

# Nutrition in Medical Education: Does a problem based, community oriented medical faculty value it more than a traditional medical faculty?

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**Objective:** To identify nutrition topics considered important for inclusion in Newcastle undergraduate medical education, and compare them to those from a traditional medical school.

**Design:** A survey, using a mailed questionnaire, listing 38 major nutrition topics. Respondents were instructed to rank topics as *essential, important, desirable, does not belong or don't know*. Responses were identified by participant group only.

**Participants:** All members of the University of Newcastle medical faculty, general practitioners (GPs) available for final year teaching and dietitians working in the region of the medical school.

**Main outcome measures:** Rated importance of listed nutrition topics; comparison between participant groups and previous survey.

**Results:** More than 60% of the Newcastle respondents overall nominated 30 of the 38 topics *essential or important*. For 31 of the 38 topics, a higher percentage of respondents in the Newcastle survey ranked the topic as *essential or important*. Newcastle medical faculty considered nutrition education significantly more essential ( $p=0.03$ ) than their peers from a traditional medical faculty.

**Conclusions:** Both Newcastle Medical Faculty and GPs have a strong commitment to nutrition in medical education. Differences between the level of interest in Nutrition education in problem based and traditional courses are postulated to be due to beliefs regarding the importance of nutrition in the practice of medicine, the structure of the course and the extent of integration within the curriculum.

## Introduction

Undergraduate medical education should produce graduates who have knowledge and skills appropriate to the community in which they will work<sup>1</sup>. In Australia, nutrition related diseases are responsible for significant morbidity and mortality<sup>2,3</sup>. To combat these diseases, public health strategies aimed at modifying the diet of Australians have been devised. These include the National Program for Better Health<sup>4</sup>, the Goals and Targets for Australia's Health in the Year 2000 and beyond<sup>3</sup>, and the Food and Nutrition Policy<sup>5</sup>. Similarly, there is an expanding body of knowledge describing the role of nutrition in the medical and surgical management of many conditions<sup>6</sup>. Thus nutrition, as an important determinant of health and disease, should be an essential component of Australian medical school curricula. Since ideally Australian medical graduates are undifferentiated and broadly educated<sup>7</sup> (up until 1995 all training has been at an undergraduate level), it would therefore be expected that a wide range of nutrition topics should be included in medical school curricula.

Over the last ten years, nutrition in medical education has been the subject of many conferences, reports and reviews<sup>8-20</sup>. Surveys of medical educators, medical practitioners and nutrition educators have been used to address the question of what to teach in American medical schools<sup>20-24</sup>. In Australia, guidelines for nutrition topics to be included in Australian medical school curricula were compiled by the National Health and Medical Research Council<sup>25</sup>, and practical suggestions for content and implementation were discussed at the 1988 Nutrition in Medical Education Seminar<sup>2</sup>. Only one survey has been undertaken to determine nutrition priority topics in an Australian medical

school<sup>26</sup>. Faculty members, general practitioners (GPs) affiliated with the medical school, and dietitians were asked to rate which nutrition topics should have priority for inclusion in the medical curriculum.

The Faculty of Medicine at the University of Newcastle has espoused problem based learning since the inception of the Faculty in 1978. The effectiveness of this educational strategy has been recognised in a national review of medical education<sup>7</sup>. Considerable interest in problem based learning has been expressed in recent years with other Australian medical faculties keen to utilise similar processes in their new graduate syllabi<sup>27</sup>.

With its community and population orientation, Newcastle medical school has always included Nutrition as an integral aspect in the teaching of health promotion and disease prevention and management. Implicit in the problem based medical curriculum is the emphasis on the person rather than the disease<sup>28</sup>. A multidisciplinary approach to content delivery enables a subject such as Nutrition, which spans almost all specialties, to gain curriculum space<sup>29</sup>. At Newcastle, members of the medical faculty, medical specialists, GPs, and dietitians are involved in the nutrition education of the medical students, which also raises the profile of nutrition in the students' perception.

In traditional medical schools, subjects are taught on a departmental basis with a subject focus. Students are more likely

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to be exposed to the specialty of the department in depth, rather than to its relationship with others facets of medicine. Content may therefore be duplicated from a number of different perspectives, causing confusion. Students learn in a compartmentalised fashion and integration of the information is the responsibility of the student. Departments of Nutrition are uncommon in Australian medical schools. In this environment, integration of Nutrition into the medical curriculum is difficult to implement<sup>17,30,31</sup> and therefore unlikely to occur.

In an ever expanding world of medical education<sup>22</sup>, and dwindling curricular time<sup>30,31</sup>, only nutrition topics relevant to contemporary medicine can be included in the curriculum. The priority that a medical school gives to nutrition education reflects its belief as to the importance of nutrition in the practice of medicine. Similarly, the selection of nutrition topics included in the curriculum indicates a particular focus for nutrition, ranging from biochemistry to public health.

This study was undertaken to determine priority nutrition topics for the Newcastle medical curriculum, and to compare the findings with those from a similar survey conducted at the University of New South Wales (UNSW)<sup>26</sup>.

## Methods

To determine priority nutrition topics for the Bachelor of Medicine course at the University of Newcastle, a questionnaire was posted to all members of the medical faculty (n=92), GPs available for final year teaching (n=166) and dietitians working in the region of the medical school (n=49). The questionnaire, listing 38 major nutrition topics, was used previously in a similar study at UNSW<sup>26</sup>. Responses were identified by group only. Respondents were instructed to rank topics as *essential*, *important*, *desirable*, *does not belong* or *don't know*.

Frequency distributions were performed on all topic responses. Topics were ranked on the summation of *essential* and *important* responses and compared to the UNSW data. Chi square analyses were performed on this combined data for Faculty and GPs, using topics where the percentage between the Newcastle scores and those of the corresponding UNSW group differed by ten percent and where one of the pair was greater than or equal to 60%. One way analysis of variance was performed on the topic means of *essential* responses to compare the Newcastle and UNSW data. Mann Whitney U tests were used to compare groups of different professions.

**Table 1.** Nutrition topics presented in descending order of importance on overall ranking University of Newcastle. Also shown: Medical Faculty, General Practitioners, and Dietitians (University of NSW data<sup>26</sup> compared with University of Newcastle data).

Topic	Percentage respondents considering topic essential or important							
	Overall		Faculty		GPs		Dietitians	
	Ncle	NSW	Ncle	NSW	Ncle	NSW	Ncle	NSW
Number of respondents	(184)	(450)	(54)	(86)	(75)	(168)	(30)	(165)
Diet in disease aetiology	97	89	94	84	99	88	97	93
Vitamins	96	92	98	93	96	95	87	90
Diet in disease management	96	88	98	79	97	93	90	87
Fats	95	91	98	76	96	94	87	92
Alcohol	95	90	94	88	99	91	87	90
Electrolytes	94	92	92	94	97	92	86	90
Carbohydrates	94	91	100	90	93	93	87	91
Protein	93	91	98	88	92	93	87	92
Water	92	85	92	87	93	85	87	86
Fibre	91	87	88	78	95	93	87	88
Nutrition in infants and children	91	84	92	79	95	85	87	85
Nutrition in pregnancy and lactation	90	83	89	76	93	83	87	87
Nutrition and fetal development	88	79	83	76	95	74	83	84
Energy expenditure, balance, regulation	87	78	87	72	95	76	83	86
Groups at risk of poor nutrition	85	79	81	71	88	76	90	87
Minerals	85	88	88	87	88	89	80	88
Nutrition and the disease process	84	77	89	60	76	43	100	92
Nutritional support techniques	82	76	78	65	75	64	100	90
Drug-nutrient interactions	79	74	69	55	81	43	90	90
Trace elements	75	78	74	71	80	79	73	81
Nutrition and the aging process	75	76	74	62	85	76	77	82
Nutritional requirements	72	74	75	63	80	79	63	73
Nutrition in adolescence	69	76	67	63	81	79	70	82
Nutrient-nutrient interactions	66	48	69	29	58	48	89	59
Dietary guidelines, goals, policies	64	66	66	40	71	65	76	81
Food composition	64	54	69	52	68	72	55	36
Food safety, contaminants, toxins	64	55	69	59	70	65	47	41
Availability and identification of nutrition information resources	62	60	55	40	57	48	97	89
Public health issues	62	39	62	30	72	53	48	30
Techniques for changing food habits	61	55	51	40	74	65	60	33
Nutritional assessment	55	53	61	38	53	51	70	64
Food fads, health foods, vegetarianism	54	55	42	37	65	58	73	64
Translation of nutrient requirements into practical food intake	52	46	47	29	62	58	50	24
Social and cultural factors	36	34	32	29	40	35	50	40
The food supply	30	23	29	15	43	36	20	13
World malnutrition	28	18	31	20	24	18	38	16
Food economics	22	13	19	8	31	17	17	13
Historical landmarks in nutrition	8	11	4	8	13	15	7	7

## Results

Response rates were: medical faculty 59%, GPs 45% and dietitians 61%. Table 1 shows the difference of ranking of individual topics with the data listed according to the Newcastle overall ranking. More than 60% of the Newcastle respondents overall nominated 30 of the 38 topics *essential* or *important*. Twenty-nine and 30 topics were nominated as *essential* or *important* by 60% of the Newcastle Faculty and GPs respectively. Since the dietitians in the Newcastle survey were in effect a subset of those surveyed in the UNSW study, further analyses were not conducted for their results.

**Table 2.** Topics considered more "essential" or "important" by Newcastle Medical Faculty and General Practitioners, than by their UNSW peers.

Topic	MF	GPs
Protein	*	NS
Fat	**	NS
Diet in disease aetiology	NS	**
Diet in disease management	**	NS
Nutrition in infants and children	*	*
Nutrition in pregnancy and lactation	*	*
Nutrition and fetal development	NS	***
Groups at risk of poor nutrition	NS	*
Energy expenditure, balance, regulation	*	**
Nutrition and the disease process	**	***
Drug-nutrient interactions	NS	***
Dietary guidelines, goals, nutritional policy	**	NS
Nutritional Assessment	**	NS
Nutrient-nutrient interactions	***	NS
Public Health issues	**	**

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.005$ , NS = not significant; Chi square analysis. MF= Medical Faculty

For 30 of the 38 topics, more Newcastle respondents than UNSW respondents marked the topic *essential* or *important*, while 36 of the 38 topics received higher ranking by both the Newcastle faculty and GPs as compared their UNSW peers. One way analysis of variance of ranking of nutrition topics indicated that Newcastle medical faculty considered nutrition education significantly more essential ( $p=0.0323$ ) than UNSW medical faculty in their respective undergraduate medical curricula. No significance was detected between overall ranking ( $p=0.3809$ ) and those of GP ( $p=0.1052$ ) cohorts.

Table 2 lists those topics where a significantly higher ranking was found by Chi square analysis in Newcastle as compared to UNSW faculty and GPs. No significant difference was found between Newcastle faculty members and GPs in their rating of topics on Mann Whitney U-test ( $p=0.2913$ ).

## Discussion

There appears to be a firm commitment to medical nutrition education at the University of Newcastle as evidenced by the number of overall respondents nominating nutrition topics as *essential* or *important*. The response rates for both faculty and GPs were also better than those of previous Australian<sup>26</sup> and American<sup>21</sup> surveys. Nutrition's continued existence in the Newcastle medical curriculum since its inception has been maintained by a critical mass of advocates within the faculty, as well as general acceptance of its importance in medicine by the faculty, and outside medical practitioners and dietitians associated with the curriculum. Its position has been further consolidated with the appointment in 1992 of a lecturer specifically responsible for medical nutrition education. The significant difference observed in the rating of nutrition topics between the Newcastle and UNSW medical faculties may reflect both the different course

structures and faculty beliefs about the role of nutrition in medicine. As mentioned above, Newcastle medical school has a problem based, patient oriented curriculum while UNSW has a traditional, disease oriented curriculum with a clear delineation between pre-clinical and clinical teaching.

General practitioners, who teach the University of Newcastle medical students in their final year, espouse the importance of the same nutrition priorities as Newcastle faculty members, providing reinforcement of the concept that nutrition is an integral part of medical practice. Learning Nutrition is strengthened by continued reinforcement over time, by different teachers and in different contexts. Nutrition knowledge and interest is not part of the recruitment process for GPs who teach in the Newcastle course. Thus it is pleasing and also effective nutrition education, that the GPs and faculty agree on the importance of nutrition topics, despite the GPs being located outside the Newcastle area, and having minimal contact with the faculty.

The integrated nature of the Newcastle medical course, with a multidisciplinary approach to the aetiology and management of disease in the individual and the community, has enabled nutrition to be viewed as an important aspect of many facets of medicine. Diabetes, for example, is addressed in depth during Year 3 by endocrinologists, dietitians, biochemists, anatomical pathologists, ophthalmologists and podiatrists. A week is completely devoted to the aetiology, epidemiology and clinical management of types I and II diabetes mellitus; biochemistry of glucose and lipid metabolism; nutritional management of both types of diabetes; and complications of diabetes - clinical manifestations and pathology. Reference is made to previous learning in Years 1 and 2, in which patients with relevant disorders were studied. Teaching sessions involve patients and are integrated with relevant clinical exposure. Similarly, nutritional management is reinforced with the consumption of a diabetic lunch.

The practical emphasis on managing an individual's health, as well as their "medical condition", by the Newcastle medical school is further highlighted by the type of topics rated significantly more important by Newcastle faculty and GPs than their UNSW peers. For example, both Newcastle groups nominated *Nutrition in infants and children*, *Nutrition in pregnancy and lactation* and *Nutrition and the disease process* as significantly more important than their UNSW counterparts. By understanding the role of nutrition in these instances, the student learns not just to treat the immediate problem or disease such as cystic fibrosis in childhood, but to optimise future health. This includes appropriate patient education strategies.

All medical curricula are dynamic, subject to pressures of not only content explosion but also political expediency. For Nutrition in medical curricula to reflect current scientific knowledge as to its role in the prevention and management of disease, and the promotion of health, requires commitment from faculty and others associated with the clinical teaching of students. With the development of new problem based, graduate medical education programs in Australia, there is an unprecedented opportunity for those committed to nutrition education for medical students to ensure that Nutrition is included in the curricula. Resources for medical nutrition education such as manuals<sup>32</sup> need not be developed by individual medical schools, but may be shared between schools either regionally or on a national basis<sup>17,33</sup>.

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## Nutrition in Medical Education

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## 按照實際問題和社區的需要進行營養醫學教育是否 比較傳統醫學院的教育方式更有效果？

### 摘要

**目的：**比較紐卡素 (Newcastle) 及其它傳統的醫科學校大學生的醫學教育，以確定營養課題的重要性。

**設計：**作者設計了一個羅列 38 項主要營養課題的郵寄問答調查表格，要求被調查人用「必要」、「重要」、「合乎需要」、「不屬於任何一者」或「不知道」來回答各項營養課題。

**參加者：**包括所有紐卡素大學醫學院成員、參與最後一年教學的普通開業醫生、和工作在醫科學校區內的膳食師。

**主要結果評定：**對表列營養課題重要性的評價，比較該次和以前調查的結果。

**結果：**60% 以上的紐卡素回答者提出在 38 個營養課題中，有 30 個課題是必要或重要的。而提出 31 個課題是必要或重要的也有很高的百分比。與其它傳統醫科學校相比，紐卡素醫學院認為營養醫學教育更加重要。

**結論：**紐卡素醫學院和開業醫生們均強烈贊成營養醫學教育，無論是按傳統醫學或按社區問題的需要，均取決於營養在醫學中的重要性，課程結構和全部課程的安排等問題。

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