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# A lifestyle intervention for primary care patients with depression and anxiety: A randomised controlled trial

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## ABSTRACT

This study aimed to evaluate the efficacy of a diet and exercise lifestyle intervention on mental health outcomes for patients currently being treated for depression and/or anxiety in primary care. Patients (n=119) referred by general practitioners to the 12-week randomised controlled trial were assigned to either an intervention of six visits to a dual qualified dietitian/exercise physiologist (DEP) where motivational interviewing and activity scheduling were used to engage patients in individually-tailored lifestyle change (focussed on diet and physical activity), or an attention control with scheduled telephone contact. Assessments conducted at baseline (n=94) and 12 weeks (n=60) were analysed with an intert-to-treat approach using linear mixed modelling. Significant improvement was found for both groups on Depression, Anxiety and Stress Scale (DASS) scores, measures of nutrient intake and total Australian modified Healthy Eating Index (Aust-HEI) scores. Significant differences between groups over time were found only for iron intake and body mass index. Patients participating in individual consultations with a dietitian were more likely to maintain or improve diet quality than those participating in an attention control. This study provides initial evidence to support the role of dietitians in the management of patients with depression and/or anxiety.

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## 1. Introduction

A growing body of evidence is demonstrating an association between dietary patterns, food and nutrient intake with mental health including depression and anxiety (Bodnar and Wisner, 2005; Murakami and Sasaki, 2010; Quirk et al., 2013). Dietary patterns including traditional and Mediterranean diets, intake of fruit and vegetables and intake of specific nutrients including folate and omega-3 fatty acids have all been associated with a reduced incidence of depression (Meyer et al., 2013; Quirk et al., 2013; Sanhueza et al., 2013). It has been demonstrated that individuals with depression and anxiety often have poor dietary habits, and that there is likely a bi-directional relationship between dietary intake and symptoms of depression and anxiety (Jacka et al., 2015). There is now a greater understanding of the mechanisms that link nutrition and mental health and interest in dietary interventions that may improve mental health (Parletta et al., 2013; Rechenberg and Humphries, 2013).

In Australia, mental illness is experienced by 20% of adults in any given year, representing 24% of the non-fatal disease burden

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http://dx.doi.org/10.1016/j.psychres.2015.10.001 0165-1781/© 2015 Elsevier Ireland Ltd. All rights reserved. (Begg et al., 2007; Australian Bureau of Statistics, 2009). Depression, anxiety and substance abuse are the leading diagnoses of mental illness in Australia, and are most commonly treated with medication and psychological interventions (Ellis et al., 2004; Australian Institute of Health and Welfare, 2012). There is growing interest and evidence to support diet and exercise interventions in the treatment of mental illness including depression and anxiety, but little is known about the optimal method of delivery of these services (Martinsen and Raglin, 2007).

In addition to improving mental health, there is also a need to improve dietary intakes of those experiencing depression and anxiety. There are several published reviews of effective components of dietary interventions including behaviour change techniques, dietary counselling, nutrition education and strategies to enhance adherence to dietary advice in the general population (Pignone et al., 2003; Spahn et al., 2010; Jepson et al., 2010; Noordman et al., 2012). Some of these reviews present specific considerations for groups with chronic diseases such as cardiovascular disease and diabetes (Desroches et al., 2013) but there is little published research describing behavioural dietary interventions for people with depression and anxiety.

The aim of this randomised controlled trial was to determine whether an individually tailored lifestyle intervention (focussed on diet and physical activity) delivered in a primary care setting

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could decrease depression and anxiety symptoms of patients being treated for depression and/or anxiety compared to an attention control. The secondary outcomes of nutrient intake and diet quality were also assessed. Physical activity and fitness outcomes are reported in a separate paper. It was hypothesised that participation in the lifestyle intervention would decrease depression and anxiety symptoms as well as improve nutrient intake and diet quality relative to participation in an attention control.

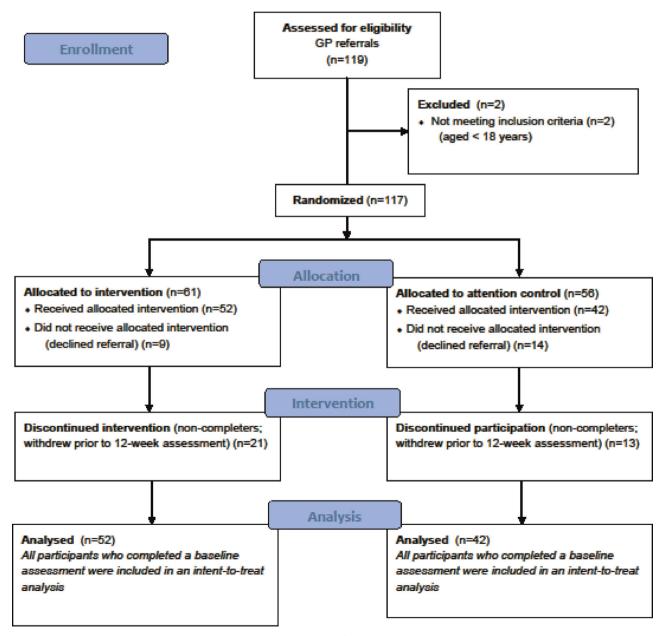
## 2. Methods

## 2.1. Population

Between 2006 and 2008, general practitioners (GPs) in the Illawarra Division of General Practice (a primary health care organisation) were invited to refer adult patients currently being treated for depression and anxiety. Patients under 18 years of age and those with contraindications to participation in physical activity were excluded from the study.

Power analysis indicated that significant changes in dietary habits could be demonstrated with a total of 63 patients, based on an effect size of 0.5 in the Australian Modified Healthy Eating Index. Other studies utilising psychotherapy interventions have demonstrated improvements in mental health with approximately 30 participants in each group (Arean et al., 2005). For this reason, and to allow for a high attrition rate, a goal of 120 referrals was selected, with half assigned to each of the study groups. Eligible participants were individually randomised by GP in order of referral using a randomisation chart. The treating dual qualified dietitian/exercise physiologists (DEPs) were aware of the randomisation sequence. Participants were informed of their group allocation at the end of the baseline assessment.

Over a two year period, 34 GPs referred 119 patients ranging in age from 18 to 84 years to the study. Fig. 1 provides the participant flow diagram through the study. Two patients under the age of 18 were referred and excluded from the study. All other referrals were individually randomized by GP. Overall, 94 met the inclusion



### Fig. 1. Participant flow diagram.

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