

A Study on the Effect of Gratitude on Happiness and Well Being

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Abstract

Background: Gratitude is a general state of thankfulness and appreciation. The majority of empirical studies indicate that there is an association between gratitude and a sense of overall well being. Currently, mental health is especially important in some occupations with harsh work conditions which require strong personal and mental capacities. Psychological well-being and happiness is especially important in personnel working in the healthcare sector. This study aimed to assess whether gratitude training affects psychological well-being and happiness in hospital personnel. **Method:** In this semi-experimental study with pre-test and post-test, 72 personnel working in 5 hospitals affiliated to Shiraz University of Medical Sciences, Shiraz, Iran, participated. The participants were randomly divided into intervention and control groups using block randomization. Then, the participants in the intervention group were given 10 group sessions of 90 minutes gratitude training. Ryff's Scale of Psychological Well Being, Subjective Happiness Scale, Gratitude Questionnaire-6, and a Gratitude training package were used for data collection. **Results:** The results show that there is no significant difference in the mean scores of psychological well-being, domains of psychological well-being, and happiness between the two groups at baseline, and gratitude training significantly affected all domains of psychological well-being (except for autonomy) and happiness. **Conclusion:** This study demonstrates that Gratitude training is effective in enhancing psychological well-being and Happiness.

Keywords: Gratitude, Psychological well-being, Happiness, psychological Intervention, positive psychology.

Introduction

Happiness is commonly understood how much one likes the life, or more formally, the degree to which one evaluates one's life as a whole positively (Veenhoven, 2009). Psychological research on happiness has focused on an individual's long-term emotional state of happiness and the positive evaluation of his life (Oishi & Gilbert, 2016). Argyle, Martin, and Lu (1995) proposed three possible

components of happiness: positive emotions, satisfaction, and the absence of negative emotions such as depression or anxiety. Lucas and Diener (2008) stated that the balance of positive to negative emotions is a powerful determinant of happiness or subjective well-being. Happiness is known as one of the important determinants of subjective well-being (Honkanen, Jaakko Kaprio, Honkanen, Viinama'ki, and Koskenvuo, 2005). Happiness is a remarkable trait for people and affects mental health status and is influenced by the integrity of mental capabilities (Fowler & Christakis, 2008). Happiness is a key factor of human daily life and was introduced as a main component of health by the World Health

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Organization (WHO) (Cohn, Fredrickson, Brown, Mikels, & Conway, 2009). There are many research evidences that indicate significant correlations between happiness and general health outcomes such as commitment to have higher levels of physical exercise, healthy sleeping pattern, healthy diet, and abstain from smoking or drinking alcohol excessively (Bloodworth & McNamee, 2007; Mojs, Stanislawska-Kubiak, Skommer & Wojciak., 2009; Stubbe, de Moor, Boomsma & de Geus, 2007)

The World Health Organization defines mental health as a form of well-being in which the individual identifies his/her strength and is able to cope with stress and engage in effective activities and help the society as a whole. Well-being is considered as a state of complete physical, mental, and social welfare and not just lack of disease (Krawczynski & Olszewski, 2000). The focal point in well-being is the way with which life flourishes and reaches its highest merits and highest potentials (Seligman & Csikszentmihalyi, 2014). Ryff defines well-being as the strife towards perfection to fulfill the individual's potential capabilities (Ryff, 1995). Ryff and colleagues categorize psychological well-being based on the following six factors: self-acceptance, pursuit of goals in life, personal growth, environmental mastery, and autonomy (Ryff & Singer, 1998). Well-being results in balanced growth and health and facilitated the correct development of skills and potentials (Stephan, Caudroit, & Chalabaev, 2011). Based on a study by Sheldon and Lyubomirsky on sustainable change for well-being, three factors are involved; genetic background, life circumstances, and intentional activity (Sheldon & Lyubomirsky, 2006). Since genetics and life circumstances are hard to change, intentional activities can be targeted for enhancing well-being (Lyubomirsky, 2008). Studies have shown that well-being increases by participating in intentional activities such as gratitude (Sheldon & Lyubomirsky, 2006), and are beneficial in everyday life (Seligman, Steen, Park, & Peterson, 2005).

As an emotion, gratitude is a two-phase cognitive

process: A) recognizing that something positive has been attained, and B) recognizing that the other, as an external source, is influential in this attainment (Weiner, 1985). The construct of gratitude has been used for implying different concepts such as appreciating the help of others, wondering about the miracles of the world, performing related rituals such as praying, permanent focus on positive aspects of life, paying attention to the mortal nature of material blessings, and comparing events with worse ones (Wood, Froh, & Geraghty, 2010).

Feeling gratitude towards God, others, life, and existence could lead to mental prosperity, happiness, physical and mental health, and deeper and more satisfying interpersonal relationships (Emmons & Crumpler, 2000). Studies on gratitude and well-being show that gratitude has a strong correlation with well-being (Park, Peterson, & Seligman, 2004). In a study by Kendler and colleagues, gratitude is correlated with the reduced risk of nicotine and alcohol dependence, panic disorder, antisocial behavior, major depression, phobias, and generalized anxiety disorder (Kendler et al., 2003). Moreover, in another study on the relationship between gratitude, depression, and religion, the researchers found that gratitude protects individuals against negative effects (Tulbure, 2015). People who are grateful have a healthier mental and physical life (Hill, Allemand, & Roberts, 2013). Moreover, they have better and closer family interactions. In addition, gratitude has been shown to reduce high risk behaviors such as sexual intercourse during adolescence and preventing the use of drugs and alcohol among African-American youth (Ma, Kibler, & Sly, 2013). Researchers have found that increased well-being, in general, leads to higher efficiency in work, social interactions and health care (Keyes & Grzywacz, 2005). Moreover, well-being has a positive relationship with physiological health (Diener & Chan, 2011). Theoretically, viewing life as something to be grateful is strongly related to well-being. Wood and Joseph found that people with low degrees of well-being experience transient and

uncontrollable instances of success and have higher degrees of depression, anxiety, and negative feeling compared to others (Wood & Joseph, 2010).

Despite the importance of this construct for physical and mental health, gratitude has not been studied well in Iran; even though it is highly emphasized upon culturally and religiously. Currently, mental health is especially important in some occupations with harsh work conditions requiring strong personal and mental capacities. Occupations related to health care are among such occupations. Therefore, psychological well-being and happiness are especially important in personnel working in the healthcare sector. Main purpose of the present study is to answer the question of whether gratitude training affects psychological well-being and happiness in hospital personnel.

Methods

Ethical Considerations

Ethical Principles for protecting the identity and personal information of participants:

The researchers guaranteed the participants that all their personal details (e.g. name and contact details) will not be disclosed to anyone else except to the researchers. In addition, they ensured them that participation in this study has no social or occupational danger. All participations have the right to withdraw from this study at any time.

Participants

The research is a clinical trial study with pretest, posttest, and control group. The research population was 72 personnel working in 5 hospitals affiliated to Shiraz University of Medical Sciences, Shiraz, Iran.

Procedure

The participants were randomly divided into intervention and control groups using block randomization. Also the researchers have obtained the informed consent of all participants (consent forms). Then, the participants in the intervention group were given 10 group sessions of 90 minutes

gratitude training. The sessions were held once a week and the study period lasted 7 months. The packages, practices, and instructions for the sessions were according to those recommended by Emmons. The subjects were also instructed to do the practices in the educational booklet for at least 21 days. After the end of the educational sessions and performing the practices, the questionnaires were handed to the participants of intervention and control groups simultaneously.

Measures

In this research, the following questionnaires were used: A) Ryff's Scale of Psychological Well Being: This is a self-report questionnaire and is considered as one of the most important measures of psychological well-being. Ryff believes that the 84-item version defines psychological well-being better than the other versions (Ryff & Singer, 1998). This measure has 6 sub-scales (autonomy, environmental mastery, personal growth, positive relations with others, purpose in life, and self-acceptance). The 84 items are scored based on a Likert scale from 1 (completely disagree) to 6 (completely agree). B) Subjective Happiness Scale (SHS): This is a four-item, 7-point scale that measures individuals' global subjective happiness (Lyubomirsky & Lepper, 1999). The reliability of SHS was $\alpha=0.77$ in the present research. C) Gratitude training package: This package was based on the book entitled "Thanks! How the New Science of Gratitude Can Make You Happier" (Emmons, 2007). It should be noted that this package was translated after obtaining the permission of Professor Emmons.

Data were analyzed using SPSS software, version 18. Descriptive (mean, frequency, standard deviation, percentage) and inferential statistics (Covariance) were used.

Results

Among 72 participants, 50 were women and 22 were men. Also, 40 were married and 32 were single.

Their educational level ranged from associate degrees to PhD. No significant difference was found between the two groups with respect to age ($P=0.544$), sex ($P=0.479$), marital status ($P=0.794$), and educational level ($P=0.810$).

Also no significant difference was found between the mean scores of psychological well-being, domains of psychological well-being, and subjective well-

being between the two groups at baseline (Table 1).

However, significant differences were found between the two groups with respect to the mentioned variables (Table 2).

Before covariance analysis, the assumptions of the test were assessed using Kolmogorov-Smirnov test. The distribution of the scores in the population was normally in all domains and therefore all pre-

Table 1. Mean \pm SD of the research variables at baseline

Variable	Group	N	Mean	SD	Pvalue	
Psychological Well-being	Control	35	308.45	59.92	0.844	
	Intervention	35	311.45	67.14		
Domains of Psychological Well-being	Positive Relations	Control	35	52.48	10.59	0.560
		Intervention	35	50.91	12.97	
	Autonomy	Control	35	50.54	11.54	0.838
		Intervention	35	49.97	11.69	
	Environmental Mastery	Control	35	52.94	12.54	0.776
		Intervention	35	53.82	13.34	
	Personal Growth	Control	35	52.74	14.21	0.724
		Intervention	35	54.02	16.03	
	Purpose in Life	Control	35	50.40	9.57	0.456
		Intervention	35	52.28	11.39	
	Self-acceptance	Control	35	49.34	7.61	0.591
		Intervention	35	50.42	9.12	
	Subjective Happiness	Control	35	11.17	6.85	0.970
		Intervention	35	11.22	5.78	

Table 2: Mean \pm SD of different domains of psychological well-being (except for autonomy), and subjective happiness, in the control and intervention groups (Post-test, Student's t test)

Variable	Group	N	Mean	SD	P value	
Psychological Well-being	Control	35	310.25	60.74	<0.001	
	Intervention	35	374.08	67.25		
Domains of Psychological Well-being	Positive Relations	Control	35	53.37	10.91	<0.001
		Intervention	35	64.40	12.97	
	Autonomy	Control	35	50.37	11.55	0.094
		Intervention	35	51.62	11.97	
	Environmental Mastery	Control	35	53.14	12.21	<0.001
		Intervention	35	65.65	13.67	
	Personal Growth	Control	35	52.77	14.38	<0.001
		Intervention	35	65.71	15.39	
	Purpose in Life	Control	35	51.85	9.49	<0.001
		Intervention	35	63.40	12.13	
	Self-acceptance	Control	35	50.08	7.44	<0.001
		Intervention	35	63.28	9.92	
	Subjective Happiness	Control	35	11.37	6.73	<0.001
		Intervention	35	17.05	5.78	

assumptions were confirmed. Since the significance level was set as 0.05, the analysts used parametric tests for covariance analysis.

As table 3 shows, the significant level of the value of covariate interaction between the independent variables and mental health and happiness is greater than the significance level ($\alpha = 0/05$). So one can say that default and can be adhered to assimilate the slope of the regression line of multivariate analysis of covariance was used to examine the hypotheses.

As can be seen in Table 4, the significant multivariate analysis of covariance ($0 / 001 \geq p$) is smaller than the significance level ($0/05 = \alpha$). Therefore, the research hypothesis is confirmed and appreciated training affects mental health and happiness of employees significantly. To investigate which of these variables between experimental and control groups are significantly different in continuous, a one-way analysis of covariance was used as well.

The results of covariance analysis showed that gratitude training significantly affects psychological well-being. Moreover, the scores of the intervention group were higher in the post-test with respect to psychological well-being.

According to F of autonomy domain, as shown in Table 4, one can conclude that gratitude training significantly affect all domains of psychological well-being except for autonomy.

In addition, the participants in the intervention group obtained significantly higher scores in the

Table 3: Survey the regression slope (the interaction between covariant and independent)

Variable	Df	F	P
Psychological Well-being	1	1.273	.129
Happiness	1	1.107	.151

Table 4: Multivariate regression analysis to test the hypothesis

Effect	Value	F	Error df	P	Eta
Pillai's Trace	.965	609.685	66.000	.000	.965
Wilks' Lambda	.035	609.685	66.000	.000	.965
Hotelling's Trace	27.713	609.685	66.000	.000	.965
Roy's Largest Root	27.713	609.685	66.000	.000	.965

domains of, environmental mastery, purpose in life, personal growth, and self-acceptance after the intervention compared to control group. As shown in Table 5, considering the significant amount of subjective happiness, one can conclude that intervention significantly affected the happiness; moreover, by doing gratitude practices, the subjects showed more grateful in their life.

Discussion

The findings of the present study show that gratitude is effective in all domains of psychological well-being, except for autonomy. Considering the model that Ryff presents for psychological well-being strives to enable individuals to fulfill their potential capabilities. In psychology, well-being is defined as desirable human function (Nel, 2011). Individuals with a high sense of well-being experience positive emotions and evaluate their surrounding events and

Table 5: Results of the Covariance test for assessing the effect of gratitude on psychological well-being, domains of psychological well-being and subjective happiness.

Index	Variable	Mean square	F	P – value
Group Effect of psychological well-being	psychological well-being	61795.71	304.69	<0.001**
	Autonomy	53.68	11.70	0.094
Group Effect of Domains of Psychological Well-being	Positive relations	2635.26	113.64	<0.001**
	Environmental mastery	2263.88	236.79	<0.001**
	Purpose in life	1636.53	138.91	<0.001**
	Personal growth	2263.42	211.59	<0.001**
Group Effect Subjective happiness	Self-acceptance	2235.71	141.70	<0.001**
	subjective Happiness	498.28	288.54	<0.001**

Significance level at 1%**

circumstances positively; while those with low sense of well-being evaluate these event negatively and therefore, experience more depression, anxiety, and anger (Diener, Oishi, & Lucas, 2003).

Considering the definition of gratitude that God or someone else is involved in creating pleasing events and consequences (Weiner, 1985), hope in others and the world in general is created and a benevolent view is shaped by gratitude. It should be noted that the participants were advised to continue their gratitude practices for 21 days. It can be stated that gratitude becomes internalized over time and thus leads to sustained well-being throughout life. As shown in Emmons and McCullough study (Emmons & McCullough, 2003), when participants follow the intervention's instructions on a daily basis, the positive effect of the participants did not increase, but when their intervention continued for 21 day, the findings changed significantly.

The finding of the study showed that gratitude affects the happiness. These findings are consistent with previous studies. The effect of gratitude on the welfare and positive affect can be explained from two perspectives. Theoretically, the effect of gratitude training is related to the nature of gratitude itself. As mentioned before, gratitude is comprised of a two-phase cognitive process: A) recognizing that something positive has been attained, and B) recognizing that an external source influences that attainment (Weiner, 1985). Therefore, in the intervention, the researchers initially tried to create awareness regarding possessions and attainments as well as common events that are frequently happening around us that we do not pay attention to. As a result of gratitude training, we pay attention to these events and to sources we had not noticed previously. Thus, gratitude training increases satisfaction and positive affect (Froh, Sefick, & Emmons, 2008; Seligman et al., 2005). Sheldon and Lyubomirsky considered gratitude as one of the methods of becoming happier, which is consistent with our study (Sheldon & Lyubomirsky, 2006).

Spiritually, gratitude is in line with happiness and in contrast to emotions such as anger, anxiety, and jealousy (McCullough et al., 2002) and enables individuals to pay attention to the positive aspects of their social environment and therefore have higher life satisfaction. The role of gratitude is also evident in clinical psychology. Researchers believe that gratitude is also related to clinical psychology for two reasons: the high significance of gratitude in defining well-being and enhancing well-being through developing the sense of gratitude by simple practices. Seligman and colleagues showed that gratitude has the potential to be a powerful foundation for treatment in reducing psychological pain and stress (Seligman et al., 2005). Moreover, Gratitude interventions are also seen in clinical interventions (Lee Duckworth, Steen, & Seligman, 2005). Since healthcare personnel are the most important health care providers and are at risk of psychological and physical stress and complications (Cavendish et al., 2003), gratitude training could enhance their psychological and subjective well-being.

Conclusion

Since healthcare personnel are the most important health care providers and are at risk of psychological and physical stress and complications, gratitude training could enhance their psychological well-being and happiness. This study had several limitations. At first, long term effects of gratitude on well-being was not accessible by the researchers. Also, the participants in this study were educated and it was not possible to generalize the results to those with lower levels of education. The researchers thus suggest further studies to be done on all social classes and education levels in order to increase generalize ability.

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Effectiveness of Mindfulness Based Stress Reduction on Negative Emotions about Disease's Signs in Patients with Gastrointestinal Disorders

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Abstract

Background: The present study aimed to examine the effectiveness of mindfulness-based stress reduction training on negative emotions with gastrointestinal disorders. **Method:** A quasi-experimental study was designed with pretest-posttest using control group. The study sample consisted of 30 male patients (referred to internal experts and admitted to Abbasi Hospital of Miandoab in 2016) with gastrointestinal disorders (Irritable Bowel Syndrome, peptic ulcer, and duodenal ulcer) based on diagnostic criteria (ROME-III) who were selected by purposive sampling method. The patients were randomly divided into two experimental and control groups. After performing the pretest using Depression, Anxiety, and Stress Scales (DASS), the experimental group received mindfulness-based stress reduction intervention during the eight sessions of one and a half hour, while the control group received no psychological intervention; and after the end of the sessions, the posttest was performed for both groups using the same tools. The collected data were analyzed through covariance analysis (ANCOV) by using SPSS-18 software. **Results:** The mean scores of negative emotions rates of experimental group significantly decreased after receiving the mindfulness-based stress reduction intervention ($P < 0.05$). **Conclusion:** The findings showed that the mindfulness-based stress reduction intervention is effective and useful as supplement in addition to medications for patients with gastrointestinal disorders (Irritable Bowel Syndrome, peptic ulcer, and duodenal ulcer).

Keywords: Mindfulness-based Stress Reduction, Negative Emotions, Patients, Digestion.

Introduction

Today, most researchers who study the psychological processes reject simplistic notions of specificity and susceptibility of organs to justify physical symptoms and look to physical symptoms from an interactive standpoint. The link between psychological factors and physical symptoms has

never been one-sided; any psychological state plays a role in a person's susceptibility to physical illness. But being ill, in turn, affects the individual mentally as the person's attitude toward the disease can accelerate the healing process. On the other hand, medical researchers' attention to the role of psychological complexity on physical disorders is increasing day by day (Sarason & Sarason, 2008). However, functional gastrointestinal disorders (FGID¹) is a group of common gastrointestinal

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diseases worldwide regardless of race and sex (Woo, Kim, Lim, Seo, and Kong Kong, 2007) that do not have a specific pathology, neither have structural or biological abnormalities (Micut, Tanasescu, & Dragos, 2001). However, considering the characteristics of these disorders, chronic and recurrent gastrointestinal symptoms are medically unjustifiable (Procelli and Soniono, 2007). On the other hand, there is a wide range of these disorders in different parts of the digestive tract from the esophagus to the rectum (Micut, Tanasescu and Dragos, 2001). Also, digestive diseases include gastric ulcer, duodenal ulcer and acid reflux into the esophagus, gall bladder, irritable bowel syndrome (IBS¹), liver failure, constipation, and peptic ulcer (Harrison, 2005). In addition, these patients show gastrointestinal symptoms such as vomiting blood and the return of food from the stomach, difficulty in swallowing food, having nausea, black stools, severe pain in the abdomen, pain in the back, and weight loss (Cecil, 2004). On the other hand, management and treatment of these disorders is associated with high costs and using frequent diagnostic assessments and not very effective organic treatments (Creed, Henningsen, Fing, 2001). However, gastrointestinal disturbances and economic and psychological pressure are imposed on the society and the healthcare system (Khajeh Veluie, Vosoughinia, and Bahari, 2013). In addition, 10 percent of deaths in Iran are due to gastrointestinal diseases (Ganji, Safavi, and Naseri, 2006). Also, these disorders that comprise a major part of clinical activity of general practitioners and gastroenterologists (Crazyari, 2004; quoted by Mazaheri and Sadat Khoshuee, 2012) are often considered as treatment failures (Jonez, Crowley, and Olden, 2007).

Although the pathophysiology of functional gastrointestinal disorders is not entirely clear, but the findings suggest that these disorders are multifactorial, among its causes mental disorders and personality problems can be mentioned (Preclle, Bagby, and

Taylor, 2003; quoted in Mazaheri, Afshar, and Mohammadi, 2010). However, severe stress, family arguments, and depression trigger the symptoms of these disorders (Sadock and Sadock, 2008). Also, in this regard, North (2005) showed that those with two or more medically unexplained gastrointestinal symptoms, especially when abdominal pain is one of those two symptoms, have a high rate of psychiatric disorders; however, the majority refer to a physician for their digestive symptoms (North, Alpers, and Thompson, 1996 quoted by Mazaheri and Adat Khoshuee, 2012). However, emotion regulation has an important role in the adaptation or stressing realities of life and their biological and psychological consequences. However, the best model known so far for pathology assessment, treatment, and management of these disorders is bio-psycho-social model. Also, according to this model, psychological disorders are particularly important in the pathogenesis and functional gastrointestinal disorders. The possible cause of psychological discomfort associated with these disorders is said to be functional abnormalities and inordinate in different parts of the brain-ventral axis, including the hypothalamic-pituitary-adrenal axis, sympathetic and parasympathetic nervous system, and hormonal and serotonergic system (Preclle and Sanino, 2007; Woo, 2001).

On the other hand, abdomen and brain are directly connected to each other, and this two-way connection takes place through the autonomic nervous system and hypothalamic-pituitary-adrenal axis. Note that the location of abdomen control in the central nervous system is the limbic system which also plays a major role in the excitement that is a nonverbal system to facilitate the survival, avoid the threats, social communication and learning. Limbic system generates excitement and physiological changes associated with it, and from the nervous anatomy point of view, it may be the key in mind-body interactions. However, stress is known as a threat to the balance of this organ that is involved in the

1- Irritable Bowel Syndrome

creation of functional gastrointestinal disorders. The relationship between stress and digestive functions and senses shape the basis of bio-psycho-social model in the disorders (Jones, Crowley, and Olden, 2007). However, most existing studies consider a part of emotional dysregulation as a personality trait called alexithymia distinguished with difficulty in identifying and verbally describing the emotions. These studies provide strong evidence about the relationship between the emotional regulation deficiency and psychological problems such as depression and anxiety and physical problems such as inflammatory bowel disease, rheumatoid arthritis, chronic low back pain, and functional syndromes such as fibromyalgia or functional gastrointestinal disorders, especially IBS syndrome. Furthermore, it is argued that in functional gastrointestinal disorders, the emotion regulation deficit in the form of alexithymia and its relationship with somatization and mediation of psychological problems such as depression and anxiety are involved. The alexithymia or emotional inhibition is an important risk factor for psychosomatic disorders including gastrointestinal diseases (Mazaheri, et al., 2010).

However, new therapies such as mindfulness, derived from cognitive-behavioral treatments, are used that are an important component of the third wave of psychological models (McCarne, Solz, and Gri, 2001). Mindfulness means paying attention in a particular way, i.e. by attention and concentration where three elements are involved in: 1) be present, 2) be targeted, and 3) without judgment; this kind of attention increases awareness, transparency, clarity, and acceptance of reality (Cacran, 2009). However, mindfulness helps people to understand that negative emotions may occur, but they are not a fixed and permanent part of character. It also allows individuals to respond to events through thinking and reflection instead of answering involuntarily and without reflection (Emanuel, Updegraff, Kalmbach, and Ciesla, 2010). Also, people use meditation to foster emotional regulation skills (Linnaeus, 1993).

The re-evaluation is one of emotion regulation skills; emotions are brought to the conscious level at re-evaluation and explored, and the relationship between states and internal and external stimuli is checked again (Wscnner et al., 2002; quoted by Mohamadkhani and Heydariyan, 2014). Also, mindfulness enables the person to create a totally different relationship with internal emotions and external events, through creating real-time awareness and behavioral orientation, based on logical responsibility instead of automatic reactivity so that one can employ higher mental functions in an effective way including attention, kind attitude, curiosity, and compassion. So, mindfulness can efficiently exert control over emotional responses through inhibition of cortical limbic system (Kabat Zin, 2003, quoted by Mohammadkhani and Heydariyan, 2014). Zomorodi and Rasoulzadeh Tabatabaei (2013) evaluated the effectiveness of cognitive-behavioral therapy and mindfulness-based therapy on reducing symptoms and improving the quality of life in patients with IBS; coping skills were performed, and the results showed that mindfulness-based therapy is more effective than cognitive-behavioral therapy on reducing symptoms and improving life quality and also on adjusting coping skills of patients with IBS and maintaining the effectiveness in long-term.

Grossman, Tiefenthaler- Gilme, and Raysz Kesper (2007) showed significant improvements in pain, quality of life, coping with pain, anxiety, and depression through evaluating the effects of mindfulness-based stress reduction method on public welfare aspects, including quality of life, coping with pain, anxiety, and depression. However, the present study was evaluated the effectiveness of training mindfulness-based stress reduction method on negative emotions (depression, anxiety, and stress) of gastrointestinal patients. In addition, the innovation of the present study is related to performing mindfulness-based stress reduction intervention on patients with gastrointestinal diseases such as irritable bowel syndrome, gastric

ulcer, and duodenal ulcer, based on previous research psychological factors which have been effective on these digestive disorders. Accordingly, this study sought to determine the effectiveness of mindfulness-based stress reduction therapy on reducing the variables presented. In addition, the main research question was whether training mindfulness-based stress reduction method is effective on negative emotions?

Materials and methods

A quasi-experimental (pretest-posttest) designs with a control group was conducted. Inclusion and exclusion criteria were as follows: having a digestive disease diagnosed by a doctor, not having received any psychological treatment before entering the study, a minimum age of 25 and maximum age of 55, having literacy, informed written consent from the patients, and no history of substance abuse and psychotic drug. The participants included patients who referred to the clinic and admitted to the internal medicine ward of the Abbasi hospital in Miandoab city during 2015 due to digestive disorders. Thirty male patients were selected using purposive sampling and were randomly divided into control and experimental groups. After mindfulness training by researcher, data were analyzed via ANCOVA analysis.

Instruments

Depression, Anxiety, and Stress Scale (DASS¹)

This scale (Lavybund & Lavybund, 1995) is a set of three self-report scales for evaluating negative states of depression, anxiety, and stress. The use of this scale measures the severity of the core symptoms of depression, anxiety, and stress. On the other hand, to complete a questionnaire, the individual has to determine the status of a symptom during the past week. Since this scale can provide a comparison of different symptoms during the week, it can be used to evaluate treatment progress over time. The

validity and reliability of DASS was validated by Anthony (1998) applying factor analysis, showing that there are three factors of depression, anxiety, and stress. The results revealed that 68 percent of the total variance scale is determined by three factors. However, equity value of stressors, depression, and anxiety factors in the present study was found 9.07, 2.89, and 1.23, respectively; alpha coefficients for these factors were 0.97, 0.92, and 0.95, respectively. However, the reliability and validity of this inventory in Iran has been studied by Samani and Jokar (2007); the retest reliability for depression, anxiety, and stress was reported 0.80, 0.76, and 0.77, respectively, and Cronbach's Alpha for depression, anxiety, and stress was reported equal to 0.81, 0.74, and 0.78, respectively. In examining the validity of this scale, confirmatory factor analysis and principal component analysis were used. However, scoring and interpretation of subscale scores of DASS-21 contains seven questions that are calculated for the final score. Each question is rated from zero (does not apply at all in my case) to three (completely true in my case), also because DASS-21 is the short form of original 42-item scale; the final score of each subscale should be doubled, and then the severity of symptoms can be determined by referring to Table (Samani and Jokar, 2007).

Recognition criteria (ROMEIII)

Diagnostic criteria of ROMEIII by the board of ROMEIII is a tool for the diagnosis of functional gastrointestinal disorders as well as a research tool, presented to the scientific community after various revisions with the collaboration of many gastroenterologists in 2006 under the name of RMEIII. This tool has a high standard and is used in Iran for detecting gastrointestinal symptoms (such as irritable bowel syndrome, gastric ulcer, and duodenal ulcer) by gastroenterologist and internal physicians (Iran Gastroenterological Association, 2015).

Intervention

In the present study, after random assignment of

patients with gastrointestinal disease into control and experimental groups, the experimental group received a group training course on mindfulness-based stress reduction according to the standard model suggested by Kabatzin (2005). It was performed in eight weeks and in an hour and a half once a week by the investigator. Each session included a brief report of the contents of past week, a review of homework and techniques; at the end of each session, the most important points of the sessions were presented to the participants as homework in the form of writing or brochures. The content of sessions is as table 1:

Findings

The average age values of the experimental group

and the control group were 38.33 years and 34.40, respectively. T-test results showed that the difference in the mean score between two groups was not significant and groups were homogenous in terms of age. Table 2 shows the distribution of variables of gender, level of education, type of digestive disease in the control and experimental groups. To examine the homogeneity of groups in terms of the mentioned variables, chi-square test was performed (Table 1). The groups were homogenous in terms of gender, level of education, and type of digestive diseases.

The descriptive statistics of negative emotions scores regarding the pre-test of control and experimental groups are presented in Table 3.

Table 1: The contents of 8 group training sessions

Session	Content
Session 1	Pre-test, communication, and conceptualization of the problem: The first 30-minute was devoted to the implementation of the pre-test. After the pre-test, mindfulness therapy, negative emotions, and gastrointestinal symptoms were explained to the participants, and the time and place of meetings and duration of sessions were agreed between the participants and tester.
Session 2	After a short review of the previous session, training was given through attention practice. To do this, some raisin was given to each subject, and they were told to focus on one of them and imagine that they have never seen anything like it before. Then, they were supposed to hold one of them in their palms between their thumb and index finger (pause). Then, they had to look at it carefully (pause) and slowly rotate between the fingers (pause) and feel its texture between their fingers (pause) and closely look at it under light to see its darker dimples and folds (pause), and if, while doing so, any thoughts came to their mind like "I am doing an odd work" or "What is the purpose of this" or "I do not like this", they were not supposed to pay attention and had to turn their awareness back to the raisins (pause). Then, they had to smell the raisins, keep it under their nose, and smell it carefully with each breath, take another look (pause) and pay attention to the taste by eating raisins quietly, and pay attention to absorption, taste, biting, chewing, saliva, changing its strength, and consciously pay attention to the experience and swallow it. At the end of the meeting, the members of the group were given homework, i.e. they were asked to eat or at least employ taste awareness exercise once during eating, and if necessary, practice it with their family.
Session 3	Mindfulness of breathing ,review of last week assignments, sitting meditation practice, review exercises, breathing exercises, and three-minute breathing space: After learning the mindfulness of breathing, relaxation techniques such as relaxing breathing (inhale and exhale when you say words of peace) without thinking about something else and watching breathing with closed eyes were taught through the following steps: Step one: Learning comfortably and sitting quietly, perpendicular spine, and keep training and learning (10 min). Step two: breathe in and breathe out deeper than normal (15 min). Step three: paying attention to the passage of air in and out during breathing and controlling it, and attention to movements of the chest and abdomen during inhalation and exhalation (15 min). Step four: repeating calming words in mind at inhale and exhale (i.e. how much comfortably I breathe, my chest is relaxing ...) (15 min). It should be noted that in this session, 2 to 3 min rest was given to the subjects between each of the above steps to avoid sleeping. At the end of the session, the group members were given homework to practice deep breathing techniques before falling asleep with closed eyes. Talk about homework.

Table 1: (Cont)

Session 4	After a short review of the previous session, body scanning or body inspection technique was taught for stress relief, in which the following steps were taken with closed eyes: The first step was paying attention to movements of abdomen and chest when breathing (15 min); Second stage: the practice focuses on public awareness of the body and movements from all parts of the body such as, feet, legs, knees, thighs, waist, abdomen, chest, shoulders, hands, neck, face, lips, eyes, ears, and forehead (25 min); talk about homework.
Session 5	Stay in the present time: a review of last week assignments, 5 min “seeing or hearing” training, the practice of mindfulness of breathing and body inspection. Practice seeing and hearing: In this exercise, participants were asked to look and listen for 5 min without judgment. Searching for the sense of hearing by listening to the environmental sounds, especially the footsteps of trainer and careful attention to respiratory sounds, regardless of teaching anything else (20 min), practice of mindfulness of breathing (15 min), practice of body inspection (15 min), discussing homework, and answering participants’ questions.
Session 6	Thoughts are not facts: review of last week assignments, discussing different views or alternative thoughts, sitting meditation (mindfulness of sounds and thoughts). Attention to mind, positive and negative thoughts, pleasant or unpleasant thoughts, allowing the entry of negative and positive thoughts to the mind and easily evacuating the mind without judgment and paying attention to them were taught. Also, “what is the best way to take care of myself” exercise and an exercise where participants determined which events in their lives are pleasant and which ones are unpleasant; in addition, how to plan life with enough pleasant events; talk about sleep hygiene and homework.
Session 7	License of presence: review last week assignments, breathing exercises, sitting meditation (awareness of breathing, body, voice, and mind), a description of stress and its relationship to pain, stress responses, and reactions of an individual to difficult situations and attitudes, and alternative behaviors; training 1) conscious mind walking 2) sitting meditation 3) body scan with conscious mind body movements 4) practicing three-minute breathing space (in an unpleasant event) and discussing homework and answering the questions of participants.
Session 8	Reception and change: review past week assignments, the practice of body inspection, summing up sessions, examining and discussing the program, scanning the entire body, and raising questions about sessions such as whether the participants achieved their expectations? Do they feel that their character has grown? Do they feel that their coping skills has increased, or do they like to continue meditation and three minutes breathing space and attention to object exercises (when eating at the present moment). After the post-test, they were asked to perform mindfulness techniques in their daily lives to improve their health.

Table 2: Distribution of sex, education, and the type of digestive disease in both groups, and chi-square test results

Variable	Experimental (N=15)		Control (N=15)		Statistics
	Frequency	%	Frequency	%	
Gender					X ² = 0.067 P=0.715
Male	7	46.7	8	53.3	
Female	8	53.3	7	46.7	
Level of education					X ² = 0.067 P=0.713
Under diploma	6	40	9	60	
Diploma and higher	7	46.7	8	53.3	
Type of digestive disease					X ² =0.08 P=0.904
Gastric ulcer	4	26.7	5	33.3	
Duodenal ulcer	5	33.3	5	33.3	
IBS	6	40	5	33.3	

In the pretest, mean and standard deviation scores of negative emotions for the experimental group and the control group were 14.85 ± 63.73 and 17.12 ± 55.33 , respectively (Table 3).

The descriptive statistics of negative emotions scores in the post-test of control and experimental groups are presented in Table 4.

Table 3 shows that in the post-tests, the mean and standard deviation scores of negative emotions for the experimental group and the control group were 13.38 ± 38.07 and 18.85 ± 46.33 , respectively.

However, to test the research hypotheses, analysis of covariance (ANCOVA) was used. For doing this, however, firstly some of the assumptions of covariance were evaluated.

A) Normal distribution of scores: it is normal in both pre-test and post-test.

B) The slope of regression: regression homogeneity hypothesis is established.

C) The assumption of homogeneity of variance: heterogeneity of variances is established in the two groups for negative emotions variable.

Since assumptions of the analysis of covariance are established, we are allowed to use this statistical test.

After controlling for the effects of negative emotions in the pre-test, post-test differences between

the groups were statistically significant at 0.05 (Table 7), i.e. mindfulness-based stress reduction training affected reducing negative emotions, depression, anxiety, and stress in patients with gastrointestinal disease with 95% confidence ($F = 5.93$, $df = 1, 27$; $P < 0.05$).

Discussion and conclusion

The current study evaluated the effectiveness of mindfulness-based stress reduction on negative emotions (depression, anxiety, and stress) in patients with gastrointestinal diseases (IBS, gastric ulcer, and duodenal ulcer). The experimental group received mindfulness-based stress reduction intervention and showed a significant decrease in scores of negative emotions (depression, anxiety, and stress) compared to the control group.

The results showed that there were differences in negative emotion mean scores between experimental and control groups. Also, after statistically controlling for pre-test effect, there was a significant difference between the two groups in terms of the post-test scores of negative emotions; thus, it can be concluded that reduced negative emotions in test scores was the effect of mindfulness-based stress reduction intervention.

Overall, the results suggest that mindfulness-

Table 3: Descriptive statistics of negative emotions in the two groups in pretest

Variables	Group	Number	Mean	SD
Negative emotions	Experimental	15	63.73	14.85
	Control	15	55.33	17.12

Table 4: Descriptive statistics of negative emotions in the two groups in post-test

Variables	Group	Number	Mean	SD
Negative emotions	Experimental	15	38.07	13.38
	Control	15	46.33	18.85

Table 5: The results of covariance analysis of post-test of negative emotions after controlling the pretest

Source of changes	Sum of squares	Degree of freedom	Mean of squares	F	Sig	Effect size
Pretest of negative emotions	2187.62	1	2187.62	11.16	0.002	0.29
Groups	1162.42	1	1162.42	5.93	0.022	0.18
Error	5292.654	27	196.02			
Total	61418	30				

based stress reduction intervention can be effective as a supplement to drug therapy for patients with gastrointestinal problems (such as irritable bowel syndrome, gastric ulcer, and duodenal ulcer).

Few studies have been conducted on the effectiveness of mindfulness-based intervention on reducing negative emotions (depression, anxiety, and stress) in patients with gastrointestinal disorders. However, the findings of this study confirmed the effectiveness of mindfulness-based stress reduction intervention on negative emotions of gastrointestinal patients, which is in line with the findings of Aghayousefi, Edraki, Zareh, and Imani (2013), who investigated mindfulness training on reduction of stress, anxiety, and depression in substance abusers. They concluded that mindfulness training is effective to reduce stress, anxiety, and depression among substance abusers. Similarly, in a meta-analysis study, Aucoin, Lalonde-Parsi, and Cooley (2014) found that mindfulness-based interventions were effective on reducing symptom severity and improving quality of life in IBS patients (Ellis, 2015).

Many research studies show that difficulties in emotion regulation (emotional deregulations) are key factors in developing many clinical behaviors and psychological problems (Gratz and Tull, 2010). Also, given psychological symptoms such as depression, anxiety, and stress as the cause of many well-known digestive disorders, many researchers conducted studies to confirm it, involving Dibajnia, Moqadasin, and Keikhari (2013) who examined the relationship between psychological disorders with irritable bowel syndrome. Their results showed that patients with IBS suffered from depression and generalized anxiety symptoms two and five times more than normal people, respectively.

Hence, cognitive change is one of the techniques in mindfulness therapy through which people learn to observe their thoughts and feelings without judgment and take them as mental processes that pass by and do not make the reality. In this viewpoint, people in this therapeutic plan learn not

to get trapped in rumination patterns (Teasdale, 2002; quoted by Mohammad Khani and Heydariyan, 2014). Therefore, gastrointestinal patients have more depression symptoms (such as negative thoughts and deep attention to these thoughts and past) compared to non-patients; the current study showed that mindfulness-based stress reduction training and exercise (thoughts are not facts and allow the entry of negative and positive thoughts to mind, without judging them and without strong focus on them) reduced depression in the experimental group.

Narimani, Arian Puran, and Abolghasemi Vahedi (2012) evaluated the effectiveness of training mindfulness-based stress reduction and emotion regulation on affection and mood of veterans of Sardasht city, revealing that mindfulness-based stress reduction training in the experimental group significantly reduced negative effect and increased positive effect, compared to the control, given that one of the psychological aspects of patients with digestive disorders (such as irritable bowel syndrome, peptic ulcer, and duodenum ulcer) includes anxiety, stress, and other disorders. For example, Yusefi (2014) compared the early maladaptive schemas and styles of emotion regulation in patients with functional gastrointestinal disorders and normal people, showing significant differences between the study groups in terms of early maladaptive schema, particularly disruption and vigilance. In mindfulness therapy and its techniques, people learn to observe and think free from judgment and criticism, with compassion towards themselves and others in practice. They learn to identify the pattern of negative thoughts by observing stressful and tragic negative thoughts before they are drawn into a vicious cycle. Thus in the long run, mindfulness causes great changes in mood and levels of happiness and health of individuals (Williams and Penman, 2011; quoted in Mohammadkhani and Heydariyan, 2014). In this study, most patients with gastrointestinal disease (such as irritable bowel syndrome, gastric ulcer, and duodenal ulcer) complained of insomnia

due to intrusive thoughts, stress, and lack of focus. Considering teaching mindfulness-based stress reduction through three-minute breathing exercises (inhale and exhale with relaxation techniques) without thinking about anything else and watching the breathing techniques, especially before the sleep, patients reported that they could sleep without taking pills. Through practicing concentration on the object (eating raisins) and applying it when eating, patients reported more comfort and pleasure.

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