical or public health care.

Conclusion

Categorisation of health risk in adults in England using BMI, ABSI and WC shows poor agreement.

References

1. Butland, B., Jebb, S. Kopelman, P., McPherson, K., Thomas, S., Mardell, J. et al. (2007). *Foresight, Tackling Obesities: Future choices – Project Report.* London: HMSO.
2. Krakauer, N. Y. & Krakauer, J. C. (2012). A new body shape index predicts mortality hazard independently of body mass index. *PLoS ONE, 7(7),* 1-10.
3. WHO (2000). Obesity: preventing and managing the global epidemic. Report of a WHO Consultation. WHO Technical Report Series 894. Geneva: World Health Organization.
4. WHO (2011). Waist circumference and waist-hip ratio. Report of a WHO Expert Consultation. Geneva: World Health Organization.

ANALYSIS OF AN ONLINE CYSTIC FIBROSIS FORUM; COMMON NUTRITIONAL CONCERNS AND QUALITY OF NUTRITIONAL INFORMATION SHARED.

L. Pearson and H. White
Faculty of Health and Social Sciences, Leeds Metropolitan University, Leeds, UK
E-mail: lucypearsonrd@gmail.com

Background
Cystic Fibrosis (CF) is an autosomal recessive genetic disease characterised by a respiratory decline and pancreatic insufficiency. Research advances include aggressive use of antibiotics, mucolytics and nutritional interventions, extending the median age of survival to 41.5 years (CF Trust, 2013). Nutritional status is a prognostic indicator of survival and remains central to treatment and care. Despite advances, nutritional compromise associated with fat malabsorption and anorexia and co-morbidities such as cystic fibrosis related diabetes (CFRD) and osteoporosis remain common areas of concern to patients. Lake (2010) reported that patients themselves identify weight, pancreatic enzyme replacement therapy (PERT), gastrostomy feeding, CFRD and knowledge of the dietitian's input and role as important areas to them. Their nutritional concerns remain part of a complex picture where high levels of depression and anxiety are common (Parkins et al., 2011). A policy of rigid infection control which prohibits patient contact compounds these issues, resulting in isolation and a lack of peer support. Online communication between people with CF is therefore common. Although studies have examined social networking and concerns about pregnancy online in CF, there are none that examine nutrition. The aim of this study was to examine the nutritional concerns shared on an online CF forum; identifying the nutritional themes important to patients and assessing the quality of information shared between online participants.

Methods
The CF Trust online forum was identified to analyse posts concerning nutritional queries raised by online participants over a defined six months period and anonymised to protect each participant's identity. Framework analysis was used as an inductive approach for analysis, allowing for the inclusion of *a priori* as well as emergent concepts. *A priori* concepts were identified from the key nutritional themes identified by Lake (2010) i.e. weight, PERT, gastrostomy feeding, CFRD and knowledge of the dietitian. Initial posts and responses were systematically recorded, quantified and analysed. Their content was compared to the evidence-base and best practice in CF in each identified area. The CF Trust forum is open and publically available, therefore ethical approval was gained through Leeds Metropolitan University ethics committee only.

Results
The most frequently discussed topics with corresponding number of initial posts were CFRD (24), weight (21), PERT (17), Dietitian (6) and gastrostomy feeding (2). Key themes of nutritional concern identified included; insulin use (CFRD), being underweight (Weight) and Creon and dose adjustment (PERT). A poor understanding of CFRD was evident, with 13 instances of non-understanding of CFRD identified. Further concepts emerged, including driving with CFRD, exercise and desire for healthier, high energy snacks. Of 253 total responses to posts, 251(99.2%) contained safe, non-harmful advice in line with the evidence-base which was well received by participants. Only 2 of 253 responses (0.8%) contained incorrect and potentially harmful advice; re-use of insulin needles and use of cannabis as an alternative medication for CFRD.

Discussion
This study confirms that online networks provide an opportunity for CF patients to share information. In doing so, they provided safe and supportive nutritional advice in areas which aligned with previously identified themes. CFRD was the most frequently identified subject raised and a lack of understanding of this comorbidity was frequently identified. Patients were predominantly well informed and shared safe information in line with the current evidence base. However potentially harmful advice or information was also present.

Conclusion
Online fora are a useful resource from which to extract service user concerns which can inform service development. Shared posts demonstrate common themes previously reported, but extends this to identify practical aspects of CFRD as a chief concern, identifying a need for further patient education on all aspects of CFRD. With increased longevity a focus on food and exercise was evident, including healthier suggestions for high energy foods than those historically advocated. These findings can be used to inform future service design and provision.

References
1. CF Trust (2013) *UK Cystic Fibrosis Registry: Annual data report 2011.* Kent: CF Trust.
2. Lake, E. (2010) *Food for Thought:Patients' & Carers' Views on Dietetic Care in CF.* Kent: CF Trust.
3. Parkins, M., Parkins, V., Rendall, J. and Elborn, S. (2011) Changing epidemiology and clinical issues in an aging cystic fibrosis population. *Therapeutic Advances in Respiratory Disease,* 5 (2), pp. 105-119.

DIET THERAPIES FOR THE TREATMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD): A SYSTEMATIC STYLE REVIEW

G. Phillips, A. Barton
Division of Nutritional Sciences, School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, LE12 5RD Email: phillips121@hotmail.co.uk, arlene.barton@nottingham.ac.uk

Background

The prevalence of NAFLD is increasing in line with rates of obesity; it is currently estimated to affect 25% of the western world (Loria et al., 2007). In the absence of approved pharmaceutical therapy, lifestyle intervention is the mainstay of current treatment (Thoma et al., 2012). Establishment of effective treatments is imperative to improve quality of life for patients with NAFLD and reduce the burden on health services.

Aim

To determine the most effective dietary interventions in the treatment of NAFLD.

Methods

Medline, Embase and Web of Science were searched by one reviewer to select studies investigating the effects of a specific dietary intervention on markers of NAFLD which were subsequently assessed for quality using an adapted Newcastle Ottawa Scale. Markers of liver function and anthropometrics were used to compare the effects of the interventions. Inclusion criteria included English language, human studies recruiting participants aged >16 years; original research published in the past 10 years were used to ensure up-to-date evidence.

Results

10 studies meeting the inclusion criteria were included in this review 7 of which explored the effects of weight loss, 2 investigating omega-3 supplementation and 1 studying liquorice root extract. Larger weight losses were not associated with greatest improvements in liver function. The greatest reduction in ALT (-62.0 IU/L), was associated with an energy intake of 126kJ/kg/day alongside an iron restriction of <6mg/day. Both omega-3 and liquorice supplementation reduced ALT levels by 30.7IU/L and 12.8IU/L, respectively, in the absence of weight loss.

Discussion

Trends in weight loss data suggest that nutrient composition may be more significant than energy content of the diet. Animal studies have uncovered a link between iron accumulation and hepatic damage caused by reactive oxygen species supporting results recorded by Yamamoto et al. (2007). The anti-inflammatory properties of omega-3 oils are thought to reduce markers of NAFLD similar to their role in cardiovascular disease (Hooper et al., 2006). Omega-3 supplementation appeared more effective when combined with weight management. Combination therapy may be more beneficial given the relationship with NAFLD, obesity and other associated metabolic disorders.

Conclusion

Weight loss, omega-3 supplementation and liquorice extract are effective in reducing markers of NAFLD; combination therapy may be more successful than isolated dietary changes. Diet therapy has the potential to provide a cost effective treatment option in targeting the increasing population of patients with NAFLD and its comorbidities. Dietary interventions have demonstrated significant reductions in clinical markers of the disease such as ALT (-62.0 IU/L p=0.001) (Yamamoto et al., 2007). Whilst iron restriction alongside weight loss appeared effective, the impact on general health is unknown; further research is therefore required in this area.

References

1. Hooper L, Thompson RL, Harrison RA, Summerbell CD, Ness AR, Moore H, Worthington HV, Durrington PN, Higgins, JPT, Capps NE, Riemersma RA, Ebrahim SBJ, Davey-Smith G (2006) **Risks and benefits of omega 3 fats for mortality, cardiovascular disease and cancer: systematic review**, *BMJ* **332**, 752-760

2. Loria P, Lonardo A, Bellentani S, Day C, Marchesini g, Carulli N (2007) **Non-alcoholic fatty liver disease (NAFLD) and cardiovascular disease: An open question**, *Nutr Metab Cardiovas* **17**, 684 - 698

3. Thoma C, Day C, Trenell M (2012) **Lifestyle interventions for the treatment of non-alcoholic fatty liver disease: A systematic review**, *J Hepatol* **56**, 255 – 266

4. Yamamoto M, Iwasa M, Iwata K, Kaito M, Sugimoto R, Urawa N, Mifuji K, Kobayashi Y, Adachi Y (2007) **Restriction of dietary calories, fat and iron improves non-alcoholic fatty liver disease**, *J Gastroen Hepato* **22***,* 498 - 503

FACTORS ASSOCIATED WITH SUCCESSFUL GROUP WEIGHT MANAGEMENT: A SYSTEMATIC STYLE REVIEW

G. Philips, A. Avery
Division of Nutritional Sciences, School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, LE12 5RD
Email: phillips121@hotmail.co.uk, amanda.avery@nottingham.ac.uk

Background
Obesity is a growing problem in the developed world affecting 23% of the UK population (D of H, 2011). Current treatment relies on 1:1 counselling, group support, pharmacological management and surgery (NICE, 2006). Group weight loss has been shown to be effective and may offer a scalable cost effective obesity therapy solution. A range of group therapies are in existence ranging from commercial organisations to sessions run by healthcare professionals within the NHS; the success of the groups may differ due to variability in how groups are managed and delivered. Specific factors attributed to successful weight loss outcomes are therefore of interest in the development of future programmes.

Aim
To identify features of group weight loss interventions associated with increased weight loss outcomes to inform the development of group interventions.

Methods
Medline, Embase, Scopus and PsychINFO were used to select research papers investigating the effects of a group weight loss intervention on long term weight loss (>6 months) most commonly measured by group leader or research staff. Internet or telephone based interventions were excluded along with paediatric studies and those losing weight following bariatric surgery. Papers published in English within the past 15 years were included. These papers were quality assessed using an adapted Newcastle Ottawa scale.

Results
15 papers were included in this review having fulfilled the inclusion criteria. 9 of the 15 authors investigated modest energy reductions whilst 5 implemented a more prescriptive energy restriction; 1 other studied the use of orlistat. 14 of the studies stated the use of behaviour modification strategies of which stages of change, goal setting and self-monitoring were most common. Weight loss ranged from 0.1-14.1kg with 10 studies reporting a clinically significant weight loss of >5%.

Discussion
Group weight management is shown to result in significant weight loss. A range of contributing factors have been identified alongside social support. A worksite based intervention showed the greatest weight loss at 12 months suggesting that easy access and environment may be key influences (Salinardi et al., 2013). Whilst behaviour change strategies were frequently included, groups led by those with a background in psychology showed greater weight loss. Prescriptive dietary regimes did not appear to be more effective than modest energy restriction and there was no apparent correlation between length of intervention or group size on weight loss.

Conclusion
Group therapy can be an effective obesity treatment; however, variation exists between groups. Accessible interventions delivered in a supportive environment with the use of behaviour modification strategies are associated with improved weight loss outcomes.

References

1. Department of Health (2011) Healthy Lives Healthy People: A Call to Action on Obesity [online], Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/134840/dh_130487.pdf.pdf. Accessed 02.07.2013

2. National Institute for Clinical Excellence (2006) Obesity [online], Available at: http://www.nice.org.uk/nicemedia/live/11000/30365/30365.pdf. Accessed 02.07.2013

3. Salinardi, T.C., Batra, P., Roberts, S.B., Urban, L.E., Robinson, L.M., Pittas, A.G., Lichtenstein, A.H., Deckersbach, T., Saltzman, E., Das, S.K. (2013) Lifestyle intervention reduces body weight and improves cardiometabolic risk factors in worksites. *Am J Clin Nutr* **97**, 667-676

A QUALITATIVE STUDY TO ASSES WHICH SOURCES OF ADVICE IMPACT ON KNOWLDEDGE OF, AND COMPLIANCE WITH, DEPARTMENT OF HEALTH INFANT FEEDING GUIDELINES IN 25 MOTHERS ATTENDING 4 NORTH YORKSHIRE CHILDREN'S CENTRES

K. Powell, D. Wild.
Faculty of Health and Social Sciences, Leeds Metropolitan University, Leeds, LS1 3HE.
Email: katepowell72@hotmail.co.uk

Introduction
The Department of Health (DH) 2003 Infant Feeding Guidelines recommend that solid foods (SF) are introduced to infants at around 6 months. Moore et al (2012) suggest knowledge of DH guidelines improves compliance, this study assesses which sources of advice, and which settings, improves participant's knowledge and is influential on the participants' decision to commence SF.

Methods
Focus groups were conducted with a convenience sample of 25 participants at 4 children's centres during pre-existing mother and baby sessions. The participants were all white- British who spoke English as a first language. Semi-structured questions were used as the basis for discussion with groups of 2-3 mothers. Systematic analysis was used to examine the resulting transcript for key themes. An analysis matrix was used to identify links between knowledge, attitudes and influences, and infant feeding behavior. Ethical approval was obtained from Leeds Metropolitan University Faculty of Health Ethics Committee.

Results
Most participants did not comply with the DH guidelines. Only 1 participant introduced SF to their infant at 6 months, 1 introduced prior to 4 months and the rest (n=23) introduced between 4-5 months. Participants demonstrated good knowledge of the recommend timing of introducing SF, but a poor knowledge of what constitutes valid signs of hunger from their infants, and of what foods the DH recommends are avoided. Participants expressed poor confidence in the relevance of the guidelines. Participants introduced finger foods quickly on commencing SFs, with many of those (n=14) introducing some foods containing gluten, ham or egg between 4 and 5 months. A high number of participants (n=19) consulted written information published by a commercial infant food manufacturer, all of these introduced SF at 4 months. Some of the participants (n=6) had attended a health visitor led-education session at their children's centre, these participants demonstrated improved compliance, knowledge and attitude towards the DH infant feeding guidelines when compared with the rest of the cohort.

Discussion
This study suggests that it is the setting in which information is given which impacts on how influential it is. This study highlights the value of incorporating evidence based education sessions into children's centre services. The results of this study suggest that commercial infant food manufacturers may be influencing the timing of the introduction of SF.

Conclusion
Participants did not feel the DH guidelines were relevant to the situation they were in with their own infants, which contributed to poor compliance and attitude towards the DH guidelines. Health visitor-led education sessions incorporated into children's centre services improved knowledge and practices of the participants. More research is required into the potential effects of the early introduction of finger foods and into the influence of information published by commercial infant food manufacturers.

References
1. Department of Health (2003*) Infant feeding recommendation.* Available from: <http://www.dh.gov.uk/en/Publicationsandstatistics/Publications/Publications/PublicationsPolicyAndGuidance/DH_4097197> [Accessed 15 January 2013].
2. Moore, A., Milligan, P., Rivas, C. and Goff, L. (2012) Sources of weaning advice, comparisons between formal and informal advice, and associations with weaning timing in a survey of UK first-time mothers. *Public Health Nutrition,* 15 (9), pp. 1661-1669.

A FOCUS GROUP STUDY EXPLORING CONSUMER UNDERSTANDING OF HEALTH CLAIMS ON FUNCTIONAL FOODS, AND THE FACTORS THAT AFFECT ACCEPTANCE OF THEM

E. Pryke and M. Standing
Faculty of Health and Social Sciences, Leeds Metropolitan University, Leeds, UK
Email: emmakpryke@gmail.com

Background
In recent years there has been a marked growth in the market of functional foods, promising consumers a wide range of benefits (Leatherhead Food Research 2011). However research seeking to assess levels of consumer understanding has produced mixed results and is quickly outdated (EdComs for Food Standards Agency 2007). It is particularly important to assess understanding given recent European Union (EU) legislation governing product claims (Council of the EU 2006) and concerns that consumers can be misled by product marketing. Meanwhile research looking at consumer acceptance is not easily generalizable and limited good quality qualitative research exists. The study aims were to address these gaps by investigating levels of understanding and exploring issues affecting acceptance of functional foods among a group of consumers.

Methods
A focus group methodology was chosen to generate in depth qualitative data and a focus group was conducted with seven employees (aged 40-60, 3 male and 4 female) of a government office in London, recruited via a contact of the researcher. The group was moderated, recorded and transcribed in full by the researcher. Questions covered the group's understanding of healthy eating and functional foods in general and then moved on to discussion of three specific functional products, selected because they were commonly found in supermarkets (identified from a prior survey). The group were asked whether they would buy them, and what affected this decision. Thematic analysis was used to identify common themes, and elements of discourse analysis were used to further explore opinions (Kreuger 1998).

Results
Awareness of functional foods was low among the group but knowledge and practice of healthy eating was relatively high. The group understood the purpose of the cholesterol lowering product and the probiotic product but were less clear as to the purpose of omega 3 enriched eggs and found the concept novel and disturbing. Overall, acceptance was very low, regardless of interest in healthy eating or personal relevance due to health conditions. Reasons given could be grouped into themes including scepticism or fear that the products would not work, were a marketing tool for food companies, and were artificial and therefore not beneficial or even harmful; and the influence of more important factors such as price, taste, and personal habits.

Discussion
Consumers have a relatively good understanding of functional food claims but are highly sceptical in their acceptance of them. The study should be expanded upon in order to assess the views of other groups and to further probe reasons for the scepticism expressed but findings did not dramatically differ to those of others, including Wills et al (2012), indicating the results should not be dismissed. Dietitians and public health nutritionists are well placed to dispel negativity and ensure consumers benefit from relevant products while avoiding those which are not relevant.

Conclusion
Participants had a good understanding of health messages and functional claims but were discouraged from purchasing functional products due to scepticism, fear and lack of trust in the food industry, factors which must be tackled in order to increase acceptance.

References
1. Council of the European Union (2006) Council Directive No 1924/2006 of 20 December 2006 on nutrition and health claims made on foods. *Official Journal of the European Union* [Online] L 404/9 December. Available from: <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:404:0009:0025:EN: PDF> [Accessed 27 July 2013].
2. EdComs for the Food Standards Agency (2007). *Review and Analysis of Current Literature on Consumer Understanding of Nutrition and Health Claims on Foods.* London: EdComs.
3. Leatherhead Food Research. (2011) *Market Report – Future Directions for the Global Functional Foods Market* [Online]. London: Leatherhead Food Research. Summary available from: <http://www.leatherhead food.com/long-may-the-growth-in-functional-foods-continue> [Accessed 27 July 2013].
4. Kreuger, R. (1998). *Analyzing and Reporting Focus Group Results.* California: Sage Publications.
5. Wills, J., Bonsmann, S., Kolka, M. and Grunert, K. (2012) European consumers and health claims: attitudes, understanding and purchasing behaviour. *Proceedings of the Nutrition Society*, 71 (2) May, pp. 229-236.

THE ACUTE EFFECTS OF HIGH FRUCTOSE AND GLUCOSE FEEDING ON BLOOD PRESSURE IN MEN OF WHITE EUROPEAN ORIGIN AND BLACK WEST AFRICAN ORIGIN.

Simms D, Harding SV and Goff LM
Diabetes & Nutritional Sciences Division, King's College London, SE1 9NH, UK
Email: davidsimms@live.co.uk

Background

The widespread use of high fructose corn syrup [Marriott 2009] and increasing sucrose intakes have led to significant increases in fructose intakes in Western societies [Department of Health 2011]. Increasing fructose consumption has been implicated in the development of hypertension [Ha 2012]. Furthermore, these effects have not been studied in groups with an established higher risk of hypertension and CVD, such as individuals of black West African origin (BWAO). This study examined the effect of high fructose and glucose consumption on blood pressure in healthy men of BWAO compared to age and BMI matched men of white European origin (WEO).

Methods

A double-blinded randomised crossover study was performed in healthy males of WEO (*n=8*) and BWAO (*n=7*), aged 30-50 years. Participants attended two controlled feeding days (8 hrs), separated by a 21-day washout period. During the study days each participant was fed standardised meals such that 20% of their individual energy requirements came from fructose or glucose. Systolic blood pressure (SBP) and diastolic blood pressure (DBP) were assessed using the Ateriograph 24 ™ (Tensiomed) and reported as mean and maximum in the postprandial breakfast period. Ethical approval was granted by King's College London Research Ethics Committees (CREC).

Results

Table 1 outlines the baseline characteristics of the participants. The BWAO and WEO men were matched for both age (p=.45) and BMI (p=.82) **(table 1)**. SBP (p=.02) and DBP (p=.03) was significantly higher in BWAO men assessed at baseline **(table 1)**. SBP was significantly higher in BWAO men over the study day (p=.019) and there was a trend towards significance with fructose treatment (p=.099). There was also a trend towards significantly higher DBP in BWAO men (p=.059) but no observed effect between treatment groups (p=.127)

Table 1: Comparison of baseline characteristics in WEO and BWAO participants

	WEO *(n=8)*	**BWAO** *(n=7)*	***P***
Age (years)	37.6±8.2	40.4±5.1	0.45
Body Weight (kg)	83.1±15.3	85.3±15.8	0.79
BMI (kg/m2)	23.9±7.2	26.6± 4.5	0.82
Body Fat (%)	21.2±8.0	20.0±5.5	0.76
SBP (mmHg)	119.9±10.4	144.9±19.5	**0.02**
DBP (mmHg)	71.5±10.6	90.6±16.5	**0.03**
PWV (m/s)	7.0±1.4	7.4±0.9	0.51

Discussion and conclusion

Our key finding was higher SBP in BWAO men across the duration of the study day. There was a trend toward higher SBP following acute fructose consumption in both BWAO and WEO men. The higher SBP and DBP observed in BWAO men at baseline **(table 1)** and treatment induced elevations in BP resulted in a greater period of time above the WHO hypertensive cut- off point [5] The clinical relevance of this requires further investigation. Furthermore the precise effects on BP may be masked in individuals having higher (but not hypertensive) BP, contributing to the lack of significant effects following fructose consumption.

References

1. Marriott BP, Cole N, & Lee E. (2009) National Estimates of Dietary Fructose Intake Increased from 1977 to 2004 in the United States. *J Nutr* **139**, 1228S-1235.
2. Department of Health. (2011) National Diet and Nutrition Survey: Headline results from Years 1 and 2 (combined) of the rolling programme 2008-9 to 2009-10.
3. Ha V & Sievenpiper JL *et al.* (2012) Effect of fructose on blood pressure: a systematic review and meta-analysis of controlled feeding trials. *Hypertension* **59**, 787-795.

AN EXPLORATORATION INTO THE RELATIONSHIP BETWEEN PROP TASTER STATUS AND THE DIETARY INTAKE OF SUGARS

A. Skillings[1], C. Harden[2], D. Mellor[1]
[1]Department of Clinical Sciences, University of Chester, Parkgate Road, Chester, CH1 4BJ, UK.
[2]Academic Unit of Surgical Oncology, Molecular Gastroenterology Research Group, The Medical School, The University of Sheffield, Beech Hill Road, Sheffield, S10 2RX, UK.
Email: 1001784@chester.ac.uk

Background
The UK population's intake of sugars greatly exceeds recommendations (Bates *et al*., 2012) and this has been linked to an increased incidence of dental caries, and obesity (EFSA NDA, 2010). 6-*n*-propylthiouracil (PROP) is a bitter tasting compound naturally present in foods and recent research suggests that taste sensitivity to PROP varies between individuals. However, the impact of PROP taster status (super-taster, taster, or non-taster) upon dietary intakes, particularly sugars, has been poorly investigated (Drewnowski *et al*., 2007). Therefore, this study aimed to investigate whether dietary sugars intake differed between PROP taster status groups.

Methods
44 participants were enrolled into a cross-sectional study via purposive sampling during December 2012 - February 2013. Ten participants were excluded due to exclusion criteria, ethical concerns, or their withdrawal; 34 data samples were analysed. Exclusion criteria included those who had; respiratory infections, diabetes, severe food allergies, ageusia, anosmia (including where caused by medication), been fitted with electronic implantable devices, were pregnant/lactating, suffered from an eating disorder, or ate/smoked/drank in the 2 hours prior to testing. PROP taster status was measured using the three-sample PROP/NaCl suprathreshold-scaling protocol and the general Labelled Magnitude Scale. Dietary intake of sugars was assessed using an adapted USDA five-step multiple-pass 24-hour recall technique and analysed using Microdiet dietary assessment software. Data was analysed using all data sets (AD), and then with under-reporters (according to the proxy BMR:EI < 1.1) and miscalculated intakes (i.e. unreliable data) excluded (UDE). Relationships between total sugars intake (grams/day and as a percentage of total daily energy (%TDE)) and PROP taster status were statistically analysed using Shapiro-Wilk normality tests and one-way ANOVAs. Ethical approval was granted by the university ethics committee.

Results
The 34 participants who completed this study were mostly Caucasian (*n*= 31), female (*n*= 27), healthy weight (*n*= 25) and degree-educated (*n*= 21), with a median age of 23 years, and were classified as super-tasters (*n*= 20), tasters (*n*= 6), or non-tasters (*n*= 8). Data variability was highest within the super-taster group for both sugars as grams/day (166.5 ± 131.9 AD; 193.2 ± 198.7 UDE) and %TDE (25 ± 9.8 AD; 22.7 ± 12.3 UDE), and lowest within the non-taster group (127.7 ± 39.4 AD; 149 ± 17.6 UDE) and taster group (24.8 ± 9.2 AD; 20 ± 0.3 UDE) for sugars as grams/day and %TDE respectively. Sugars intake (grams/day) tended to be highest within the super-taster group, and lowest within the taster group, showing a reverse J-shaped relationship amongst both data sets. This trend however, was not statistically significant (p = 0.288 AD; p = 0.641 UDE). Intake of sugars (%TDE) varied much more between data sets and PROP taster status groups, and there were no clear relationships (p = 0.911 AD; p = 0.862 with UDE).

Discussion
This study found no relationship between PROP taster status and dietary sugars intake, however a number of factors may explain this. These include: the variability in classifying PROP taster status between studies, the low participant sample, and possible confounding variables e.g. the 'adventurous' or 'non-adventurous' nature of super-tasters, other dietary intakes etc. This study supports findings of similar studies in this area, and it is proposed future investigations should recruit a wider range and greater number of participants, limit potential confounding variables, and all classify PROP taster status using the same method.

Conclusion
Initial findings do not support a relationship between PROP taster status and dietary intake of sugars; at this stage PROP taster status cannot be used to predict sugars consumption.

References
1. Bates, B., Lennox, A., Prentice, A., Bates, C. & Swan, G. (2012) *National Diet and Nutrition Survey: Headline results from Years 1, 2 and 3 (combined) of the Rolling Programme (2008/2009 – 2010/11).* London: TSO
2. Drewnowski, A., Henderson, S. A. & Cockroft, J. E. (2007) Genetic sensitivity to 6-n-propylthiouracil has no influence on dietary patterns, body mass indexes, or plasma lipid profiles of women. *Journal of the American Dietetic Association*, **107**(8), 1340-1348.
3. European Food Safety Authority Panel on Dietetic Products, Nutrition, and Allergies. (2010) Scientific Opinion on Dietary Reference Values for carbohydrates and dietary fibre. *EFSA Journal,* **8**(3), 1462-539.

DINING OUT WITH COELIAC DISEASE: AN ANALYSIS OF ONLINE MESSAGE BOARD POSTINGS ON THE SOCIAL IMPLICATIONS AND THE CHALLENGES TO LIVE A NORMAL LIFE

Y. Solomon, J. McClinchy
School of Life and Medical Sciences, University of Hertfordshire, Hatfield, Herts AL10 9AB
Email: yvettesolomon@rocketmail.com

Background
Strict adherence to a gluten free diet is the only treatment for coeliac disease. Over the past two decades, there has been a societal shift into less home cooking and eating at restaurants has become an important means of social participation (Buckley, Cowan & McCarthy, 2007) creating significant difficulties for people with coeliac disease. This research aimed to explore the issues that people with coeliac disease need to contend with when dining out, their coping mechanisms and the key aspects that facilitate a normal social life through the analysis of online message board postings.

Method
A qualitative approach to the research was selected. Data were collected from The Coeliac, DH and Gluten Free Message Board between November 2012 and January 2013. Posts pertaining to the experiences of eating out on a gluten free diet were identified and analysed retrospectively using thematic analysis. Data were anonymised for confidentiality.

Results
The emergent themes examined positive and negative dining experiences, coping mechanisms, informational support/expert knowledge, relationships/spouses, and emotional stress. The posts suggested an appreciation of the support of Coeliac UK and the ability to dine out now, with mainstream restaurants offering gluten free choices. Negative dining experiences occurred when staff demonstrated a lack of knowledge regarding gluten intolerance, were inhospitable or where illness had resulted from being served food containing gluten. Partners of people with coeliac disease reported stress from these negative consequences. People with coeliac disease experienced guilt, shame, anxiety and fear of being a social nuisance. Positive coping strategies included calling restaurants in advance to check that they are willing to cater for someone with coeliac disease.

Discussion
However, despite the coping strategies that people with coeliac disease deploy, the negative dining experiences may lead to a lack of trust and the belief that they will be unable to dine out safely. In support, Coeliac UK (2012) found that 22% of sufferers are unable to trust restaurant staff to prepare safe uncontaminated gluten free food. Restaurants may not prioritise education and training initiatives in safe practices in the provision of gluten free meals to diners with coeliac disease. This can place a greater burden on people with coeliac disease in utilising assertiveness skills to ensure their food is safe.

Conclusion
Being able to eat the same food as others promotes feelings of unity, which enables greater social participation and potentially increased wellbeing. Restaurants are becoming more aware and adaptive to diners with coeliac disease but there is a need for an increased focus on ensuring safe practices in the provision of gluten free meals.

References
1. Buckley, M., Cowan, C. & McCarthy, M. (2007) The convenience food market in Great Britain: convenience food lifestyle (CFL) segments. *Appetite*, 49 (3), 600-617.
2. Coeliac UK. (2012). *Accreditation symbols for the catering industry: helping your customers to identify foods for a gluten free diet*. Buckinghamshire: Coeliac UK.

AN EXPLORATION INTO THE ATTITUDES OF UNIVERSITY STUDENTS REGARDING THE IMPLEMENTATION OF A TAX ON UNHEALTHY FOODS TO IMPROVE THE NATION'S HEALTH

N. Weaver, N. Cooper
Faculty of Health and Life Sciences, Coventry University, Priory Street, CV1 5FB;
Email: ndw69@hotmail.com

Background:
The UK Government are considering introducing a tax on unhealthy foods to reduce their consumption in order to improve the nation's health and fund National Health Service (NHS) costs for obesity related co-morbidities and treatments. They suggest that the evidence supporting a food tax needs to be investigated before its implementation (Watt 2011). Mytton,Clarke and Rayner (2012) state that food taxes may improve public health, however, American research shows that there is no correlation between existing taxes and a reduction in obesity (Powell, Chriqui and Chaloupka 2009) This study aimed to investigate the attitudes of university students regarding the implementation of a tax on unhealthy foods to improve the nation's health.

Methods:
This research employed an exploratory qualitative methodology based on grounded theory to gain an insight of student attitudes towards a food tax. Convenience sampling was used to recruit twelve university students consisting of eleven female health care profession students, representing nursing, occupational therapy and dietetic cohorts and one male engineering student. Data was collected from two, one hour focus groups which were audio recorded and transcribed verbatim. The six stages of thematic analysis used to analyse the data and identify themes (Braun and Clarke 2006). Ethical approval was granted by the Coventry University Research Ethics Committee.

Findings:
The predominant emergent themes were: acceptance of taxes, behaviour changes, accountability and a combination of approaches. Most participants felt that an unhealthy food tax would only be acceptable if the revenue was specifically used to fund the NHS to assist with the costs of obesity and subsidise healthy foods. The overarching perception was that a food tax alone would not reduce the participants' purchases of unhealthy food due to its desirability. However, it was suggested that if other interventions were used alongside a tax this may bring about behaviour change.

Discussion:
Participants felt that a combination of interventions including education, subsidies, food taxes, clear nutritional labelling, availability of healthier options and appropriate marketing alongside the consideration of low income groups would be required to bring about a change in eating behaviours to address the prevalence of obesity. These findings are consistent with public health expert views (Hawkes 2012) and concur with a study conducted with Danish residents (Waterlander *et al.* 2010). Due to the small sample size of this study generalisation to the wider population is not possible; therefore further research is necessary to provide stronger evidence to evaluate the impact that existing taxes and interventions may have on behaviour change and health outcomes. This will enable policy makers to establish the effectiveness of taxes and other strategies before their implementation in the UK.

Conclusion:
This study concluded that a holistic approach may be necessary in order to have an impact on eating behaviours and ultimately obesity.

References:
1. Braun, V., and and Clarke, V. (2006) 'Using thematic analysis in psychology.' *Qualitative Research in Psychology* 3 77-101.

2. Hawkes, C. (2012) 'Food policies for healthy populations and healthy Economies'. British Medical Journal 344.

3. Mytton,O., Clarke,D., and Rayner, M. (2012) 'Taxing unhealthy food and drinks to improve health'. British Medical Journal 344 2931.

4. Powell, L.M.,Chriqui,J and Chaloupka, F.J. (2009) 'Association between state-level soda taxes and adolescent body mass index' *Journal of Adolescent Health* 45 (3), 57-63.

5. Waterlander, W.E., de Mul, A., Schuit, A.J., Seidell, J.C., and Steenhuis, I.H.M. (2010) 'Perceptions on the use of pricing strategies to stimulate healthy eating among residents of deprived neighbourhoods: a focus group study'. *International Journal of Behavioural Nutrition and Physical Activity* 7 (44).

6. Watt, H. (2011) 'Conservative Party Conference 2011: don't rule out a fat tax, says David Cameron'. *The Telegraph* [online] 4 October. Available from < http://www.telegraph.co.uk/news/politics/conservative /8807376/Conservative-Party-Conference-2011-dont-rule-out-a-fat-tax-says-David-Cameron.html> [20 October 2012].

DIETITIANS' PERCEPTIONS OF DEVELOPING BEST PRACTICE IN COMMUNICATION SKILLS

K.A. Whitehead[1], S.C. Langley -Evans[1], V. Tischler[2] And J.A. Swift[1]
School of Biosciences, Division of Nutritional Sciences, Sutton Bonington Campus, Loughborough, Leicestershire, LE12 5RD[1,] Institute of Mental Health, University of Nottingham Innovation Park, Triumph Road, Nottingham NG7 2TU [2], Email: Kirsten.whitehead@nottingham.ac.uk

Background
The communication skills of health care practitioners, such as Registered Dietitians (RDs), are increasingly recognised as fundamental to patient care and monitoring the effectiveness of these skills is recommended (DH 2010). The aim of this study was to explore experienced RDs views on best practice in relation to the use of communication skills for behaviour change (CSBC) and the assessment of these skills in practice.

Methods
This qualitative study recruited eight RDs from the East Midlands and Yorkshire, to participate in semi-structured interviews. The study was part of a larger mixed methods study which developed and validated a tool for the assessment of CSBC in dietetic consultations, DIET-COMMS. The details of sampling, recruitment, ethics and research methods including data collection, data management, and data analysis have been reported elsewhere (Whitehead *et al.,* 2013). Participants had viewed and assessed 20 video recorded mock dietetic consultations. This study is a preliminary report of their opinions of those consultations, the importance of CSBC in dietetics, what best practice is, and possible methods for professional development in this area. Interviews were transcribed verbatim and subject to inductive thematic analysis.

Results
Preliminary analysis identified three main themes. Theme 1: Concern about consultations viewed. Although there was great variation, participants were disappointed and sometimes 'shocked' by the poor skill level observed in some consultations. They felt passionately that RDs should be highly skilled in CSBC throughout patient consultations to be effective. Theme 2: Communication skill development and assessment: ready or not? Participants felt that post-registration training and assessment of CSBC was desirable throughout the profession at all levels and in all specialities but they had strong reservations about the acceptability of this and perceived it needed to be *'handled very sensitively'*. Theme 3: Knowledge versus communication skills: one or the other or both? This theme related to the development and use of knowledge and/or CSBC. Participants perceived that knowledge was more highly valued and CSBC sometimes neglected. Poor ability to implement CSBC throughout the whole patient consultation was observed and thought to have a negative effect on patient dietitian relationships and patient outcomes.

Discussion
Despite concerns at some of the communication skills viewed participants were still not overwhelmingly supportive of radical action such as regular, compulsory assessment in practice. Concern for how RDs would 'feel' about assessment was stronger than concern about the effectiveness and outcomes of consultations. Theme 3 suggests that participants recognise that both knowledge and skills are important but observed a lack of ability to use CSBC beyond ascertaining the patients' reason for attending the consultation. This suggests a need to support RDs to integrate these skills throughout the consultation for optimal effectiveness and patient outcomes. Post-registration training and development of these skills, including tailored assessment, may be beneficial, if challenging to implement. A change in the behaviour of RDs may be necessary in order to facilitate more behaviour change in their patients.

Conclusion
Although it may be challenging to implement in practice, the development and assessment of CSBC in RDs post-registration is an area for improvement in dietetics.

References
1. Department of Health (2010) Essence of Care Benchmarks for Communication. London. The Stationery Office Limited.
2. Health and Care Professions Council (2013) Standards of Proficiency-dietitians. London,
3. Whitehead K.A., Langley-Evans S.C., Tischler V.A. & Swift J.A. (2013) Assessing communication skills in dietetic consultations: the development of the reliable and valid DIET-COMMS tool. *J Hum Nutr Diet.* doi:10.1111/jhn.12136

WEIGHT MANAGEMENT DURING PREGNANCY: WOMEN'S EXPECTATION AND KNOWLEDGE RELATING TO GESTATIONAL WEIGHT GAIN

C. Whitmore, A. Avery
Division of Nutritional Sciences, School of Biosciences, University of Nottingham, Sutton Bonington Campus, Loughborough, Leicestershire, LE12 5RD
Email: cwhitmore@hotmail.co.uk

Background
There are no guidelines on gestational weight gain (GWG) in the UK although excess gain may increase the risk of postpartum obesity (Siega-Riz *et al*, 2004). The present study aims to explore pregnant women's knowledge of GWG and information received, using data from the managing weight gain in pregnancy (MAGIC) study, a longitudinal study investigating the knowledge, attitude, experience and expectation of women during and after pregnancy relating to their body weight and the factors that influence GWG.

Methods
70 participants were recruited for this cross-sectional study through the MAGIC study. Ethical approval was obtained by the East Midlands-Northampton Research Ethic committee and the R&D department at Nottingham University Hospital NHS Trust. Pregnant women able to read English of all ethnicities, socio-demographic backgrounds and body weights, ≥18 years were recruited at 12 or 20 week antenatal clinics. A questionnaire set was developed requiring quantitative and qualitative responses, where possible using validated questions. Women's height and weight were recorded on the day of recruitment. Chi-squared analysis was used to compare women's expectation of weight change during pregnancy against their BMI classification, the number of women who weighed themselves during pregnancy against their BMI classification and to compare the BMI classifications of women who received advice. The level of expectation of weight change and the women's ages were compared using a Mann-Whitney U-test.

Results
Mean BMI (SD) of participants=26.4kg/m^2 (5.9). 97.7% of participants reported being weighed by a healthcare professional (HCP) during their pregnancy. No significant difference was found between level of expectation of weight gain and BMI (p=0.479), level of expectation and previous pregnancies (p=0.093) or expectation and women's age (p=0.484). No significant difference was found between self-weighing and BMI (p=0.060). 17.1% of women reported receiving advice on body weight from a HCP during pregnancy, no significant difference was found between receiving advice and BMI (p=0.616).

Discussion
Overall the results show that most women don't have a clear expectation of how their weight will change during pregnancy regardless of age, BMI and previous pregnancies and do not receive advice on body weight from HCPs. Pregnancy is seen as a receptive time to provide women with advice and a lack of advice on body weight from HCPs has been linked to a lack of concern from pregnant women (Olander *et al*, 2011). Although no specific weight gain guidelines exist in the UK, the Centre for Maternal and Child Enquiries (CMACE) recommends that all obese pregnant women should be provided with information about the risks associated with obesity in pregnancy and how they may be minimised (CMACE/RCOG, 2010). In the current study, 33 women, who were overweight or obese, reported they did not receive advice on weight management, suggesting recommendations are not being followed.

Conclusion
Most women did not have a clear expectation of weight change during pregnancy and although most are weighed by a healthcare professional they don't receive GWG advice. This could be a missed opportunity to provide information on body weight during pregnancy although without clear guidelines on GWG, HCPs are limited on what they should recommend.

References
1. Olander, E. K., Atkinson, L., Edmunds, J. K. and French, D. P. (2011) The views of pre- and post-natal women and health professionals regarding gestational weight gain: an exploratory study. *Sexual & Reproductive Healthcare,* **2**: 43-48.
2. Siega-Riz, A. M., Evenson, K. R. and Dole, N. (2004) Pregnancy-related weight gain- a link to obesity? *Nutrition Reviews*, **62**(7): S105-S111.
3. The Centre for Maternal and Child Enquiries (CMACE) and Royal College of Obstetricians and Gynaecologists (RCOG) (2010). CMACE/RCOG joint guideline management of women with obesity in pregnancy. London: CMACE/RCOG.

Malnutrition

A COMMUNITY BASED DIETETIC-LED SERVICE TO EXTEND THE CITYWIDE CARE OF PATIENTS AT RISK OF MALNUTRITION AND TO REDUCE INAPPROPRIATE PRESCRIBING COSTS OF ORAL NUTRITIONAL SUPPLEMENTS

H Diskin, C Weir
Dietetics Department, Leeds Community Healthcare NHS Trust, 311 Dewsbury Road, Leeds LS11 5LQ.
Email: hannahdiskin@nhs.net

Background
Malnutrition is a cause and consequence of disease, affecting at least 3 million UK adults (Elia, 2009) of which 93% are in the community at a cost to the NHS of £13 billion/year (BDA, 2012). Food should be first line treatment for anyone identified as at risk of malnutrition (Crawley & Hocking, 2011). Oral nutritional supplements (ONS) are often inappropriately prescribed to treat malnutrition (Gall et al., 2001). The current annual spend on ONS in Leeds is approximately £1.7million for around 1500 patients. This innovative service aims to receive 1000 new patient referrals and as a consequence make £300,000 of savings through clinical and cost effective use of ONS usage in the community.

Process
The success of a pilot project led to the citywide dietetic-led service. This process is outlined below. Ethics approval was not required.

1. A 12 month pilot project in Leeds North CCG involved a retrospective audit which was carried out with 8 GP practices in 2011/12, to assess current ONS prescribing. Concurrently all Leeds North CCG practices could refer any adult patient on ONS, directly to the dietetic team.

2. This pilot project identified 315 people on ONS with 83 patients assessed and reviewed by a dietitian. The audit showed less than 20% of patients were appropriately prescribed ONS. Dietetic intervention made an average saving of £2.62 per patient per day by getting the right patient on the right product for the right length of time. This equates to an annual saving of £79,372.90.

3. The impact of this work led to investment (until 03/2014) to implement a city wide community 'Eating and Drinking Team' to raise awareness of the need to identify and treat malnutrition, through nutritional screening, promoting 'food first' principles, appropriate prescribing practices, and pathways, to ensure the best outcomes for Leeds residents.

4. Targets for the new team were set at 1000 new patient referrals, with 3000 patient contacts to enable annual cost savings of 20% per year (approx £300,000).

Outcomes
In the first two full quarters of activity (Jan-Jun 2013), the service has:

Outcome	Achieved	Discussion
Number of new referrals	1320	3.5 times greater number of referrals than the same time period last year
Number of patients seen	595	If current trends continue the service will be approx. 50% above profile in the remaining 9 months of funded activity
Number of contacts	1204	This is on target to deliver 3010 contacts over the funded period.
Cost savings	£846,000	Savings target achieved in the first quarter and now exceeded.

Cost savings are generated by preventing inappropriate prescribing by getting the right patient on the right product for the right length of time. Increase in referrals, activity and outcomes (not discussed here) demonstrate the need for a dietetic-led service, with additional and longer term investment to recognise the referral rate and the savings.

Conclusion
Dietetic-led interventions for reducing the risk of malnutrition can be successful in promoting the role of the dietitian and achieving significant cost savings.

References
1. British Dietetic association (BDA) (2012) Managing Adult Malnutrition in the Community (2012) produced by a multi-professional consensus panel. Available from: http://www.bda.uk.com/publications [Accessed 07/13]
2. Crawley, H., and Hocking, E. (2011) Eating well: supporting older people & older people with dementia Herts:The Caroline Walker Trust
3. Elia, M., Russell, C.A. and Stratton, R.J. (2010) Malnutrition in the UK: policies to address the problem. Proc. Nutr. Soc. 69, 470–476.
4. Gall, M.J., Harmer, J.E. & Wanstall, H.J. (2001) Prescribing of oral nutritional supplements in primary care: can guidelines supported by education improve prescribing practice? Clin. Nutr. 20, 511–515.

ADHERENCE TO PROTECTED MEALTIME GUIDELINES: A COMPARISON BETWEEN ACUTE AND COMMUNITY HOSPITALS.

[1]K Kerr 2C Monaghan
[1]*Glasgow Caledonian University – Student. kkerr20@caledonian.ac.uk.*
[2] *Glasgow Caledonian University – Project Supervisor.*
Email: kakkerr@hotmail.com

Background
Between 25-34% of patients admitted to hospital are at risk of malnutrition (BAPEN, 2012). Protected mealtimes ensure all non-essential interruptions are limited so patients are eating in a clean, quiet and safe environment (HIS, 2011). The aim of this evaluation was to determine whether 2 Hospitals within a Scottish Health Board adhered to protected mealtimes guidelines.

Methods
30 Mealtimes (843 patients), were observed by 1 observer over 12 days (weekdays only) using Healthcare Improvement Scotland Observation Tool for Protected Mealtimes Guidelines (HIS, 2011). Protected mealtimes were observed in four wards in an acute hospital and one ward in a community hospital at breakfast, lunch and dinner and then repeated. Ethical approval was granted by The Life Sciences Human Subjects Research Ethics Committee of Glasgow Caledonian University.

Results

Observations During Mealtimes (HIS, 2011)	**Mealtime Observation Occurrence % (n=30)**	**Patients affected (n)**	**Observation Occurrence Acute Mealtimes % (n=24)**	**Observation Occurrence Community Mealtimes % (n=6)**
Patients remained in unsafe eating positions	27%	25	33%	0%
Patients could not reach their meal	13%	9	17%	0%
Interruptions during mealtimes	80%	171	95%	16%
Encouragement during meals	33%	142	16%	100%
Completion of food and fluid charts directly after meal	30%	28	37%	0%
Patients given opportunity to wash their hands prior to a meal	0%	0	0%	0%

Discussion
The findings from this study indicate that the delivery of nutritional care was seen as a low priority; all appropriate nutritional care was not always provided. A recent study by Huxtable (2013) found that a protected mealtime programme increased nursing staff availability at mealtimes and for feeding assistance, but also increased mealtime interruptions. Education and training of ward staff in the importance of the delivery of nutritional care and the consequences of poor nutritional care is essential to ensure optimum nutritional care is received by each patient and protected mealtime guidelines are adhered to correctly.
Conclusion: This studied showed that protected mealtime guidelines were frequently not adhered to, predominantly more so in the acute setting, indicating patients did not receive optimum nutritional care.

References
1. BAPEN., 2012. *Introduction to Malnutrition* [online] http://www.bapen.org.uk/about-malnutrition/introduction-to-malnutrition [accessed on 25/09/12]
2. Health Improvement Scotland., 2011. *Improving Nutrition.,Improving Care. Eat Well, Get Well, Stay Well. Interim Report.*:http://www.healthcareimprovementscotland.org/our_work/patient _safety/improving_ nutritionalcare.aspx [accessed on 28/02/13].
3. Huxtable, S., Palmer, M., 2013. The efficacy of protected mealtimes in reducing mealtime interruptions and improving mealtime assistance in adult inpatients in an Australian hospital. *European Journal of Clinical Nutrition.* Vol 9. Pp 904-910.

FACTORS THAT ARE ASSOCIATED WITH MALNUTRITION IN VULNERABLE POPULATIONS FROM ECONOMICALLY DEVELOPED COUNTRIES: A NARRATIVE SYNTHESIS OF A SYSTEMATIC REVIEW

K Kimber[1] and C Baldwin[2]
[1] *Department of Nutrition and Dietetics, King's College London, London, SE1 9NH, UK*
[2] *Nutritional Sciences Division, King's College London, London, SE1 9NH, UK*
Email: katherine.kimber@kcl.ac.uk / kat_kimber@hotmail.co.uk

Background
A better understanding of the underlying causes of malnutrition could help create more detailed screening tools. This would help guide the early identification of malnutrition and therefore initiating early treatment. This systematic review aims to identify the underlying causes and risk factors of malnutrition, in vulnerable populations, from economically developed countries in a variety of settings.

Methods
A systematic review was conducted through electronic database searching (MEDLINE, CINAHL, EPPI Centre, Cochrane Library), hand searching references of included studies and review papers, and contact with a knowledgeable expert in the field. The last database search was conducted on 12th October 2012. The inclusion criteria were; observational studies published in English, participants who are elderly, frail or vulnerable, living in either hospitalised, institutionalised, or community settings of more economically developed countries, with either chronic illness, malnutrition, or at risk of. A narrative synthesis was used, relying primarily on words and text to summarise and explain findings, a technique most suitable where numbers are unavailable (Rodgers et al 2009).

Results
A total of 5273 titles were screened, of them, 302 abstracts were further examined, and a total of 119 studies were broadly divided in to similar categories. Nine categories were identified as potentially associated with malnutrition; age (n=15), social (n=57), dental/oral (n=24), gender (n=7), perceived health (n=16), polypharmacy (n=15), psychological/cognitive (n=32), diseases/health status (n=37), and food/catering (n=19). Due to time constraints, polypharmacy and perceived health were analysed. A total of 20 observational studies were identified for inclusion in the review. Polypharmacy, considered to be more than 2-3 medications, is likely associated with an increased risk of malnutrition, in the community and institutional settings, in those aged >55 years. Poor perceived health is likely associated with an increased risk of malnutrition in the community, and hospital settings, in those aged <80 years.

Discussion
The factors identified in this review as being associated with the risk of malnutrition, are in agreement with another recent systematic review (Nieuwenhuizen et al 2010). Study quality in both groups was predominantly low, due to lack of reporting of adequate detail of patient randomisation, how the study size was arrived at, and efforts to reduce bias. The findings in this review highlight the importance of identifying polypharmacy and poor perceived health. However, there is a need for further and higher quality studies in this field, as well as the analysis of the seven other categories identified in this review, in order to help manage malnutrition.

Conclusions
Polypharmacy and perceived health are factors associated with malnutrition in vulnerable populations from more economically developed countries, in a variety of settings in those aged >55 years.

References
1. Nieuwenhuizen, W. F., H. Weenen., P. Rigby., M. M. Hetherington. (2010) Older adults and patients in need of nutritional support: review of current treatment options and factors influencing nutritional intake. *Clinical Nutrition* 29(2): 160-169.
2. Rodgers, M., A. Sowden., M. Petticrew., L. Arai., H. Roberts., N. Britten., J. Popay. (2009) Testing methodological guidance on the conduct of narrative synthesis in systematic reviews effectiveness of interventions to promote smoke alarm ownership and function. *Evaluation* 15(1): 49-73.

'BEING HEARD'. DIETITIANS INVOLVEMENT IN MAKING DECISIONS ABOUT ARTIFICIAL NUTRITION AND HYDRATION

[1]B.J. Tighe, [2]C. Blackburn and [3]A. Slowther
[1]Department of Health Professions, Coventry University, Coventry, CV1 5FB
[2/3]Warwick Medical School, University of Warwick, Coventry, CV4 7AL.
Email: hsx423@coventry.ac.uk

Background
Decisions about artificial nutrition and hydration (ANH) can be difficult to make. Team working, good communication and listening to other team views are recommended in non-emergency decisions relating to ANH (Royal College of Physicians and British Society of Gastroenterology 2010). The experience of dietitians' involvement in these decisions has not been investigated. This research aims to explore the lived experience of dietitians' involvement in decisions related to ANH.

Methods
16 registered dietitians were interviewed as part of a qualitative phenomenological study exploring their experiences of involvement in decision-making related to ANH. Convenience sampling via an email advert to the West Midlands Branch of the British Dietetic Association membership enabled participants' with a range of clinical experience and from a range of clinical settings to be recruited. Interviews were fully transcribed and analysed within an interpretive phenomenological framework (van Manen 1990). Ethical approval was obtained from Coventry and Warwickshire Research ethics committee.

Results
'Wanting to be heard' was a key theme which was made up from the subthemes of 'being heard', 'trying to listen' and 'not being heard'. The sub-theme of 'being heard' is reported here. For my participants successful involvement in decision-making meant their voice 'being heard'. This did not necessarily mean having their view accepted and adopted, but to them it meant being listened to and respected. Participants who were listened to and respected were known by the team and had positive working relationships with them. This was facilitated by have a physical presence in the clinical setting and being seen to make a difference to patient care. Many felt they needed to prove their worth to the team. For my participants, 'being heard' was also about speaking up for what they believed was right. For example if it was appropriate to initiate, continue with or withdraw a feed which may be related to end of life situations.

Discussion
For these participants positive team relationships were needed to enable them to be heard. Attendance at team meetings where the clinical benefits of dietetic input on patient care could be discussed helped relationships to develop. Time was a barrier to this for some participants. Speaking up about appropriate use of ANH is interesting as implies that participants are not just thinking about ANH as fluid and fuel for the body, but ethical aspects as well. It might be expected that dietitians would promote the initiation and continuation of feeding as they are trained to detect, treat and prevent malnutrition. However, many participants took a more holistic view, showing courage to speak up and ethical sensitivity that it might not be right to feed some patients in certain situations. For some participants 'being heard' enabled them to demonstrate expert power. Mandel and Garey's survey of New Jersey dietitians suggests this is important for dietitians (Mandel and Garey 1993).

Conclusion
Dietitians want to have their opinions heard to inform the decision making process. However having opinions respected and listened to appeared to be more important than if *their* decision which was implemented. Developing relationships with the team and showing clinical benefits of dietetic input on patient care facilitated them 'being heard'. Time may be a barrier to this. Many participants had the courage to speak up for what they believed was right.

References
1. Mandel, E.D., and Garey J.G. (1993) Perception of power among dietitians. *J Am Diet Assoc* 93 (4): 423-8
2. Royal College of Physicians and British Society of Gastroenterology. (2010) *Oral feeding difficulties and dilemmas: A guide to practical care, particularly towards the end of life.* London: Royal College of Physicians van Manen, M. (1990) *Researching lived experience. human science for an action sensitive pedagogy*. Ontario: The State University of New York

Practice Evaluation

INSULIN DOSE ADJUSTMENT BY A DIETITIAN

[1]R Boocock, [2]M Bannister
[1]Nutrition and Dietetic Services, C2, St Luke's Hospital, Little Horton Lane, Bradford, BD5 0NA.
[2] Horton Park Diabetes Team, Horton Park Centre, 99 Horton Park Avenue, Bradford, BD7 3EG.
Email: ruth.boocock@bthft.nhs.uk

Background
Locally, experienced dietitians have been teaching carbohydrate counting (CHOC) and associated insulin dose adjustment as per nationally recognised structured patient education programmes for people with type 1 diabetes since 2005. In 2007, the BDA suggested a protocol with organisational approval was best practice to ratify this extended role. As organisations have a responsibility to ensure competency of staff there is sometimes, understandably, a reluctance to give local agreement without a legal framework to underpin this practice. Dietitians are currently not eligible to do the non-medical prescribers course.

Methods
People with type 1 diabetes who do not wish to attend secondary care, sit within the level 3 diabetes service in primary care. Following completion of a CHOC workshop, they often opt for e-consultation. This involves submitting electronic charts detailing blood glucose (BG), carbohydrate (CHO) loads and insulin doses for advice. All insulin dose adjustment advice by a dietitian is cross-checked by a prescriber (Diabetes Specialist Nurse DSN) prior to email response. Three case reviews illustrate this process.

Results

Case	Insulin Regimen	Dose adjustment advice from dietitian	Rationale for advice from chart	Time for verification of advice by DSN
1	Humalog 5/6/10 units. Levemir 8/14 units.	Humalog 1unit:10g CHO. Levemir 8/12 units. 30-50% Humalog dose reduction for planned activity. Corrective Humalog dose – take 1 unit less if BG below 6mmol/l pre-meal.	• CHOC skills good. • Meal-time ratio gave comparable dose of insulin but enabled more precise dosing at time of eating, including injecting for early breakfast and snacks. • Background insulin reduced, exercise advice and use of corrective insulin limited hypo risk due to existing tendency to hypos and anticipated increased risk due to covering snacks with quick acting insulin.	19.25 hours
2	Novorapid 8-10 units with meals. Lantus 24 units.	Novorapid 1 unit:10g CHO. Lantus 24 units. Corrective Novorapid – assume 1 unit will lower BG by 2-3mmol/l.	• CHOC skills reasonable. • Based on charts, meal-time ratio at breakfast reduced risk of hypos mid-morning. • Additional charts were required to confirm other meal-time ratios but safe starting point. • Introducing a corrective dose provided a more consistent way of correcting blood glucose.	47 hours
3	Humalog 1.5 unit:10g CHO at breakfast; 1 unit:10g CHO at other meals. Lantus 48 units.	Humalog 1.5 unit:10g CHO at breakfast and evening meal; 1 unit:10g CHO at lunch. Lantus 44 units.	• Reduce lantus by 4 units as BG dropping overnight. • Increase evening meal-time ratio as BG rising post prandially. • Do not use corrective dose mid-morning rather give Humalog to cover CHO in snack.	46.75 hours

Discussion
Waiting for a prescriber to okay insulin dose adjustment advice from the dietitian delays email response to patient by an average of 38 hours. A regulatory framework such as a patient group directive or protocol would enable a dietitian to provide this advice in a timely manner. Without organisational support locally, dietitians have been refused this mechanism.

Conclusion
This brief abstract provides evidence of on-going safe working of a dietitian in an extended insulin dose adjustment role and reinforces the need for a legal framework to underpin this practice.

References

1. Department of Health (2009) Allied Health Professions Prescribing and Medicines Supply Mechanisms Scoping Project Report. Leeds: Department of Health

2. The British Dietetic Association (2007) Information on Medicine Legislation. Working under Patient Group Directions and Protocols. Birmingham. BDA

COST EFFECTIVENESS OF A COMMUNITY SPECIALIST WEIGHT MANAGEMENT SERVICE

Carroll P.[1], Stokes S.[2] , Turnbull L.[1], Shotliff K. [1],Chase C. [1], & Nelmida T[1].

1. *Specialist Weight Management Service, Central London Community Healthcare NHS Trust*
2. *Imperial College London*

Email: Perryn.Carroll@clch.nhs.uk

Background

The aim of a tier 3 specialist weight management service (SWMS) is to encourage patients to lose and maintain clinically significant levels (5-10%) of weight (NICE CG43, 2010), through a holistic, patient centred multidisciplinary approach. The service consists of specialist dietitians, clinical psychologist, physiotherapist and consultant endocrinologist. As levels of obesity worldwide increase, bariatric surgery is not a viable and long-term, population wide treatment option (secondary to the associated costs and patient risk). The aim of this service evaluation was to identify the cost effectiveness of a community based specialist weight management service.

Methods

Using SWMS outcome database, patients were identified within this retrospective study if they had attended at least one 3 month review and had available anthropometric information. Weight changes were analysed using SPSS 20 statistical software and compared with costs identified in the literature search. Costs associated with providing the service were obtained via the service's finance department which accounts for the salaries of the healthcare professionals, room hire, and other overhead costs. A literature search was performed and manual identification within references, to determine weight loss and associated cost savings of type 2 diabetes mellitus (T2DM) diagnosis occurrence and bariatric surgery costs. This retrospective analysis was logged with the service's Trust clinical governance and did not require ethical approval.

Results

Of the 249 patients within the database, 128 patients were included in this evaluation with a mean starting BMI of 42.4 kg/m^2 (SD ±5.6). Patients within this study had been within the service for different lengths of time ranging from 3-15 months. The mean weight loss of the cohort was 3.5% of their starting body weight, with 37 (28.9%) of patients achieving >5% weight loss. The average BMI reduction for males and females were 1.2 and 1.6 units respectively. The literature search found bariatric surgery costs ranging from £5,500 to £17,900 (depending on surgical costs, pre and post-operative appointments and complications) per person. Projected costs using UK literature of T2DM occurrence and associated treatment costs were £6411.76/ year/patient. The possibility of diagnosis of T2DM for patients of high risk was 11% diagnosis/ year. The cost of the SWMS service was £242, 000 per year.

Discussion

It has been estimated that the direct cost of treating obesity and associated co-morbidities is £480m to the national health service (NHS) expenditure in England (National Audit Office 2001). If the above findings were applied to the SWMS weight loss results, 15% of patients would no long qualify for bariatric surgery which equates to a saving of £71500-232000/ year. For patients that achieved a 5% weight loss reduction, 1.86 of these patients are less likely to develop T2DM with a potential saving of £11925.87. Savings identified in this evaluation sample total to £83,425.87-£243,925.87. Further savings associated with the reduction in obesity would be recommended for future investigations including cardiovascular disease treatments, prescription drug utilisation and other health care costs.

Conclusions

There is an indication that the SWMS has the potential to be a cost neutral weight loss provider. Further research is required to gain a greater understanding of it's broader cost savings.

References

1. National Institute for Health and Clinical Excellence (NICE) (2010) *CG43 Obesity: Guidance on the prevention, identification, assessment and management of overweight and obesity in adults and children*. London: National Institute for Health and Clinical Excellence.
2. National Audit Office (2001) Tackling Obesity in England, http://www.nao.org.uk/publications/0001/tackling_obesity_in_england.aspx

EVALUATING THE IMPORTANCE OF LONG-TERM FOLLOW UP IN A DIETITIAN LED WEIGHT MANAGEMENT SERVICE IN THE COMMUNITY

Carroll P.[1], Collins L.[2] , Brien A.[1], & Majumdar A.[2]
1. Department of Nutrition and Dietetics, Central London Community Healthcare NHS Trust
2. Faculty of Life Sciences and Computing London Metropolitan University

Email: Perryn.Carroll@clch.nhs.uk

Background

According to current reports, 26% of adults in the United Kingdom are obese (Royal College of Physicians, 2013). This highlights a need for practical, affordable and scalable intervention strategies that induce and effectively maintain clinically significant levels of weight loss. The Drop in to Stay on Track (DIST) service offers patients post weight loss intervention (WLI) support for weight maintenance and lifestyle changes. The purpose of the investigation was to evaluate a current community based dietitian led weight maintenance service to determine whether long term support and monitoring assist with weight maintenance/ weight loss post intervention.

Methods

Over a period of a year, patients (n=44) attended an initial dietitian developed and led WLI. Upon competition patients were invited to attend the DIST service for long term support. Weights were collected pre and post WLI as well as at each time the patient utilized the DIST service. Weight changes were analysed using SPSS 20 statistical software and compared with DIST attendance frequency.

Results

The majority (84%) of participants had either maintained (10%) or lost (74%) weight at their last recorded DIST session. Table 1 highlights the various statistically significant weight decreases from WLI referral.

Table 1

From WLI referral to:	Mean Weight (SD)	Mean Wt. Change	% Wt. Change	T Value Comparison with Baseline	P Value
Post WLI	92.03 ±14.51	2.40	2.61	t(43)=7.34	**p=0.00**
45 days ±2 weeks	87.51±13.75	4.81	5.21	t(17)=6.99	**p=0.00**
84 days ±2 weeks	91.07±16.53	4.09	4.3	t(23)=4.94	**p=0.00**
133 days ±2 weeks	88.66±13.44	4.26	4.58	t(13)=3.20	**p=0.007**

Table 1- Mean weight and weight change of participants at each time-point . T- test results comparing weights at baseline to the different time points are displayed on the left and positive values are shown in bold.

Discussion

It is clear from the findings of numerous studies that preventing weight regain is extremely challenging (Perri *et al*, 2001). Recent reviews suggest that weight maintenance efforts should be long in duration with a focus on relapse prevention and problem solving to combat regain (Brantley *et al*, 2008). Our findings from our evaluation suggest long term support and monitoring is beneficial for weight maintenance/weight loss post weight management intervention and further research is required to analyse greater numbers.

Conclusion

Extended care is a necessary and effective method to optimise both continuous weight loss and long term weight maintenance.

References

1. Brantley, P., Appel, L., Hollis, J., Stevens, V., Ard, J., Champagne, C., Elmer, P., Harsha, D., Myers, V., Proschan, M., William, V. and Svetkey, L. (2008) Design considerations and rationale of a multi-center trial to sustain weight loss: the Weight Loss Maintenance Trial. *Clinical Trials*, 5(5), pp.546-56.
2. Perri, M.G., Nezu, A.M., McKelvey, W.F., Shermer, R.L., Renjilian, D.A. and Viegener, B.J. (2001) Relapse prevention training and problem-solving therapy in the long-term management of obesity. *Journal of Consulting and Clinical Psychology*, 69(4), pp.722–726.
3. Royal College of Physicians. *Action on Obesity: Comprehensive Care for All.* United Kingdom: Report of a working party; 2013.

CEREBRAL PALSY GROWTH CHARTS VERSUS STANDARD GROWTH CHARTS FOR ASSESSING GROWTH IN CHILDREN WITH CEREBRAL PALSY

M Little1, E Garrison1, R Luffman2, T Russell2

1 Community Nutrition and Dietetics Department, Whittington Health, 11 Hornsy Road, N7 8GG

2 Dietetics Department, London Metropolitan University,166-220 Holloway Road, N7 8DB

Email: melissa.little@nhs.net

Background

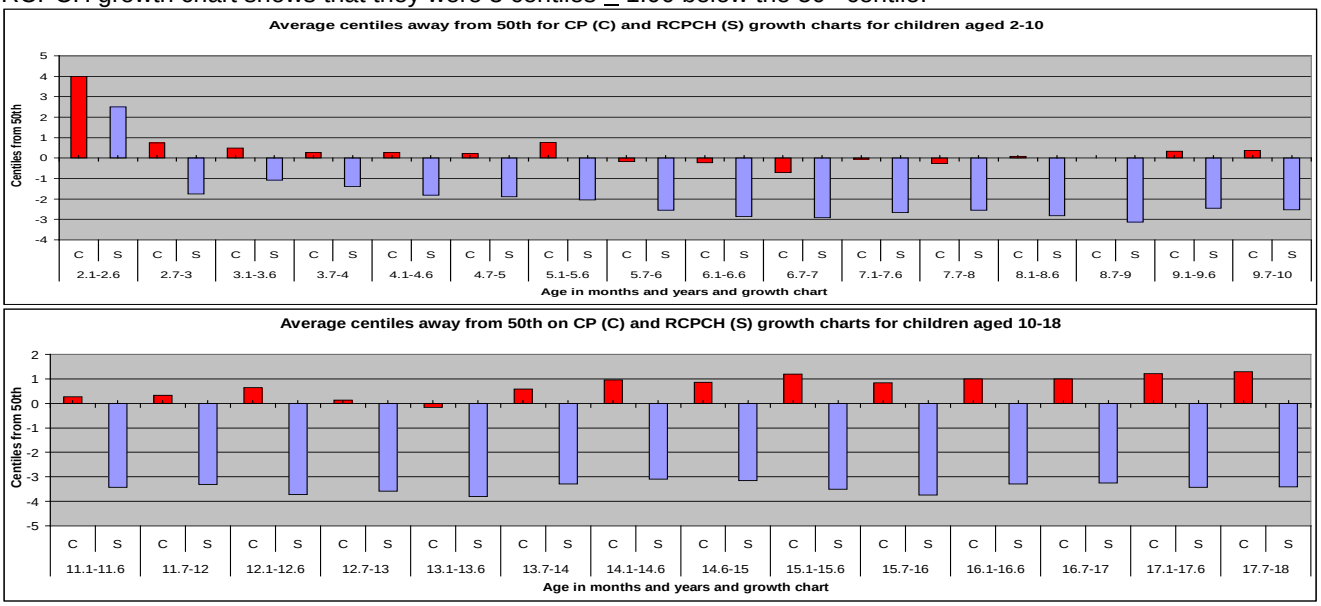
In 2011 the American Life Expectancy Project created growth charts specifically designed for use in children with cerebral palsy (Brooks et al., 2011). The charts differ from the standard Royal College of Paediatrics and Child Health (RCPCH) growth charts as they are based upon the measured growth of children with cerebral palsy and are divided by gross motor function classification system (GMFCS). This research aims to determine the differences in plotted growth between the cerebral palsy growth chart and the standard RCPCH growth charts for children with cerebral palsy.

Methods

Children with a primary diagnosis of cerebral palsy attending special schools in Islington were identified by their electronic patient records. Ethical approval was not needed as research was limited to secondary use of anonymous information. The children were stratified based on GMFCS and given a score from 1-5, with 5 being divided between tube fed and non tube fed (Day et al., 2007). Growth was then retrospectively plotted on both a RCPCH standard growth chart and a cerebral palsy growth chart. One weight was plotted for every six months of the data collected. Excel was used to convert the data to centiles and calculate how many centiles each plotted growth was away from the 50th, with the 50th being classified as 0. Mean centiles for each age group were calculated for both the cerebral palsy and RCPCH growth charts and variations between the two charts were determined.

Results

In total 36 children were identified ranging in age from two to 18 years, with the mean age 11.6 years $\pm$ 4.2. Stastical analysis was only done on children with GMFCS score of 4 or 5 as sample sizes for GMFCS 1-3 were too small. Plotted data on the cerebral palsy growth charts showed that on average children were 1 centile $\pm$ 0.96 above the 50th centile whilst RCPCH growth chart shows that they were 3 centiles $\pm$ 1.00 below the 50th centile.



Discussion

The results show a clear difference between growth centiles for weight of children with cerebral palsy when plotted on the two different charts. These outcomes mirror those discovered by Day et al. (2007) however, the results from this research show that there is more variation between centiles as age increases which was not found by Day et al. (2007).

Conclusion

This study shows that there is a difference in plotted growth between the cerebral palsy growth chart and the standard RCPCH growth charts however further research is needed to determine whether this difference is significant.

References

1. Brooks J, Day SM, Shavelle RM, Strauss DJ (2011). Low weight, morbidity, and mortality in children with cerebral palsy: New clinical growth charts. Pediatrics, 128; e299; originally published online July 18, 2011 (DOI 10.1542/peds.2010-2801).
2. Day SM, Strauss DJ, Vachon PJ, Rosenbloom L, Shavelle RM, Wu YW (2007). Growth patterns in a population of children and adolescents with cerebral palsy. Dev Med Child Neurol, 49(3):167-71.

A RETROSPECTIVE REAUDIT OF OUTCOMES FOR CHILDREN WITH FALTERING GROWTH REFERRED TO DIETETIC SERVICES

S Meredith
Birmingham Community Nutrition, Springfields Centre, Raddlebarn Road, Selly Oak, Birmingham B29 6JB Email: Susan.meredith@bhamcommunity.nhs.uk

Background
The aim of this reaudit was to understand the nature of the client group in terms of diagnosis, to identify how clinical treatments were being used from the departmental clinical guideline and to identify if the aims of treatment are being met in managing faltering growth. This audit followed on from a pilot audit in 2011, which raised several concerns and actions to be taken. In 2011, aims of treatment were shown to be vague and goal setting was found to be too optimistic for the child's condition and social circumstances. Secondly, anthropometric measurements were missing in some cases, specifically length/height measurements. Results of the pilot audit were fed back to the team, with the aim of improving dietetic input and outcomes for children with faltering growth.

Method
An audit tool was designed and used in both 2011 and 2013 to collect information relating the child's diagnosis and treatment. The dietetic team agreed on a ranking scale used to define growth (good = increase one centile in weight, adequate = maintain current weight centile position, poor = decrease centile position). For the reaudit, data recorded on Patient Administration System (PAS) was used to identify patients who had been seen by the Community Paediatric Dietitian team between the dates 1st December 2012 and 31st January 2013. The dietitian then reviewed the case notes for each child and completed the audit of each set of case notes, according to age. The first 8 children identified in three age categories (0-5 years, 5-11 years, 12-16 years) were chosen for inclusion by the PAS referral code 'failure to thrive'.

Results

Measure	2011	2013
Growth	5% good, 71% average, 29% poor	38% good, 50% adequate, 4% poor, 4%?accuracy of measurements
High energy advice given	94%	87%
Oral nutrition supplements recommended	94%	75%
Behaviour advice given	39%	37%
Micronutrients of concern/discussed	78%	58%
Achievement of aims	22% full, 78% partial	54% full, 46% partial
Multidisciplinary working	83%	67%
Safeguarding concerns	0%	8%

In addition to the above results, a vast improvement in record keeping was noted – length/height measurements were available for all children during this audit, which was not the case in 2011.

Discussion
Re-auditing dietetic practice for children who experience faltering growth has produced significant improvements in their clinical outcomes in terms of growth. This was mainly as a result of improved record keeping and realistic goal setting. There was an improvement in identifying the aim of treatment for each child, taking into account their diagnosis, age and social circumstances. This has led to better goal setting and achievement of growth. There were no children who did not achieve anything as a result of their dietetic intervention. Further actions have been agreed within the team in order to continue to improve outcomes.

Conclusion
Re-audit has helped to identify that improvements have been made, and reiterated the use of the clinical guideline. It has also allowed the identification of a clinical outcome related to growth to be agreed within a departmental contract. It would be useful to benchmark these outcomes with a similar service/population.

References
1. Shaw, V and Lawson, M (2007) Clinical Paediatric Dietetics, 3rd edition, Blackwell publishing, pp.556-587
2. King, C; Davis, T (2010) Nutritional treatment of infants and children with faltering growth European Journal of Clinical Nutrition, vol 64 suppl 1 (S11-13)

IMPROVING DIETITIANS' SKILLS AND CONFIDENCE TO MANAGE DISORDERED EATING WITHIN A COMMUNITY BASED WEIGHT MANAGEMENT SERVICE.

[1]E Oates, A Edwards, J Wilton, [2]U Philpot
[1]Leeds Community Nutrition, Dietetic and Weight Management Service, Parkside Health Centre, 311 Dewsbury Road, Beeston, Leeds, LS11 5LQ.
, [2]Nutrition & Dietetics, School of health & Wellbeing Faculty of Health and Social Sciences City Campus, Leeds Metropolitan University, Calverley Street, Leeds, LS13HE
Email: emmaoates@nhs.net

Background
The Leeds Community Weight Management service (LCWMS) has identified that 1/3 to ½ of its clients score highly for disordered eating (DE) via validated questionnaire (Stice, 2000). Clients frequently report DE patterns and the presence of underpinning psychological problems at dietetic interview. LWMS dietitians feel unskilled in supporting these clients. This is reflected in the literature (Whisenant, 1995). The presence of DE impacts on outcomes for the service including poor weight loss and higher dropout rates (LCWMS audit, 2012).

Aim
The project aims to evaluate and develop service provision for clients with DE.

Process
Ethical approval was not required as project was deemed to be service improvement and evaluation. A 4 step process has been proposed and to date steps 1 to 3 have been undertaken. Eight specialist weight management Dietitians working in LCWMS were recruited for the study

1) Baseline data collection focused on assessing the skills and confidence of dietitians in identifying and treating DE via semi-structured taped interviews and included: how clients with DE were identified, the common problems encountered, and the skills and knowledge of the dietitians in supporting behaviour change for this group of patients. This was analysed using thematic analysis.
2) Delivery of a validated Guided Self-Help (GSH) for disordered eating training package.
3) Supervision for the GSH implementation, resource development (a range of GSH materials, worksheets and supporting fact sheets) and DE pathway development for referral onto specialist services.
4) Service evaluation via semi-structured taped interviews to assess changes in skills and confidence in identifying and treating DE

Outcomes
Key themes that emerged at baseline interview. Dietitians identify DE through mixed methods, as well as questionnaire, including:

- client reports of repeated extreme diets
- asking specific questions about eating due to boredom, comfort or depression which leads to disclosure of information that might lead to concerns about BED.
- Observation of body language such as anxiety, poor eye contact, and signs of emotional distress
- Identifying dichotomous thinking towards food and /or weight management such as: " it never works" " I'm a victim of food", " I'm addicted to food", "I never feel full"
- Reports of depression or mention of loneliness or grief
- Linking food problems to childhood events that were traumatic e.g. unwanted sexual contact or statements such as "I was not treated well, so I eat like this".

Dietitians feel stuck knowing what to do and how to help when 1) clients link their eating to past trauma 2) state they don't have control over their eating 3) have negative or critical thinking patterns or 4) refuse to seek additional psychological support.

Conclusion
Final evaluation (Steps 4) will be undertaken in Sept 2013, but to date the provision of specific training, resources, pathways, onward referral information and supervision has increased staff confidence and competence to address DE within a weight management setting.
Dietitians working in weight management often struggle with psychological aspects of disordered eating. Training, resources, pathways and supervision may improve dietetic service delivery and patient outcomes for those with disordered eating behaviours. This requires further investigation.

References
- Heywood- Everett, S. & Hill A.J. Working to overcome Eating Difficulties. Guided self help Manual. University of Leeds 2007
- Stice, Eric; Telch, Christy F.; Rizvi, Shireen L (2000) Development and validation of the Eating Disorder Diagnostic Scale: A brief self-report measure of anorexia, bulimia, and binge-eating disorder. Psychological Assessment, Vol 12(2)
- Whisenant S, Smith B (1995) Eating Disorders: Current Nutrition Therapy and Perceived Needs in Dietetics Education and Research. Journal of the American Dietetic Association. Volume 95, Issue 10, 1109–1112

ASSESSING THE VALUE OF A NUTRITION AND DIETETIC SERVICE WEBSITE

A Scott, A Avery*-
*Nutrition and Dietetics, Leicestershire Partnership Trust, 11 and 12 Warren Park Way, Enderby LE19 4SA * Division of Nutritional Sciences, University of Nottingham, Sutton Bonington LE12 5RD*
Email: Alison.Scott@lnds.nhs.uk

Background
The Leicestershire dietetic service developed a website (www.lnds.nhs.uk) in 2004 with three levels of access; for the public, health care professionals (HCPs) and dietitians. Over 450 resources are available on the site. The website has never been evaluated, though is perceived as being used frequently by dietitians. Access to nutrition websites has increased over recent years. Marquis et al (2005) and Buttriss (2011) have discussed how nutrition websites are used by dietitians and the public and how and why their popularity has increased. The study aimed to explore the value attached to the department website, the costs of running it and make recommendations for future development of the website.

Methods
The researcher developed a SurveyMonkey (www.surveymonkey.com) questionnaire, containing 12 questions to assess how visitors used the website and what they viewed. This was attached to the website for 6 weeks in spring 2013. Local Health Information Services (HIS) and Google Analytics information was available to look at retrospective website activity. Information on departmental printing costs was available to see if this had reduced over the time the website had been live.

Results
Fifty four website users responded to the online questionnaire and indicated that this sample of users visited the website regularly and could find the information they were looking for. On a scale of 1-5, with 5 being a very positive response, the average rating for useful information was 4.19 and the average rating from users for the quality of the information was 4.27. The retrospective information showed that users, repeat users and pages viewed had increased steadily over the last 3 years. Unique visitors had increased from 7986 in 2011 to 10641(predicted in 2013) and return visitors had increased from 50.9% in 2011 to 57.6% (predicted) in 2013. The website users were a range of patients/public, HCPs and dietitians and although most users were from the UK there was an increasing worldwide audience. The printing budget had reduced over recent years while the number of dietetic staff employed and patients seen had increased between 2010 and 2012.

Discussion
The results of the online questionnaire and Google Analytics data provided information that indicated the range of visitors valued the website and could mostly find what they were looking for. Improvements were identified e.g. a better search facility and consideration given to setting up Facebook/Twitter accounts to allow user experience to be captured on an on-going basis. The website was a very cost effective way of providing, accessible, evidence based, patient centred resources when compared with other ways of providing dietary information to patients and HCPs in Leicestershire.

Conclusions
The website was valued and should be maintained with consideration given to the improvements recommended.

References
1. Buttriss JL (2011) Getting the balanced nutrition message across-translating complex science life-course health promoting strategies *Proceedings of the Nutrition Society* 70, 38-46
2. Marquis P, Dubeau C & Thibault I (2005) Canadians' level of confidence in their sources of nutrition information *Canadian Journal of Dietetic Practice and Research 6 (3) 170-176*

DIETETIC CLINICAL EFFECTIVENESS – WOULD THERAPY OUTCOME MEASURES BE UP TO THE MEASURE?'

C Weir, K Johnson & S-A Search
Nutrition & Dietetic Services, Leeds Community Healthcare NHS Trust, Parkside Health Centre, 311 Dewsbury Road, Leeds LS11 5LQ Email: sally.search@nhs.net

Background
It is challenging to identify single measures appropriate to meet the needs of the whole dietetic caseload, to measure the impact of clinical interventions. This has lead to failure to identify the impact of specific dietetic services and nutritional interventions.
Having searched the literature, there were no validated outcome measures for dietetic interventions. In the absence of recognised measures the BDA (2011) has produced guidance, covering six domains, to improve practice and demonstrate clinical and cost effectiveness, the only measure that included all six was the Therapy Outcome Measure (TOM)(Enderby et al 2006).
The aim of the work was to develop and implement Dietetic TOMs to:
- Establish whether interventions are effective.
- Improve reflection on practice.
- Support service development and improvement.
- Demonstrate we provide services that are: clinically cost effective, efficient, responsive and equitable.

Process
(NB Only for Innovative Service Development Abstracts) After identifying TOMs as the outcome measure of choice, we undertook training in TOM methodology and consistency of scoring with Professor Enderby, who developed TOMs. This was then subsequently cascaded to all staff.
From whole service caseload, commissioning requirements and patient demographics and need, we identified six clinical areas that would provide a TOM for the majority of patients accessing the service, these were: obesity, under nutrition, home enteral feeding, diabetes, irritable bowel syndrome (IBS), and Cardiovascular Disease (CVD).
The clinical teams working in these areas developed and piloted the relevant TOM. We undertook a six month pilot, firstly with case notes, and then with patients to test usability, validity, reliability, as well as issues of recording and reporting the data. We undertook a peer review process to ensure consistency of approach and language and then extended the pilot outside of the development teams to the whole service. After further review, the final TOMs were then validated by Professor Enderby.

Outcomes
(NB Only for Innovative Service Development Abstracts) he Leeds Community Healthcare (LCH) Dietetic Service has developed and implemented six validated TOMs for dietetics in the Community. This is a validated tool developed by Prof Enderby and measures the clinical outcome of interventions.
LCH Dietetics has developed and amended the framework to meet the needs of our teams and service users. The six TOMs are new frameworks and have Prof Enderby validation.
The six TOMs developed cover the range of interventions offered in the broadest sense. Every service user will have at least two outcome measures recorded, (baseline and end point) to assess the quality and effectiveness of the dietetic intervention. This will not only demonstrate to our 'customers' the effectiveness of what we do, but also enable us as a dietetic service to assess our clinical effectiveness in dietetic practice and make improvements based on this knowledge, to ensure we continue to improve and deliver the best possible care to Leeds residents.

Conclusion
TOMs ensure that LCH dietetics can identify the difference their specific dietary interventions make to patient care. TOMs enables effectiveness to be a measured in a consistent approach. This will demonstrate to all stakeholders, including commissioners, that dietetic services are clinically cost effective, efficient, responsive and equitable.

References
1. British Dietetic Association (2011) Model for Dietetic Outcomes Available from: http://www.bda.uk.com [Accessed May 2013].
2. Enderby, P., John, A., Petheram, B. (2006) Therapy Outcome Measures for Rehabilitation Professionals. Wiley, England.

A LITERATURE REVIEW OF DIETITIANS' KNOWLEDGE, ATTITUDES AND OPINIONS TOWARDS DIETARY SUPPLEMENTS

J Thomson and P Smith
School of Health and Life Sciences, Glasgow Caledonian University, Glasgow, G4 0BA
Email: thomsonj_4@yahoo.com

Background
Since the late 1990's, public interest and use of dietary supplements has dramatically increased despite the evidence supporting the use of dietary supplements being largely inconclusive (NHS Choices, 2011). Various reports indicate that the public have insufficient knowledge of dietary supplements to enable them to use them safely and effectively (Miller & Russell., 2004). With the lack of public knowledge of dietary supplements already recognised dietitians play a critical role in offering impartial advice based on the best available evidence to support the public in making informed decisions in the use of dietary supplements. The aim of this review was to consider dietitians' level of knowledge and the stance they take towards dietary supplements. For this purpose, a dietary supplement is the collective term used to describe both nutrient-based dietary supplements and herbal-based dietary supplements.

Methods
A literature search focussed on journal articles published in English between January 2000 and February 2013, in the following databases; Proquest, Science Direct and EBSCOHost searching; Ahmed, Cinhal and Medline. A combination of the following search terms were used; 'dietitian(s)', 'dietician(s)', 'knowledge', 'attitude(s)', 'opinion(s)', 'perception(s)', 'belief(s)', 'dietary supplement(s)', 'nutraceutical(s)', 'vitamin(s)', 'mineral(s)' and 'herb(s)'. Eleven primary research articles pertinent to the aim of this study were selected for inclusion from a total of 483 articles which were retrieved from this search, and one other from an unrelated 'Google' search.

Results
The eleven studies were of cross-sectional design. Nine studies conducted their research across various states of America, with one extending to Germany, Hungary and Canada, one focussed their research in Canada; and one in the Netherlands. Each study carried out their research using a questionnaire, in one of the following formats; postal, email, online or telephone survey; with the number of eligible subjects ranging from 57 to 1,268.

Discussion
Dietitians have a greater knowledge of nutrient-based dietary supplements than herbal-based dietary supplements (Lee et al., 2000). Findings suggested dietitians are more knowledgeable on the intended use of dietary supplements and least knowledgeable on the pharmacological effects and risks of these products, including supplement-drug interactions and side effects. A greater knowledge was positively associated with the personal use of dietary supplements and specifically of the particular products used. Dietitians' knowledge, attitudes and opinions were reflected in their recommendations for use of dietary supplements in practice. There was a recognised need among dietitians for further training regarding dietary supplements.

Conclusion
It can be concluded that dietary supplements warrant further recognition within the dietetic curriculum and also within the practice setting. In addition, there is a general consensus that advising patients on dietary supplements should be a shared responsibility between the multi-disciplinary team. Further Recommendations; A standardised tool is developed to further explore this subject area, within the European dietetic population.

References
1. Lee et al., Georgiou, C. & Raab,C. (2000). The knowledge, attitudes, and practices of dietitians licensed in Oregon regarding functional foods, nutrient supplements, and herbs as complementary medicine. 2*J Am Diet Assoc.* 100, pp. 543–548.
2. Miller, C, K. & Russell, T. (2004). Knowledge of dietary supplement label information among female supplement users. *Patient education and counselling. 52*, pp.291-296.
3. NHS Choices. (2011). *Supplements who needs them*? A Behind the Headlines Report. U.K: NHS.

CHANGES IN ANXIETY AND DEPRESSION SCORES ON PATIENTS WITHIN A COMMUNITY SPECIALIST WEIGHT MANAGEMENT SERVICE (SWMS)

Turnbull L.[1] 29 07 13, Lui A. [2], Carroll P. [1], Shotliff K. [1], & Chase T. [1].

[1]*Specialist Weight Management Service, Central London Community Healthcare NHS Trust,*[2]*London Imperial College* Email: Lucy Turnbull [Lucy.Turnbull@clch.nhs.uk]

Background

Morbid obesity has multiple negative consequences for psychological health. These patients are described as depressed, anxious, and impulsive, with low self-esteem and impaired quality of life. The severity of these psychological disorders has been related to the degree of obesity (Abiles et al, 2010). In addition, emotional eating is a driver of weight gain in the obese, and depression is linked to disrupted eating patterns. Therefore, an effective weight loss program should include psychological management of these patients. The Specialist Weight Management Service (SWMS) offers clinical psychology intervention, alongside diet and exercise, with the hope that improving psychological health, leads to improved clinical outcomes for patients.

Aim

This service evaluation aims to investigate if specialist psychological intervention of patients with moderate to high depression and/or anxiety scores; enrolled in the specialist weight management service is improved during their treatment in the service, and if clinical outcomes (specifically weight) are therefore improved.

Methods

All patients assessed by the SWMS team were asked to complete an anxiety and depression measurement score (GAD7 and PHQ9) (Spitzer et al, 1994) before coming to their assessment appointment with the dietitian. The PHQ9 (Patient Health Questionnaire) is a multiple-choice self-report inventory, used as a screening and diagnostic tool for mental health disorders of depression, anxiety, alcohol, eating, and somatoform. It was designed for use in the primary care setting. The GAD7 (Generalized Anxiety Disorder 7) is a self-reported questionnaire for screening and severity measuring of generalized anxiety disorder. A score above 10 in either questionnaire indicated there may be a need for psychological input, and patients were referred to the SWMS clinical psychologist for further assessment. Patients were then assessed by the psychologist to see if further psychological intervention was required. Psychological interventions and treatments included motivational interviewing, brief solution focused therapy, cognitive behavioural therapy, and acceptance and commitment therapy. Treatment was tailored to each individual patient and their personal treatment needs. The number of sessions each patient received was between 2 and 10. With most patients having an average of 6 one-hour sessions on a fortnightly basis. The same questionnaires were then repeated at the 3 month point. As this project was a service evaluation, ethics were not required. All data was anonymised before being evaluated.

Results

N= 297 patients were assessed by the SWMS team dietitian during the review period (2010 to 2012). A further psychological assessment was indicated for n=119 patients, n=67 of these required psychological intervention as described above. The mean BMI in cohort was 42.7kg/m^2. The mean PHQ9 score at baseline was 14 and GAD7 9.

Table 1 shows the basic demographic data of the cohort.

Demographics (units) {normal range}	Psychological intervention	No Psychological intervention
Age	49	51
Sex	F=76.3%	F=66.9%
	M=23.7%	M=33.1%
Most common ethnicity	White British	White British
Waist (cm) {<80 for women, <94 for men}	F=120.9	F=120.7
	M=136.4	M=129
Weight (kg)	118.3	120.8
Weight Range	82.5-175.7	80.2-224
BMI (kg/m2) {18.5-24.9}	42.7	42.7
BMI range	32-60.3	33.2-64.8
BP (mmHg) {90/60-140/90}	129/88	130/86
Total Chol (mmol/L) {<5.2}	4.9	4.8
PHQ9 {0-27}	13.6	8.8
*None - mild {0-6}	35.7%	54.8%
*Moderate - severe {7-27}	64.3%	45.2%
GAD7 {0-21}	9.9	7.6
None - mild {0-6}	53.2%	62.4%
Moderate - severe {7-21}	46.8%	37.7%

Table 2 shows the mean PHQ9 scores at baseline and 3 months, mean change after 3 months, range of change in scores and % of patients who improved their scores in the treatment and non-treatment group. Fisher's exact test was used to compare the changes in PHQ9 scores in the two groups over 3 months: p=0.72.

Chi squared test used to see if there is a significant difference between the numbers of those that improved their PHQ9 scores between the two groups: p=0.47. Therefore the change was not statistically significant.

	Mean PHQ9 at start	Mean PHQ9 at 3 months	Mean change of PHQ9	Range of change	% of patients who improved PHQ9
Psych	14	7.1	-7	-15 to +3	73.7
No psych	8.3	6.2	-2.1	-14 to +10	64.1

Table 3 shows the % of patients in the treatment and non-treatment group that gained weight, lost ≤5% of their initial body weight or >5%. Using chi squared test to see if there is a significant difference between the intervention and non-intervention group in terms weight change. Non of the weight changes were statistically significant.

	Weight gain	≤5%weight loss	>5% weight loss
Psych	35.3%	52.9%	11.8%
No psych	22.9%	45.7%	31.4%
P-value	0.34	0.62	0.12

Table 4 shows the mean GAD7 score at baseline and after 3 months, the mean change in scores between the two groups, the range of change and the of % patients who improved their scores amongst the two groups. Fisher's exact test was used to compare the changes in scores of the treatment and non-treatment group: p=1. Chi squared test was used to compare the numbers of those that improved their GAD7 scores between the two groups: p=0.64. The results were not statistically significant.

	Mean GAD7 at start	Mean GAD7 at 3 months	Mean change of GAD-7	Range of change	% of patients who improved GAD7
Psych	9.9	7.6	-2.3	-13 to +6	52.63%
No psych	7.3	5.4	-1.9	-12 to +13	46.15%

Discussion

This evaluation looked at the effect of psychology intervention on weight loss and self-reported anxiety and depression using patient questionnaires in a community SWMS. It was observed that the intervention group had a higher proportion of patients who gained weight. Possible explanations for this from anecdotal observation may be due to the complex relationships these patients have with food and emotional eating, however, without further research it is difficult to ascertain the reason for is. Therefore, further long-term research into this area is required.

Although not statistically significant, the results suggest that depression scores did improve with intervention after 3 months. However, there was no indication that the intervention had any effect on anxiety scores.

Conclusions

The results suggest that psychological intervention helps improve patients depression scores, although in this evaluation this did not translate into weight loss. Further long term research in needed to see if weight loss increases with increased length of intervention in SWMS.

References

1. Abiles V, Rodriguez-Ruiz S, Abiles J, Mellado C, Garcia A, Perez de la Cruz A, et al. Psychological characteristics of morbidly obese candidates for bariatric surgery. *Obesity Surgery* 2010;20(2) 161-167.

2. Spitzer RL, Williams JBW, Kroenke K, Linzer M, deGruy FV, Hahn SR, Brody D, Johnson JG. Utility of a new procedure for diagnosing mental disorders in primary care: The PRIME-MD 1000 study. JAMA 1994;272:1749-1756. www.phqscreeners.com

AN AUDIT COMPARING CURRENT PRACTICE OF GLYCAEMIC MANAGEMENT IN THE ENTERALLY FED STROKE PATIENT WITH DIABETES AGAINST THE JOINT BRITISH DIABETES SOCIETY GUIDELINES (2012).

J. Woods
Department of Nutrition and Dietetics, Therapies, Nottingham University Hospital NHS Trust, City Campus, Hucknall Road, NG5 1PB.
Email: jennifer.woods@nuh.nhs.uk

Background
Hyperglycaemia immediately following acute stroke increases death rates, reduces neurological outcomes in comparison with normo-glycaemic levels (Clement et *al.,* 2004) as well as increasing length of stay and additional hospitalisation costs (Leverton, 2000). The aim of this audit was to evaluate if current practice for the glycaemic management in the enterally fed stroke patients in our hospital meet the standards published in the Joint British Diabetes Society guidelines 2012 (JBDS 2012).

Methods
This was a prospective audit which took place on days 7-10 of patient's admission over three stroke rehabilitation wards in our hospital between November 2012 and April 2013. The following standards for all patients with diabetes on an enteral feed were audited:

1. Was the patient referred to the specialist diabetes nurse?
2. Was the patient referred to the Dietitian?
3. Were the patients' blood glucose levels monitored (pre-feed, 4-6 hourly, monitored hourly if feed unexpectedly switched off)
4. Any actions taken if patients bloods glucose level were out of range (<6mmol/l or >12mmol/l)

We also audited if dietetic documentation included the carbohydrate content of feed because we wanted to evaluate dietitians practice at a ward level according to the JBDS recommendations

Results
Eight patients with type 2 diabetes were included in the audit. There were no patients excluded from the audit as all eight were appropriate for inclusion (patients were excluded if they had been admitted established on enteral feeding with a suitable medication/insulin regimen). None of the patients were referred to the specialist diabetes nurse by the ward staff. Seven patients were referred to the dietitians. Only one patient had their blood glucose levels monitored as per standard number 3. Only one of the patients had their BGL's within the target range (6-12mmol/L) over the previous 24 hours when the data was collected. All other patients had at least one blood glucose level out of range (2.8mmol/L - >30mmol/L). None of the dietitians documented the carbohydrate content of the feed in the medical notes and only one documented on the feeding regimen.

Discussion
The results from this audit highlight that local practice across the stroke rehabilitation wards did not meet the standards of the JBDS (2012) guidelines. Recently Oyibo et *al*., (2012) conducted an observational study into evaluating the effectiveness of twice daily injections in the enterally fed stroke patient and found that their tailored insulin regimen was safe and effective for most patients; this work highlighted the importance of good multidisciplinary working and glycaemic monitoring.

Conclusions
Although training was not looked at in this audit, and the sample size was only 8 patients, future audits could be used to assess the level of knowledge and education of the ward staff and decipher whether education or time was a barrier to appropriate monitoring of this patient group. Plans are to re-audit practice annually following further training of the appropriate staff to assess if this improves practice. The main conclusion drawn from this audit is that the results obtained did not meet the JBDS (2012) standards.

References
1. Clement, S., Braithwaite, S.S., Magee, M.F., Ahmann, A., Smith, E.P., Schafer, R.G., and Hirsch, I.B., (2004) Management of Diabetes and Hyperglycaemia in hospital *Diabetes Care* **27:**2; 553-291
2. Joint British Diabetes Society for inpatient care (JBDS) (2012) Glycaemic management during the inpatient enteral feeding of stroke patients with diabetes www.diabetes.nhs.uk/document.php?o=3766
3. Leverton, C. (2000) Controlling hyperglycaemia in the hospital: A matter of life or death *Clinical Diabetes* Vol 18:1
4. Oyibo, S.O., Sagi, S.V., & Home, C., (2012) Glycaemic control during enteral tube feeding in patients with diabetes who had had a stroke: a twice-daily insulin regimen *Practical Diabetes* 29: 4; 135-139

Public Health

DIETARY NITRATE – AN UNRECOGNISED NUTRIENT?

A. Ashworth, A. Vanhatalo, A.M. Jones.
Sport and Health Sciences, College of Life and Environmental Sciences, University of Exeter, Heavitree Road, Exeter, EX1 2 LU, UK.
E-mail address: eaa207@exeter.ac.uk

Background
Hypertension (high blood pressure) is a major risk factor for cardiovascular disease such as stroke (NICE, 2011). Dietary nitrate supplements, including beetroot juice, may have positive effects on health: for example by reducing blood pressure (BP) (Siervo et al., 2013) and improving exercise tolerance in peripheral arterial disease (Allen et al., 2012). However, nitrate is a strictly controlled, environmental contaminant and not regarded as a nutrient essential for health. Plasma [nitrate] and [nitrite] increase following ingestion of nitrate containing supplements, but few studies have used whole, nitrate-rich vegetables to supplement a normal diet. The purpose of this study was to assess the effects of supplementation with high- and low-nitrate vegetables on plasma [nitrate], [nitrite], and BP.

Method

Following ethical approval, fifteen non-smoking, physically active males of 18-40 years of age were recruited between January 2011 and March 2012. In a randomised, balanced, cross-over design, participants received high- or low-nitrate vegetables for a 2-week period and, after a 2-week wash-out, participants received the remaining diet (low- or high-nitrate) for a 2-week period. Data were analysed using repeated-measures ANOVAs.

Results

There were significant main and interaction effects by diet on plasma [nitrate] (P<0.05) and plasma [nitrite] (P<0.05). Post hoc tests revealed that high-nitrate diet significantly increased plasma [nitrate] (pre: 29.5 ± 20.0 µM; post: 129.4 ± 87.1 µM, P<0.05) and plasma [nitrite] (pre: 118.9 ± 35.2 nM; post: 226.5 ± 89.3 nM, P<0.05). There were significant inverse correlations between changes in plasma [nitrate] and systolic BP (r =–0.49, P<0.05), plasma [nitrate] and the mean arterial pressure (r =–0.44, P=0.05) and plasma [nitrite] and diastolic BP (r =–0.56, P<0.05). No significant changes were observed in these variables after the low-nitrate diet.

Discussion

This is the first study to compare whole, fresh, high-nitrate and low-nitrate vegetables as a dietary intervention with potential to reduce BP. It was shown that increases in plasma concentrations of nitrate and nitrite were associated with a reduction in BP. These findings are comparable to previous studies using high-nitrate supplements, such as natural or concentrated beetroot juice or sodium nitrate (Siervo et al., 2013).

Conclusion

The present findings support the hypothesis that increasing dietary nitrate intake in the form of nitrate-rich vegetables reduces BP, with major public health implications for dietary interventions to reduce hypertension.

References

1. Allen, J.D., Giordano, T. & Kevil, C.G. (2012). Nitrite and nitric oxide metabolism in peripheral artery disease. *Nitric Oxide*. 26, 217-222.
2. NICE (National Institute for Health and Clinical Excellence) (2011). NICE clinical guideline 127: Hypertension: clinical management of primary hypertension in adults.
3. Seshadri, S., Beiser, A., Kelly-Hayes, M. et al., (2006). The lifetime risk of stroke: Estimates from the Framingham Study. *Stroke*, 37, 345-350.
4. Siervo, M., Lara, J., Ogbonmwan, I. & Mathers, J.C. (2013). Inorganic nitrate and beetroot juice supplementation reduces blood pressure in adults: a systematic review and meta-analysis. *J Nutr*. 143, 818-26.

DEVELOPMENT OF AN EVIDENCED-BASED IODINE FOOD FACT SHEET FOR USE IN THE UK

S Bath and M Rayman.
Faculty of Health and Medical Sciences, University of Surrey, Guildford, GU2 7XH.
Email: s.bath@surrey.ac.uk

Background
An adequate intake of iodine is vital before and during pregnancy as iodine is required for fetal brain development (Zimmermann 2009). We have shown that a low iodine status in UK pregnant women is adversely associated with cognition in the child (Bath *et al.* 2013). The UK is now classified as mildly iodine deficient but there is very little information about iodine in nutritional advice given to the UK public. This study aimed to produce an evidenced-based food fact sheet on iodine.

Methods
The iodine concentration of a range of UK foods was estimated from number of studies, including those from the Food Standards Agency (FSA). Average values per portion of white fish (cod, haddock, plaice and coley), oily fish (mackerel, kippers, salmon, sardines, trout, pilchards and herring) and shellfish (scampi, mussels, cockles and prawns) were taken from data reported in a UK Total Diet study. The iodine concentration of dairy products was calculated from the appendix of the 2008 FSA report and these values (split by summer and winter because of the seasonal difference in milk-iodine content) were used together with recent values of the iodine content of organic milk (Bath *et al.* 2012).

Results
The iodine concentration of a range of food items is shown in the Table.

Food	Portion (g)	Average iodine/portion (mcg)*
Conventional milk	200	50-80**
Organic milk	200	30-65**
Conventional yoghurt	150	50-100**
Eggs	1 egg: 50g	20
Cheese	40	15
White fish	100	115
Oily fish	100	50
Shellfish	100	90
Meat	100	10
Poultry	100	10
Nuts	25	5
Bread	1 slice: 36g	5
Fruit & vegetables	1 portion: 80g	3

A double-sided fact sheet was produced that covered information on iodine requirements, iodine-containing nutritional supplements, and advice against excessive iodine intake.

Discussion
Information on dietary source of iodine is available in other countries (e.g. New Zealand) but to date has not been available in the UK. The construction of an evidence-based fact sheet is therefore an important step in improving knowledge of the importance of iodine in the UK diet. The main dietary iodine sources are dairy products and fish and dietitians should be aware of iodine deficiency in those who omit these sources, especially women of childbearing age. Kelp supplements should not be used owing to their high iodine content and risk of excess.

Conclusion
The iodine factsheet produced by this study has now been published by the British Dietetic Association as part of their "Food Fact Sheet" series and should be a useful resource for both dietitians and the public.

References
1. Bath SC, Button S & Rayman MP (2012) Iodine concentration of organic and conventional milk: implications for iodine intake. *Br J Nutr* **107**, 935-940.
2. Bath SC, Steer CD, Golding J *et al.* (2013) Effect of inadequate iodine status in UK pregnant women on cognitive outcomes in their children: results from the Avon Longitudinal Study of Parents and Children (ALSPAC). *Lancet*, doi:10.1016/S0140-6736(1013)60436-60435.
3. Zimmermann MB (2009) Iodine deficiency. *Endocr Rev* **30**, 376-408.

ENGAGEMENT WITH CHILDHOOD WEIGHT MANAGEMENT INTERVENTIONS: A QUALITATIVE EVALUATION OF MEND PROGRAMME DELIVERY IN NORTH SOMERSET.

E Sutton, L Birch, A Waylen, K Turner and J Hamilton-Shield.
NIHR Biomedical Research Unit in Nutrition, Diet and Lifestyle, Level 3 University Hospitals Bristol Education Centre, Upper Maudlin Street, Bristol BS2 8AE.
Email: laura.birch@bristol.ac.uk

Background
The prevalence of child obesity continues to increase in England and tackling obesity effectively has become a major government priority. Guidelines on obesity[1] recommend the provision of multicomponent treatment interventions but recognise that commercial and community programmes are of variable quality. MEND (Mind, Exercise, Nutrition…Do It) is a commercial multicomponent childhood weight management programme that has been running across the UK since 2004. This qualitative evaluation examined the experiences of families referred to MEND in order to identify the perceived barriers and facilitators to successful engagement with childhood weight management interventions and what families require from such interventions.

Methods
A qualitative evaluation incorporating semi-structured, incentivised telephone interviews with the parent(s)/carer(s) of children referred to MEND. Subjects were recruited using an opt-in design and the sampling strategy employed aimed to include as broad a range of participant characteristics as possible. Telephone interviews were recorded and transcribed verbatim and then analysed using the framework method[2] with the aid of the NVivo software package. This evaluation was approved by the University of Bristol Ethics Committee of the Faculty for Medicine and Dentistry and was registered with the Avon Primary Care Research Collaborative.

Results
Of the 85 families referred to MEND programmes in the North Somerset area, 25 initially agreed to participate in the evaluation. Of these, telephone interviews were conducted with 13 families (response rate: 52%); nine who had completed MEND, four who had not. The main referral method onto the MEND programme was self-referral through information received from the child's school. The key barriers to a family's successful engagement with the programme were identified as parental difficulties in understanding and accepting their child's overweight status, practical difficulties in attending sessions and a lack of perceived support from families, schools and health professionals. Positive feedback was expressed overall in relation to programme content and delivery, but a lack of individually tailored advice was seen as a barrier to engagement by some. Practical considerations such as location and timing of sessions, and childcare options, were reported as being very important for successful programme completion. A desire for longer-term support and continuing engagement with weight management services was expressed.

Discussion
Consistent with previous work, in the current study few parents considered their child to be overweight[3]. Furthermore, few referrals to MEND were made from healthcare professionals suggesting difficulties in engaging healthcare professionals in child weight management[4]. Feasible practical arrangements were cited as a key element to a family's ability to engage with MEND.

Conclusion
To facilitate successful engagement in child weight management interventions there must be adequate awareness of, and accessibility to, local services. An integrated approach with co-operation from healthcare professionals is needed. Sufficient consideration must be given to the practical arrangements of interventions and to the provision of continued support in the longer term

References

1. NICE: National Institute for Health and Clinical Excellence (2006). Obesity: the prevention, identification, assessment and management of overweight and obesity in adults and children. London: NICE clinical guidance 43. www.nice.org.uk/CG43NICEGuideline.pdf

2. Ritchie, J. & Spencer, L. (1994). Qualitative data analysis for applied policy research. *Analyzing qualitative data*, Bryman, A. & Burgess, R.G. 173-194. London and New York:Routledge

3. Towns, N, & D'Auria, J, (2009). Parental perceptions of their child's overweight: An integrative review of the literature. *Journal of Pediatric Nursing*, 24, 115-130

4. Walker, O., Strong, M., Atchinson, R., Saunders, J. & Abbott, J. (2007). A qualitative study of primary care clinicians' views of treating childhood obesity. BMC Family Practice, 8:50

DIETARY INTAKES OF OLDER ADULTS WITH AND WITHOUT DEMENTIA COMPARED TO HEALTHY EATING RECOMMENDATIONS.

K Hart[1], E Cave[1], B Conroy[1], N Farina[2], J Young[2], J Rusted[2] and N Tabet[3]
[1]Department of Nutritional Science, University of Surrey, Guildford. GU2 7XH, [2]School of Psychology, University of Sussex, Brighton. BN1 9QH and [3] Brighton and Sussex Medical School, Mayfield House, *University of Brighton*, *BN1 9PH*.
Email: k.hart@surrey.ac.uk

Background
The Alzheimer's Research Trust (2012) report that 820,000 people are currently living with dementia in the UK with prevalence increasing in line with the ageing population and a new case estimated to occur every 3.2 minutes. Whilst there is currently no cure, early diagnosis and intervention may be essential in reducing the considerable health, economic and social burden of dementia. Whilst multifactorial in aetiology, diet and lifestyle factors have been identified as potentially protective and pathogenic for dementia development (Staehelin, 2005). The aim of this study was to compare the dietary intakes of a group of older adults early in their dementia disease to those of healthy controls in order to inform the development of future dietary intervention studies and service delivery to delay the onset and slow the progression of cognitive decline.

Methods
Ethical approval was granted from the National Research Ethics Service Committee London. Participants with a diagnosis of dementia were recruited from Memory Clinics across Sussex, with consent obtained from both the participant and their designated carer. Routine clinical data was extracted from the patient notes and any additional data collected during a 2hr initial interview. Healthy controls were recruited from community groups in the Brighton area. Anthropometric measurements were made according to standard age-appropriate procedures and dietary intakes were assessed using an adapted version of the EPIC Food Frequency Questionnaire (FFQ) (Adamson et al 2009). FFQ's were coded and converted into nutritional information using the FETA software (Mulligan et al, unpublished). Relative nutrient intakes (expressed as a percentage of the age- and gender-appropriate dietary reference values (DRV) and adherence to a Mediterranean style diet (Trichopoulou et al., 2003) were compared between groups using independent t tests or non-parametric equivalents as appropriate.

Results
Ninety-six cases and 53 controls had FFQ data available for analysis. Cases were more likely to be older (mean age 80.7[6.2] and 68.1[6.0]years), female (58% and 28% respectively) ($p \leq 0.001$) and of a higher BMI (26.4[3.8] and 25.0[3.2]kg/m^2; $p=0.02$) than controls. Cases consumed significantly more energy in the form of saturated fat (13.8[2.6] and 12.2[3.2]% of energy) and significantly less as polyunsaturated fat (5.6[1.6] and 6.6[1.5]%) and alcohol (2.0[3.2] and 3.8[4.3]%) ($p \leq 0.001$). The differences in fat remained significant even when only healthy weight individuals were analysed ($p<0.05$). No significant differences in relative micronutrient intakes were observed, with the exception of magnesium ($p=0.04$). Food-based analyses suggested that adults with dementia were less likely to consume fruit and nuts and seeds ($p \leq 0.007$) and more likely to consume sugars and snacks ($p<0.001$) than controls. These differences remained significant, with the exception of fruit, when analysed within healthy weight adults only ($p \leq 0.005$). Controls showed greater adherence to a Mediterraean–style diet ($p=0.001$) and specifically higher scores for the fruit, vegetable and meat components of this score ($p \leq 0.01$).

Discussion
The cross-sectional nature of this data limits the ability to draw conclusions regarding causality however it would appear that the current diet of older adults with dementia may fail to meet healthy eating recommendations, particularly with regard to the balance of fats. The cognitive benefits of a Mediterranean diet have been widely reported (Sofrizzi et al, 2011) and the food-based analyses would seem to support this theory, with potentially beneficial foods like fruits, nuts and alcohol underconsumed in a sample of adults with diagnosed cognitive impairment.

Conclusion
This data would suggest that older adults with cognitive impairment have sub-optimal dietary intakes not solely explained by their greater age or BMI. Ongoing follow up of this cohort will confirm the impact of this on disease progression.

References
1. Adamson AJ et al (2009) Nutrition in advanced age: dietary assessment in the Newcastle 85+ study. *European Journal of Clinical Nutrition*, 63, S6–S18.
2. Alzheimer's Research UK (2012) *Dementia Statistics* Great Abington: Alzheimer's Research UK.
3. Solfrizzi V *et al* (2011) Mediterranean Diet in Predementia and Dementia Syndromes. *Current Alzheimers Research*, 8, 520-542.
4. Trichopoulou A *et al* (2003) Adherence to a Mediterranean Diet and Survival in a Greek Population. *NEJM* **348**(26), 2599-2608.
5. Staehelin HB (2005) Micronutrients in Alzheimer's Disease. *Proceedings of the Nutrition Society*, 64, 565570.

SATURATED FATTY ACID INTAKE AS A RISK FACTOR FOR CARDIOVASCULAR DISEASE IN HEALTHY CAUCASIAN ADULTS FROM WESTERN POPULATIONS

P Thomas and S Mushtaq,
Department of Clinical Sciences and Nutrition, University of Chester, Chester, UK, CH1 4BJ
Email: 1003616@chester.ac.uk

Background
Cardiovascular disease (CVD) is the leading cause of premature death globally (WHO, 2010). For over 50 years saturated fatty acids (SFA) have been implicated as a main dietary risk factor for CVD. Therefore national guidelines recommend limiting SFA to <10% of total daily energy intake (COMA, 1991). However, recent literature has begun to question this advice due to contra evidence showing SFA not to be a risk factor for CVD (Hoenselaar, 2012). This study's aim was to investigate the relationship between SFA and CVD to assess whether or not recommendations should be made to review national guidelines.

Method
A systematic review and meta-analysis were conducted. Electronic research databases were searched using variations of the keywords "saturated fatty acids" and "cardiovascular disease". Articles were only included if they had a randomised control trial (RCT) or prospective cohort (PC) study design. Additionally participants had to meet the following criteria: Caucasian, non-smokers, normal BMI, classed as healthy, no pre-existing CVD related conditions, not taking cholesterol altering drugs and no inborn errors of lipid metabolism. Articles were also only included if they were conducted in western populations in an attempt to standardise environmental factors. In the PCs, only data which was adjusted for these factors was included. Articles were assessed for quality using the Jadad *et al.* (1995) scoring/CASP tool and for confounding variables, risk of bias and homogeneity.

Results
A total of 411 articles were identified. Eight articles were included after exclusion for duplication, study design, not meeting full inclusion criteria, low quality, confounding variables, high risk of bias and heterogeneity. Of these, 4 were RCTs and 4 were PCs including 193,409 participants (192,686 female, 723 male). RCT and PC data were analysed separately. For the RCTs, LDL-cholesterol concentration post high/low SFA intervention was used as a functional biomarker for CVD risk. For the PCs the number of CVD related events in the low/high SFA diet groups was used as the marker for CVD risk. In the RCT meta-analysis there was a standard mean difference (95%CI) of -0.94 (-1.17, -0.71) ($p<0.00001$) favouring the low SFA diet to decrease the risk of CVD. In the PC meta-analysis a risk ratio (95%CI) of 1.00 (0.64, 1.58) ($p=1.00$) showed there to be no statistically significant relationship between SFA and CVD. Sensitivity analyses conducted showed no change in outcome.

Discussion
RCT outcomes favoured a low SFA diet for lowering CVD risk whereas the PC outcome showed no relationship. Although these differed they indicate that SFA does not increase CVD risk in western Caucasian adults. However further research is needed before requesting recommendations for the review of national guidelines. These findings correlate with other systematic reviews/meta-analyses (e.g. Skeaff and Miller, 2009).

Conclusion
From the studies included SFA does not increase CVD risk in affluent Caucasian adults

References
1. WHO. (2011) Global status report on non-communicable diseases, Geneva: WHO COMA. (1991) Dietary Reference Values for Food, Energy and Nutrients for the UK, London: HMSO.
2. Hoenselaar, R. (2012) Saturated fat and cardiovascular disease: the discrepancy between the scientific literature and dietary advice. Nutrition 28, 118-23.
3. Jadad, A. R., Moher, D., Nichol, G., et al. (1995) Assessing the quality of randomised controlled trial: An annotated bibliography of scales and checklists. Control. Clin. Trials 16, 62-73.
4. Skeaff, C. M., Miller, J. (2009). Dietary fat and coronary heart disease: summary of evidence from prospective cohort and randomised controlled trials. Ann. Nutr. Metab 55, 173-201.

BDA events.

create.excite.innovate.

The British Dietetic Association
5th Floor, Charles House
148/9 Great Charles Street Queensway
Birmingham B3 3HT
Tel: 0121 200 8080
Fax: 0121 200 8081
email: info@bda.uk.com
www.bda.uk.com