USE OF TALBINAH (BARLEY BROTH) AS A PATTERN OF DEPRESSION MANAGEMENT AMONG SAUDI FEMALE MEDICAL STUDENTS

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ABSTRACT

Purpose: Depression prevalence and antidepressant medication usage have recently increased. This paper aims to study the effect of Talbinah (barley broth) as a prophetic evidence-based complementary medicine on depression, and to emphasise the importance of combining private and public Medicare in managing depression.

Design: A randomised clinical trial was conducted to determine the effect of Talbinah consumption on depression on a sample of 42 female medical students. Self-administered questionnaires were used. The intervention group was given one serving of Talbinah on a daily basis in addition to their usual diet.

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Findings: The depression score decreased in the intervention group (score = 8.69 ± 6.53) compared to the non-intervention group (13.3 ± 8.1), although the difference is insignificant.

Research Limitations: Advanced diagnostic approaches are needed to detect depression. Participants must be in a closed setting to control their food intake.

Practical Implications: Public-private Medicare collaboration and using diet in managing depression to reduce the use, cost and the side effects of antidepressant medication.

Originality/Value: The study has significant importance in broadening the scope of giving more attention for managing mental diseases, which come in parallel with sustainable development goal (3): Ensuring healthy lives and promoting wellbeing for all at all ages.

Keywords: Talbinah; depression; barley; complementary; evidence-based; mental

INTRODUCTION

Depression is a psychological problem that causes determined low mood, a feeling of hopelessness in the depressed person. It makes somebody feel unhappy, aggravated, desperate, have low self-image, they also lose interest in things they usually like (Al-Qadhi et al., 2014).

Internationally, the prevalence of depression has been stated as growing recently (Andersen et al., 2011). In developing countries, it was found that 10–44% of people suffer from anxiety disorders and depression: less than 35% of the patients get medical care (Gadit and Mugford, 2007). In Europe, approximately 10% of females and 6.6% of males were found to suffer from anxiety disorders and depression; a total of 8.5% across the population (Ayuso-Mateos et al., 2001). Saudi Arabia has a great prevalence of depression; as the population grows, in addition to increasing depression risk factors such as modernisation stress, inactive life style, social isolation and chronic disease, there are the pre-existing stigmas of getting a mental health disorder. In 2002, approximately 18% of adults in Saudi Arabia had anxiety disorders and depression (Al-Khathami and Ogbeide, 2002). In King Saud University, Riyadh, Saudia Arabia, medical students were screened for depressive symptoms using the 21-item Beck Depression Inventory. In those showing an elevated prevalence of depressive symptoms (48.2% of those tested), 11% were found to be severe, 17% moderate, and 21% mild (21%). The presence and severity of depressive symptoms had a statistically significant notification with primary academic years ($p < 0.000$), and female sex ($p < 0.002$) (Al-Faris et al., 2012). Furthermore, a study was conducted in King Abdul-Aziz University to determine the prevalence and predict depression and anxiety among female medical students, Jeddah, Saudi Arabia. Results showed that the prevalence of depression and morbid anxiety were 14.7%, and 34.9% respectively (Ibrahim et al., 2013).

Management of depression usually involves a combination of medical, psychological and nutritional intervention (Palazidou, 2012).

LITERATURE REVIEW

Medical intervention, such as antidepressant medication, is used for moderate to severe depression, while antipsychotic drugs are used for severe depression. Using anti-anxiety drugs for long periods can result in addiction or dependence. Common side effects of antidepressant and antipsychotic drugs may involve sleepiness, headache, dizziness, and in some patients loss of memory. Examples of these drugs include alprazolam (Xanax) and diazepam (Valium) (Furukawa et al., 2001).

Different health practitioners, especially clinical psychologists and psychologists, can provide psychological intervention. Psychological therapies include cognitive behaviour therapy, interpersonal therapy, supportive therapy and others (Butler et al., 2006).

In nutritional management, food is considered as an important factor that influences mood and depression (Murakami and Sasaki, 2010). Both macronutrients and micronutrients had an ability to affect mood and cognitive function (Benton and Donohoe, 1999; Horrobin, 2002).

Talbinah is a food product that has great possible uses as a functional food. In Islam, Talbinah has been stated in many narrations of the Prophet Muhammad [peace be upon him] as medicine for depression. In the narration of Aisha (Mother of the believers) that the prophet Mohammed [peace be upon him] usually commend Talbinah for one who is grieving over a dead person and for the sick. She said, "I heard the Messenger [peace be upon him] saying, 'The Talbinah gives rest to the heart of the patient and makes it active and relieves some of his sorrow and grief'" (Abdel-Hassib, 2007).

Talbinah is an Arabic word that comes from the word "Laban"; this means fermented shaken milk, which might also describe the barley grains case when they come to the milky stage, where the inner of these grains is liquid and white like milk (Abd El-Rahman, 2001).

Talbinah is a meal, which is made from barley flour formed by adding honey and milk to the powder of dried barley. Barley (the essence of Talbinah), a member of the grass family, is a major cereal grain (Mohammadi Aghdam and Samadiyan, 2014).

Whole barley grain consists of about 65–68% starch, 10–17% protein, 4–9% ß-glucan, 2–3% free lipids and 1.5–2.5% minerals (Izydorczyk et al., 2000; Sastry and Tummuru, 1985). ß-glucans, the major fibre constituent in barley, had been shown to lower plasma cholesterol, reduce glycaemic index and reduce the risk of colon cancer (Brennan and Cleary, 2005).

Considering the nutritional value of Talbinah macronutrient content in relation to depression, a systematic review and meta-analysis of the dietary pattern of 21 studies

showed that a healthy diet pattern was significantly connected with a reduced possibility of development of depression (Lai et al., 2014). Women with depression tend to consume fewer nutrients than non-depressed women. A prospective cohort study showed that a "whole food" pattern (rich in vegetables, fruits, and fish) was inversely connected with depression. At the same time, a "processed food" pattern (rich in sweetened desserts, fried food, processed meat, refined grains, and high-fat dairy products) showed a straight association with depression in the middle-aged population (Akbaraly et al., 2009).

Carbohydrate intake seems to be an important factor in the management of depression. Symptoms of depression are associated with lower consumption of vegetables and fruit (Michels et al., 2012), while overeating of high Glycaemic Index (GI) foods is a regular coping mechanism in depressed and stressed patients. Carbohydrate consumption is linked with a higher secretion of insulin, which facilitates the transport of tryptophan in the brain and leads to higher synthesis of serotonin (Wurtman and Wurtman, 1989). Another cross-sectional study on 976 homebound elders (30% of participants with type 2 diabetes) assessed the correlation between dietary GI and depression (Mwamburi et al., 2011). The result of this study recommended that even with similar amounts of carbohydrate consumption by both depressed and non-depressed people, GI and serum insulin levels were significantly higher in depressed than non-depressed patients (Lai et al., 2014).

A study done by Halyburton et al. (2007) showed that both a Low Carbohydrate Diet (LCD) and Low Fat Diet (LFD) improve mood after eight weeks. The unfavourable effects of LCD may be due to disturbed synthesis of serotonin or Brain-Derived Neurotropic Factor (BDNF). Talbinah contains 2–3% free lipids. Studies show that human brains are composed of around 40% fat and the brain cells require fats to keep their structure; for this reason, an adequate supply of unsaturated fat is needed to maintain health.

Dietary fat intake has a strong role in determining oxidative stress and inflammation. Moreover, depression is associated with lower n-3 Polyunsaturated Fatty Acids (n-3 PUFA) concentrations (Assies et al., 2010) and disturbed lipid profile (Van Reedt Dortland et al., 2010). However, the results of a meta-analysis on 28 randomised and placebo controlled clinical trials showed that the efficacy of n-3 PUFA in depression is related to Eicosapentaenoic Acid (EPA), not Docosahexaenoic Acid (DHA) (Martins, 2009). The severity of depression was positively associated with the Arachidonic Acid (AA)/EPA ratio and lower levels of erythrocyte EPA correlated with more levels of depression.

The positive effects of MUFA and PUFA intake on depression might be related to their connection with inflammation. For that reason, beneficial subtypes of fatty acids could improve depressive symptoms by modulating serum levels of inflammatory markers. They also showed that PUFA intake is inversely linked with depression. It has been reported that people with a high consumption of fish appear to have a lower prevalence of major depressive disorders (Lai et al., 2014). Women who were

infrequent fish eaters were at an increased risk of depression (Timonen et al., 2004). In general, a low-fat diet may have negative effects on mood (Wells et al., 1998).

Protein is made up of amino acids and is an important building block of life. Some essential amino acids must be supplied through the diet. The recommended daily calorie intake from protein should be 10 to 20% (Besharat Pour et al., 2014). Depression is associated with deficiencies in neurotransmitters such as serotonin, dopamine, noradrenaline, and Gamma-aminobutyric Acid (GABA) (Firk and Markus, 2007). Brain tryptophan and serotonin levels are influenced by dietary protein and carbohydrate through effects on plasma amino acids patterns. Carbohydrate in the diet increases the secretion of insulin that elevates plasma concentration of tryptophan and lowers the concentrations of other large neutral amino acids; this can lead to increased serotonin concentrations in the brain (Fernstrom and Wurtman, 1971).

Tryptophan is an essential amino acid and is a precursor for serotonin synthesis; it has the ability to play a key role in many brain functions such as mood regulation. A number of studies has shown that depressive symptoms and results in worsening of mood results from acute tryptophan depletion (Neumeister et al., 1998; Spillmann et al., 2001). The increased availability of tryptophan to the brain can promote sleep and restore serotonin levels that can lead to diminished depression (Møller et al., 1983). Several studies have shown the amino acids tryptophan, tyrosine, phenylalanine, and methionine can help in treating many mood disorders, including depression (Hoes, 1982). Tryptophan can be found in meat, liver, cheese, tuna, nuts, soybean, sunflower seeds and poppy seeds. The recommended intake is 4–6mg/kg/day. Tyrosine can be made from the amino acid phenylalanine. This is usually converted into dopamine and norepinephrine (Kravitz et al., 1984). Some tyrosine sources are beef, chicken, eggs, fish, avocado and banana. Serine it is not an essential amino acid in the diet because it can be synthesised in the human body. It is produced from hydroxyl pyruvate, which is derived either from glucose or from glycerol. Serine is found in some foods such as salmon, cheese, eggs, pork, cattle, soybeans, nuts, sunflower seeds, and poppy seeds; there is no specific recommended daily intake for serine. Patients with depression, and those with schizophrenia, had increased plasma levels of serine compared to normal control (Sumiyoshi et al., 2004). There are also reports of decreased serine plasma levels in psychotic depressive disorder (Fekkes et al., 1994).

Vitamins and minerals have an effect on mood and cognitive function. Folic acid, riboflavin and some of the other B vitamins (cobalamin, and pyridoxine) also play major roles in depression (Benton and Donohoe, 1999; Horrobin, 2002). Some evidence shows that micronutrient deficiencies, particularly iron, zinc, vitamin B–12 and folate, may be linked to depression. Various sources suggest a relationship between folate levels and depression. Patients with low folate status have a higher risk of major depression, greater severity of depression (Abou-Saleh and Coppen, 1989; Bottiglieri et al., 1992), and decreased response to anti-depressants (Papakostas et al., 2012). In addition folate deficiency leads to elevated homocysteine (Hcy),

which has been associated with depression in some studies (Kim et al., 2008; Tolmunen et al., 2004). Zinc deficiency has also been associated with depression in several studies (Wójcik et al., 2006; McLoughlin and Hodge, 1990). The Talbinah content of minerals, which are associated with reduced depression, are zinc (Szewczyk et al., 2011) and magnesium (Eby and Eby, 2006). A study demonstrated the effectiveness of using zinc as a supplement in anti-depressant therapy. Thus, the zinc content in Talbinah of 5mg per serving may have also contributed towards reducing depression (Roozbeh et al., 2011). Magnesium may play a role in the treatment of depression if it is given as a supplementary dose of 125–300mg/day (Eby and Eby, 2006). Talbinah magnesium content was 14.4mg per serving.

Regarding the relationship between Talbinah and depression, Talbinah is considered as a high carbohydrate food. An increase in carbohydrate consumption has a negative relationship with depression and mood; this might be due to the carbohydrate effect on serotonin synthesis, differential ratio of amino acid, sugar and zinc content (Reid and Hammersley, 1999). As lower zinc serum levels are related to highly depressed patients, one study demonstrates the efficiency of using a zinc supplement in antidepressant therapy (Roozbeh et al., 2011). Therefore, the zinc content in Talbinah plays a role in reducing depression. Magnesium can facilitate the treatment of depression when taken as a supplement dose of 125–300mg/day (Eby and Eby, 2006). Although the carbohydrate content of Talbinah is high, it is not enough to make a significant difference in the daily carbohydrate intake (Badrasawi et al., 2013).

METHODOLOGY

Ethical Approval: The study proposal was prepared to include an introduction, aim and objectives of the study, material and method, timeline and resources of the study. It was introduced to the research ethical committee of Applied Medical Sciences at King Abdul-Aziz University. The research proposal was reviewed in relation to ethical aspects and the study was *ethically approved*.

Consent Form: A written consent form was distributed among all participants. This was signed to give permission to be included in the study after the risks and benefits of the study had been explained.

The Scale of Depression among Participants: This was evaluated using the new version of the Beck Depression Inventory (BDI-II) that is designed for individuals aged 13 and over. This scale is one of the patient-rated assessment scales for noticing depression. It is broadly used as an evaluation tool by researchers and health care workers in a variety of settings. The participants were asked about depression symptoms, such as irritability and hopelessness, cognitions such as guilt or feelings of being disciplined, in addition to physical symptoms such as weight loss and fatigue (Beck, 1972).

The Cognitive Function: This was measured using the Mini-Mental State Examination (MMSE), a questionnaire containing 30 points that is used widely in research and clinical settings. It takes around 5–10 minutes and investigates functions including attention, recall, language calculation, ability to follow simple commands and orientation (Pangman et al., 2000).

Sociodemographic and Perceived Stress Scale: This is a questionnaire that included information about health, and socioeconomic status. The perceived stress scale included a 12-item food frequency questionnaire; it is used to estimate the participant's food intake that is related to depressive symptoms. All participants who met the inclusion criteria completed the self-administered questionnaire. After evaluating the score for each group (intervention and non-intervention), the higher score indicated stronger depressive symptoms (Liu et al., 2007).

Subjects: These were 42 females aged between 19–25. They were recruited from the medical campus, King Abdul-Aziz University, Jeddah, Saudi Arabia.

Talbinah: The Talbinah that is used in this study is a ready-made one available in the local markets in Jeddah, KSA with the brand name Talbinah of Prophetic Sunna.

Talbinah Analysis: The Talbinah was analysed for protein, fat and carbohydrates by using lowery, soxhlet and spectrophotometry methods respectively.

Preparation of Talbinah: A total of 25g of the ready-to-use Talbinah was prepared with 100ml of warm water by the subjects. It was distributed into small plastic bags with a total number of 28 bags of Talbinah for each of the participants. Talbinah was measured using a nutritional scale.

Talbinah Intervention: Participants were randomly selected. After completing the Beck Depression Inventory (BDI-II) questionnaire, subjects who met the inclusion criteria were included in the study. The included participants have high depression score ($\geq$14) according to the Beck Depression Inventory (BDI), and a score of ($\geq$24) according to Mini Mental State Examination (MMSE). The exclusion criteria included diabetic participants, those under medical treatment for depression, and those who had communication problems. The subjects were randomised into two groups (i.e., A and B) by random selection of the folded consent form papers; 21 subjects were placed in each group. The intervention was for a continuous four week period. The control group continued to consume the food that they usually took. The intervention group was given one serving of Talbinah on a daily basis in addition to their usual diet.

Anthropometric Measurement: Weight and height were taken in a self-reported way. All measurements were taken twice.

Study Design: A randomised case study was conducted on female medical students at King Abdul-Aziz University, Jeddah in Saudi Arabia.

Data Analysis: The data were analysed using a Statistical Package for Social Science (SPSS) to determine the changes in the variables' mean scores in the intervention and control groups before and following intervention.

RESULTS

Sociodemographic Characteristics: The mean age of participants was 20.80 ± 1.251. Most of them were single (94.6%). The majority of the students (40.5%, n=15) were studying at 2nd level. The 3rd and 4th levels represented the same percentage (29.7%, n=11). Regarding the income level per month, 62.2% earned >10,000RS, 32.4% earned between (6000–10,000RS) while only 5.4% earned <6000 (Figure 1).

Anthropometric Measurements: These showed that the body weights and the body height of the participants were 56.08 ± 11.786, and 159.27 ± 7.19cm respectively. The calculated BMI for participants was 22.03 ± 4.01. Furthermore, 54.1% were considered to be of normal weight, 21.5% were either overweight or obese, while 24.3% were underweight (Table 1).

The depression score showed that the participants scored 19.38 ± 5.35 for the intervention group, and 18.1 ± 4.24 for the non-intervention group. The cognitive measurements using a Mini Mental State Examination (MMSE) revealed that the participants scored 27.25 ± 1.81 for the intervention group, and 27.67 ± 1.65 for the non-intervention group. Moreover, the perceived stress scale score was 28.44 ± 7.02 for the intervention group and 26.14 ± 5.65 for the non-intervention group (Table 2).

The Perceived Stress Scale for the food intake showed that the majority of the participants (89.2%) reported that they consume sweets sometimes 32.4% (n=12), fairly

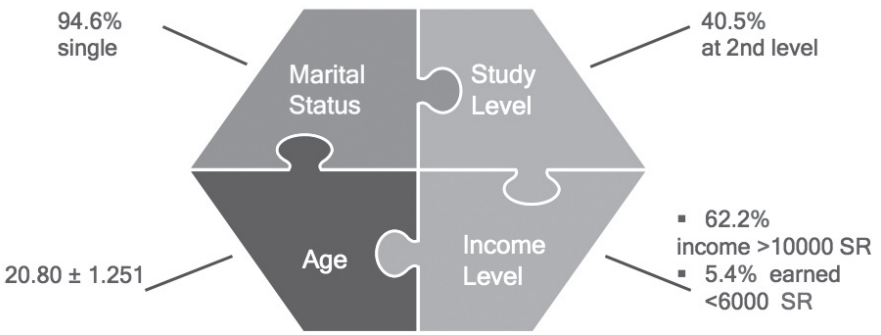

Figure 1 Sociodemographic Characteristics

Source: Devised by author

Table 1 Anthropometric Measurements

Characteristics	*Intervention group*	*Non-intervention group*	*All*
Body weight	54.69 ± 10.95	57.14 ± 12.54	56.08 ± 11.786
Body height	159.25 ± 5	159.29 ± 8.63	159.27 ± 7.19
Body mass index	21.51 ± 3.99	22.43 ± 4.06	22.03 ± 4.01

Source: Devised by author

Table 2 Depression Score, Cognitive Score and Perceived Stress Scale for Intervention and Non-Intervention Groups

Characteristics	*Intervention group*	*Non-intervention group*	*All*
Depression Score	19.38 ± 5.35	18.1 ± 4.24	18.65 ± 4.73
Cognitive Score	27.25 ± 1.81	27.67 ± 1.65	27.49 ± 1.71
Perceived Stress Scale	28.44 ± 7.02	26.14 ± 5.65	27.14 ± 6.3

Source: Devised by author

often 27% (n=10), very often 29.7% (n=11), while 10.8% (n=4) reported that they never or almost never consume sweets. Regarding cake/cookies, most of the participants (54.1%, n=20) sometimes consumed cake and cookies. Of the total participants, 8% (n=3) never or almost never consumed cake/cookies, while 29.7% (n=11) fairly often consumed these items, and 8.1% (n=3) very often consumed it. The consumption rate of fast and canned food is almost the same as the consumption rate of cake and cookies. Nearly half of the participants (48.6%, n=18) consumed fresh fruit very and fairly often, whereas 19% never or almost never consumed this food item. Of the participants, 89% (n=33) used to consume salad/vegetables, and 54% (n=20) reported that they consumed cooked vegetables on a regular basis. It was found that 46% (n=17) of participants consumed lemon juice. It was not expected that 54% (n=20) of participants did not consume soft drinks. Of the participants, 89% (n=18) avoided eating meat. Fish/sea foods were consumed sometimes by 54.1% (n=20). Milk was consumed regularly by 73% (n=27) of participants, while 65% reported that they consumed cereals and cereal products often; 13.5% (n=5) never consumed these food items (Table 3).

Table 3 The Pattern of Food Items Related to Depression

Food item	*Never*	*Almost Never*	*Sometimes*	*Fairly often*	*Very often*
Sweet	2 (5.4%)	2 (5.4%)	12 (32.4%)	10 (27%)	11 (29.7%)
Cake/cookies	2 (5.4%)	1 (2.7%)	20 (54.1%)	11 (29.7%)	3 (8.1%)
Fast food/canned food	3 (8.1%)	3 (8.1%)	21 (56.8%)	6 (16.2%)	4 (10.8%)
Fresh fruit	1 (2.7%)	6 (16.2%)	12 (32.4%)	9 (24.3%)	9 (24.3%)
Salad/vegetables	1 (2.7%)	3 (8.1%)	10 (27.0%)	13 (35.1%)	10 (27.0%)
Cooked vegetables	4 (10.8%)	4 (10.8%)	9 (24.3%)	8 (21.6%)	12 (32.4%)
Lemon juice	8 (21.6%)	12 (32.4%)	8 (21.6%)	5 (13.5%)	4 (10.8%)
Soft drinks	12 (32.4%)	8 (21.6%)	9 (24.3%)	5 (13.5%)	3 (8.1%)
Meat	9 (24.3%)	9 (24.3%)	8 (21.6%)	9 (24.3%)	2 (5.4%)
Fish /Sea food	3 (8.1%)	6 (16.2%)	20 (54.1%)	6 (16.2%)	2 (5.4%)
Milk/Milk products	-	2 (5.4%)	8 (21.6%)	11 (29.7%)	16 (43.2%)
Cereals/Cereals product	4 (10.8%)	1 (2.7%)	8 (21.6%)	12 (32.4%)	12 (32.4%)

Source: Devised by author

Table 4 The Effect of Talbinah on the Intervention and Non-Intervention Groups

	Cases			*Control*		
Characteristics	*Pre intervention*	*Post intervention*	*P. Value*	*Pre intervention*	*Post intervention*	*P. Value*
Body weight	54.69 ± 10.95	55.15 ± 11.59	0.52	57.14 ± 12.54	57.99 ± 12.39	0.01
Body mass index	21.51 ± 3.99	21.8 ± 4.19	0.056	22.43 ± 4.06	22.75 ± 4.18	0.017
Depression score	19.38 ± 5.35	8.69 ± 6.53	0.00	18.1 ± 4.24	13.3 ± 8.1	0.00

Source: Devised by author

Table 5 Talbinah Analysis

Carbohydrates	68
Protein	14.5
Fat	0.5

Source: Devised by author

Effect of Talbinah on Depression Score: There was no significant difference between the intervention group and non-intervention group in regard to the depression score, as shown in Table 4. Both groups had a significant decrease in the depression score (P=0.00). Although the difference is insignificant between the two groups, there was a decrease in the intervention group (score=8.69 ± 6.53) compared to the non-intervention group (13.3 ± 8.1) (Table 4).

The Talbinah analysis resulted in a high carbohydrate content of 68%, while protein and fat were 14.5% and 0.5% respectively (Table 5).

DISCUSSION

Recently, macronutrients and micronutrients and their relationship to mental health have received attention in research (Christensen and Pettijohn, 2001). Scientific evidence regarding the use of Talbinah has shown an effect on reducing symptoms of depression. The results of most studies of Talbinah intervention showed improvement in the depression score.

According to a study carried out by Badrasawi et al. (2013), carbohydrate consumption has been hypothesised to relieve depressive moods; this may be due to the effect of carbohydrates on serotonin synthesis. In the current study, the Talbinah analysis showed that the carbohydrate content was 68%, which may have the same effect and agreed with the findings of previous research on depression.

Studies of the effect of dietary protein on depression revealed positive results. A number of studies have shown that acute tryptophan depletion results in worsening

the mood, which is strongly associated with depressive symptoms. A study conducted by Fernstrom and Wurtman (1971) revealed that brain tryptophan and serotonin levels influenced dietary protein through effects on plasma amino acids patterns. A study done by Youssef et al. (2012) indicated that the protein level in Talbinah is 18.34%; this indicates the positive effect of using Talbinah in reducing depression. This finding agrees with the present study results, which showed that the protein content of Talbinah was 14.5%. This is considered to be almost the same percentage in the study mentioned above, may have the same effect, and agreed with the findings.

A study done by Lai et al. (2014) showed that the beneficial subtypes of fatty acids could improve depressive symptoms by modulating serum levels of inflammatory markers. The fat analysis of Talbinah used in the current study is 0.5%, a percentage that may not have any effect on depressive symptoms.

The minerals that are considered to have an effect on reducing depression are zinc and magnesium. The association between zinc deficiency and depression has been reported in many studies. Lower zinc serum levels have been associated with highly depressed patients (Szewczyk et al., 2011; Eby and Eby, 2006). Thus, the zinc content in Talbinah of 5mg per serving may have also contributed to the reduction of depression.

Although magnesium may play a role in the treatment of depression if it is given as a supplementary dose of 125–300mg/day, the magnesium content in Talbinah was only 14.4mg per serving. This level will not improve depression, and this is confirmed by a study done by Badrasawi et al. (2013) that showed that the effect of Talbinah on depression was not due to the magnesium content.

The findings of the present study disagrees with a study conducted among elderly in critical ill care by Badrasawi et al. (2013), which found a significant positive effect of Talbinah on depressive symptoms. While the findings of this study show an effect of Talbinah food consumption in reducing depressive symptoms among the intervention group, the difference between the depression score in the intervention and non-intervention groups were insignificant. This may be due to a lack of honesty while completing the post-intervention questionnaire. This is because both groups were familiar with the sequence of the questionnaire and interpretation when they completed it for the second time; this could result in errors when evaluating the depression score. In the present study, there was no association between the perceived stress scale and depressive symptoms. However, a similar result was reported in a previous study that was conducted to investigate the relationship between food consumption and depressive symptoms using the perceived stress scale (Mikolajczyk et al., 2009). Uncontrolled settings in the contribution to regular diet intake by the participants can lead to this conflicting result on the perceived stress scale. It was found that the intervention group had insignificant weight change after Talbinah consumption in comparison with pre-intervention body weight, possibly due to the low calorie content in Talbinah.

CONCLUSIONS

Depression is one of the largest health problems the society faces today. The cost of anti-depressants increases annually, resulting in an economical challenge for public health. Food and nutrition has a great role in managing mental diseases. Both macronutrient and micronutrient consumption does affect psychology function and improves depressive symptoms; this is because the production of neurotransmitters requires certain nutrients. Prophetic medicine is one of the most effective complementary medicines. Although there is a positive insignificant effect of Talbinah on depression in this study, due to the limitations of the study Talbinah has a positive effect to lessen depression and improve mood. Eating of functional foods such as Talbinah might give a mental health advantage to depressed people. This ensures the facts of the prophet Mohammed [peace be upon him] on the affirmative positive effect of Talbinah in reducing depression for sad people. Practical implications include public private Medicare collaboration and using diet in the management of depression to reduce the use, cost and side effects of anti-depressant medication. The originality and value of this study is the significant importance in broadening the scope of giving more attention for managing mental diseases that come in parallel with sustainable development goals (3): Ensuring healthy lives and promoting wellbeing for all at all ages.

Limitations

- Participants were not in an enclosed setting; this resulted in taking different food items that has a noticeable effect on depression due to the content of effective macronutrient and micronutrient on depression occurrence.
- Some of the subjects did not consume the recommended amount of Talbinah on a daily basis due to the unacceptable taste to most of them.

Recommendations

- A controlled setting could result in a more effective outcome of Talbinah consumption on depressive symptoms.
- Using certain instruments to analyse micronutrient content in Talbinah could result in determining the depression risk factor that can be prevented by nutritional management.
- The establishment of computerised food analysis programs and nutrient analysis database.
- Further studies are required using highly advanced technology such as MRI to detect the immediate effect of Tablinah on the physiological change of the brain.
- Other studies are required to determine the effectiveness of Talbinah on depression among various age groups.

- To encourage people to return to deserted Sunnah and prophetic medicine by using prophetic nutrition in treating some chronic diseases such as depression.

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