TANG [HUMANITAS MEDICINE]

Review

Non-pharmacological interventions for depression in Persian medicine

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ABSTRACT

Depression is an important medical problem in today's world. Despite its high prevalence, treatment of depression remains problematic, as its cause is still not fully understood. Of the ways recommended to tackle this problem is implementing the potentials of various medical schools. A medical school which has played an important role in the history of medicine in the world is Persian medicine. This study was intended to identify non-pharmacological interventions for depression in the most reliable references on Persian medicine, classify these interventions and compare them with the latest medical findings. The study was set to review the most reliable references on Persian medicine. In addition, relevant keywords were used to search the PubMed and Scopus databases. In Persian medicine sources, melancholia is categorized into three main types. One type is regarded as cerebral melancholia, which resembles modern psychiatry's depression closely. Therefore, some key points put forth by Persian medicine scholars regarding melancholia can be used to answer questions concerning depressive disorders and their etiology and treatment. Although recent studies have confirmed most approaches offered by Persian medicine physicians in ancient Persia, it is imperative to design and conduct clinical trial studies according to these approaches.

Keywords melancholia, depression, traditional medicine, treatment, music therapy, aromatherapy, nutrition therapy

INTRODUCTION

Depression is regarded as one of the most important challenges facing medicine in today's world, as it is an important factor in the reduction of quality of life (Shimizu et al., 2011) and growth of healthcare costs (Luber et al., 2001). It may also cause relapse of cardiac diseases in patients and increase the risks of morbidity and mortality, resulting in a poor prognosis in these patients (Carney et al., 2003; Frasure-Smith et al., 1993; Pozuelo et al., 2009; Rosengren et al., 2004). According to publications of the World Health Organization (WHO), by the year 2020, psychological ailments will become the imminent healthcare priority in countries around the world. The share of depression, as the second cause of debilitation in developing countries after cardiac diseases, is much more prominent compared to other psychological disorders (Murray and Lopez, 1997).

Unfortunately, despite the high prevalence of depression, treatment of this ailment remains problematic, as its cause is still not fully comprehended (Almeida et al., 2012). The correlation between depression and cardiovascular diseases, which has had crucial consequences from relapse of the disease to high mortality rates, is a very important aspect of the problem which has left many researchers puzzled over the last two decades (Blumenthal et al., 2003; Frasure-Smith et al., 1993; Jianget al., 2001; Penninx et al., 2001; Sullivan et al., 2003). This correlation, and the risks it entails, amplifies the importance of rigorous endeavors in the field. A plausible and recommended way to diagnose and treat diseases such as this has been to implement extensive potentials of various medical schools around the globe (Braunwald and Bonow, 2012).

Persian medicine (PM) is a medical school which has played an important role in the history of medicine (Emtiazy, 2012). This school has introduced prominent scholars like *Mohammad ibnZakarīyā al-Rāzī (Rhazes), 'Alīibn 'Abbās Ahwāzī (Haly Abbas), Hosseyn ibnabdollāh ibnSīnā (Avicenna) and Seyyed Ismā'il Jorjānī (Jorjani)* to the world.

Of the ailments extensively discussed and studied in this medical school is melancholia (*mālīkhūlīyā*). Melancholia is defined as a disease caused by an alteration in the functioning of the brain and prevents the sufferer from observing common sense and healthy speculation in a way that the patient is afflicted by paranoia, fear, delusion and sorrow, for no apparent reason (Yousofpour et al., 2015). Based on the principles of PM, the general cause of melancholia is known as an abnormal increase of a matter known as 'black bile' or 'atrabile' in the body. Depending on where this matter is accumulated, this disorder is divided into three general types: cerebral melancholia, *mālenkholia-l-marāqqī* and systemic melancholia. Many of the signs of cerebral melancholia are similar to that of

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depression in conventional psychiatry. Furthermore, in the DSM-V TR classification, melancholic disorders are presented as one of the main type of depressive disorders (Kaplan and Sadock, 2010). Taking all the above into consideration, it seems that the two disorders share a common nature. Thus, some key therapeutic approaches assumed by prominent scholars in PM towards the etiology and treatment of melancholia might prove beneficial.

PM scholars have always applied non-pharmacological treatments along with pharmacological ones, and have held them in high regard, to such an extent that some have presented these treatments as the principal therapeutic approach, and have regarded their implementation as undeniably crucial (Avicenna, 1973). This paper reviews these non-pharmacological treatments, in the hope that this data would be subjected to scientific investigation in form of clinical trials.

OBJECTIVES

This study is intended to identify non-pharmacological interventions for depression in the most reliable references on Persian medicine, classify these interventions, and compare them with the latest medical findings.

METHODS

Methods

The most reliable references on PM were determined on the basis of the following criteria:

- Author's credibility;
- Being the most used books by ancient physicians;
- Being the most cited references in papers published in the peer-reviewed national and international journals in recent years.

Once reliable references were determined, literature search was initiated to collect data in accordance with the following steps:

- Mālānkhūlīyā, Vasvase Mālīkhūlīyāiee (melancholic Obsession), and Mālīkhūlīyā were picked as keywords;
- All data relevant to the treatment of melancholia was collected;
- All non-pharmacological treatments of melancholia were extracted;
- Common points in various references about non-pharmacological treatments were combined and subsequently classified.

Furthermore, the following keywords were used to search the PubMed and Scopus databases: melancholia, depression, traditional, medicine, treatment, music therapy, aromatherapy, nutrition therapy, and chromo therapy.

RESULTS

Psychological disorders in Persian medicine

In PM, diseases are classified in accordance with the human body's organs a *capitead calcem* (from head to toe); no separate chapter exists in PM sources titled 'psychological disorders', but upon further enquiry into cerebral diseases, disorders can be found which are described as having been caused by accumulation of putrid humors in the brain. These disorders include: *mālīkhūlīyā* (melancholia), *ro'ūnah* and homoq (mental retardation), *mānīyā* (mania), *dā' al-kalb* (cynanthropy), *qotrob* (lycanthropy) and *sobārā* (maniac phrenitis). This group of diseases can be referred to as 'psychological disorders in Persian medicine'. The last four disorders are generally regarded as types of psychoses (Jorjani, 2006).

Melancholia (definition - types)

Based on the principles of PM, to each organ in the body two of the four qualities of hotness, coldness, wetness and dryness are attributed, which is regarded as the 'temperament' of the organ. The function of each organ is in accordance with its specific temperament. For instance, the brain has a cold and wet temperament; this temperament changes if any of these two qualities change. Any alteration in the temperament interferes with the function of the organ, and would result in the occurrence of disease.

Melancholia is defined as a disease which results from an alteration in the temperament of the brain. The quality of wetness in the brain gives way to dryness, hence, the temperament of the brain shifts from cold and wet to cold and dry. This alteration results in a disturbance of its function; meaning that the sufferer is deprived of common sense and healthy speculation, in a way that s/he is afflicted by paranoia, fear, delusion and sorrow, for no apparent reason (Avicenna, 1973; Yousofpour et al., 2015).

The English word melancholy comes via late Latin melancholia from Greek melagkholíā, a compound formed from *mélās 'black'* and kholé 'bile' (Ayto, 2005).

The reason for the nomenclature of this disorder is that its main cause had been assumed to be an abnormal increase in the amount of black bile or atrabile (Avicenna, 1973).

This disorder is classified into three main types, considering where black bile accumulates:

1- if brain is where black bile accumulates: cerebral melancholia;
2- if black bile accumulates in organs like stomach, liver, spleen and *marāqq: mālenkholia-l-marāqqī* (in PM the extra-peritoneal layer of the abdomen is referred to as marāqq. When black bile accumulates in any of these organs, flatulence occurs in marāqq; therefore, this disorder is known as mālenkholia-l-marāqqī);
3- if the excess black bile is distributed all over the body: systemic melancholia (Arzani, 2008).

Melancholia and depression

Both melancholia in PM and depressive disorders in conventional psychiatry have different types, the congruence of all of which is in need of further investigations. But the two disorders seem to have a common nature for the following reasons:

- Today, in the classification of psychological disorders in psychiatry, under mood disorders, and specifically in depressive disorders, a category of disorders are regarded as 'melancholic disorders'; meaning, melancholia is classified as a type of depressive disorder (Kaplan and Sadock, 2010).

- Many signs of depression, especially major depression, are common to melancholia as well, as listed below; therefore, based on their common nature, from here on in this paper, this disorder is referred to as depression instead of melancholia.

A comparison of symptoms of melancholia in PM with

major depression on the basis of DSM_V_IR diagnostic criteria is presented in Table 1. Based on this comparison, and as it seems that these two concepts share the same nature, non-pharmacological treatments of melancholia have been extracted from prominent sources in PM. Afterwards, regarding each treatment suggested in PM, conventional scientific databases have been referred to, in order to find contemporary evidence for current usage of such treatments, and possible explanations for validity of their usage.

Non-pharmacological interventions in PM

Generally, scholars have presented the non-pharmacological treatments of depression under the notions of advices and abstinences (dos and don'ts). First, their exact advices are presented and afterwards, the treatments are elaborated, analyzed and classified.

Table 1. Comparison of symptoms of melancholia in PM with major depression on the basis of DSM_V_IR diagnostic criteria

DSM-V-IR criteria for major depression (18)	Signs of melancholia in Persian Medicine (16)
Depressed mood	Excessive sorrow for no reason and crying
Markedly diminished interest or pleasure in all or almost all activities	Despair, affinity towards seclusion, isolation
Significant (>5% body weight) weight loss or gain	[Qahl=] Emaciation
Increase or decrease in appetite	Excessive appetite
Insomnia or hypersomnia	Insomnia, hypersomnia in individuals of phlegmatic temperament
Psychomotor agitation or retardation	[Qalaq=] Agitation and restlessness
Fatigue or loss of energy	Dullness, decrease in physical motility
Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional)	Having excessive morbid fantasies (= delusional)
Diminished ability to think or concentrate	Excessive thought, perpetual obsession
Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation	Preoccupation with death

a) Advices

1-'For these patients, on the one hand, there is nothing more harmful than leisure and being left alone, and on the other hand, no treatment more efficient than forcing the patient to an affair which would entirely fill up his psyche and his mind and would engage him extensively. Many of these patients are sad over something that has happened to them, or are afraid of something and their minds are kept busy by it. Therefore, preventing them from thinking by keeping them busy is an essential cure for these patients (Avicenna, 1973).

2- 'It is worthy to cure these patients by engaging them to work. If this is not possible, other affairs which might engage the patient and would move away their mental repose need to be arranged. These affairs can be entertainments, like travelling, hunting, playing chess, attending merrymaking sessions, listening to exhilarant sounds, seeing of things appealing to the patient, or anything which would prevent him becoming engaged in deep thoughts, like socializing with the wise or people he shies away from or is eager to conversing with. Because, the psyche, as soon as it is left alone, would start thinking about things far and away, and once it does, it cannot understand their cause, therefore, it becomes gloomy and sad, and its intellect becomes puzzled. Once these propagate, it would result in the generation of melancholia (Avicenna, 1973).

3- '[He] should sit in equable regions like gardens and greens and heartwarming ranches. The air in his residence needs to be humid and laden with pleasant scents. It is generally necessary for the patient to smell pleasant scents and essential oils' (Avicenna, 1973).

4- Nutritional recommendations: the extent to which the scholars have elaborated in this section shows that they regarded this category as very important. However, these physicians have given all these recommendations provided that the amount of food and the digestive faculty of the patient's stomach are equable. These recommendations are presented in four categories:

   a. Drinks: malt beverage sweetened with sugar either with condiments or simple, julep (a concoction of rosewater with honey or sugar) with cold water; infuse of borage with sugar and basil seed, apple sherbet with infuse of borage. Apple, quince, prune and sweet pomegranate sherbet, borage distillate and their jam' (Tavakkoli-Kakhki et al., 2014).

   b. Edibles: If the patient can digest, meat in the form of espīdbāj (a stew made of meat, onion, pea, and pungent and sour condiments) or ijjāsīyah (a broth made of meat, prune, rice, water and salt). Chickpea stew with fat chicken meat, rice broth (same as espīdbāj) with fat lamb's meat, oily rice and meat, oily rice and almond oil or fresh sugar or fresh tallow and sugar or honey sweet flummery with almond violet oil and rosewater and pistachio and poppy cured with almond oil, poppy and pistachio and fresh cheese with honey or apple sherbet or quince sherbet or infused dates, and adding milk and sugar to cooked rice, and fresh fruit bread with meat and sweet cow's yoghurt, and entrails and bread broken and soaked in it and brain with sugar and sweet yoghurt drink and sautéed chicken and leek and green coriander and lettuce frittata, and sheep or chicken haleem, and barley and dried whey haleem with meat (Tavakkoli-Kakhki et al., 2014).

   c. Fruits: cucumber, serpent cucumber, sweet pomegranate, sweet and sour pomegranate with rosewater, prune, sweet apricot, sweet apple and pear, sweet melon, fig, grapes, sweet berry, fresh coconut, banana, sweet quince, well-cooked sweet cherry, almond, hazelnut, pistachio, date, sweet watermelon with rosewater (Tavakkoli-Kakhki et al., 2014).

   d. Beneficial sweetmeats: pumpkin and citron jam in sugar syrup, watermelon jam and cucumber jam and purslane jam and sweet apricot jam and Alhagi Camelorum manna with almond sweetmeat and slivered almond sweetmeat and white almond kernel sweetmeat and white grape juice (Tavakkoli-Kakhki et al., 2014).

5- Anointment: pouring of violet or almond or pumpkin oil over the head, especially in the case of cerebral [melancholia], cooling of the liver using rosewater, sandalwood and camphor or barley flour poultice and

sandalwood and rosewater, laxing of the bowels with wicks or sucking on cassia fistula seed with almond oil. Perpetually oiling of the head and soles of feet with violet in almond oil or lily in almond oil or pumpkin is very beneficial and if [the patient] keeps tying a layer of fresh tallow to the soles of his/her feet, it is highly beneficial and has been tried numerous times (Avicenna, 1973). 'Measures to fatten the body need to be taken with becoming food and applying of massage four hours after the meal, as to cause exhilaration and augmentation of the body (the massage needs to be equable as to allow the wetness of the food to reach [the patient's] organs' (Avicenna, 1973).

6- Ablution with appealing water (equable in terms of hotness and coldness) before a meal and pouring of lukewarm water over the head before a meal (Avicenna, 1973).

7- 'More attention needs to be paid to wettening of [the temperament of] body compared to rendering it ['s temperament] hot' (Avicenna, 1973).

8- 'If the disease is caused by retention of the menses (amenorrhea) or the anus (hemorrhoids) or the like, first they need to be dealt with' (Avicenna, 1973).

9- 'Whatever food has been putrefied in the patient's stomach, it should be expulsed, especially when its acidity is felt in the cardia, if this is the case, inevitably vomiting needs to be induced and eating food is strictly forbidden' (Avicenna, 1973).

10- 'It should be so arranged that the patient would sleep, as sleep is of the most becoming treatments for these patients' (Avicenna, 1973).

11- 'Wearing white clothes and sitting on white carpets is good for these patients' (Avicenna, 1973).

b) Abstinences

12- Edibles: generally speaking, these patients should avoid things salty, pungent and too sour, and also aliments producing black bile. These include: cow's meat and thick foodstuffs, cabbage, garden cress, mustard, raw garlic, raw onion, fava bean, salt-cured meat, lentil, mountain goat meat, dill, garden leek, jerked meat (frozen meat in present-day kitchens), eggplant, fenugreek, mountain or plain game, large fish, dry cheese, radish and whole meal bread.

13- Avoidance of excessive sexual intercourse.

14- Avoiding heavy work, exercise and rigorous motility which would result in profuse perspiration.

15- Avoiding excessive wakefulness.

16- Avoiding anger, excessive thought and gloom, and also affairs which would result in concern.

17- Avoiding wearing black clothes and looking at things black or dark.

18- Avoiding sitting alone in places narrow and dark.

19- Avoiding endurance of hunger and thirst.

20- Avoiding consumption of one meal just after another as such would result in putrefaction (Avicenna, 1973).

DISCUSSION

According to scholars in PM, the treatment of depression or melancholia has three main pillars:

- First, evacuation of the matter responsible for the disease via different measures, depending on the condition of the patient: venesection, laxatives, clysters and induction of vomiting.
- Second, perpetual wettening [of temperament] concurrent with evacuation of the matter. This, too, is done in various ways: anointation or oiling with suitable oils, wettening aliments, using wettening ablution and the like.
- Third, strengthening the heart in accordance with the patient's temperament (Avicenna, 1973).

Apart from these pillars, points have been listed which can be regarded as the principles of treating this disorder:

- The first principle insisted upon, is the necessity of treating the disease in the initial stages, because curing of the disease once it has been consolidated is difficult for two main reasons: 1- for the consolidation of the responsible matter; 2- the patient's low compliance (Avicenna, 1973).
- The second principle, which too has been emphasized upon, is that, although the rule of thumb for the treatment of melancholia is wettening of the temperament, evacuation of atrabile (black bile) should never be neglected (Avicenna, 1973).

It is noteworthy that PM scholars believed that for some types of melancholia in their initial stage, when no putrid matter is yet formed in the patient's body, there is no need for medication. These cases are treated by management of the cause of the disorder, meaning by implementation of what is today regarded as 'psychotherapy'. (Abolhassani, 2013; Baker, 2012).

Rhazes in his book Al-Hawi (the Container) presents an anecdote as a case report, and eventually remembrances that apart from this case; others have been treated by 'psychotherapy' (Baker, 2012).

Considering that a majority of PM scholars, similar to Avicenna, believe that: "melancholia is, in essence, dryness of the temperament of the brain, and its amelioration is in increasing the engendering of good wet blood using suitable nutrition." (Avicenna, 1973). And considering the second therapeutic pillar, which is abounding wettening of the patient's body, it can be said that most non-pharmacological measures, taken by PM scholars to treat depression, fall within the second therapeutic pillar. However, the third pillar has never been neglected, as many of the nutritional recommendations like apple, quince, pistachio, borage, and pomegranate and etc. are cardiac and cerebral tonics.

Classification of non-pharmacological treatments

The non-pharmacological treatments in PM can be categorized in four groups:

1) **Treatments reducing the matter responsible for the disease**: as the matter responsible for this disease is black bile (atrabile), some of the treatments are designed to reduce its production in the body. These treatments include the advices (item 4) and nutritional abstinences (item 13). However, items 10, 18 and 21 also belong to this category.
2) **Treating of the preceding causes**: which can be divided to psychic and material preceding causes. Advices related to the psychic causes include obligatory engagement in work or engaging in merrymaking in order to prevent the idleness of thought, causing a mental preoccupation to prevent morbid thoughts and delusions, and items 3, 17 and 19. Advices related to the material causes include curing of preceding diseases like amenorrhea, avoiding eating aliments producing black bile, and items 14, 15 and 16.
3) **Treating of the quality of disease**: considering that the quality of the disease is cold and dry, the items dealing

with wettening of temperament, like anointment and fattening measures, avoiding excessive sexual intercourse, heavy and demanding work, staying awake, sorrow, fear and anger, as well as items 2, 3, 4, 6, 7, 8 and 13 fall in this category.

4) **Invigorating the brain and the heart**: in this category, some nutritional recommendations, entertainment, and also avoiding staying awake for too long, avoiding psychic accidents like fear and anger, and also, items 3, 5, 11 and 14 can be listed.

Upon reflecting on the four categories, this important point is arrived at, that the scholars' main point of concentration is the third group, i.e. treating of the quality of the disease. Put in other words: 'The canonic cure principle for depression (melancholia) is abounding wettening of the temperament.'

Non-pharmacological interventions in PM and current research

The beneficial effects of many therapeutic measures taken in PM have been verified in current research, some of which are presented here:

- One of the measures the scholars have suggested, in order to provide entertainment to prevent idleness of thought in these patients, are for the patient to attend merrymaking sessions and listen to appealing sounds. Several studies have shown that music therapy and merrymaking sessions cause a reduction in the symptoms of depression and an improvement in mood. In a study carried out by Fachner et al. in 2012, alterations in alpha and theta waves in EEG in fronto-temporal and temporo-parietal regions indicated therapeutic effects in depressive patients treated with music therapy for three months (Cross et al., 2012; Fachner et al., 2013; Jun et al., 2013).
- Another therapeutic measure is to keep where the patient lives fragrant, and also for him to smell pleasant scents and essential oils, which is basically what is today referred to as aromatherapy and enjoys extensive application. Several studies have demonstrated the positive effects of aromatherapy on depression (Chang, 2008; Conrad and Adams, 2012; Lee and Lee, 2006). For instance, Yim et al. in 2009, in a review on the effects of aromatherapy for patients with depressive symptoms, recommended aromatherapy for all depressive patients (Yim et al., 2009).
- What the PM scholars have stated in regard with the relation between amenorrhea and depression has been addressed in recent studies (Dundon et al., 2010; Lawson et al., 2009). Considering low levels of estradiol in depressed women, an alteration in the function of the hypothalamic-pituitary axis has been suggested as a probable mechanism (Young and Korzun, 2002).
- The recommendation to wear white clothes and sit on white carpet, and to avoid wearing black and looking at things black and dark, correspond to what is done in the framework of photochromotherapy. Its efficacy has been shown in studies (Kir'ianova, 2012; Loving, 2005).
- Results of numerous studies regarding the role of nutrition in depression can verify the views of PM. As reduction in the levels of neurotransmitters including serotonin, dopamine, noradrenaline, and GABA would result in many mood disorders, such as depression, extensive research has suggested provision of these brain chemicals through nutrition and supplements (Diehl and Greshon, 1998; Rush, 2007; Saljoughian, 2009; Stockmeier, 1997).
- Last, but not least, is the scholars' recommendation regarding proper sleep in these patients; a point which has been verified in some studies (Trockel, 2011).

A quick review of these points shows that treatment is basically the same in both medical schools. Before reaching any clinical conclusion, however, some considerations need to be taken into account;

- With regards to therapeutic methods in PM, these interventions are not yet evaluated in accordance with scientific methods, i.e. clinical trials, and arguments are made solely based on case reports, which is not sufficient in today's scientific world. It is necessary to evaluate the effects of these interventions by clinical trials. Furthermore, to raise the validity of these interventions, they are best biologically evaluated as well.
- With regards to interventions noted in PM, critical evaluation and scrutiny is necessary.
- With regards to behavioral recommendations, there is evidence that, along with other treatments, cognitive-behavioral interventions are beneficial.

STUDY LIMITATIONS

We kept our search limited to only the most reliable resources on PM as we did not have access to all trusted sources. In addition, electronic databases were searched for only relevant English articles.

CONCLUSION

According to the principles of PM, it is crucial to treat patients suffering from depression in the initial stages, as yet no putrid matter has been formed in their bodies, and therefore, they might not be in need of medication. Given that the scholars of PM viewed the essence of depression as preponderance of dryness in the temperament of the brain, their main focus had been on attempering of this quality. Therefore, the canonic treatment of depression has been abounding wettening of the patient's temperament. It can be said that the majority of non-pharmacologic treatments listed for the management of depression fall within the second therapeutic pillar. However, the third pillar - i.e. strengthening the brain and the heart- has never been neglected, because many of the treatments serve as tonics for the brain and the heart. Based on the points mentioned in the present paper, the authors suggest scientific study and evaluation of the teachings and therapeutic approaches of PM with regards to this disorder.

CONFLICT OF INTERESTS

The authors have no conflicting financial interests.

REFERENCES

Abolhassani, Z. Review of prevention and Treatment of mental Disease from point of Iranian Traditional Medicine. Medical History. 2013;14:135-152.

Almeida OP, Alfonso H, Yeap BB, Hankey GJ, Flicker L. Cardiovascular diseases do not influence the mental health outcome of older men with depression over 6 years. J Affect Disord. 2012;144:248-252.

Avicenna. The Canon of Medicine of Avicenna. (New York, USA: AMS PRESS INC.), 1973.

Baker D. The Oxford Handbook of the History of Psychology Global Perspective. (Oxford, England: Oxford University Press, Inc.), 2012.

Blumenthal JA, Lett HS, Babyak MA, White W, Smith PK, Mark DB, Jones R, Mathew JP, Newman MF; NORG Investigators. Depression as a risk factor for mortality after coronary artery bypass surgery. Lancet. 2003;362:604-609.

Braunwald E, Bonow RO. Cardiovascular Medicine. In Braunwald's Heart Disease: A Textbook of Cardiovascular Medicine. 9 ed. (Philadelphia, U.S.A: Elsevier Saunders), pp.1042-1047, 2012.

Carney RM, Freedland KE. Depression, mortality, and medical morbidity in patients with coronary heart disease. Biol Psychiatry. 2003;54:241-247.

Chang SY. Effects of aroma hand massage on pain, state anxiety and depression in hospice patients with terminal cancer. Taehan Kanho Hakhoe Chi. 2008;38:493-502.

Conrad P, Adams C. The effects of clinical aromatherapy for anxiety and depression in the high risk postpartum woman - a pilot study. Complement Ther Clin Pract. 2012;18:164-168.

Cross K, Flores R, Butterfield J, Blackman M, Lee S. The effect of passive listening versus active observation of music and dance performances on memory recognition and mild to moderate depression in cognitively impaired older adults. Psychol Rep. 2012;111:413-423.

Diehl Dj, Greshon S. The role of dopamine in mood disorders. Comp Psychiatry. 1992;33:115-120.

Dundon CM, Rellini AH, Tonani S, Santamaria V, Nappi R. Mood disorders and sexual functioning in women with functional hypothalamic amenorrhea. FertilSteril. 2010;94:2239-2243.

Emtiazy M, Keshavarz M, Khodadoost M, Kamalinejad M, Gooshahgir SG, Shahrad Bajestani H, Hashem Dabbaghian F, Alizad M. Relation between Body Humors and Hypercholesterolemia: An Iranian Traditional Medicine Perspective Based on the Teaching of Avicenna. Iran Red Crescent Med J. 2012;14:133-138.

Fachner J, Gold C, Erkkilä J. Music Therapy Modulates Fronto-Temporal Activity in Rest-EEG in Depressed Clients. Brain Topogr. 2013;26:338-354.

Frasure-Smith N, Lespérance F, Talajic M. Depression following myocardial infarction.Impact on 6-month survival. JAMA. 1993;270:1819-1825.

Jiang W, Alexander J, Christopher E, Kuchibhatla M, Gaulden LH, Cuffe MS, Blazing MA, Davenport C, Califf RM, Krishnan RR, O'Connor CM. Relationship of depression to increased risk of mortality and rehospitalization in patients with congestive heart failure. Arch Intern Med. 2001;161:1849-1856.
John Ayto. Word Origins. 2nd edition. (London, U.K.: A&C Black), p 229, 2005.

Jun EM, Roh YH, Kim MJ. The effect of music-movement therapy on physical and psychological states of stroke patients. J Clin Nurs. 2013;22:22-31.

Kaplan V, Sadock B. Pocket Handbook of Clinical Psychiatry. 5th ed. (Tehran, Iran: Arjmand publication), 2010.

Kir'ianova VV, Baburin IN, goncharova VG, Veselovskiĭ AB. The use of phototherapy and photochromotherapy in the combined treatment of the patients presenting with astheno-depressive syndrome and neurotic disorders. Vopr Kurortol Fizioter Lech FizKult. 2012;1:3-6.

Lawson EA, Donoho D, Miller KK, Misra M, Meenaghan E, Lydecker J, Wexler T, Herzog DB, Klibanski A. Hypercortisolemia is associated with severity of bone loss and depression in hypothalamic amenorrhea and anorexia nervosa. J Clin Endocrinol Metab. 2009;94:4710-4716.

Lee IS, Lee GJ .Effects of lavender aromatherapy on insomnia and depression in women college students. Taehan Kanho Hakhoe Chi. 2006;36:136-143.

Loving RT, Kripke DF, Knickerbocker NC, Grandner MA. Bright green light treatment of depression for older adults. BMC Psychiatry. 2005;5:42.

Luber MP, Meyers BS, Williams-Russo PG, Hollenberg JP, DiDomenico TN, Charlson ME. Depression and service utilization in elderly primary care patients. Am J Geriatr Psychiatry. 2001;9:169-176.

Murray CJ, Lopez, AD. Alternative projections of mortality and disability by cause 1990-2020: Global burden Disease Study. Lancet. 1997;349:1498-1504.

Penninx BW, Beekman AT, Honig A, Deeg DJH, Schoevers RA, van Eijk JT, van Tilburg W. Depression and cardiac mortality: results from a community-based longitudinal study. Arch Gen Psychiatry. 2001;58:221-227.

Pozuelo L, Zhang J, Franco K, Tesar G, Penn M, Jiang W. Depression and heart disease: what do we know, and where are we headed? Cleve Clin J Med. 2009;76:59-70.

Rosengren A, Hawken S, Ounpuu S, Sliwa K, Zubaid M, Almahmeed WA, Blackett KN, Sitthi-amorn C, Sato H, Yusuf S; INTERHEART investigators. Association of psychosocial risk factors with risk of acute myocardial infarction in 11119 cases and 13648 controls from 52 countries (the INTERHEART study): case-control study. Lancet. 2004;364:953-962.

Rush AJ. The varied clinical presentations of major depressive disorder. J Clin Psychiatry. 2007;68:4-10.

Saljoughian M, Nutrition and Clinical Depression. US Pharm. 2009;11:19.

Sarris J, Schoendorfer N, Kavanagh DJ. Major depressive disorder and nutritional medicine: a review of monotherapies and adjuvant treatments. Nutr Rev. 2009;67:125-131.

Shimizu Y, Yamada S, Miyake F, Izumi T; PTMaTCH Collaborators. The effects of depression on the course of functional limitations in patients with chronic heart failure. J Card Fail. 2011;17:503-510.

Stockmeier CA. Neurobiology of serotonin in depression and suicide. Ann N Y Acad Sci. 1997;836:220-232.

Sullivan MD, LaCroix AZ, Spertus JA, Hecht J, Russo J. Depression predicts revascularization procedures for 5 years after coronary angiography. Psychosom Med. 2003;65:229-236.

Tavakkoli-Kakhki M, Motavasselian M, Mosaddegh M, Esfahani MM, Kamalinejad M, Nematy M. Food-Based Strategies for Depression Management From Iranian Traditional Medicine Resources. Iran Red Crescent Med J. 2014;16:141-151.

Trockel M, Manber R, Chang V, Thurston A, Taylor CB. An e-mail delivered CBT for sleep-health program for college students: effects on sleep quality and depression symptoms. J Clin Sleep Med. 2011;7:276-281.

Yim VW, Ng AK, Tsang HW, Leung AY. A review on the effects of aromatherapy for patients with depressive symptoms. J Altern Complement Med. 2009;15:187-195.

Young EA, Korzun A. The hypothalamic pituitary-gonadal axis in mood disorders. Endocrinol Metab Clin North Am. 2002;31:63-78.

Yousofpour M, Kamalinejad M, Esfahani MM, Shams J, Hoshdar Tehrani H, Bahrami M. Role of Heart and its Diseases in the Etiology of Depression According to Avicenna's Point of View and its Comparison with Views of Classic Medicine. Int J Prev Med. 2015;6:49.