AN AUDIT INVESTIGATING THE EFFICACY OF THE LOW FODMAP DIET IN IMPROVING SYMPTOMS IN PATIENTS WITH FUNCTIONAL GASTRO-INTESTINAL SYMPTOMS

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Introduction The low FODMAP (Fermentable Oligo-, Di-, Mono-saccharides and Polyols) diet is a diet low in fermentable carbohydrates. These types of carbohydrate are rapidly fermented but poorly absorbed in the small intestine leading to functional gastrointestinal (GI) symptoms in sensitive individuals. Evidence suggests that a reduction in high FODMAP foods leads to an improvement in GI symptoms.[1] The aim of this audit was to determine whether the low FODMAP diet was effective in improving symptoms within the first 4—12 weeks of following the diet.

Methods All patients commenced on the low FODMAP diet between July 2010 and June 2011 were included (n=40). Of these 19 patients did not attend their first review and therefore their data were incomplete and they were excluded from the analysis. Patients were asked to score their symptoms subjectively using a symptom severity scale between 0 and 10 (0= no symptoms/absent; 10= severe symptom affecting daily life) at their initial assessment and at subsequent follow-up appointments. Paired sample t-tests were used to compare the difference in symptom scores between the initial appointment and first review. Data were included and results obtained for all patients followed up within 3 months where a score was provided.

Results A statistically significant reduction was seen for bloating, abdominal pain and diarrhoea only.

Conclusion Functional GI symptoms are common and often have a significant impact on a person's quality of life.[1][2] These results show that symptoms improved significantly on the low FODMAP diet which is supported by previous studies.[1] The data presented only measures the response to a low FODMAP diet over a 4—12 week period so we are unable to determine if the improvements seen were maintained in the longer term, where issues such as compliance may have a significant impact. We need to continue to collect data so that we can measure the benefits at 6 and 12 months and investigate compliance over this longer period. In conclusion the low FODMAP diet was shown to be effective in the management and overall improvement of functional GI symptoms, however further evaluation is needed to determine the long term management and effectiveness of this diet.

Abstract PMO-031 Table 1

Symptom	Initial assessment			1st review			
	n	Mean	SD	n	Mean	SD	p Value
Bloating	9	7.33	1.35	9	5.17	2.24	0.036
Abdominal pain	6	7.92	1.16	6	6.00	2.10	0.020
Diarrhoea	8	7.94	1.43	8	4.75	2.67	0.017
Constipation	3	9.17	1.04	3	9.50	0.50	0.423
Nausea	4	7.13	1.44	4	6.00	2.94	0.417

*Statistically significant, p.

Competing interests None declared.

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VALIDATION OF A FOOD FREQUENCY QUESTIONNAIRE FOR ESTIMATING CALCIUM INTAKE IN YOUNG FEMALE ADULTS

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Introduction The relatively low cost and low respondent burden of a Food Frequency Questionnaire (FFQ) that effectively and rapidly identifies individuals with low calcium intakes would be a valuable asset to clinical dietetics. Young female adults (age 18—30 years) tend to have a lower calcium intake which may increase their risk of osteoporosis in later life. This study aimed to examine the validity and reliability of a non-quantitative calcium FFQ by comparing the mean calcium intake measured by the FFQ with that measured by a 7 day weighed food diary.

Methods The validity and reliability of non-quantitative calcium FFQ was evaluated. A self-administered FFQ was administered to 41 Caucasian female participants, aged 18—26 years, studying at the Robert Gordon University, Aberdeen. A points system was used to assess whether the individual was meeting their recommended calcium requirement. A paired t test measured the difference between the mean calcium intake measured by the food diary and the FFQ.

Results The mean calcium intake estimated by the FFQ and the 7 day weighed food diary was 622.0 ± 138.3 mg/day and 692.5 ± 188.1 mg/day, respectively. A paired t test revealed a significant difference of 70.6 ± 78.1 mg/day between the calcium intake measured by the FFQ and the food diary ($Pr=0.931$, $p < 0.05$)

Conclusion A small but significant difference of 70 mg/day was found between the calcium intake measured by the FFQ and the 7-day food diary. However, this significant result did not reflect the precision between the two methods at estimating calcium intake. Both Pearson's correlation coefficient and Bland Altman procedures demonstrated good agreement and validity. The FFQ identified individuals with low calcium intakes; however, the degree of underestimation by the FFQ increased when calcium intake increased. Although the FFQ may not be as accurate as a 7-day weighed food diary when estimating absolute calcium intake it appears to be an effective method of rapidly identifying individuals with low calcium intake. This easily utilised calcium FFQ could be a valuable and useful clinical tool in identifying individuals with calcium deficient diets. Furthur research into whether this FFQ is a reliable method of identifying low calcium intakes in other subgroups of the population is recommended.

Competing interests None declared.

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GLUCOSE AND LIPID REGULATION IS MODULATED BY VASCULAR ADHESION PROTEIN-1 (VAP1) IN NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD)

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Introduction NAFLD is characterised by steatosis, chronic inflammation and fibrosis. The underlying mechanisms include insulin resistance, increased free fatty acid flux from de-novo lipogenesis and decreased lipid oxidation. Vascular Adhesion Protein—1 (VAP -1), is an adhesion molecule with semicarbazide- sensitive amine oxidase activity (SSAO), which is also expressed as a soluble protein in serum (sVAP-1) and elevated in inflammatory liver diseases such as NAFLD. VAP-1 has been shown to modulate glucose and lipid uptake in muscle and adipose tissue and thus we investigated whether it may contribute to glucose and lipid homeostasis in human liver tissue.

Methods We have used precision cut liver slices (PCLS) from normal and diseased human liver specimens and cultured human sinusoidal endothelium (HSEC) and hepatocyte cells in combination with VAP-1 substrates (200 µM methylamine or benzylamine) and inhibitors (400 µM bromoethylamine) to perform standard ex vivo radiolabelled glucose uptake and fatty acid uptake assays using oil red O quantification following exposure of cells to Oleic and Palmitic acid (PA). Immunohistochemical staining and qPCR were performed using standard techniques and for confirmatory experiments HSEC were transfected with enzymatically active/inactive VAP1.

Results QPCR confirmed upregulation of VAP-1 mRNA (DDCT=1.144 p=0.03) in NASH vs normal liver and also changes in FABP1, -4, -5, FATP3, -4 (p≤0.05 for all) and GLUT-1, 2, 3, 5, 8, 9 and 12 in NAFLD compared to normal individuals. Results were confirmed using immunohistochemical staining. Exposure of human PCLS to sVAP-1 and methylamine typically resulted in a 38%—54% increase in PA uptake (p≤0.01 for all) and a 20% increase in hepatocyte glucose uptake in vitro which could be inhibited using bromoethylamine. Transduction of HSEC with enzymatically active VAP-1 also increased glucose uptake which was prevented in the absence of enzyme activity. Interestingly methylamine treatment of human liver resulted in decreased expression of mRNA for glucose transporters and an increase in some lipid transporters including FABP6, FATP and LRP8, and H_2O_2 produced by SSAO activity increase lipid uptake by hepatic cells.

Conclusion In conclusion, we demonstrate for the first time global alterations in cellular expression of glucose and lipid transporter proteins in human NAFLD. We confirm that VAP-1 is elevated in disease and that SSAO activity of VAP-1 results in enhanced hepatic lipid and glucose uptake and changes in transporter expression. Thus we propose that bioactive metabolites of SSAO activity contribute to the metabolic derangement evident in fatty liver disease.

Competing interests None declared.

Nutrition screening

PMO-034 | COMPLIANCE WITH THE MUST SCREENING TOOL FOR MEDICAL IN PATIENTS

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Introduction The National Institute for Health and Clinical Excellence (NICE) recommends that screening tools such as the five step MUST (Malnutrition universal screening tool) be used on patients admitted to hospital and weekly thereafter.[1] Early identification of nutritionally deficient patients is vital so that nutritional intervention can be targeted.

Methods All patients (n=80) on four general medical wards were reviewed and followed up for 4 weeks or until discharged. Medical and nursing notes were assessed to see if MUST scoring was used and if the appropriate intervention was carried out based on the MUST score. The trust policy is that 100% compliance should be achieved in the use of MUST for inpatients.

Results The Abstract PMO-034 table 1 shows that compliance with the nutritional screening tool is below the expected standard of 100% and slowly reduces over the first 4 weeks from admission. There were 14 instances of MUST score 1 but this resulted in only 36% of patients being given a high energy diet and 57% of patients being placed on a food diary. There were 28 instances of MUST score 2—3, but this led to only 46% of patients being placed on a high energy diet and 68% of patients being placed on a food chart. There were six instances of MUST score 4—6, however this led to only 50% of patients on a high energy diet, 67% of patients being placed on a food chart although 100% of these patients were referred to a dietician.

Abstract PMO-034 Table 1

	Week 1	Week 2	Week 3	Week 4
Height recorded	95%			
Weight recorded	94%	85%	85%	83%
BMI recorded	88%	89%	82%	82%
Acute disease score recorded	82%	83%	77%	81%
MUST score recorded	87%	89%	85%	84%

Conclusion The adherence to nutritional scoring in medical patients is high but below the expected 100%. As time goes by the adherence to weekly screening drops slowly. Although there is a relatively high adherence to working out the MUST score, the final step in the screening tool which concentrates on nutritional intervention is disappointingly low. Continued education for both medical and nursing staff is needed so that targeted nutritional intervention can be delivered more effectively.

Competing interests None declared.

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PMO-035 | WEIGH OFF THE MARK: AN AUDIT ON THE ACCURACY OF SCALES IN AN ACUTE HOSPITAL

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Introduction Weight is a vital component of a patient's medical information which is used in a number of assessments such as the Malnutrition Universal Screening Tool (MUST), calculating drug dosages and monitoring medical treatments. The purpose of this audit was to determine the accuracy of hospital weighing scales in accordance with the UK Weighing Federation, and investigate the impact of inaccurate weights on medical assessments.

Methods Newly calibrated scales were used to obtain a reference weight for four subjects with a range of weights: subject A 31.8 kg, subject B 54.6 kg, subject C 60.8kg and subject D 106.7 kg. The subjects were then weighed on all functioning hoist, chair and standing (class 3) weighing scales within the Conquest Hospital, a medium size district general hospital. The collected weights were compared to the reference weight, and then the differences compared to error allowance specified by the UK Weighing Federation for Class III scales.

Results A total of 33 scales were included in the study including one set of standing scales which produced an excessive inaccuracy. Good