



Grief Management based on Persian Medicine

Somayeh Zakeri¹, Narjes Gorji^{1*}, Reihaneh Moeini¹, Hoorieh Mohammadi Kenari²,
Seyyed Ali Mozaffarpur¹

¹Traditional Medicine and History of Medical Sciences Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

²Research Institute for Islamic and Complementary Medicine, School of Iranian Traditional Medicine, Iran University of Medical sciences, Tehran, Iran

Received: 11 Jul 2018

Revised: 20 Sep 2018

Accepted: 15 Oct 2018

Abstract

Grief is an unavoidable emotional reaction against the something that was valued especially the death of beloved ones that can lead to psychiatric disorders. Persian medicine (PM) scholars have made considerable recommendations regarding emotional reactions including grief. This research was carried out by searching through outstanding Persian Medicine textbooks such as the *Canon of Medicine*, *Zakhireye Kharazmshahi*, *Exir Azam* and *Kholasa Al-hekma* using specific key words related to the emotional reactions. The key terms were also searched through a series of databases including PubMed, Scopus and Science Direct to find possible evidence to efficacy of PM recommendations by modern medicine. PM physicians have considered emotional reactions as one of the most important factors in physical or mental dysfunction. They treated bereaved patients based on their mental and cardiovascular conditions using a combination of appropriate nutrition, herbal medicines (*Amygdalus communis* L., *Cinnamomum zylanicum* L., *Crocus sativus* L., *Cydonia oblonga* Miller. etc.), physical movement (exercise, massage therapy, game etc.) and psychotherapy (music therapy, aromatherapy etc.). PM is one of the old paradigms of medicine that can improve psychological and physical complications of grief. Grief is one of the debilitating emotions that can influence patient quality of life, so it is important and necessary that health authorities and physicians employ the total potential of medical science for patients' treatment and rehabilitation.

Keywords: Persian medicine; Grief; Psychiatric disorder; Herbal medicine

Citation: Zakeri S, Gorji N, Moeini R, Mohammadi Kenari H, Mozaffarpur SA. **Grief Management based on Persian Medicine.** Trad Integr Med 2018; 3(4): 208-218.

*Corresponding Author: Narjes Gorji

Traditional Medicine and History of Medical Sciences Research Center, Health Research Institute, Babol University of Medical Sciences, Babol, Iran

E-mail: n.gorji@mubabol.ac.ir, nargess_gorji@yahoo.com

Tel: +98 (11) 32194728-30

Fax: +98 (11) 32194728-30

Introduction

Grief consists of emotions, thoughts and behaviors that occur after absence of something or someone which was valued, with deep psychiatric affects in person's life and shows itself in physiological and psychological reactions [1,2]. The bereaved have no incentive for daily or routine activities and suffer from several or repetitive thoughts about the dead person [3]. Some factors affect the intensity of grief such as age, gender, amount of interest in the dead person and suddenness or predictability of the death [4]. Insufficient attention to this problem can disturb the patient's life but early management can prevent from these result [5]. Bereavement's side effects are more serious in persons older than 60 especially in patients without good care for whom the prognosis of complicated grief may include delirium or delusion [3]. Complicated grief can weaken the immune system and lead to some respiratory dysfunctions and mimic the signs of depression. Although these have different categories, in susceptible person it can lead to depression [6]. Complications of bereavement are more common among mothers whose kids have died [7].

Persian medicine (PM) as a traditional and complementary medicine with more than seven thousand years' history has outstanding statements regarding psychiatric disorders [8]. Psychological states like fear, anger, happiness, embarrassment, sadness and enjoyment are the six essential principals (*Asbabe Settahe Zaruriah*) that have an obvious and direct role in maintaining health and preventing diseases [9,10].

Al-Akawayni Bukhari (?–983 AD) one of the

outstanding PM physicians in Medieval period explained the mechanism of emotional reactions and their effects in human function. He had a special expertise for the treatment of psychological disorder, so that he became famous as a psychiatric that was called "physician of the insane" (*Pezesk e divanegan*) [11].

Avicenna (970-1037AD) the most famous physician of PM in his medical book "the *Canon of Medicine*" explained various psychiatric disorders such as grief [9].

Jorjani (1042–1137AD), the other popular PM scholar, believed that physicians should be well informed about the harms and benefits of emotional reactions to be able to treat and manage psychiatric diseases [10].

According to this fact that grief is a bleak experience and human beings inevitably will encounter it during their life and also given the importance of its side effects and physical or psychiatric complications, we decided to investigate the viewpoints of PM physicians about grief management to achieve comprehensive advice for grief resolution and treatment of the bereaved.

Methods

This research was carried out by investigating medical text books of PM including *The Canon of Medicine*[9], *The Treasure of Khwarazm Shah* [10], *Exir Azam* [12], *Daghayegh al alaj* [13], *Kholasa al hekma* [14], *Teb e akbarii* [15], *Al- Aghraz al- Tebbieh va al- Mabahe al-Alayieh* [16] and *Hedayat al-mota'allemin fi al-tibb* [17] with keywords related to the emotional reaction (*Araze Nafsani*) including *hozn*, *soog*, and

jaza. Common useful herbs for management of grief were extracted; then PubMed, EMBASE, Scopus and ScienceDirect were searched with scientific name of these herbs plus these keywords: grief, depression, and anxiety. Finally, suitable findings (including clinical trial, animal or *in vitro* evidence of the efficacy and pharmacological mechanisms on recommended therapies) are categorized and presented.

Findings

PM physicians defined grief with special name including *hozn* and *jaza* as a kind of emotion which experienced related to the loss of someone or something that was valued [18]. They believed that mood induction can change blood flow pattern and in the emotions like happiness and anger, blood flow shifts to outward the body and vice versa in emotions like fear and depression it moves inward and the body appearance becomes cold. This movement can influence heart rate, blood perfusion, sweating and other clinical demonstrations [9,12].

PM scholars believed the impact of emotional reactions like happiness, enjoyment, anger, grief, fear and a combination of hope and despair affect the body faster than a fatal poisons because of the metabolism of poison takes some time for appearing its damages but hearing the pleasant or disappointing words leads to a quick reaction in facial expressions and body metabolism. In this viewpoint heart has a special role [10].

Definition of grief

Whenever something irreplaceable is missed and cannot be regained or when an unpleasant

and irreparable event happens, a mood arises in human which is named grief [9,10,17].

The effects of grief on body health

PM physicians believed if *hozn* and *jaza* (grief) became chronic, changes in heat and metabolism in inner and outer parts of body annihilate balance of physiologic substances and vigor and as a result, production of abnormal substances (humors) may increase and acts as a predisposing risk factor for several diseases like blood concentration in some patients, premature aging and even early death. Digestive system, cardiovascular system, genital system etc. are also involved (Figure1, Table 1) [9,10,17].

In this view, grief had individualized complications and effects in each person that depended on their strength, stamina and patience. The effect of bereavement in persons with heart diseases is more and longer than those with a potent and healthy heart [9,12,13].

According to PM, women and elderly persons are more prone to grief's complications. Seasonal difference could change body metabolism and emotional reaction, so especially in autumn psychological diseases are more common than other seasons. Dry and cold climate is another predisposing factor for exacerbation of the bereavement's side effects [9,10].

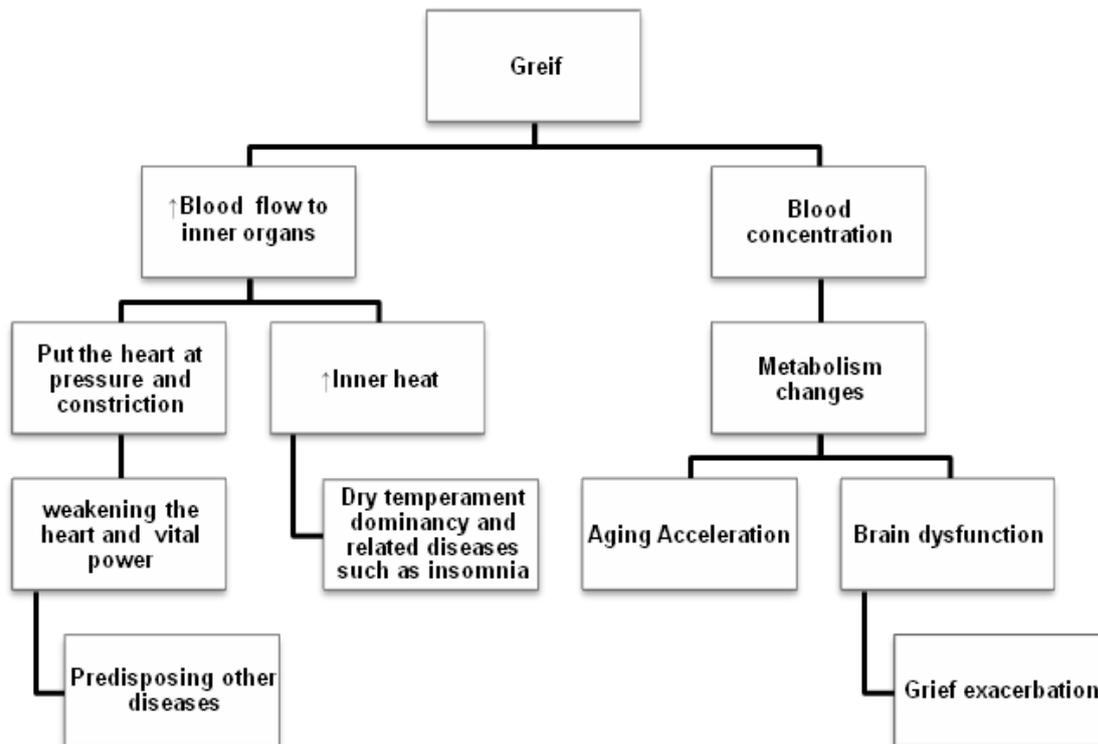


Figure1: The mechanisms of grief affecting the body based on PM

Table 1: complications of chronic grief according to PM and evidences in recent studies

Target organ	Side effects in PM	Recent studies
Digestive system	↓Food digestion - ↓ Liver function - Hemorrhoid [12]	Depression can increase the risk of hemorrhoid [19]
Nervous system	↓Brain function – Insomnia - Epilepsy attacks – Amnesia – Faint - Sudden Paralysis – Tremor - Poor vision - Eyelid’s Jump - Headache [12]	Sleep disturbances in 63% of bereaved person [20]
Muscle / joint	Muscles’ spasm - Involuntary limbs convulsion - Gout [10,12,15]	Joint pain increases over time among bereaved [person [20]
Genital system	Impotency- Hard labor- Infertility- abortion [10, 12]	Depression and other psychological dysfunctions can result in erectile dysfunction [21]
Cardio vascular system	Heart and pulse weakness, palpitation [12,17]	High intensity of grief can result in high blood pressure [22]
Blood stream	↑Blood concentration - ↑black bile production [12,16]	↑Risk of type 2 diabetes [23]
Others	↓ Appetite [12,15]	↓Appetite in 43% of bereaved person [20]
	↑Fever [10,12,16,17]	–
	Dark face [12,15]	–

Therapeutic strategies for grief

Bereaved person is unique and as mentioned, grief changes the body metabolism and causes neurological and cardiovascular failures; in addition, the production of pathologic humor increases complications and this vicious cycle will continue if the bereaved does not receive any health care [9,10,12].

Based on PM's rules, the first step of all treatments is the elimination of causative and aggravating factors. Then the second step is counter therapy [9]. The causative factor that is the loss of loved person can't be eliminated but specific auxiliary plans such as anti-depressant or mood stabilizer, herbal medication and nutrient foods can reinforce tolerance against grief and cause more effective adaptation to the loss (Table 2)[9].

1. Psychotherapy

PM scholars believed that grief is the main cause of all diseases that leads to body weakness and dysfunction and the best treatment in this situation is psychological treatments (13). PM grandmasters believed hope and mirth can cause heart expansion and increase its strength and since emotional reaction works faster than the other factors, they offered that the bereaved person be placed in a cheery and pleasant situation with sincere friends and family members while talking about hopeful and pleasant topics, the point is that challenging obsessions must be avoided (9, 10).

Reading sweet stories, playing amusing games and aromatherapy are also recommended (Table 3 and 9).

Table 2: General treatment in PM for decreasing psychiatric symptoms and side effects of grief

Therapeutic Advices	In PM	Recent studies
Psychotherapy	Hopeful talking, Providing reassuring ceremonies for bereaved person, Reading instructive stories, Concomitance with intimate friends [10]	↓Severity of grief with Mental health support ↓Depressive symptoms with mindfulness-based cognitive therapy [24]
Sports recommendation	Horse riding, Hiking [13] Massage therapy [9]	↑Quality of life, energy level and health status after regular exercise at least once a week in elderly bereaved person [25]
		↑Psychological status on bereaved persons after chi Kung (a Physical – Psychological exercise) [26]
		↑Patience against expected grief with general massages [27]
		Mild, slow and in a circular motion massage with herbal oils, rehabilitates the bereaved persons whose life was desperate [28]
		↑Bereaved person's mood results in massage and muscle relaxation [29]

Medicaments	Metabolic stabilizer [13]	↑Quality of life for the sorrowful person with monitoring the diet and sufficient vitamin and minerals consumption [25]
	Mood stabilizer herbal medicines [10]	↓Anxiety and depression disorder with Saffron [30]
	Heart and brain restructuring (aromatic herbs) [10]	↓Stress and side effects of emotional disorders peace of mind and coronary artery relaxation after aromatherapy with <i>L. angustifolia</i> extract [31]

2. Nutrition

Bereaved person is at risk of mild malnutrition so PM advised tonic nutrition such as soft-boiled egg yolk, fruit sauces and juices in this situation [9]. In general, most aromatic edible materials such as saffron, rosewater, apple, amber and musk have positive mood effects. In addition, foods which damage and weaken nervous system such as yogurt, pickle and vinegar were avoided. In Iran's ancient culture it was customary to aromatize the mourning ceremony atmosphere with rosewater and welcome the guests with saffron sweets [12].

3. Exercise and Massage therapy

Exercise is one of the most important factors for healthy life style which can improve heart, brain, liver and the whole body metabolism, regulate digestive health, muscle strength, and promote physiological well-being. Physical movements especially the exhilarating sports increase heart contraction and push blood and heat throughout the body and contribute to the vital force [9]. Competitive and team sports can generate liveliness so horse riding and wicket were men-

tioned for this purpose. It should be mentioned that main factors for choosing the type of exercise should be the individual's preference [13]. Massage has an important role in preventing and treatment of diseases. According to PM, massage prepares the dense and pathogenic humors for removal, distribute vital heat all over the body, increases the food absorption in tissues and eventually increases the immunity level against diseases [9].

4. Enlivening herbal medicines

PM scholars believed that anti-depressant herbal medicines such as lemon balm, lavender, valerian, rose, saffron, cinnamon as well as quince fruit, apple, grape and pear could strength the heart and brain function. They also believed that residues resulting from bad metabolism cause clarity of mind and the doleful person will be able to deal with pensiveness (Table 3) [9].

Table 3: Herbal remedies for grief in PM

NO	Scientific name	Common/ Traditional name	Part of usage	Active component	Recent studies	
					Form of use	Result
1	<i>Amygdalus communis</i> L.	Almond/ Louz	Seed	Amino acids glutamine, ornithine and arginine	Aqueous extract	Sedative and hypnotic effect [32].
2	<i>Cinnamomum zylanicum</i> L.	Cinnamon/ Darsini	Bark	Proanthocyanidin	Aqueous extract	↓Collection of protein tau, ↓formation of filaments (markers of Alzheimer) and keep the brain away from pathological disorder [33].
3	<i>Crocus sativus</i> L.	Saffron/ Zaferan		Crocin, Safranal	Ethanol extract Aqueous extract	↓Depression [34] Effect brain's neurotransmitter (dopamine, norepinephrine and serotonin), effective in memory enhancement, ↓depression and some other central nervous system disorders [35].
4	<i>Cydonia oblonga</i> Miller.	Quince fruit/ Safarjal	Fruit	Phenolic flavonoid	Hydroalcoholic extract Organic extract, Aqueous extract	↓Anxiety in Schizophrenia [36]. Antioxidant, eradicate free radicals and inhibit their infiltration to cell membrane [37,38].
5	<i>Echium amoenum</i> Fisch. and Mey.	Lesanossour	Flower, Leave	Flavonoid [39]	Aqueous Extract	↑Serotonin and dopamine level [40]
6	<i>Lavandula angustifolia</i> L.	Lavender/ Ostokhodods	Flower		Essential Oil Essential oils	The peace of mind and coronary artery relaxation. ↓Cortizol level and coronary flow velocity reserve (CFVR) [31]. ↓acetylcholinesterase, ↑brain activity, ↓stress and side effects of emotional disorders [41]
7	<i>Malus domestica</i> Borkh.	Apple/ Toffah	Fruit		Apple juice	↓Central nervous system oxidative damage, ↓Alzheimer's disease [AD] hallmarks and ameliorated cognitive performance, attenuate the mood decline in AD, improve behavioral and psychotic symptoms, change in anxiety, agitation and delusion and ↓burden of caregivers [42].
8	<i>Melissa officinalis</i> L.	Lemon balm/ Baderanj-booyeh	Seed, Leave		Extract Ethanol extract Ethanol extract	↑Cognitive abilities by ↓two enzymes (MAO-B and PDE4) [43]. ↓Anxiety and amends cognitive abilities by ↑release of acetylcholine [44]. ↓Acetylcholine esterase [41].
9	<i>Pistacia vera</i> L.	Pistachio/ Fostugh	Seed		Methanol extract	↓Acetylcholine esterase [45]
10	<i>Rosa damascene</i> Mill.	Red flower/ Vardeahmar	Flower	Flavonoid	Extract	↑Hippocampal volume and modify cognitive status with neurogenesis and synaptogenesis mechanisms. Induce nerve growth factor, ↓inflammation and destruction of nerve cells [46]
11	<i>Valeriana officinalis</i> L.	Valerian/ Sonbol o tib	Root	Valerenic acid	Hydro-alcoholic extract	↓Depression like behavior in ovalbumin sensitized rats [47]
12	<i>Vitis vinifera</i> L.	Grape/ Enab	Fruit	Resveratrol	Ethanol extract Dietary supplement Cognigrape®	Anti-stress activity and ↓corticosterone [48]. Improve physiological cognitive profiles [49].

Discussion

Our research had shown special attention of PM to grief and its therapeutic approach based on the mechanism of diseases in the period during which in other parts of the world metaphysical reasons were considered as the main cause of these types of disorder [50,51]. In recent years grief has been receiving more attention from the scientists because of facing severe complications such as increasing the risk of anxiety, addiction and alcoholism [52], minor and major depression or suicide [53].

It seems PM explanations were based on observing patients and their changes in different conditions and were justified by their special and observation-based opinions about physiology whose accuracy have been confirmed by new research studies [9].

Persian scholars believed different psychological reactions are associated with the moving of blood flow to inside or outside of the body. Nowadays, some research showed emotions like happiness and love resulted in increasing activity of whole body but emotions like depression and sadness cause decreasing of activity in surface of body especially in limbs [54]. The cause of these changes is not clear but changes in emotions commonly reflect in autonomic nervous system functions that are monitored by some physiological measures such as heart rate (HR) and its variability (HRV) [55].

PM scientist insisted on patient rehabilitation based on appropriated diet and physical movement [9]. Also attention to use of a variety of complementary therapies in psychotherapy including music therapy, vision therapy, aroma-

therapy and massage etc seems very interesting. Recent evidence also suggest several management for treating grief including diet, multivitamin/mineral supplements [25], general massages that rehabilitate the bereaved person and improve the quality of life for the sorrowful one [27].

Recommended planta medica in PM like *E. amoenum*, *L. angustifolia*, *V. officinalis* etc. [9] have shown positive effects in psychiatric disorder according to new research. Studies have shown they ameliorate mood and anxiety, increase brain activity (memory, cognitive abilities, coronary artery relaxation), reduce stress and side effects of emotional disorders and resolve depressive, state sedative, analgesic, neuroprotective effects [31,35,36,39,41-44,56,57] According to the recent studies, several mechanism may be involved such as enhances in brain's neurotransmitters including norepinephrine, serotonin and dopamine level in cerebrospinal fluid [35,40], inhibiting two enzymes MAO-B and PDE4 [43], increasing the release of acetylcholine [44], inhibitory effect on acetylcholine esterase enzyme [41], significant decrease in cortisol level [48], antioxidant, anti-inflammatory [37,38,49], anti-neuroprotective and neuroendocrine effects [58] decreases GABA degeneration and increases gamma - amino butyric acid [59], enhance hippocampal volume and induces nerve growth factor [46,60], coronary flow velocity reserve (CFVR) enhancement [31] and inhibition of collection of protein to which facilitates the formation of filaments as markers of Alzheimer [33].

This study showed that therapeutic approaches

to grief based on PM principles, have scientific basis and are in line with recent investigations. Although historically it is interesting to review the opinions of the scholars of PM, it seems that their views and recommendations contain notes that can be considered useful for research even today.

Considering the devastating effects of bereavement on life and its burden for family and society, we offer that it is better to inform the health care providers about the proposed therapies for grief according to PM for better controlling of this critical situations and saving the bereaved from future complications. It seems that the earlier the preventive actions are taken, the fewer the complications. We also suggest some clinical studies for evaluating the effect of PM therapeutic package for the bereaved.

Conclusion

Grief is one of the debilitating emotions that can influence patient quality of life so it is important and necessary that health authorities and physicians employ the total potential of medical science for patients' treatment and rehabilitation.

Conflict of interests

None.

Acknowledgment

None.

References

- [1] Maccallum F, Malgaroli M, Bonanno GA. Networks of loss: Relationships among symptoms of prolonged grief following spousal and parental loss. *J Abnorm Psychol* 2017;126:652-662.
- [2] Oates JR, Maani-Fogelman PA. *Nursing, Grief and Loss*. StatPearls. Treasure Island (FL): StatPearls Publishing. StatPearls Publishing. LLC 2018.
- [3] Shear MK, Ghesquiere A, Glickman K. Bereavement and complicated grief. *Curr Psychiatry Rep* 2013;15:406.
- [4] Harvey J. *Consolation of lonely human: Guidelines for prevailing over loss and traumas*. Yazdani publication. Tehran 2005.
- [5] Khoo S. Acute grief with delirium in an elderly: holistic care. *Malays Fam Physician* 2011;6:51-57.
- [6] Widera EW, Block SD. Managing grief and depression at the end of life. *Am Fam Physician* 2012;86:259-264.
- [7] Behrman RE, Field MJ. *When children die: Improving palliative and end-of-life care for children and their families*: National Academies Press 2003.
- [8] Zargaran A, Ahmadi S, Daneshamouz S, Mohagheghzadeh A. Ancient Persian pharmaceutical vessels and tools in Iranian archaeological museums. *Pharm Hist* 2012;42:68-71.
- [9] Avicenna H. *Al-Qanoon fi al-Tibb (The Canon of Medicine)*. Dare Ehia Attorath Al Arabi Beirut 2005.
- [10] Jorjani E. *Zakhire Kharazmshahi [The Treasure of King Khwarazm]*. Ehyaye Teb Institute. Qom 2011.
- [11] Zargaran A, Kordafshari G, Hosseini SR, Mehdizadeh A. Akhawayni (?–983 AD): A Persian neuropsychiatrist in the early medieval era (9th–12th Century AD). *J Med Biogr* 2016;24:199-201.
- [12] Chashti M. *Exir-e-Azam [Great Elixir]*. Research Institute for Islamic and Complementary Medicine. Tehran 2008.
- [13] Kermani MK. *Daqaq-al Alaj*. Saadat Press. Kerman 1983.
- [14] Aghili Khorasani shirazi M. *Kholassat Al-Hekmah (The Principals of Traditional Iranian Medicine)*. Esmaeilian. Qom 2006.
- [15] Arzani MA. *Teb-e-Akbari [Akbari's Medicine]*: Ehya Teb e Tabiee. Jaleleddin Press. Tehran 2008.
- [16] Jorjani SI. *Al- Aghraz al- Tebbieh va al- Mabahees al-Alayieh*. Tehran University Press. Tehran 2005.
- [17] Akhawayni A. *Hedayat al-mota'allemin fi al-tibb (An educational guide for medical students)*. Ferdowsi University of Mashhad Publication. Mashhad 1992.
- [18] Balkhi AZ. *Masaleh Al-Abdan va Al-Anfos*. Institute of arabic manuscripts. Cairo 2005.
- [19] Lee JH, Kim HE, Kang JH, Shin JY, Song YM. Factors associated with hemorrhoids in korean adults: korean national health and nutrition examination survey. *Korean J Fam Med* 2014;35:227-236.
- [20] Utz RL, Caserta M, Lund D. Grief, depressive symptoms, and physical health among recently bereaved spouses. *Gerontologist* 2011;52:460-471.
- [21] Rajiah K, Veettil SK, Kumar S, Mathew EM. Psychological

- impotence: Psychological erectile dysfunction and erectile dysfunction causes, diagnostic methods and management options. *Scientific Research and Essays* 2013;7:446-452.
- [22] Prigerson H. Traumatic Grief, Disability, and the Underutilization of Health Services A Preliminary Examination Primary Psychiatry. *Psychiatr Serv* 2001;8:61-6.
- [23] Olsen J, Li J, Precht D. Hospitalization because of diabetes and bereavement: a national cohort study of parents who lost a child. *Diabet Med* 2005;22:1338-1342.
- [24] O'Connor M, Piet J, Hougaard E. The effects of mindfulness-based cognitive therapy on depressive symptoms in elderly bereaved people with loss-related distress: a controlled pilot study. *Mindfulness* 2014;5:400-409.
- [25] Chen JH, Gill TM, Prigerson HG. Health behaviors associated with better quality of life for older bereaved persons. *J Palliat Med* 2005;8(1):96-106.
- [26] Li J, Chan JS, Chow AY, Yuen LP, Chan CL. From body to mind and spirit: Qigong exercise for bereaved persons with chronic fatigue syndrome-like illness. *J Evid Based Complementary Altern Med* 2015;2015.
- [27] Conley VM, Kempson D. Integrating massage into rural caregiving at end-of-life. *J Palliat Care* 2007;23:51-53.
- [28] Cronfalk BS, Ternstedt BM, Strang P. Soft tissue massage: early intervention for relatives whose family members died in palliative cancer care. *J Clin Nurs* 2010;19:1040-1048.
- [29] Uvnäs-Moberg K, Petersson M. Oxytocin--biochemical link for human relations. Mediator of antistress, well-being, social interaction, growth, healing. *Lakartidningen* 2004;101:2634-2639.
- [30] Mazidi M, Shemshian M, Mousavi SH, Norouzy A, Kermani T, Moghiman T. A double-blind, randomized and placebo-controlled trial of Saffron (*Crocus sativus* L.) in the treatment of anxiety and depression. *J Complement Integr Med* 2016;13:195-199.
- [31] Shiina Y, Funabashi N, Lee K, Toyoda T, Sekine T, Honjo S. Relaxation effects of lavender aromatherapy improve coronary flow velocity reserve in healthy men evaluated by transthoracic Doppler echocardiography. *Int J Cardiol* 2008;129:193-197.
- [32] Abdollahnejad F, Mosaddegh M, Kamalinejad M, Mirnajafi-Zadeh J, Najafi F, Faizi M. Investigation of sedative and hypnotic effects of *Amygdalus communis* L. extract: behavioral assessments and EEG studies on rat. *J Nat Med* 2016;70:190-197.
- [33] Peterson DW, George RC, Scaramozzino F, LaPointe NE, Anderson RA, Graves DJ. Cinnamon extract inhibits tau aggregation associated with Alzheimer's disease in vitro. *J Alzheimer's Dis* 2009;17:585-597.
- [34] Talaei A, Moghadam MH, Tabassi SAS, Mohajeri SA. Crocin, the main active saffron constituent, as an adjunctive treatment in major depressive disorder: A randomized, double-blind, placebo-controlled, pilot clinical trial. *J Affect Disord* 2015;174:51-56.
- [35] Etehadhi H, Mojabi SN, Ranjbaran M, Shams J, Sahraei H, Hedayati M. Aqueous extract of saffron (*Crocus sativus*) increases brain dopamine and glutamate concentrations in rats. *J Behav Brain Sci* 2013;3:315-319.
- [36] Hajizadeh Moghaddam A, Kianmehr A. The Protective Effect Of Quince (*Cydonia Oblonga* Miller) Leaf Extract On Locomotor Activity And Anxiety-Like Behaviors In A Ketamine Model Of Schizophrenia. *J A M S* 2016;19:31-41.
- [37] Premanath R, Lakshmi Devi N. Studies on Anti-oxidant activity of *Tinospora cordifolia* (Miers.) Leaves using in vitro models. *J Am Sci* 2010;6:736-743.
- [38] Singh N, Rajini P. Antioxidant-mediated protective effect of potato peel extract in erythrocytes against oxidative damage. *Chem Biol Interact* 2008;173:97-104.
- [39] Sayyah M, Sayyah M, Kamalinejad M. A preliminary randomized double blind clinical trial on the efficacy of aqueous extract of *Echium amoenum* in the treatment of mild to moderate major depression. *Prog Neuropsychopharmacol Biol Psychiatry* 2006;30:166-169.
- [40] Faryadian S, Sydmohammadi A, Khosravi A, Kashiri M, Faryadayn P, Abasi N. Aqueous Extract of *Echium amoenum* Elevate CSF Serotonin and Dopamine Level in Depression rat. *Biomed Pharmacol J* 2014;7:137-142.
- [41] Ferreira A, Proença C, Serralheiro M, Araujo M. The in vitro screening for acetylcholinesterase inhibition and antioxidant activity of medicinal plants from Portugal. *J Ethnopharmacol* 2006;108:31-37.
- [42] Remington R, Chan A, Lepore A, Kotlya E, Shea TB. Apple juice improved behavioral but not cognitive symptoms in moderate-to-late stage Alzheimer's disease in an open-label pilot study. *Am J Alzheimers Dis Other Demen* 2010;25:367-371.
- [43] Buchwald-Werner S, Vazquez I. Effects of a *Melissa officinalis* special extract on mood and cognitive function. *Planta Med* 2015;81:SL5C_01.
- [44] Wake G, Court J, Pickering A, Lewis R, Wilkins R, Perry E. CNS acetylcholine receptor activity in European medicinal plants traditionally used to improve failing memory. *J Ethnopharmacol* 2000;69:105-114.
- [45] Kilic IH, Sarikurku C, Karagoz ID, Uren MC, Kocak MS, Cilkiz M. A significant by-product of the industrial processing of pistachios: shell skin--RP-HPLC analysis, and antioxidant and enzyme inhibitory activities of the methanol extracts of *Pistacia vera* L. shell skins cultivated in Gaziantep, Turkey. *RSC Adv* 2016;6:1203-1209.
- [46] Esfandiary E, Karimipour M, Mardani M, Alaei H, Ghanadian M, Kazemi M. Novel effects of *Rosa damascena* ex-

- tract on memory and neurogenesis in a rat model of Alzheimer's disease. *J Neurosci Res* 2014;92:517-530.
- [47]Neamati A, Chaman F, Hosseini M, Boskabady MH. The effects of *Valeriana officinalis* L. hydro-alcoholic extract on depression like behavior in ovalbumin sensitized rats. *J Pharm Bioallied Sci* 2014;6:97-103.
- [48]Singh MP, Vashisht S, Chawla V, Mishra P. Comparative antistress effect of *Vitis vinifera* and *Withania somnifera* using unpredictable chronic mild stress model in rats. *Health Sci* 2016;5:19-27.
- [49]Zhu L, Luo X, Jin Z. Effect of resveratrol on serum and liver lipid profile and antioxidant activity in hyperlipidemia rats. *Asian-Australas J Anim Sci* 2008;21:890-895.
- [50]Ammirati R, Hendrick ST, Lilienfeld SO. The demon test: who still believes mental illness is caused by demons? *Skeptic*. 2015;20:18-22.
- [51]Alexandros Argyriadis R. The Historical Approach of Psychopaths in Greece: An Endless Effort of Seeking Therapy for the Different Other. *International Journal of Caring Science*. 2017;10:590-595.
- [52]Shear MK. Grief and depression: treatment decisions for bereaved children and adults. *Am J Psychiatry* 2009;166(7):746-8.
- [53]Gündel H, O'Connor M-F, Littrell L, Fort C, Lane RD. Functional neuroanatomy of grief: an FMRI study. *Am J Psychiatry* 2003;160:1946-1953.
- [54]Nummenmaa L, Glerean E, Hari R, Hietanen JK. Bodily maps of emotions. *Proc Natl Acad Sci* 2014;111:646-651.
- [55]Nakahara H, Furuya S, Obata S, Masuko T, Kinoshita H. Emotion-related Changes in Heart Rate and Its Variability during Performance and Perception of Music. *Ann N Y Acad Sci* 2009;1169:359-362.
- [56]Parejo I, Viladomat F, Bastida J, Rosas-Romero A, Flerlage N, Burillo J. Comparison between the radical scavenging activity and antioxidant activity of six distilled and non-distilled Mediterranean herbs and aromatic plants. *J Agric Food Chem* 2002;50:6882-6890.
- [57]Nizami Q, Jafri M. Unani drug, Jadwar (*Delphinium denudatum* Wall.)—a review. 2006;5:463-467.
- [58]Lopresti AL, Drummond PD. Saffron (*Crocus sativus*) for depression: a systematic review of clinical studies and examination of underlying antidepressant mechanisms of action. *Hum Psychopharm Clin* 2014;29:517-527.
- [59]Weeks BS. Formulations of dietary supplements and herbal extracts for relaxation and anxiolytic action: Relarian. *Med Sci Monit* 2009;15:256-262.
- [60]Williams RJ, Spencer JP, Rice-Evans C. Flavonoids: antioxidants or signalling molecules? *Free radic Biol Med* 2004;36:838-849.