PUBLIC HEALTH XXX (2016) 1–9

Available online at www.sciencedirect.com

Public Health

journal homepage: www.elsevier.com/puhe

Conference Report

Proceedings of the inaugural International Summit for Medical Nutrition Education and Research

Keywords:
Medical Nutrition Education
Medical Nutrition Research
Public Health
Knowledge translation
Conference proceedings

ABSTRACT

Medical Nutrition Education (MNE) has been identified as an area with potential public health impact. Despite countries having distinctive education systems, barriers and facilitators to effective MNE are consistent across borders, demanding a common platform to initiate global programmes. A shared approach to supporting greater MNE is ideal to support countries to work together. In an effort to initiate this process, the *Need for Nutrition Education/Innovation Programme* group, in association with their strategic partners, hosted the inaugural *International Summit on Medical Nutrition Education and Research* on August 8, 2015 in Cambridge, UK. Speakers from the UK, the USA, Canada, Australia, New Zealand, Italy, and India provided insights into their respective countries including their education systems, inherent challenges, and potential solutions across two main themes: (1) *Medical Nutrition Education,* focused on best practice examples in competencies and assessment; and (2) *Medical Nutrition Research*, discussing how to translate nutrition research into education opportunities. The Summit identified shared needs across regions, showcased examples of transferrable strategies and identified opportunities for collaboration in nutrition education for healthcare (including medical) professionals. These proceedings highlight the key messages presented at the Summit and showcase opportunities for working together towards a common goal of improvement in MNE to improve public health at large.

Introduction

On August 8, 2015 in Cambridge, UK, the *Need for Nutrition Education/Innovation Programme* (NNEdPro) group hosted the inaugural *International Summit on Medical Nutrition Education and Research.* Speakers for the event were from the UK, the USA, Canada, Australia, New Zealand (NZ), Italy, and India. The presentations were divided into two main themes: (1) Medical Nutrition Education (MNE), with a focus on best practice examples in competencies and assessment; and (2) Medical Nutrition Research (MNR), with a focus on translating research into education opportunities. Key organizations in attendance are described in Table 1. Pre- and post-meetings provided opportunities for key attendees to discuss potential projects, collaborations and ideas generated by the Summit.

NNEdPro background

The NNEdPro group is an independent knowledge generation, transfer/exchange and evaluation platform.[1] The group represents a strategic interdisciplinary partnership between doctors, dietitians, nutritionists, researchers, nurses and other healthcare professionals. It is composed of several partner organizations (Table 1). In 2014, the NNEdPro group launched the Global Innovation Panel (GIP), with the intent to promote international initiatives and knowledge exchange on nutrition education innovations relevant to clinical and public health practice. One of the key projects of the GIP was to arrange the inaugural International Summit on Medical Nutrition Education and Research.[2]

The NNEdPro group works closely with the American Society of Nutrition (ASN), and members of its Medical Nutrition

Please cite this article in press as: Laur C, et al., Proceedings of the inaugural International Summit for Medical Nutrition Education and Research, (2016), http://dx.doi.org/10.1016/j.puhe.2016.08.023

Table 1 – Key organizations in attendance at the Summit.

Key organizations in attendance	Country
British Dietetic Association (BDA)[a]	UK
British Medical Association (BMA)	UK
Cambridge University Health Partners[a]	UK
Medical Research Council[a]	UK
American Society for Nutrition (ASN)	USA
Academy of Nutrition and Dietetics (AND)	USA
WellnessRx	Canada
Students and faculty from over 15 universities worldwide.	

[a] NNEdPro partner organization. The Society for Nutrition Education and Behaviour is a partner but was not in attendance.

Council (MNC) sub-committee.[3] The MNC focuses on meeting the needs of those ASN members interested in clinical, research, educational, and/or training aspects of nutrition and metabolism as it relates to optimal health and the prevention and treatment of human disease. Objectives of ASN and MNC align well with the NNEdPro themes and the organizations collaborated to organize the Summit.

Aim of the Summit

The aim of the inaugural Summit was to identify needs across regions and showcase examples of potentially transferrable strategies related to implementation of MNE. Opportunities for collaboration in nutrition education for healthcare (including medical) professionals were identified. These proceedings highlight the key messages presented during the Summit and opportunities for future collaboration (see Fig. 1 for Summit goals and Table 2 for speakers and key points).

Theme 1: Medical Nutrition Education

The importance of nutrition in medical and healthcare education has traditionally been undervalued and widely neglected.[4–6] Despite evidence of continuing nutrition education neglect in health care,[4–6] the development of nutrition care guidelines[7] and a medical undergraduate nutritional curriculum framework,[8] medical schools rarely implement nutrition-related material. This situation poses a challenge to ensure that nutrition, whilst only a small element of the medical curriculum, is demonstrated as important. It is important that doctors' crucial role is recognized in ensuring nutrition is central to patient management and public health. As the emphasis on healthy living increases, the demand by patients for education and tools to support their efforts to improve their lifestyles will also intensify. Counselling patients in areas such as weight control, chronic disease prevention, and living healthy generally requires that health professionals have the knowledge to provide clear, goal-driven and evidence-based advice in nutrition.

Medical nutrition in the UK

There are challenges that emerge when introducing the Undergraduate Medical Nutrition Curriculum[8] into a programme that is already 'jam packed' with important subject matter. Undergraduate medical students have many disparate areas to study, so having clear nutritional outcomes that are signposted and assessed will support learning and develop students' confidence in addressing nutritional issues as qualified practitioners. Using multiple strategies, including problem-based learning, case studies, lectures, symposia and student-selected components will ensure nutritional content is accessible and feels 'real' to the students. As presented, local 'nutrition champions' can be an asset to raise and then maintain the profile of nutrition and its relevance to medical practice and patient care. Investing in a research and education dietitian as a joint process between the local teaching hospital and medical school also aims to provide opportunities for embedding nutrition in the medical curriculum. This position signals a commitment between education and practice that recognizes the role of nutrition in the medical care and management of patients.

Medical nutrition in the US

The US perspective emphasized that deficiencies in nutrition education in US medical schools and residency programmes have been noted for over 30 years.[9–12] While curriculum hours and teaching methods vary widely, nutrition educators suggest that a minimum of 25 hours is needed to train medical students in nutrition.[12–14] Current trends in medical education are for team-based learning, longitudinal learning environments, and inter-professional education, such as having students from medical, nursing, physician assistant,

The main goals of the Summit were to:

1. Share information on the current state of medical nutrition education and associated research in each region.
2. Share examples of learning from each region, including successful and unsuccessful initiatives and actions.
3. Identify common or shared needs across regions.
4. Showcase examples of transferable models of strategies across regions.
5. Identify opportunities for joint strategies in medical nutrition education.

Fig. 1 – The main goals of the Summit.

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Table 2 – Speaker, affiliation and key points from each section of the Summit.

Speaker	Country	Presentation	Key message
Medical Nutrition Education			
Dr Kathy Martyn, from the Brighton and Sussex Medical School	UK	*Medical Nutrition in the UK*	Pedagogical challenges emerge when introducing the Undergraduate Medical Nutrition Curriculum[8]
Dr Lisa Hark from the Sidney Kimmel Medical College, Philadelphia	USA	*Medical Nutrition in the US*	There are deficiencies in nutrition education in US medical schools and residency programmes
Melita Avdagovska, on behalf of her team at University of Alberta, Edmonton	Canada	*A Canadian Example*	The evolution of WellnessRx: Initiating a paradigm shift from 'illness-care' to 'health-care' through nutrition and physical activity education
Professor Caryl Nowson from the School of Exercise and Nutrition Sciences, Deakin University	Australia	*On going work in Australia*	There are gaps and barriers to adequate Medical Nutrition Education; however, support tools exist to address these gaps.
Dr Clare Wall and Jennifer Crowley from the University of Auckland	New Zealand	*The New Zealand Perspective*	Medical students gain nutrition knowledge and improve their nutrition behaviours when nutrition is included in the early stages of undergraduate education; however, they still lack confidence to provide nutrition care.
Dr Livio Luzi, professor of endocrinology, Universita degli Studi di Milano Director, Endocrinology and Metabolism San Donato Hospital and Scientific Institute	Italy	*Changes and Challenges in Italy*	Nutrition is included in many aspects of the higher education system in Italy.
Dr Anand Ahankari of the University of Nottingham and Halo Medical Foundation, India	India	*Medical Education, Nutrition Training and India*	The current medical/paramedical education system in India does not have sufficient focus on nutrition and doctors are not adequately trained in providing nutrition care.
Medical Nutrition Research			
Dr Sumantra Ray, NNEdPro chair and honorary professor, senior clinician scientist at the UK Medical Research Council (MRC), and Unit Senior Medical Advisor and UK National Diet and Nutrition Survey (NDNS) Lead Clinician	UK	*NNEdPro and Medical Nutrition Research*	Introduction to Medical Nutrition Research and the role of the NNEdPro Group.
Dr Martin Kohlmeier, a research professor and director of *Nutrition In Medicine*, from the University of North Carolina, Chapel Hill	USA	*Integrating Nutritional Genomics in the Medical School Curriculum*	Nutrition education in medical curricula could be enhanced by exploring interactions of nutrient metabolism and genetic variation.
Pauline Douglas, RD and Dr Lynn McCotter, RD from the Ulster University hub of the NNEdPro Group	UK	*Translation of Hydration Research into Education*	Examples exist regarding how to translate research into practice, such as the hydration education project.

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occupational therapy, and pharmacy schools learning clinical content together.[15] This is an ideal time to ensure that all students and practicing health professionals have a positive attitude towards nutrition, along with nutrition-related knowledge and skills relevant to public health and practice. These attributes are needed to help their patients improve their dietary behaviours to reduce, prevent, treat and manage acute and chronic diseases.[16–21]

In the US and Canada, the 2015 Liaison Committee on Medical Education curriculum incorporates nutrition into several sections.[16,22] Given that the Liaison Committee on Medical Education is the degree accrediting organization, nutrition content should be incorporated into all medical school curriculum to meet the standards and graduate medical education competencies.[16,18–24] The health of the nation depends upon this important training at both the medical school and residency level.[16]

A Canadian example

The Canadian presentation focused on an example for educating health professionals through an education intervention called WellnessRx, designed to address gaps in knowledge, skills and attitudes regarding nutrition and physical activity (PA).[25–27] The presentation focused on the establishment of the WellnessRx initiative, the education programme development and the findings from the curriculum pilots. The aim was to assess the level of knowledge, skills and attitudes of health professional students and practitioners regarding nutrition and PA; assess changes in these attributes after completing the nutrition and PA curriculum; and to evaluate the effectiveness of an online delivery approach used for the learning modules.[25] Revision of curriculum modules is on-going and based on participant evaluations.

The WellnessRx initiative fills a documented curricular gap in the domains of nutrition and PA across preclinical health professional education programmes at the University of Alberta. By empowering current and future healthcare professionals and giving them the tools they need to council on nutrition and PA, the goal is to facilitate a shift from a healthcare system focused on disease treatment to one which incorporates health promotion and disease prevention.

Ongoing work in Australia

The content of nutrition within entry-level medical courses in Australia is highly variable. A 2009 survey of Australian medical schools found that there was no clear integration of learning opportunities for nutrition knowledge or skills across medical courses and that assessment of nutrition knowledge and skills varied widely.[28] A 2013 survey indicated that the barriers to the introduction of nutrition competencies were an overcrowded curriculum, inability to train educators, lack of prioritization, cost and inability to capitalize on technology.[29]

To address the barriers to MNE, the Nutrition Competency Framework (NCF) was discussed, consisting of four knowledge and five skill-based nutrition competencies for medical graduates, and the development of the Web-based Nutrition Competency Implementation Toolkit (WNCIT).[29] WNCIT supports medical programmes to meet the competencies outlined in the NCF. The WNCIT includes an instruction manual, the NCF (with student learning outcomes), a nutrition curriculum mapping tool, nutrition competency assessment tools and a set of nutrition teaching exemplars. The NCF has been well received by medical educators and WNCIT has provided opportunities for further networking and development of nutrition education in medical, nursing and allied health curricula.

The New Zealand perspective

Approximately 30% of medical graduates express interest in becoming General Practitioners (GP),[30] highlighting an important area of focus. For GP training, the Royal New Zealand College of General Practitioners introduced a nutrition syllabus into the training programme in 2012, with competencies that GP registrars are expected to develop throughout their training.[31] The Australian Medical Council that accredits NZ medical schools specify that medical graduates must have the ability to apply nutrition knowledge in practice.[32] However, no nutrition competencies are formally integrated or mandated into either of the two medical courses.

Nutrition has been included in the medical curriculum at the University of Auckland's Medical School. The team in Auckland have undertaken an evaluation of this nutrition education and found: (a) while medical students gain nutrition knowledge and improve their nutrition behaviours when nutrition is included in the early stages of undergraduate education, they lack confidence to provide nutrition care; (b) medical students at the completion of their training, GP registrars and GPs all have positive attitudes towards nutrition care, yet low confidence in their effectiveness to help people improve their dietary behaviours; (c) GPs perceived a lack of time as a barrier to provide nutrition care in consultations with patients. Lack of confidence to provide nutrition care suggests that nutrition education may not be delivered appropriately, and that GP registrars and GPs need to be supported to provide nutrition care at all appropriate opportunities.

Changes and challenges in Italy

For an Italian perspective, details of higher education on human nutrition in Italy were provided. The Italian University system was outlined for the 3-year technical degrees, as well as the 5–6 year medical degrees, which can include a specialization in clinical nutrition after completion of a medical degree (see Fig. 2 for details). The breakdown of courses included in nutrition education was also provided, including the combination of nutrition and sport. It was explained how the *Human Nutrition Research: International Center for Assessment of Nutritional Status* at the University of Milan is responsible for training of dietitians, medical doctors, PhD students and students of Scuola di Specializzazione in Scienza della Alimentazione. Treatments available in human nutrition provided through this centre included dietary counselling, psychological counselling, medications, medical devices and bariatric surgery.

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Medical education and nutrition training in India

A unique perspective regarding the current state of play in medical education in India was presented. It was proposed that the current medical/paramedical education system in India does not have sufficient focus on nutrition, and doctors are not adequately trained in providing nutrition care. The practical application of nutrition training in the doctor's practice is of paramount importance in India, which has a widely diverse population. It was also discussed how different medical and paramedical education systems (such as ayurveda, homeopathy, dentistry) should be monitored to develop a consistent approach to nutrition education in the Indian education system. The diversity between culture, language and thus differences between food preparations must be carefully addressed in student learning in order for doctors to be supported to provide nutrition care to patients.

Theme 2: Medical Nutrition Research

Translating research into practice through education is an important consideration in MNE and public health. With increasing focus on evidence-based medicine,[33] mechanisms to provide appropriate evidence to the right professionals is crucial to support effective and safe medical practice and improve public health outcomes. The presenters in this section discussed how they have translated evidence into practice, including barriers and facilitators to this translation.

NNEdPro and Medical Nutrition Research

The introduction to this second theme provided an overview of MNR, including one framework for knowledge translation, the Knowledge to Action (KTA) process.[34] The KTA includes development of knowledge, synthesis of information and implementation into practice by understanding context, barriers and facilitators. Through the KTA process, the NNEdPro group aims to synthesize knowledge, and understand the context, barriers and potential solutions to incorporating research into evidence-based care through knowledge translation.

An example of knowledge translation by the NNEdPro group was provided regarding the complex relationships between diet and cardiovascular disease/metabolic risk as a way to highlight new evidence and the importance of translating this into practice through healthcare education. This approach is exemplified through the Nutrition and Vascular Studies platform/team associated with NNEdPro which has a particular interest in understanding how diets rich in (or supplemented with) fruit, vegetables and/or phytonutrients can modulate cardio-metabolic pathways in at-risk populations, such as the overweight and obese. Based on Nutrition and Vascular Studies work, the NNEdPro group aims to translate key findings and other supporting evidence from the wider literature, into educational innovations for healthcare professionals. This work is explained through three strands including: *experimental:* individual diets, nutrition and vascular/endothelial function; *epidemiological:* population diets, nutrition and cardiovascular/metabolic risk; and *translational:* evidence synthesis and knowledge exchange for researchers and/or practitioners.

Integrating nutritional genomics in the medical school curriculum

An example of integrating evidence-based practice into the medical curriculum was provided with a focus on nutritional genomics. It was explained that everyone has numerous functionally significant genetic variants and that some are associated with clinically relevant health consequences. A variety of examples and teaching opportunities were presented to explain how exploring interactions of nutrient metabolism and genetic variation could enhance MNE. An example from the preventive approach focused on a common generic variant (rs762551) associated with slowed metabolism of caffeine. People with this particular genetic variant are exposed to the stimulant, caffeine, for longer after ingestion than those without the variant and there are potential consequences. If used in medical teaching, discussion could relate to a variety of topics from the genetics to the clinical impact, through to public health significance. Other teaching examples are included in Fig. 3.

It was highlighted that most medical school curricula in the US already include nutrigenomic issues, but usually without referencing the actual term or concept. Nutrigenomic concepts can be included in many diverse instructional settings, such as basic science courses, case-based learning and clinical rounds. Most medical nutrition educators would like to see a significant expansion of nutrigenomic teaching.

Translation of hydration research into education

The NNEdPro group presented their work on a hydration education project for GPs, which has included the development of a blended learning package. The evidence regarding the importance of adequate hydration is transitioning from a complete focus on hydration in sports, to its impact on specific medical conditions, overall health and public health impact. For this project, a review of scientific literature and clinical guidelines was conducted, followed by the conversion of key learning points to education material for the target audience (GPs). A survey of the group's hydration knowledge, attitudes and self-reported practices (KAP) identified key gaps, which were used to inform the intervention. Once the material was brought together and reviewed by researchers and practitioners, a pilot of the education package with the target group was conducted and evaluated for changes in KAP. Qualitative feedback regarding the training was also collected. Suggestions from the evaluation were incorporated into the material and adapted for the next group.

Delivery of the hydration package for GPs involved both face-to-face teaching and provision of online materials. The evaluation of both aspects included feedback on the quality of the materials, quality of tutors and key learning points. A more objective evaluation was also conducted by measuring hydration KAP immediately before and after the face-to-face session as well as completion of online activities. The group continues to offer this teaching to GPs and to apply the learning to other topic areas.

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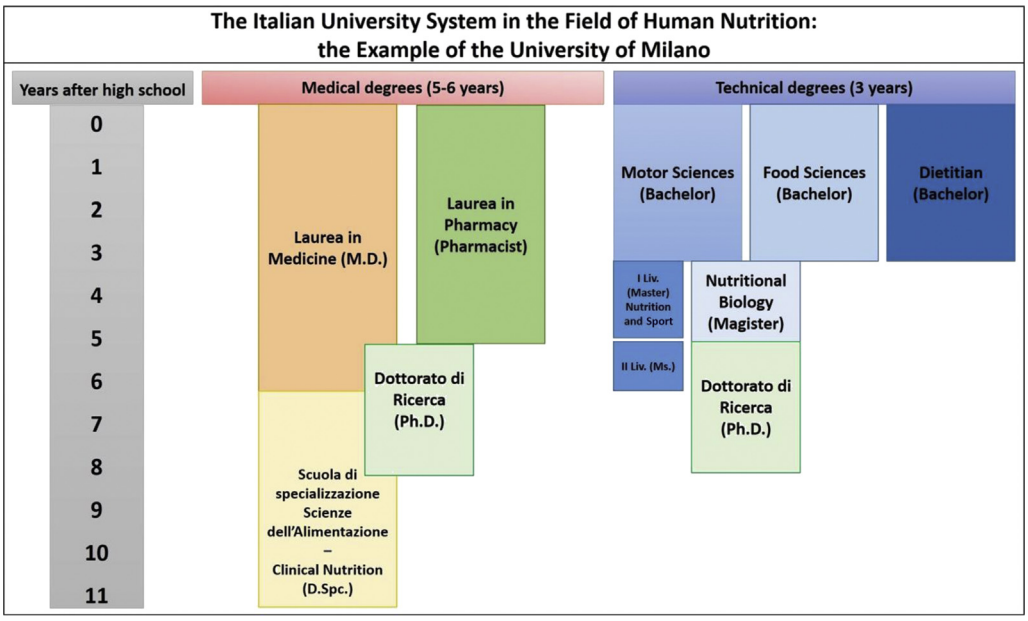

Fig. 2 – Overview of the Italian university system for human nutrition.

- Mechanisms of gene-nutrient interactions and inherited nutritional individuality
- Evolutionary and short-term genomic adaptations to nutrition exposure
- Research methods and study types for the investigation of gene-nutrient interactions
- Principles and practice of assessing evidence for nutritional genomics
- Inherited food and nutrient intolerances
- Genetic variability of appetite control, metabolic rates and body composition
- Mechanisms and relevance of nutrition-related epigenetic modifications before and after birth
- Practice and public health implications of genetically differential response to nutrition

Fig. 3 – Key learning points for medical student regarding nutritional genetics.

Conclusion

All speakers presented unique perspectives on MNE and MNR based on their region and experiences. A consistent message was the need for collaborations at a global level to ensure nutrition is prioritized in medical curricula. Curriculum integration strategies such as toolkits or champions were thought to be transferable and adaptable to other contexts or regions. Use of online learning modules such as WellnessRx was seen as other potential areas for collaboration.

There are many barriers to overcome within MNE and MNR, ranging from the evolving nature of nutrition evidence, through to the competing priorities of students and practicing health professionals. Although the focus of many talks related to curricula and teaching methods, the overarching aim is for health professionals to have the knowledge, skills and confidence to advise their patients, thus impact the health of the population.

Following the presentations, discussion continued regarding the specifics of continued collaboration including joint papers, funding applications and planning for the 2016 Summit. Many of these ideas progressed throughout 2015, resulting in continued discussion, an Australia and New Zealand NNEdPro Network[35] and student research projects. One idea was to conduct a research priorities setting project to determine what key stakeholders see as the way forward. Results of the project were presented at the 2016 Summit[1] held in Cambridge in June 2016.

These discussions and future collaborations brought through this inaugural event have the potential to impact public health by increasing the knowledge, skills and attitudes of healthcare professionals through increased education. It is essential that all health professionals provide evidence-based advice to their patients and support public health strategies in nutrition.

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Author statements

Acknowledgements

The authors would like to thank all those who attended the 2015 Summit, as well as all NNEdPro members for their continued supports. They also thank Alberto Battezzati MD PhD, and Simona Bertoli MD PhD of the International Center for the Assessment of Nutritional Status, University of Milan for providing data about the Center for the Italian section. The authors also thank the WellnessRx Team: Dr Leah Gramlich, Dr Katharina Kovacs Burns, Dr Karin Olson, and Dr Lana Bistritz for their contributions to the presentations and to this publication.

Ethical approval

None sought.

Funding

None declared.

Competing interests

None declared.

Authorship

Each speaker at the Summit wrote a section of the manuscript that summarized their presentation and reviewed the combined document before submission. Speaker contributors included Anand Ahankari (AA), Melita Avdagovska (MA), Jennifer Crowley (JC), Darwin Deen (DD), Pauline Douglas (PD), Lisa Hark (LH), Martin Kohlmeier (MK), Livio Luzi (LL), Lynn McCotter (LM), Kathy Martyn (KM), Caryl Nowson (CN), and Clare Wall (CW). The Summit Leads, Celia Laur (CL) and Lauren Ball (LB) and Sumantra Ray (SR) brought all sections together. All authors contributed to the delivery of the Summit, writing of the manuscript and agreed on the submission.

REFERENCES

1. Need for Nutrition Education/Innovation Programme (NNEdPro). *Need for Nutrition Education/Innovation Programme* (Accessed 15 September 2016). Available from: http://www.nnedpro.org.uk/; 2015.
2. Need for Nutrition Education/Innovation Programme (NNEdPro). *Global innovation panel* (last accessed 15 September 2016). Available from: http://www.nnedpro.org.uk/global-innovation-panel-home/4592497256; 2016.
3. American Society for Nutrition. *American Society for Nutrition* (last accessed 24 November 2015). Available from: https://www.nutrition.org/about-asn/; 2015.
4. Guest JF, Panca M, Baeyens J-P, de Man F, Ljungqvist O, Pichard C, et al. Health economic impact of managing patients following a community-based diagnosis of malnutrition in the UK. *Clin Nutr* 2011;**30**(4):422–9.
5. Russell C, Elia M. *Nutrition screening survey in the UK in 2007: nutrition screening survey and audit of adults on admission to hospital, care homes and mental health units* (last accessed 11 July 2015). Available from: http://www.bapen.org.uk/pdfs/nsw/nsw07_report.pdf; 2007.
6. Francis R. *Report of the Mid Staffordshire NHS Foundation Trust Public Inquiry London: the Stationary Office* (last accessed 10 July 2015). Available from: www.official-documents.gov.uk; 2013.
7. NICE. *Nutrition support for adults: oral nutrition support, enteral tube feeding and parenteral nutrition. NICE guidelines CG32* (last accessed 19 July 2015). Available from: https://www.nice.org.uk/guidance/cg32/chapter/guidance; 2006.
8. ICGN Undergraduate Nutrition Education Implementation Group. *UK undergraduate curriculum in nutrition* (February 2013) (last accessed 1 August 2015). Available from:, http://www.aomrc.org.uk/intercollegiate-group-on-nutrition/curricula.html; 2013.
9. Early K, Adams K, Kohlmeier M. Analysis of nutrition education in osteopathic medical schools. *J Biomed Educ*; 2015. http://dx.doi.org/10.1155/2015/376041.
10. Committee on Nutrition in Medical Education, Food and Nutrition Board, Council on Life Sciences, National Research Council. Nutrition education in U.S. medical schools. Washington, D.C.: National Academy Press; 1985.
11. Winick M. Nutrition education in medical schools. *Am J Clin Nutr* 1993;**58**:825–7.
12. Adams KM, Lindell KC, Kohlmeier M, Zeisel SH. Status of nutrition education in medical schools. *Am J Clin Nutr* 2006;**83**(Suppl.):941S–4.
13. Weinsier RL, Broker JR, Brooks CM, Kushner RF, Visek WJ, Mark DA, et al. Priorities for nutrition content in a medical school curriculum: a national consensus of medical educators. *Am J Clin Nutr* 1989;**50**(4):707–12.
14. Kushner RF, Thorp FK, Edwards J, Weinsier RL, Brooks CM. Implementing nutrition into the medical curriculum. *Am J Clin Nutr* 1990;**52**(2):401–3.
15. Inter-professional Education Collaborative Expert Panel. *Core competencies for inter-professional collaborative practice: report of an expert panel*. Washington, DC, USA: Inter-professional Education Collaborative; 2011.
16. Hark L, Deen D, Morrison G. Learner-directed nutrition content for medical schools to meet LCME standards. *J Biomed Educ*; 2015. http://dx.doi.org/10.1155/2015/469351.
17. DiMaria-Ghalili RA, Mirtallo JM, Tobin BW, Hark L, van Horn L, Palmer CA. Challenges and opportunities for nutrition education and training in the health care professions: intraprofessional and interprofessional call to action. *Am J Clin Nutr* 2014;**99**(5):1184S–93.
18. Hark L, Deen DJ. Taking a nutrition history: a practical approach for family physicians. *Am Fam Physician* 1999;**59**(6):1521–8.
19. Lenders CM, Deen DD, Bistrian B, Edwards M, Seidner D, McMahon MM, et al. Residency and specialties training in nutrition: a call for action. *Am J Clin Nutr* 2014;**99**(Suppl):1174S–83.
20. Kushner R, Van Horn L, Rock C, Edwards M, Bales C, Kohlmeier M, et al. Nutrition education in medical school: a time of opportunity. *Am J Clin Nutr* 2014;**99**(5):1767S–73.
21. American Board of Medical Specialties. Setting the standard for quality medical care. Available from: http://www.abms.org/.
22. Liason Committee for Medical Education. *Functions and structure of a medical school: standards for accreditation of medical education programs leading to the M.D. degree* (last accessed 25 July 2015). Available from: http://www.lcme.org/publications.htm#guidelines; 2014.
23. Peterson LE, Carek P, Holmboe ES, Puffer JC, Warm EJ, Phillips RL. Medical specialty boards can help measure graduate medical education outcomes. *Acad Med* 2014;**89**(6):840–2.

Please cite this article in press as: Laur C, et al., Proceedings of the inaugural International Summit for Medical Nutrition Education and Research, (2016), http://dx.doi.org/10.1016/j.puhe.2016.08.023

24. Hawkins RE, Lipner RS, Ham HP, Wagner R, Holmboe ES. American Board of Medical Specialties maintenance of certification: theory and evidence regarding the current framework. *J Continuing Educ Health Prof* 2013;**33**(Suppl. 1):S7–19.
25. The Alberta Institute for Human Nutrition. 2015 (last accessed 24 November 2015). Available from: http://www.ales.ualberta.ca/FacultyResearch/AlbertaInstituteHumanNutrition/AboutUs.aspx
26. Kovacs Burns K, Gramlich L, Bistritz L, McCargar L, Olson K, Avdagovska M. Piloting online WellnessRx learning modules: demonstration of developmental evaluation. *Eval Program Plan* 2015;**4**(49):76–85.
27. Bistritz L, Kovacs-Burns K, Avdagovska M, McCargar L, Olson K, Gramlich L. WellnessRx education initiative development and pilot study of nutrition and physical activity education for health sciences students. *Pedagogy Health Promot* 2015;**1**(1):24–36.
28. Nowson C, Roshier-Taks M, Crotty B. Nutrition competencies for the prevention and treatment of disease in Australian medical courses. *Med J Aust* 2012;**197**(3):147.
29. Deakin University Exercise and Nutrition Sciences. *Nutrition Competency Implementation Toolkit (WNCIT)* (last accessed 2 September 2012). Available from: http://www.deakin.edu.au/exercise-nutrition-sciences/school-research/wncit/toolkit; 2012.
30. Poole P, Bourke D, Boaz S. Increasing medical student interest in general practice in New Zealand: where to from here? *N Z Med J* 2010;**123**(1315):12–9.
31. Royal New Zealand College of General Practitioners. *Nutrition GPEP syllabus 2012*. Royal College of New Zealand General Practitioners; 2012.
32. Medical Deans Australia and New Zealand, Health Workforce Australia. *Medical graduate competency framework stage 2*. Final Report. Sydney, Australia: Medical Deans' Competencies Project; 2012.
33. Sackett DL, editor. *Evidence-based medicine. Seminars in perinatology*. Elsevier; 1997.
34. Graham ID, Logan JMB, Harrison MB, Straus SE, Tetroe J, Caswell W, et al. Lost in knowledge translation: time for a map? *J Continuing Educ Health Prof* 2006;**26**:13–24.
35. Crowley J, Ball L, Douglas P, Laur C, Wall C, Bhat S, et al. NNEdPro. *CN* 2016;**16**(2 May):77.

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Please cite this article in press as: Laur C, et al., Proceedings of the inaugural International Summit for Medical Nutrition Education and Research, (2016), http://dx.doi.org/10.1016/j.puhe.2016.08.023

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29 March 2016
Available online xxx

0033-3506/$ – see front matter

http://dx.doi.org/10.1016/j.puhe.2016.08.023