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Randomized Control Trials

Enhanced referral prioritisation for acute adult dietetic services: A randomised control trial to test a web-based decision training tool

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SUMMARY

Background & aims: Dietitians in acute adult services need to prioritise dietetic referrals in order to manage their daily workload and ensure effective treatment of patients. Newly qualified dietitians do not usually receive specific training on prioritisation and could be helped with an evidence-based, effective, decision-training tool that is based on the practice of experienced dietitians. We developed an internationally available web-based decision-training tool designed to improve novice dietitians' ability to make dietetic prioritisation decisions. The training tool comprised of a pre-training task, a post-training task and training materials. The aim of this study was to test the effectiveness of the training tool on novices' ability for dietetic prioritisation.

Methods: Pre-registration dietitians and recent graduates (one-year) from across the UK were invited to participate in this randomised controlled trial (RCT). Each participant made prioritisation decisions on a set of dietetic referral scenarios: 53 scenarios at pre-training and 27 at post-training. After pre-training the intervention group was presented with the training materials, whereas the control group was told to carry on with the post-training task. Participants did not know which group they had been randomly allocated to. We calculated i) level of agreement between decisions made by each novice and experts' consensus using Pearson correlation, intra-class correlation (ICC(2,1)); ii) intra-rater consistency using ICC(1,1) and iii) intra-group consistency using ICC (2,1). We compared group means at pre-training and post training; estimated effect size using the degree of change from pre- to post-training, and 2-factor mixed ANOVA to assess overall effect of the training across the groups and time-points.

Results: 151 participants (69 in control and 82 in intervention) completed the trial. The groups did not differ in demographic characteristics. Both Pearson and ICC(2,1) correlations increased with training intervention; a moderate effect of training was found for both metrics, $d = 0.69$ ($r = 0.32$) for the former and $d = 0.54$ ($r = 0.26$) for the latter. Intra-rater consistency improved with training but with a small effect size, $d = 0.32$ ($r = 0.16$). The intra-group consistency also improved with training: ICC = 0.48 pre training to 0.61 post training.

Conclusions: The training tool was found to be effective in improving the novice dietitian's ability to prioritise referrals in the acute adult setting. The training tool is freely available at www.dietitianreferral.org for use by all student or early career dietitians internationally.

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1. Introduction

Dietitians working in adult acute services receive large numbers of referrals, making it difficult to provide services to all on the day they are received. In order to optimise the safety of patients and maximise the effectiveness of the treatment dietitians have to be selective and decide which patients need the most urgent dietetic intervention and prioritise their referrals accordingly. However, newly qualified dietitians with limited experience may find it

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difficult to know how best to prioritise referrals; it is well recognised that skill in prioritisation is a characteristic of an expert clinician [1]. Since nutrition status impacts significantly on key factors such as health related outcomes, effectiveness of medical treatments, and the quality and cost of care [2], skills in prioritisation are crucial for novice dietitians to learn. In order to share best practice, the decision policies of 50 experienced UK dietitians were statistically modelled using a set of 60 example referrals [3]. Six referral cues were identified from the literature, case experience and through debate among experienced dietitians; presenting complaint, nutrition status from screening tool, reason for referral, previous food intake, weight history, biochemistry picture [3]. The policies identified which of these cues were most influential when making referral prioritisation decisions and provided the experienced dietitians' consensus decision for each of the example referrals. Consensus between experts' dietetic prioritisation decisions was very high: intra-class correlation (ICC) (2,1) = 0.98 (95% confidence interval: 0.97–0.99) [3]. It is proposed that this model of expert practice can be used to develop training materials to upskill students and newly qualified practitioners on professional programmes [4]. Enhanced prioritisation skill would then enable novices to provide a better service to patients that would result in a more efficient use of healthcare resources. Evidence suggests that enhanced work-based skill can increase confidence [5], improve work satisfaction [6], and reduce work based stress [7], and improving prioritisation skills may contribute to this effect.

This paper reports on the design and testing of the decision training tool which aimed to improve novices' decision making ability when prioritising referrals for acute adult dietetic services. There were three specific research questions: (1) do trained novices make dietetic prioritisation decisions that are more aligned with the experts' consensus decisions than untrained novices?; (2) do trained novices make more consistent dietetic prioritisations on repeated scenarios?; (3) do trained novices agree more with each other about the prioritisation decisions made than untrained novices.

2. Materials and methods

A Randomised Controlled Trial (RCT) was undertaken, using a two-factor mixed design with one between-subjects factor (group),

with two levels (no training materials provided (control) and training materials viewed (intervention)), and one within-subjects factor (time-point of training) with two levels (pre-training and post-training). To maintain blinding volunteers were told they were participating in a study to investigate prioritisation of referrals, not a study to test a training website. Ethical Approval for the study was obtained from Brunel University Research Ethics Committee (14/10/STF/03).

The training materials were developed using the findings of the previous study [3] and used as the intervention for this RCT. In Hickson et al. [3] six cues were identified as being important when assessing dietetic referrals, and a total of 21 cue levels were defined in order to enable generation of a range of referrals. The training information was informed by how the six cues were weighted by the experienced clinicians in their prioritisation decisions, and the training explained to the novices how to use these cues when prioritising referrals to their acute adult dietetic services (see [supplementary information](#) for further detail).

In order to measure the novices' ability to prioritise referrals, the control and intervention group participants were asked to make decisions on the same dietetic referral case scenarios that the experts had prioritised previously. The novice's decisions on identical cases could be measured, and then be compared with the experts' decisions. The case set of 80 was made up of 60 original cases and 20 repeated cases. Cooksey [8] recommends that at least one third of case profiles are repeated in order to measure consistency. An example of a case scenario and the five possible prioritisation outcomes are presented in Fig. 1.

Since web-based decision training has been found to be most successful when applied at the pre-registration stage of training [9,10], pre-registration dietetic students and recent graduates (less than one-year experience) were identified as suitable participants. Pre-registration students had to have at least completed the first part of their practical placement, so they had some experience of ward work and could relate to the scenarios. To identify a medium effect (Cohen's $d = 0.5$) between two independent sample means at 0.05 significance and for 0.8 power, it was calculated that 64 participants were needed for each group [11].

The participants were recruited from across the UK via University dietetic programme leads. Of the 14 universities contacted, 12 replied and gave permission and facilitated access to students and

You have received a referral for a 65-year-old patient who may require dietetic assessment. The patient's presenting complaint is Dysphagia; and they have screened as 'High risk of malnutrition'.

They have been referred for enteral tube feeding. The referrer reports that the patient is not eating and has stable weight. The biochemistry results show normal biochemistry.

Prioritisation options:

1. Does not need to be assessed during admission- refer on to community dietetics
2. Non-urgent - assess before discharge
3. Non-urgent - assess within two working days
4. Urgent - assess on next working day
5. Urgent - assess today

Fig. 1. Example of a case referral and the five possible prioritisation options.

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