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Original Article

Defining and evaluating the role of dietitians in intensive care: State of play[☆]

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SUMMARY

Background & aims: Intensive Care is a relatively new work area for dietitians in Australia and New Zealand. It is unclear how many dietitians are working in intensive care units (ICUs) and what their level of involvement is.

Methods: The study was a complete population study, surveying all 182 adult Australian and New Zealand ICUs on a list obtained from the Australian and New Zealand Intensive Care Society (ANZICS). An 18-question telephone survey was implemented to explore dietitians' practices in ICU.

Results: At least one dietitian from each of the 182 hospitals participated in the survey (100% response rate). Thirteen ICUs had no dietitian service. In the remainder there was wide variation in dietitians' involvement, ranging from occasional consulting to daily attendance at the ICU round, identifying and assessing patients requiring dietitian input, prescribing parenteral, enteral or oral nutrition support, ordering laboratory tests, and contributing to all nutrition-related decision-making in the ICU.

Conclusions: The wide variation in dietitians' roles and responsibilities in the intensive care units across Australasia reflects the rapid recent growth in this area. The results of this survey may suggest some useful strategies that dietitians could implement to increase their involvement in the ICU setting.

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1. Introduction

The growing evidence for the role of nutrition in improving the outcomes after critical illness has led to an increase in dietitians working in intensive care. This is a relatively new work area for dietitians in Australia and New Zealand. The recent growth in research concerning nutrition in the critically ill has created opportunities for dietitians to enter this new area, yet it is unclear how many dietitians are working in intensive care units (ICUs) and what their level of involvement is. Anecdotal reports suggest that there has been a recent increase in the number of Australasian hospitals that have allocated a dietitian to the ICU, but it also appears from these reports that this situation is vulnerable to the influence of individual managers and intensivists, and that the dietitian's role or allocated ICU hours can change markedly as a result. It does not

appear that there has been any previously-published survey of dietitians in ICU, and benchmarking data is scarce. Recommendations for ICU dietitian staffing (expressed as dietitian Full-Time Equivalents (FTE), that is, the fraction of one week's working hours) have ranged from 0.02¹ to 0.05–0.1² FTE per ICU bed; one survey of 33 British ICUs found a mean staffing of 0.02 FTE per ICU bed³ and a recent international survey of 167 ICUs worldwide found a mean staffing of 0.05 FTE per ICU bed (range 0.01–0.67),⁴ but all of these data are expressed in terms of hours with no definition of the role or level of involvement of the dietitian in question.

There is a lack of research that defines the concept of 'involvement' in the health care team. In the absence of relevant health literature, studies from other fields such as business and psychology have been used in the development of a survey looking at dietitians' involvement in ICU.⁵ It is important to look at the specific tasks and clinical privileges of the ICU dietitian, since a larger number of hours allocated to ICU may have little effect on patients' nutritional management and outcomes if these hours are spent on low-level routine tasks such as maintaining stock levels of feeding formula and updating lists of patient diets.

The aim of this study was to obtain a census snapshot of dietitians' current practices in adult ICUs in Australia and New Zealand: how many of these ICUs have a dietitian associated with them? How 'involved' are these dietitians in the ICU team? What are dietitians doing in ICU?

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2. Materials and methods

2.1. Subjects

The study was a complete population study: a list of all adult Australian and New Zealand intensive care units was obtained from the Australian and New Zealand Intensive Care Society (ANZICS). Each of the 182 hospitals on this list was contacted to find out whether a dietitian was allocated to the ICU and to obtain that dietitian's contact details. The dietitian was then contacted by telephone and invited to participate in answering a survey. Where more than one dietitian was working within an ICU, all of these dietitians were invited to take part. All surveys were carried out during five weeks in September–October 2009. Informed verbal consent was obtained from all participants before proceeding with the survey. The Ethics Review Committees at both the hospital and the university approved the study.

2.2. Survey tool

A telephone interview schedule was developed consisting of 18 questions exploring specific dietetic practices and some aspects of dietitian involvement in the ICU team. The process of developing and validating this tool has been reported elsewhere.⁵ For consistency the same researcher conducted all the interviews, following a set script so that questions were always asked in the same way. To minimise response bias due to perceived level of threat, all questions were worded and asked as neutrally as possible to reduce the impression that there is a right or wrong answer and to avoid implying any criticism of a respondent's current practices. Standardisation was maximised by having the survey administered by the same person throughout. Where more than one dietitian worked in an ICU, the responses of all participants from that ICU were compared as a validation measure, but only the response of the main or most senior dietitian was included in the main analysis.

2.3. Statistical analysis

Analysis was performed using Statistical Package for the Social Sciences version 19 (SPSS, Chicago, IL, USA). A median split was used to define hospital size (number of beds 220 or more, versus 219 or fewer) and ICU size (8 or more, versus 7 or fewer specifically-designated ICU beds, or 12 or more versus 11 or fewer total beds in a combined unit that incorporated intensive care, high dependency/step down and/or coronary care unit monitored beds. Pearson's product–moment correlation (r) was used to obtain a correlation matrix, and ANOVA was used to establish the relationships between parameters. The duplicate responses within each hospital were compared using Spearman's correlation and Kappa Measure of Agreement for the categorical variables; and Pearson's product–moment correlation (r) and Student's paired-samples t -test for the continuous variables. A p -value of <0.05 was considered significant for all analyses.

3. Results

3.1. Hospital demographics

All 182 ICUs were contacted (see Table 1) and at least one dietitian from each of these hospitals participated in the survey; no dietitian declined to participate (100% response rate). In total, 192 dietitians were surveyed but only one from each hospital was included in the main analysis. The dietitians' responses were validated by comparing the responses between the dietitians who worked in the same ICU, and by the initial randomly-timed

telephone call to the ICU, asking the random ICU staff who answered the telephone to name their dietitian. There was a significant correlation between involvement ratings and ICU staff being able to name the dietitian ($r = 0.33$, $p < 0.0001$) which provides some external validation of these involvement ratings, as does the fact that there were no significant differences between the duplicate responses within an ICU ($p = 0.34$).

3.2. Dietitians in ICU

In 13 of the hospitals, the interviewed dietitian reported that the ICU did not have a dietitian service at all; a further four hospitals had minimal dietetics input. In nine hospitals there was a discrepancy between the responses of the ICU staff and the dietitian as to whether a dietitian service was being provided. Three ICUs did not know whether or not they had a dietitian, when contacted on two separate occasions. In 110 (60.44%) of the ICUs, the staff were able to state that their ICU had a dietitian and to name that dietitian correctly.

Forty six ICUs (25.27%) had a formal allocation of weekly dietitian hours, expressed as dietitian Full-Time Equivalents (FTE). Amongst those 46 ICUs, the mean was 0.08 FTE per ICU bed (range 0.01–0.6). Hours actually spent by the dietitian in the ICU for those 46 hospitals varied widely, with median 1.67 weekly hours per ICU bed, interquartile range (IQR) 0.94–3.25 h. Of the total 182 ICUs, median dietitian weekly hours per ICU bed was 0.86 h (IQR 0.2–2.0). In the 169 ICUs with any dietitian contact, 92 (55.44%) allowed the dietitian automatic or 'blanket' referral. In about half of these ICUs the dietitian reported that ICU staff consulted them 'most days' or 'most weeks' (116 ICUs (68.64%) reported this for ICU nursing staff and 83 ICUs (49.11%) for ICU medical staff consulting the dietitian). In most of the ICUs, the dietitian reported that other ICU staff followed the dietitian's recommendations 'frequently' or 'almost always' (159 ICUs (94.08%) reported this for nursing staff and 145 ICUs (85.580%) for medical staff.) Of the whole group of 182 hospitals, only 46 dietitians (25.27%) stated that there were no barriers to being involved in their ICU. The remainder identified one or more barriers (see Table 2).

3.3. What are dietitians doing in ICU?

Of the 169 ICUs with any dietitian contact, 131 conducted a daily round or ICU team meeting and of these only 41 (31.30%) had a dietitian attending the round/meeting at least once per week. Twenty four dietitians (14.20%) reported ever having attended any ICU social event such as picnics, Christmas parties or after-work drinks.

There was a high level of consistency in medical records documentation, with 145 dietitians (85.80%) reporting that they routinely documented a full nutritional assessment in ICU, incorporating anthropometry, biochemistry/haematology, clinical signs and symptoms, dietary intake, and estimated requirements (see Table 3). Seventy six dietitians (44.97%) stated that they performed a physical examination on at least some of their ICU patients, half of these considering it a routine part of their nutritional assessment. Most reported that these examinations were based upon the physical component of the Subjective Global Assessment.⁶

For estimating patient's energy requirements, 164 dietitians reported what method they used. Of these, 97 (59.15%) reported using the Schofield Equation^{7,8} and 50 (30.49%) reported using an energy-per-kilo-bodyweight rule of thumb, with others using formulae such as the Harris-Benedict⁹ or Ireton-Jones¹⁰ equations or a combination of different methods for comparison. Only three dietitians reported having routine access to indirect calorimetry for assessing energy requirements in ICU. When asked to give a general

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