Original Article

Dietary supplement use in people being treated for depression

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The use of dietary supplements has increased over the past 10 years, with up to 50% of adults being reported to have taken dietary supplements. The types of supplements taken are often related to physical morbidities. However, information about their use in combination with prescription drugs is lacking. In particular, there is little information on the use of supplements by people with depression. Our aim was to examine the use of dietary supplements by people being treated for depression. Seventy-two participants who were being treated for depression in the community were recruited for a clinical trial to determine the effect of fish oil on mood in the treatment of depression. The results of the primary analysis are reported elsewhere. Exclusion criteria included any co-existing psychiatric disorder (except anxiety disorders), blood clotting disorders, unstable medical conditions, and those taking fish oil supplements. Demographic information, details about the participants' depression and current therapies, use of dietary and herbal supplements in the previous 12 months, and physical activity data were collected at baseline. Characteristics of supplement users were compared with those of non-users using either chi-square or Mann-Whitney U tests. Forty-five (63%) of 72 participants who provided dietary supplement information had taken at least one dietary supplement within the previous 12 months. On average, supplement users were found to have taken 2.8 (SD=1.56) dietary supplements during the assessment period. Women were more likely to be taking supplements than men (P<0.001). In conclusion, the use of dietary supplements is common among people being treated for depression. This has important implications for clinical practice as little is known about supplement-drug interactions.

Key Words: dietary supplements, vitamins, minerals, herbal remedies, drug interactions, depression.

Introduction

As with all complementary and alternative therapies, the use of dietary supplements has increased over the past 10 years, but information associated with their use and possible interactions with prescription drugs is lacking. Up to 40% of adults in the UK, Sweden and the USA take at least one dietary supplement depending on the demographics of the population.[1-3] In New Zealand, data from the last National Nutrition Survey carried out in 1997/98 showed that 59% of the population had consumed at least one die-tary supplement in the previous 12 months.[4]

There is evidence to suggest that dietary supplement users are more likely to be women, to follow healthier lifestyles, and to consume diets associated with lower risk of chronic diseases.[3,5,6] A recent study found that dietary supplement use is related to particular physical morbidities.[7] For instance, people with arthritis and other musculoskeletal disorders were found to be more likely to be taking fish oil, whereas those with cardiovascular disease were less likely to use any kind of dietary supplement.[7]

As more is understood about the therapeutic effects of herbs and other dietary components, dietary supplements are increasingly being tailored for the treatment of specific disease conditions, yet in general, little is known about the way in which dietary supplements interact with prescription drugs. This has important implications for clinical management in general practice as research has found that many patients do not report the use of dietary supplements to their physicians, increasing the likelihood that adverse effects due to supplement-drug interactions are not recorded or are wrongly attributed to the action of the prescribed drug.[8]

Despite the fact that some dietary components, e.g. folate, are known to have psychotherapeutic effects, little is known about dietary supplement use among people with depression. Our aim was to examine dietary supplement use over the previous 12 months by people being treated for depression in the community. Participants were recruited for a clinical trial to determine the effect of fish oil on mood in the treatment of depression. The results of this trial are reported elsewhere.[9]

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Materials and methods

Participants

Participants being treated for a current depressive episode and with no co-existing psychiatric disorder (except anxiety disorders) were recruited to the study if they were between 18 and 65 years old. If female, participants were pre-menopausal with a normal menstrual cycle. Exclusion criteria included blood clotting disorders, use of anticoagulant therapy, unstable medical conditions or conditions likely to affect gastrointestinal absorption, allergies to seafood, objections to taking fish or olive oil based products, and those currently taking fish oil. Participants were also required to have been on their current medication at a constant dose for at least 2 months, to have no objections to providing blood samples, and to be available for the length of the trial. They were recruited through a Community Mental Health Service, general practices and advertisements in community newspapers in the Wellington region of New Zealand over a 14-month period between July 2000 and September 2001. Most potential participants were identified through community advertising because in New Zealand, patients diagnosed with depression are not generally seen by psychiatric clinicians unless they have co-existing psychiatric disorders. Eligible participants were sent an information sheet and consent form.

The study was approved by the Massey University, the Manawatu–Whanganui and the Wellington Human Ethics Committees. All participants gave written informed consent and permission for researchers to request diagnosis, treatment and general health information from their general practitioner and mental health key worker. This information was used to confirm diagnosis, history and treatment information. Participants were not independently assessed.

Data collection

Demographic information, and information about participants' depression and current therapies, use of dietary supplements, physical activity and health beliefs, were collected at baseline. A dietary supplement was defined as "a product (other than tobacco) intended to supplement the diet that bears or contains one or more of the following dietary ingredients: a vitamin, a mineral, an herb or other botanical, an amino acid or a dietary substance for use by man to supplement the diet by increasing the total dietary intake, or a concentrate, metabolite, constituent, extract, or a combination of the above ingredients".[10] Participants were asked if they had taken any type of dietary supplement in the previous 12 months, and were then asked to specify the type of dietary supplement according to 20 categories. Mood was assessed using a self-administered Short-Form Hamilton Depression Rating Scale (HDRS-SF) and Beck Depression Inventory (BDI II). General health status was assessed using the SF-36 questionnaire. Interviews and questionnaires were administered at Massey University Psychology Clinics in Palmerston North and Wellington.

Statistics

Participants were classified into Supplement Users and Non-Users depending on whether they reported taking any dietary supplement in the last 12 months. The background characteristics of the two groups were then compared using either chi-square tests (for categorical background information such as sex or level of education), or Mann-Whitney U tests (for continuous measures such as age or SF-36 scores). Results are presented as means (standard deviation) with a significance level of $P<0.05$.

Results

Participants

Seventy-seven participants currently being treated for depression in the community were recruited to the study. Four participants withdrew before baseline data were collected and one provided background information, but no information on supplement use, so data are presented for only 72 participants. Baseline demographic and clinical characteristics can be found in Table 1.

Forty-five (63%) of the 72 participants had taken at least one dietary supplement within the previous 12 months. Women were more likely to be taking supplements than men ($P<0.001$). Supplement users tended to be younger than non-users ($P = 0.012$); however, once gender differences due to the recruitment of only pre-menopausal women were taken into account, this difference was not significant ($P = 0.786$). Users also tended to have lower scores on the mental health and physical functioning scales of the SF-36 than non-users, but this difference was not significant.

Sixty-one (85%) of the 72 participants were taking antidepressant medication at the time of data collection. Thirty-six (80%) of the 45 participants who had taken a dietary supplement in the previous 12 months were taking antidepressant medication at the time of data collection compared with 25 (93%) of the 27 who were not dietary supplement users. However, this difference was not significant. There was no significant difference in the numbers of dietary supplements used in the previous 12 months between medicated and non-medicated participants.

Of the 45 participants reporting use of a dietary supplement in the previous 12 months, 2.8 (SD=1.56) supplements were consumed per person. The numbers and types of supplements consumed by participants over the previous 12 months are listed in Table 2. Multivitamin and/or mineral products were taken by the highest proportion (81%) of those using dietary supplements. The next most commonly used supplements were vitamin B complexes (36%), garlic (27%) and iron (24%).

Discussion

The proportion of participants that had taken at least one dietary supplement in the previous 12-month period was similar to the 59% found in the general adult population of New Zealand, despite the fact that we excluded volunteers who were taking fish oils at the time of recruitment. While there may have been sample bias due to the recruitment method used, recent evidence shows that the use of complementary therapies, non-prescription medication and dietary changes are actions taken to cope with depression following the intensification of everyday activities, e.g. spending time with family and friends, and

Table 1. Baseline demographic and clinical characteristics

	All (N = 72)	Supplement users (N =45)	Non - users (N =27)	P value[1]
Female	37 (51%)	31 (69%)	6 (22%)	<0.001
Age (yrs)	38.6 (12.7)	36.1 (12.8)	42.8 (11.7)	0.012
Mood scores				
HDRS-SF	11.8 (5.2)	12.3 (4.8)	11.0 (5.8)	0.215
BDI II	22.4 (11.4)	23.7 (10.8)	20.4 (12.2)	0.261
SF-36 scores				
Mental health scale	49.9 (16.9)	48.1 (15.4)	52.9 (19.0)	0.337
Physical functioning scale	82.5 (18.9)	80.2 (20.6)	86.3 (15.1)	0.297
Background treatment				
Anti-depressant medication	61 (85%)	36 (80%)	25 (93%)	0.150
Psycho-therapy[2]	20 (34%)	11 (32%)	9 (36%)	0.770
Education				0.214
Up to 5th form(≤16 y)	26 (36%)	13 (29%)	13 (48%)	
Up to 7th form (≤18y)	23 (32%)	15 (33%)	8 (30%)	
Tertiary	23 (32%)	17 (38%)	6 (22%)	
Annual income				0.990
Under NZ$20k	30 (42%)	19 (42%)	11 (41%)	
NZ$20k-$40k	26 (36%)	16 (36%)	10 (37%)	
Over NZ$40k	16 (22%)	10 (22%)	6 (22%)	
Smoker[3]				0.423
Yes	13 (23%)	9 (26%)	4 (17%)	
No	44 (77%)	25 (74%)	19 (83%)	
Alcohol intake				0.288
Under 1 unit/week	24 (33%)	13 (29%)	11 (41%)	
1-5 units/ week	24 (33%)	18 (40%)	6 (22%)	
5+ units/ week	24 (33%)	14 (31%)	10 (37%)	
Physical activity				0.122
None in last 7 d	6 (8%)	6 (13%)	0	
≤ 2.5 hr in last 7 d	15 (21%)	8 (18%)	7 (26%)	

Data are given either as counts (%) for categorical variables or as means (standard deviation) for continuous variables. [1]For categorical variables, P value for chi-square test comparing median values users and non-users. For continuous variables, P value for Mann-Whitney U-test comparing median values users and non-users. [2]Only have information from 34 users and 25 non-users. [3]Only have information from 34 users and 23 non-users.

Table 2. Supplements consumed in previous 12 months

	Number of supplement users (N)	Number of supplements taken (N)
Total	45	127
Multi vitamin and/or mineral supplement	34	42
B complex	16	16
Single B vitamins	7	7
Folic acid	5	5
Other single vitamins	3	3
Iron	11	11
Other single minerals	2	2
Garlic	12	12
St John's wort	4	4
Other herbals	5	5
Fish oils	2	2
EPO	6	6
Flax oil	1	1
Other	10	11

exercise, prior to seeking professional help.[11] This supports our finding as it suggests that the use of self-help strategies, such as dietary supplements, may be relatively commonplace among people who have sought treatment from a general practitioner.

Women were found to be more likely to have taken a dietary supplement in the previous 12 months, which agreed with previous findings.[3,6,7] Supplement users have previously been found to be older[3,7] and to follow generally healthier lifestyles.[3,5,7,12] However, our data did not support these latter findings as supplement users were no different in age and tended to have poorer general health, according to their SF-36 scores, though this was not significant. This may have been due to the characteristics of our sample, as poor physical health is known to be associated with depression.[13]

Supplement users were found to have taken an average of 2.8 dietary supplements over the previous 12-month period. Some reported the use of as many as six supplements. This level of use raises questions about the occurrence of interactions with prescription drugs. A recent study found that dietary supplements were associated with adverse events of varying severity, and urged that research into the hazards and risks of their use should be a priority.[14] Of particular concern is the possibility of supplement-drug interactions. While the number of dietary supplements taken was not significantly different in those taking anti-depressant medication, there is considerable scope for supplement-drug interactions in this group. Such interactions may have adverse or beneficial effects.[15] For example, St John's wort, which is marketed as a natural treatment for depression, has been reported to further increase serotonin levels in patients using selective serotonin reuptake inhibitors.[16]

In conclusion, people being treated for depression were found to be taking a variety of dietary supplements. This has important implications for the clinical

management of depression as little is known about supplement-drug interactions. A systematic assessment of the benefits, contraindications and possible adverse effects of dietary supplements and their interactions with prescription drugs is necessary if consumers are to be assured of their safety. Until more is understood, consumers should be advised of possible interactions and of the need to inform their physicians that they are using dietary supplements. In addition, physicians and pharmacists should be urged to request information about the use of supplements when prescribing medications.

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膳食补充剂被人们使用作为治疗抑郁症

膳食补充剂的使用在过去的十年中已经增加，有达到 50%的成年人被报道采用了膳食补充剂。补充剂的类型经常和身体发病率有关。尽管，还缺乏关于采用膳食补充剂和处方药相结合的信息。特别是，没有抑郁病人使用膳食补充剂的信息。 我们的目的是调查使用膳食补充剂对抑郁症的治疗。72 位正在治疗的抑郁病人作为一个群体进行研究。参与者征募到一个临床实验用来测定鱼油在治疗抑郁症中对情绪的效果。初级的分析结果在别处报道。排除标准包括任何辅助共存的精神病学紊乱（除焦虑紊乱外），血栓紊乱，不稳定的医学条件，和那些已经食用鱼油补充剂的。人口统计信息，关于参与者的抑郁和当前治疗的细节，在开始前 12 个月使用规定的食物和中药补充剂，和身体行为被收集起来作为基线。补充剂食用者和非食用者的特征通过 chi-平方检验或 Mann-Whitney U 检验比较。提供食用膳食补充剂的 72 位参与者中，有 45 位（63%）参与者在先前的 12 个月内至少食用一种膳食补充剂。平均起来，实验发现补充剂食用者在估计时期内食用 2.8 种（SD=1.56）补充剂，女士比男士更喜欢食用补充剂（P<0.001）。膳食补充剂被人们普遍地食用作为治疗抑郁症。这对当前没有关于补充剂-药品交互作用的临床实践具有重要的含意。

关键词：膳食补充剂、维生素、矿物质、中药疗法、药物交感、鱼油、情绪、抑郁症。