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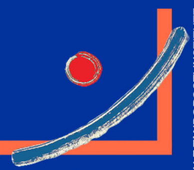

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From Umwelt to Umwelten of Human Being; a Glance on Mulla Sadra's Mind-Body Model

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Editorial

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This editorial is the result of my questions about and insights into "phenomenal world" (Umwelt). It is a text consisting of some short contemplations which immediately push us into the "phenomenal world". Although it seems that each topic gives us a unique perspective for contemplating ourselves and other topics, sometimes they come together in some determining points and transform this text into a picture of concepts and meanings. Wherever in the text you see it, the term "phenomenal world" is brought in quotations – of course, not in the sense of Husserl's bracketing the world. I resort to two great philosophers in my contemplation so that it is possible to finish the text in the briefest form while explaining the reason for putting “phenomenal world” in quotations and the meaning of “phenomenal world” to the most possible extent with the hope of grasping some worthwhile insights about "phenomenal world" in their philosophy. It is evident that the extent to which we explore is never enough to fully grasp their philosophy about the subject. One of the philosophers is Mulla Sadra – the great Iranian philosopher – and the other is Rene Descartes – the well-known French philosopher, and the pioneer and founder of modern philosophy in the west. What is said about the "phenomenal world" is from the perspective of the relationship between body and soul. Nevertheless, it was not intended to deal with the historical genealogy or terminology of the concept of "phenomenal world". Therefore, we supposed that the concept of Umwelt ("phenomenal world") in its biological sense in the German language initiated in the theoretical activities of the German biologist Jakob von Uexküll. "Phenomenal world" is the endless potential of our "phenomenal worlds" to the time we exist. These are the worlds that are the signs of existence of the being and our existence in the being, not in the sense that Martin Heidegger sought in sein (being), but in the sense that Mulla Sadra found from existence of the phenomenal world.

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Contemplation 1. It has been said that Jakob von Uexküll used the theory of Umwelt to answer the biological question of the behavior of the earthworm. His question was: "How does the earthworm, which has neither hands nor eyes, understand where the tip and base of a leaf are?" (Atarodi, Rafieian, & Salavati, 2016). Through this theory, he ultimately wanted to explain why and how animals have "phenomenal worlds". How does he reconstruct the map of the earthworm's "phenomenal world" based on the functional cycle? In his view, the "phenomenal world" creates a world which envelopes the body of an organism as it is perceived by body organs. The world which surrounds the body is a space with boundaries; to put it another way, the boundaries of the world around the body is like a skin which has surrounded it. This skin is not visible for an outside observer (von Uexküll & Pauli, 2016). How can we understand that an invisible skin envelopes the "phenomenal world", which is around the organism's body? His answer is that we, as an organic system, can reconstruct the other organism's boundaries of "phenomenal world", which has surrounded its body, through analysis of its nervous system and sensorimotor organs and observation of its behavior (von Uexküll & Pauli, 2016). What does this "phenomenal world" do for an organism? The "phenomenal world" is that which creates the relationship between the organism and its environment. The "phenomenal world" works as a translator to convert the language of the environment into the inner language of the organism. Can we conclude that it is for this reason that animal systems illustrate their environment in the form of "phenomenal worlds" that contain accessible objects for them? The question of "phenomenal world" for Jakob von Uexküll and his functional cycle and also for Thure von Uexküll – Jakob's son – and his situational circle is how do human beings or animals as organisms communicate with their outside world (or their environment) and how do they survive as organisms in the world outside of their own and how do human beings as organisms give meaning to their outside world and their behaviors? Now I can shift from biological questions to philosophical ones. Hence, in this concluding part of contemplation 1, I have to say that biological questions are the starting point of epistemological questions not the end of their answers.

Contemplation 2. Can a human being be thought of as an earthworm in this being who, despite having hands and eyes, cannot understand where the tip and base of the leaves are?

Contemplation 3. Bodily perception of the earthworm from the objects in its outside world is resulted from embodiment of the motion of its body's "phenomenal world". Embodiment of the motion of its body's "phenomenal world" assimilates the entire world outside its body into it. This is embodiment of the motion of its body's "phenomenal world" that continuously recreates its body in all its "phenomenal worlds". Can we reach the earthworm's "phenomenal world" through the causal cues of its behaviors or is "phenomenal world" the cue for all causal cues of its world?

Contemplation 4. Is the "phenomenal world" where the body and the soul unite with each other on the one hand, and the body and soul associate with their outside world on the other hand?

Contemplation 5. Immanuel Kant's Copernican revolution was simply aimed at telling us that it is not the subject that adapts itself to the object, but it is the object that adapts itself to the subject. Does what Kant has stated about the structure of the mind of the human being have a clarifying similarity with Jakob and Thure von Uexküll's "phenomenal world"? In his philosophy, Kant says that the mind of the human being is designed in a way that it cannot know noumenon and can merely know phenomena. Does this mean that we are the same blind earthworm who understands where the tip and base of the leaf is through phenomena?

Contemplation 6. Human being is the only creature who is the translator of his own being through his "phenomenal world".

Contemplation 7. "Phenomenal world" is the lexicon for our world of being.

Contemplation 8. Our "phenomenal world" is the motion itself. If it is not, the embodiment of motion of the earthworm's "phenomenal world" reaches no leaves.

Contemplation 9. The philosophy of Descartes is based on the duality of the body and mind (≈ soul). In his philosophy, the mind is a thinking object and the body is an object with extension that belongs to the world outside of the mind. What is this world outside the mind that Descartes talks about? Let me say we do not know what happens to our earthworm if it enters Descartes's world outside the mind since, when it passes the gate of the world outside the mind to enter it, it has to takes its "phenomenal world" off his body! It is evident that if our earthworm comes into Descartes's world outside the mind in this way, it will find no leaves!

In Descartes's philosophy, the mind and body belong to two fundamentally different worlds. Hence, the laws of the mind and the laws of the body are fundamentally different from each other. In one direction, we have the scene of the world of the mind and, in the other direction, there is the universal scene to which body, nature, matter, or, to put it another way, all being, except the mind, belongs. Here, we have to inquire into the relations of the body and mind with the important subject of "motion" in Descartes's philosophy. Descartes knows body as an object that is subject to the laws of motion dominant in the world outside the mind. Again we have to ask what laws of motion the mind is subject to? Descartes answers that the world of the mind is fixed and has nothing to do with "motion"; motion is exclusive to the worlds of body, nature, and matter. Such distinction between body and mind in Descartes's philosophy is because he believes that the origins of the body and mind are fundamentally different; the body originates from matter and the world of nature, and the mind originates from a metaphysical and non-material world (by metaphysics Descartes intends the meaning he has made himself). In his philosophy, the body and mind have not simultaneously come from the same place and do not finally end in one place either. Descartes's ontological and epistemological system is based on the relationship between mind and body-object, rather than body-mind and object. There is no place for Umwelt in such a philosophy and, when the “phenomenal world” in this sense is put aside, there is no place for knowledges such as psychosomatics either. For instance, the relationship of the mind with body-object in Descartes's philosophy does not match Jakob's functional cycle, Thure's situational circle, or systemic theories. Here it is worthy to point out a very important subject matter: from our point of view, the modern mind in Descartes's philosophy is without environment (Umbegung) in the sense used by Jakob or in systemic theories. Overall, the relationship of the mind with body-object in Descartes's philosophy is the movement from the mind to the outside world and the existence of the outside world is not resulted from the mind. This is while the relationship between body-mind and object is the movement from the outside world toward the mind and the existence of the world is not possible outside the mind. Our earthworm knows that if the body and soul were separated completely somewhere, there would be no place for “phenomenal world”, and of course, for death!

Contemplation 10. The “phenomenal world” is the result of a kind of adaptation, coordination, and correspondence of we as "body-soul" to the outside world.

Contemplation 11. In the philosophy of Mulla Sadra, all being is the same as motion and motion is the same as all being, not that all being is in motion. Our existence in this being is the same as our body and soul. Therefore, we can conclude that his philosophy is the same as substantial motion

and substantial motion is the same as body and soul. How can we grasp the true meanings of the language of being without the instant deep contemplating body and soul? Mulla Sadra believes that substantial motion is the syntactic structure of the language of being, and body and soul are syntactic structures of the language of substantial motion. In his ontological philosophy, being is an integrated whole with correlations devoid of contrasts. Hence, being is not dual for him; not two completely separated and independent realms as is for Descartes.

Mulla Sadra believes deeply in unity, harmony, and interweaving of body and soul. Body and soul are a common language, but sometimes are different dialects, in this being from their simultaneous incidence of body and soul until the death of the body.

In his view, the soul originates from the material force of the body when it is emerging simultaneously with the soul and the substantial motion of the body, which comes from the force of nature and the outside world, and transmits to the soul. What Mulla Sadra, who lived in the second half of the 16th and first half of the 15th centuries and was more or less contemporary to Descartes, states about the body and soul is fundamentally different from what Descartes states about them. In Mulla Sadra's philosophy, the body and soul have emerged simultaneously from one place and they go to one place in the end, with some difference, while in Descartes's philosophy, as previously mentioned, the body and soul do not come from one place simultaneously and their fate is not the same at the end. We have also emphasized this about Descartes that the "phenomenal world" has no place in philosophies like that of Descartes, which know the body and soul as completely separate and independent of each other.

The question raised is what is the state of the "phenomenal world" in the philosophy of Mulla Sadra, which is fundamentally different from the philosophy of Descartes? In Mulla Sadra's philosophy, we can talk about "phenomenal world", but not specifically in the sense that Jakob von Uexküll has explained in his theory of Umwelt ("phenomenal world"). Here, we will point out some of the differences between what we can get from Mulla Sadra's explanations about the "phenomenal world" and what Jakob and Thure von Uexküll have expressed about it.

1. In Mulla Sadra's philosophy, the body is the carrier of the soul until it reaches a relative abstractness. After that, the soul is the carrier of the body. However, in the Umwelt theory, the body of the organism is always the carrier of the Umwelt.

2. When the "phenomenal world" transforms into the image of the functional cycle of Jakob and situational circle of Thure, it becomes a sign component in the human being and organism. However, in Mulla Sadra's philosophy, the soul and the "phenomenal world" do not transform into a single component, but each are a world at the level of the hierarchy of their being.

3. The "phenomenal world" in the Umwelt theory is essentially a machine for translating the organism's environment signs or inner signs for the organism. Mulla Sadra confirms that our "phenomenal world" functions as the translator of the signs of the shared language of the body and soul. Nevertheless, he does not identify it merely as a machine for translating the codes of images resulted from objective things in the environment.

4. In Jakob's functional cycle and Thure's situational circle, the mind and soul are totally replaced with the "phenomenal world". Such an attitude can bring about some restrictions and challenges for spiritual dimensions in research and clinical practice. In Mulla Sadra's philosophy, the body, mind, soul, and spirit are not replaced with each other; hence, his view is more compatible with transpersonal psychology.

5. The functional cycle and situational circle follow a kind of circular ontology, while the ontology of Mulla Sadra is based on the intermittent creation of being and

actualization of all its potential forces for our soul, and the phenomenal world reaching higher levels of evolution of existence.

Contemplation 12. The theoretical achievement and research activities of Jakob and Thure von Uexküll are valuable and appreciated. What I have discussed in this short essay was simply a few points to open up some new perspectives and start some useful dialogues between well-known theories in the psychosomatic field such as Jakob and Thure von Uexküll's functional cycle and situational circle and less-known theories such as the philosophy of Mulla Sadra. Such cross-cultural conversations can specially yield useful results for advancing the goals and methods of psychosomatic knowledge.

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Bioenergy Economy: Fields and Levels – A Narrative Review

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Theoretical Study

Abstract

The key point which is dealt with in this essay is the question of many philosophers, economists, and psychologists from Buddha, Socrates, and Epicurus to Adam Smith, Bentham, Freud, Reich, and Kahneman; the question of satisfaction and liberation from pain and boredom. Bioenergy economy (BEE) is introduced as a phenomenal-contextual, evolutionary, and metadiagnostic care system that facilitates the sustainable development of happiness. BEE follows its aim through using cognitive, behavioral, physical, energetic, and transpersonal modalities. This approach originates in the dynamic conventions of Freud, Lacan, Lyotard, and Deleuze's libidinal economy on the one hand and energy healing traditions such as yoga, qigong, and reiki on the other. Based on an economic and evolutionary model, BEE is employed to reach salutogenesis and consciousness evolution through integrating the four fields of body, narrative, relations, and intention (BEE fields). To do this, we need to cathect onto more proactive and agapistic levels of pleasure rather than cumulative and releasing ones (BEE levels). BEE uses biosemiotics as a common language for sublimating cumulative and releasing levels and following material, symbolic, reflective, and energetic signs in physical, symbolic, and existential worlds.

Keywords: Bioenergy economy, Salutogenesis, Consciousness evolution, Bioenergy economy fields, Bioenergy economy levels, Biosemiotics

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Prologue

Traditionally, there is a dominant trend in psychology to consider mind in its symbolic and abstract form. This essay is a brief review on how to care for the embodied mind in its biological, symbolic, and social extensions.

Signs in their self-regulated circuits form our complex embodied mind. To integrate the physical, mental, and social aspects of our health, we need to find a common biosemiotic language and integrative care model to provide the groundwork for a very vast variety of psychological and biological interventions. What you find in this study is an attempt to show the possibility of such a mode.

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Beyond pain and boredom

Schopenhauer (2010) illustrated life as a pendulum swinging between pain and boredom. The problem of a pendulum-like life fluctuating between pain and boredom and avoiding it has a long history continued

to the recent time.

Studies show that the inner experiences of people, and not the social and bioenvironmental aspects of their life, are more influential in the happiness and peacefulness of people [World Health Organization (WHO), 2018]. Statistics show that the average prevalence of depression (4.5 ± 1%) and anxiety (3.5 ± 1%) are approximately the same in both poor and rich countries (Numbeo, 2018). A lower prevalence of suicide is seen in countries with disastrous conditions such as Afghanistan, Iraq, and Syria (WHO, 2017). Of course, objective indices of welfare such as life expectancy (50.64 in Southern Africa to 89.37 in Monaco) (Geoba. se, 2018) in various countries differ more significantly between poor and rich countries. Naturally, the burden of distress cannot moderate all the behavioral and physical consequences of stressors (Ritchie and Roser, 2018). Hence, something other than losses or reaching desired objects are responsible for happiness.

I will extend the scope of the problem further; looking more deeply, the movement of the pendulum between suffering of losses and boredom is in fact between the suffering caused by loss of desired objects and those caused by decathecting after reaching them. This leads us to conclude that both suffering caused by losses and those caused by boredom spoil man's life and obstruct his happiness.

The pain of losses and boredom of possibilities are repeated for any object – whether it is an objective thing such as a house or a job or a state such as health and success. It is not surprising that many people who do not have the symptoms of any disease feel as if they live an empty, boring, and static life. Conversely, we see many people who live a lively, lovely, and creative life despite suffering from several illnesses. The question that comes to our mind is "as the most important prescriptions and values of today's world, should we consider health and success as fundamental values or are they merely instrumental values for actualizing the self, the self which is a process rather than a certain object, extending rather than autistic, and value-creating rather than merely valuable?"

From the above discussion, we can conclude that health, as the ultimate value of health care systems does not lead to sustainable development unless it finds its way to intrinsic values such as satisfaction, that is, coordination of emotional processing or coherence of narrative. Flexibility of personality (Sutton, 2018), integrity in body functions (Riva and Dakanalis, 2018), and coherence of self (Antonovsky, 1979; Siegel, 2005) are equivalent indices which provide more openness and unconditional happiness as an outcome of the organism's attempts.

From an evolutionary point of view, if a care system cannot transform instrumental values into intrinsic ones, it is insufficient and non-economical. Even if medicine becomes able to make an ever-lasting life possible for man, it would be an instrument for developing suffering and a futile life.

In addition to extending himself in time and power, man has to extend himself into meaning to get rid of such a vain life. It is the fate of Sibyl in Eliot's The Waste Land – and may be the fate of future human beings to have such a useless life. Sibyl had asked for and was given eternal life, but had forgotten to ask for eternal youth. Having a lengthy and miserable life, Sibyl desired death. The fear is that despite asking for a long life with a young body, the future human being is coerced to live in the cage of an old and perished mind. Bioenergy economy (BEE) is an integrative, contextual, and metadiagnostic model of care directed at sustainable development of happiness. My studies and clinical experiences in past years can be considered as attempts to approach a life-oriented care model that understands and manages the health of the body and psyche in the context of life and its evolutionary values.

BEE has its roots in my personal and professional experiences with the libidinal

economy of Freud, Reich, Lyotard, Deleuze, and Guattari, biosemiotics of Lowen, energy medicine, Peirce's semiotics, systems theory, contextual therapies, especially consciousness-based methods, Merleau-Ponty's phenomenology of the body, transpersonal psychology, and also Eastern healing traditions such as yoga, qigong, and reiki, and, most of all, sufistic psychology (Goli, 2010; Levold & Goli, 2017).

The effectiveness of BEE has been shown in clinical trials, empirical studies, and case studies conducted recently in contexts such as improvement of mood, reduction of anxiety, and pain control in migraine patients (Derakhshan, Manshaei, Afshar, & Goli, 2016), treatment of autoimmune disorders such as ulcerative colitis (Goli, 2016a) and pemphigus (Goli, 2016c), improvement of psychological and physical symptoms of irritable bowel syndrome (Safavifard & Goli, 2018), amelioration of tethered cord symptoms and signs (Goli & Boroumand, 2016), improvement of anxiety sensitivity and attention bias (Rafienia, Bigdeli, Sabahi, Goli, & Keyvanipour, in press), as well as promotion of educational performance and presence experience (Ahangar Ahmadi, Henning, & Goli, 2017).

The answer to the question "how can this care model help the sustainable development of happiness?" is "by going beyond levels of sooner and more pleasure and reaching levels of more sustainable, and finally, unconditioned pleasure through the teleonomic guiding of matter-energy-information in the body, narrative, relation, and intention fields."

In this essay, I will try to explain the necessity and the way of optimizing a model of bioenergy investment and the role it plays in health and satisfaction.

Bioenergy economy levels

To survive, human organism as an economic system needs to accurately interpret its needs. It also needs to have access to new resources and use them optimally so that it creates more value and its self evolves into a more valuable self. For this reason, we have to search for those objects which have intrinsic value. Following economy and psychotherapy traditions which see pleasure, satisfaction, or happiness as intrinsic values (Oyserman, 2015; King & McLure, 2014), concepts of pleasure, or sometimes happiness, are mentioned as intrinsic value in BEE. By pleasure, we mean the extending mode that originates in the body and tends to extend in time rather than released impulsively. The difference between developing and releasing pleasure is that which is mentioned by Socrates in Philebus. He explains that authentic pleasure is wisdom or the force which forms life and body, because being aware is the condition necessary for enjoying (Plato, 1972). Wisdom is a constructing force that has emerged from self-organizing, autopoietic systems rather than the one that manages the flow of energy-matter from outside. Life as such a system emerges from repetitive and synergetic sequences of material processes (Haken, 1983; Maturana & Varela, 1991). In this sense, life stream is the desire for joining and forming more complex systems. In other words, this desire has constructed our reflective body, and it is differentiated in the local body in the form of drives. Considering all the above-mentioned facts, there is no difference between wisdom/pleasure or reason/love orientations. Rather, there is a functional and evolutionary difference between pleasure caused by a transient release of one drive or situational self and that caused by extension of the whole in embodied mind-time-space. Following this, BEE is in search of reaching sustainable development of happiness (pleasure) by directing the cathexes from releasing and cumulative levels of pleasure to proactive and agapistic ones. These are discussed in the following sections.

Releasing level of pleasure

In releasing economy, pleasure is made by

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drives, ancient modules of our brain, and conditional learning that are activated by a specific situation, interpret the signs of the environment, and form behaviors. The genetic algorithms of drives, mental modules, and the memetic algorithms, which are coded culturally and personally, perform spontaneously. As an instance, according to the natural thinking model, fear or greed may lead the organism to find the nearest way to lower and release their tension as soon as possible by careless removal of barriers and extension of the self into resources; what Freud calls the “pleasure principle” (1977).

Cumulative level of pleasure

Releasing economy is not sufficient even for less communicative forms of life, and evidently, in most complicated social environments of the present day human being. In the world of today, man has to be able to overlook and inhibit sooner pleasure for the sake of cumulative levels of pleasure. To reach more release and pleasure in the course of time, man has to postpone his searching, digestive, and phallic drives to an appropriate time and overcome the inertia of his body to store more food for winter or more stable resourceful relations; what Freud called the "reality principle" (1977). This level is actually the outcome of physical, biological, social, and cultural negative reinforcement of impulsive behaviors which have aroused from sooner and pleasure-seeking.

In the "cumulative economy" level, pleasure, which was in a three-dimensional space, comes into a four-dimensional space. In this level, man has the opportunity to consume available resources (having pleasure), but not satisfaction (meeting pleasures); he is always stuck in the dilemma of selection between happiness and goodness (pleasure/virtue), or between his own happiness and goodness for others. In more developed countries, goodness is the purposive hindrance of pleasure and caring for others to actualize a self that has selected a greater communicative space. On the other hand, goodness is the same as happiness since our body is not restricted to the skin, but it is an inter-intra-transpersonal body. Knowing this and considering the fact that the contrast between happiness and goodness is essentially the contrast between sooner and more pleasure, the pain caused by hindering happiness and resisting environmental and normal pressures becomes bearable. Expecting something which brings about more pleasure awakens the brain reward system, decreases man’s dissatisfactions and frustrations, and can prevent bioenergy from wandering and symptom generating.

Proactive level of pleasure

In the third level, the proactive level of pleasure, man is the elector between sooner and higher pleasures (consuming and having the resources), but knows that these two levels are not sufficient for producing sustainable pleasure. A mature mind of this level tends to construct his self and the meaning of his life by "constructing" new resources and ways (pleasure creating). In this level, man’s consciousness has a caring, selective, and creative nature the work of which is to establish identity and existence of the self and its pleasure is constructing even if it is needed for man to ignore his sooner and more pleasures and cope with various deprivations (Sartre, 1962; May, 2015) to the extent that it may lead to severe traumas or even death. In this sense, man has given priority to intrinsic values that give him the pleasure of being the self and being extended in his world of meaning, that is, the pleasure is an ontic pleasure (Sartre, 1962).

Agapistic level of pleasure

In the agapistic level (unconditioned level), consciousness is directed towards harmonizing its construction with "being". This is brought about by developing a relational and proactive understanding of the self. Here, man dwells in a transpersonal

body so that caring for his body for him becomes equivalent to caring for existence. Pleasure is not achieved by quantity, quality, and action; rather, pleasure is the same as being or being attuned with the whole. This state was known as unconditioned love or agape from ancient times.

Peirce (1893) sees agapism as the stream of increasing correlation of signs. It shows how signs have gradually become interpretable in the course of evolution, created a wider meaning network, and little by little formed this global village from sole cells (Peirce, 1893). We can consider agapism as an analogue of desire in the universal scope. Pleasure in this level is the characteristic of the transpersonal boundarylessness body rather than a mode imposed on the body. Pleasure is pure pleasure in this sense and there is no barrier between "I" and the desired object (being or creating our own existence). Here we have transcended the triadic oedipal world into the world of dualistic oneness where there exists neither the paranoid ego nor the one in combination with the other. In Heidegger's words, there is a subtle and vague, but secure and sustainable individuality that cares for existence (2008).

From the above discussions, we understand that we have to turn our attention from objects to joy. The sustainable development of happiness as a more intrinsic and contextual pleasure is raised from the proactive-bodily extension of the self. Joy in this sense is the bodily attunement of self and desire. Of course, this process is painful by nature. The teleonomic procedure of joy-making leads to a complex release with openness to a new self with new potentials, powers, and abilities. All these become possible through employing an economic model sensitive to the needs of being which also mindfully guides matter, energy and information to sustainable development of happiness amongst the body, narrative, relation, and intention fields.

Fields of BEE

The four fields of mechanical body (physical body), symbolic body (narrative), interpersonal body (relation), and transpersonal body (intention) are self-organizing meridians of bioenergy. It seems that body-awareness and integration in each field not only enhance its function, but also help other bodies to become coherent and integrated with each other (Goli, 2016a). Many experiences are encoded in the body and become the background music of our life. Even after the establishment of procedural and autobiographical memories and bodily thinking works in the form of body modes and imaginary language (Kövecses, 2003; Johnson, 1990), we need both cognitive-behavioral processing and bioenergy reprocessing in the body. In this way, our rhythm, mode, thought, and relationships become aligned with life.

As will be discussed later, body awareness is the strategy used in all BEE fields for making our investments timelier and more optimal in the present. For this reason, there is a need to align body rhythm and cognitive orientation together as well as know and live our values. This in fact is a strategy that harmoniously transforms our cognitions (potential bioenergy) and emotions (actual bioenergy) (Jung, 1969).

Body economy

In body economy, the expansion of awareness is on the mechanical body. Here, body is used not only in the sense of material-energetic-symbolic-reflective extensions of our organism but also in its more common meaning of a physical body. To make bioenergy distribute more evenly in the body, we have to use muscle economy to release unnecessary tensions (Jacobson, 1934). In addition, to release tension, dynamic coherence of energy-information is needed in tactile, proprioceptive, vestibular, and visceral systems for balancing the body. This balance and dynamism in the gravity field of the earth help the development of

coordination and integrity (Rolf, 1962; Rolf, 1977; Myers, 1997a; Myers, 1997b; Oschman, 1993). "Tensegrity" as the main objective of BEE in this domain is the state in which the pressures and strains in the body neutralize each other and cause the homogeneous distribution of energy in the body (Levine, 1985; Ingber & Jamieson, 1985; Ingber & Folkman, 1989). Tensegrity is the same as the sense of coherence in itself and security in emotional processing.

"Body review" sensation is a technique for developing body awareness in this field. The awareness is more focused on homogeneous distribution of energy in the musculoskeletal system. In body economy, like other mindfulness-based methods, body review (body scan) (Hofmann, Sawyer, Witt, & Oh, 2010) is used to develop our non-judgmental awareness of tactile, proprioceptive, vestibular, and visceral senses so that our cathexes become synchronized and our bioenergy becomes more coordinated. Here we are especially dealing with scanning bodily sensations. By facilitating balance, tensegrity exercises enhance relaxation responses, differentiate between work and load, and give us the experience of grounding and security in our mechanical body. This is the balanced state of the body, which makes physical and emotional functions of the body more stable. This balanced state of the body provides more stability in physical and emotional functions (Rolf, 1977; Kurtz and Prestera, 1977). In this method, the first response to distresses instead of overthinking is to become aware of the body and achieve tensegrity so that the loads on the body, which disturb the body rhythm and make our responses untimely and ineffective, decrease to a great deal (Jacobson, 1976; Jacobson, 1938).

Another technique of this field is body caress which is stroking the body and discovering new qualities. This exercise develops curiosity and care both of which are constructive emotions that keep us oriented towards life. Body caress is a routine to foster self-compassion and body awakening.

In sum, body economy aims to reach muscle economy (Jacobson, 1934), make body cathexes functional, thus making the body timely, releasing it from past and future loads, and caring for the body.

Narrative economy

Organizing the energy-information flow in the symbolic body is what we deal with in narrative economy. The world is figurated in our body in the form of affections and namely body modes. We construct ourselves with these bodily modes. The bodily modes and qualities are named feelings and interpreted as emotions (Damasio & Carvalho, 2013). We value our body modes, form them, and finally, narrate them in a time sequence as our life. Apparently, the self is more coherent when the relationships between the events of our narrative are more meaningful. Integration of events around our given "I" in the narrative self is equivalent to releasing energy blocks in the mechanical body and feeling centered in the gravity point of the body (fluent-focused body). In this way, the energy-information stream flows freely throughout the whole body, and hence, interpretations will have a high meaningful correlation and things in life seem to be more manageable (Antonovsky, 1979).

In this field, we need to change our narrative. This is possible both through cognitive and insight-oriented changes and changing the body tune. "Bioenergy reprocessing" in the body (fluent-focused), "attention work", "speech pragmatization", and "non-dual narrative" are the main techniques used in narrative economy.

Bioenergy reprocessing is caring for the body and reorganizing the context of bioenergy. Developing awareness is correlated with the free flow of energy-information in the body. This is possible through redistribution and reprocessing of bioenergy, attunement and meta-attunement of bioenergy streams, and energy works. Therefore, energy-touch and energy-

awareness exercises are methods used for this reason (Goli, 2010). The micro-vessels of the self are the bioenergy flows that encode the world through our body tune. Energy awareness redirects our attention to the more fundamental, but non-conceptualized level of the self.

Attention work is the conscious distraction of attention from dysfunctional thoughts through diffusing it, changing the body tune via turning the eyes, changing our place and modes of the body, expressing gratitude, and reminding ourselves of our resources. These routines can make us secure and turn our attention away from grudges, blame, and regret. Gratitude activates the brain's reward system and causes us to think more pragmatically by reminding ourselves of our resourcess (Zahn, Garrido, Moll, & Grafman, 2014).

Speech and thought pragmatization is a technique used in this level to distract our attention from repetitive and dysfunctional propositions such as “I am so weak, poor, and so on” and direct it toward the functional outcome of the proposition. Thus, instead of repeating the latter, I will repeat its functional outcome “I am making myself weak, poor, and so on” (Ellis, 2001). This decreases the endless reproduction of such dysfunctional propositions. The key to using this technique is body-awareness and perceiving what is happening in the body. We can check the effect of our speech in our body. The suggestions and implications of our verbal behavior can be traced in our body directly or by intercorporeal mirroring.

Non-duality in narrative is the basic approach of this field. This is the way to prevent our bioenergy from fluctuating between pleasure-goodness and self-other. Here, we understand that goodness is the same as the sustainable development of happiness.

Narrative economy is focused on caring for our body compassionately and coordinating bioenergetics and symbolic processing.

Relation economy

In the narrative field, we try to attune investments existing in the intrapersonal intersubjective world, while the focus in relation economy is on attuning cathexes of the interpersonal intersubjective world. The relation field is the expansion of the body spatially and symbolically. Therefore, relationships can be considered as extensions of the energy-information flow in the intercorporeal body.

In this field, body-awareness is placed on the interpersonal body. When we consider the phenomenological principle that we live in this world in our lifeworld and the BEE principle that all our behaviors and activities are for living our own values, we understand that caring for others equals caring for our own interpersonal body. Bioenergy interactions and couplings affect us through altering our biofield, in other words, our phenomenal field.

In this field, we try to stick to our values, while staying open to communication with others. Body-awareness in this field is used to scan whether the flow of energy-information through our interpersonal body is directed toward living our values or not. Timely directing of bodily distresses due to our anti-value investments is a powerful tool for releasing our bioenergy from obsessed or enforced objects. Early shifting from the image of an object to the quality of the body is the BEE golden key.

The techniques used in this field consist of "biofield-awareness" to be grounded in our biofield, "self-directed act", "forgiveness", "moderating distance-angle-bond" to manage our relationships contextually, and coordinated caring for our own thoughts, feelings, and relationships.

Amplifying and increasing the sensitivity of this field leads to development of the sense of intuition; that is, navigating the periphery (Rome, 2014; Mollon, 1991). Since consciousness is non-local and non-temporal, it can experience from any spatial or symbolic perspective (Jaynes, 1976).

Consciousness goes beyond boundaries of the skin into the biomagnetic field (Cohen, 2004), so we respond when others enter into our proxemics in the periphery of our body even if they do not touch us (Hall, 1990; Rogers, 2000). Moreover, our sense of biofield integration, and consequently, sense of security in relations are increased when we come out of our mind and stay open and engaged in the present moment of relationships. This presence also makes evident resources by which we can remove barriers to effective relationships and refrain from fixed and traumatic patterns we have in relationships. In other words, biofield-awareness leads to developing security in relationships and the timely adjustment of the context of relationships in terms of distance-angle-bond. By distance, I mean temporal and spatial distance through which the efficiency of a relationship is maximized. The angle of a relationship is the way of our cathexes onto a relationship; that is, contextually and implicitly, or in an explicit and confrontative manner. By bonds, I mean that a relationship may have various meanings or, in other words, contracts and roles. To be aware of the bonds of a relationship in the present moment and attune them with our values coordinates cathexes that are discordant. Overall, acceptance of the other's being and having selective behavior with him/her is a major strategy in this field.

As it is evident from what was discussed thus far, in relation economy, the focus is on the extension of awareness in the interpersonal field. Selecting to serve others may be an economic way to create more value (Lamm & Majdandzic, 2015), happiness, meaning, new resources, capacities, and qualities for the self outside the limits of our ownership. This is the same as being happy in the other's body since our mirror neurons absorb phenomenal worlds and meanings, and thus, more happiness and our phenomenal world becomes more enriched and extended. As a result, we can extend ourselves beyond our possessive boundaries in order to find more mines of meaning and joy.

Intention economy

Our body, narrative, and relationships, and hence, our consciousness have their own orientation and openness. Intentionality, as being directed and open to something, can be defined as the fundamental state of consciousness toward existence (Brentano, 1995). Consciousness is intentional toward local objects, and non-local objects such as the future, the whole, or just to a fuzzy direction. The intentionality of consciousness toward the future and existence is characterized with a rhythm and mode. The word *āhang* in Farsi serves to mean both music and intention (readiness to do something). In other words, *āhang* is the openness and orientation we have from/in/with/toward the world (Goli, 2008). Perhaps *āhangs* are incompatible and incoherent with each other whether they are given rise by the chaotic order of the present moment, genes, memes (cultural codes), or memories. The incoherence in *āhangs* leads to the ineffectiveness and non-functionality of our work and dis-ease mode of the body.

By intention economy, I mean attuning our intentionality with our general orientation in the body, psyche, relationship, and being which is attuning wants, prayers, and the manner of being. Experiences of boundarylessness and non-locality reflect the sense of integration and security in the intention field. To reach the integration in this level requires "nonlocal-awareness", being "non-interpretive", attuning our intention with "guided imagination" of the desired future, and transforming the intention into the tune of the body, and in short, extending our body awareness into the transpersonal body. This development of the field and experience of boundarylessness state of consciousness leads to individuality and helps psychological and moral growth towards universal ethical principles (Kohlberg, 1973). This individuality is not regression toward nature, mother, or the merging with others, but is a transcendental

state aligned with selfishness through gaining a sense of security. Here man is in a dual-openness state; the state that is named the non-dual (Ken Wilber, 1993).

Obviously, non-local consciousness changes cognitions in terms of thinking. In boundarylessness state, the will for becoming or bettering becomes tangible and activated. In the boundarylessness state, which is ascribed to the feminine aspect of volition, one wants, waits, and witnesses with openness. Moreover, body orientation toward the desired future occurs in this state.

We are deeply connected with others and with existence, and surpassing the cognitive relationship we have with the world enhances our sense of integration and security. This reflects the organizing role intentionality plays in life and especially in therapy (Goli, 2010).

In addition to what was mentioned above, mind-matter synchronicities happen in this body mode. The studies that indicate the effect of pure intentionality (non-behavioral) on events range from those on mind-machine anomalies (Nelson, 1999; Jahn, 2001) to those on distant healing and prayer healing (Benor, 2000; Dossey, Keegan, Guzzeta, & Kolkmeier, 1995; Halperin, 2001; Sierpina & Sierpina, 2004).

Considering the four fields of BEE, it is implied that the self in this approach is actualized through deconstructing and cocunstructing cognitive and narrative fields, and bodily development of perception and action. Accordingly, empowering contextual balance and upward-down organization BEE can also lead to more cognitive consistency, salutogenesis, and security (Rafienia et al., in press; Lindström & Eriksson, 2006; Rome, 2014; Antonovsky, 1979).

Bridging mind-matter schism

From the biosemiotics point of view, as the epistemological basis of bioenergy economy, the body, mind, relationship, and culture are in fact embodied semiotic, interpretative, or meaning systems.

In any moment, billions of cells and molecules are interpreted in the body by cells and vital systems. In fact, the structure of the body is a consistent meaning network; the meanings which emerge from the interpretation of external stimuli and internal transmitters by cellular or organ receptors. These meanings are the same functions which construct the organism. In other words, the identity of each organism is nothing but meaning (from the upward-down view) or information (from the bottom-up view). Matter and energy are being continuously replaced with each other and new matters and energies form the environment. From this point of view, disease is an inconsistent interpretation of signs which causes a sub-system's destruction or separation from the whole (Brier, 2016; Barbieri, 2001). However, semiosis, the flow of signs (interpretants), continues in a self-organizing manner. Signs flow in the form of sub-atomic, atomic, molecular, cellular, energetic, symbolic, reflective, sociocultural, and ecologic events, are translated into each other, and are developed vertically (to higher and lower levels of organization) and horizontally (other same-level systems). To continue its existence, this flow of signs needs to receive energy and information from the environment. The more coherent this heterogeneous, complex meaning system is, the more homogeneous and compatible energy distribution is and the more timely and flexible responses it provides (Goli, 2016c). For the structures and needs that maintain its structure, every organism has a differentiating system that causes it to respond in different ways to the signs it receives from the internal and external environment. Consequently, various objects have different values for the organism, of course, in a given communication – time context. Therefore, one object may be interpreted as an irresistible worthy dish or a situation is conceived as a dangerous situation, while in another context in which we are

completely full, we ignore the same dish, or when we are in a group, that dangerous condition is not interpreted as dangerous anymore. This dependency on the context creates the basic characteristic of meaning, that is, ambiguity and interpretability of signs (Bakir & Todorovic, 2010).

To preserve the integrity of our body, narrative, relations, and intention, we have to satisfy some needs, resources, and wants the majority of which are conveyed epigenetically through memes rather than genes. The others stem from intentional and more flexible responses to conditions. Hence, the economic investment of energy depends on the consistency in the meaning/value system of the body, narrative, relations, and intention.

From the biosemiotics view, we need to mindfully guide material-energetic-symbolic-reflective signs that create our world, which is possible through teleonomic and intentional physical, chemical, biological, and psychocultural changes. For this reason, we have to satisfy our needs more at a proactive and agapistic level, not just in releasing and cumulative ones. In this way, the creation of sustainable happiness becomes possible.

Removing a malfunctioning tissue, the chemical moderation of an organ's functions, or resolving the conflicts of an exhausted psyche are not teleonomic. BEE emphasizes on *farbehi* (meaning fatness of the soul in sufistic literature) which is consciousness evolution (*far*) to higher and more unconditional levels of pleasure and healing (*behi*), to create an unconditioned salutogenesis in all domains of our bioenergy investments. Whether a health care system leads to health problems or not, we have to always be loyal to sustainable development of happiness. The technology to reach this is joy-making, extension of the body and integration of the self and desire into each other. Through body-awareness and homogeneous distribution of bioenergy, BEE creates upward-down organization. However, the bottom-up processing is also important in BEE. Therefore, BEE can be recognized as a complementary care system for other therapeutic approaches. In addition, BEE improves the functions of the parts and helps the integration of the whole through the mindful removal of barriers in each BEE field towards salutogenesis and consciousness evolution.

If I want to summarize BEE in one sentence, I will say that BEE is simply a system that cares for the reflective body developed in symbols, relations, and being.

Conflict of Interests

Authors have no conflict of interests.

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Pain Catastrophizing and Attentional Bias among Patients with Chronic Back Pain in Isfahan, Iran: A Comparative Study

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Quantitative Study

Abstract

Background: Chronic back pain accounts for 70 to 85% of all kinds of chronic pain. Chronic back pain is recognized as the third most common disease among Iranians aged between 15 and 69 years. According to previous studies, psychological aspects of pain perception are the main reason for referral to clinics. Therefore, the understanding of creating and continuing factors, such as psychological parameters, is necessary for recognizing the procedure affecting the alleviation of disease in its initial stages. This, in turn, leads to preventing the long-term consequences of chronic back pain. This study aimed to compare pain catastrophizing and attentional bias between patients with chronic back pain and healthy individuals in Isfahan, Iran.

Methods: This was a descriptive-analytical study in which 34 patients with chronic back pain and 33 healthy individuals were investigated and compared. All participants completed the Pain Catastrophizing Scale (PCS) and attentional bias was assessed using the dot-probe task.

Results: The average age of participants was 39.40 years ± 9.79, and 38.8% of them were men. Based on the present study findings, there was a significant difference in pain catastrophizing between patients with chronic back pain and the control group. Moreover, the results of attentional bias of the two groups in the incongruent situation of the dot-probe task were significantly different.

Conclusion: This study showed that there was a significant difference in pain catastrophizing and attentional bias between patients with chronic back pain and controls. Furthermore, people with chronic back pain presented attention avoidance.

Keywords: Pain, Chronic pain, Attentional bias, Pain catastrophizing

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Introduction

The International Association for the Study of Pain (IASP) defines pain as an unpleasant emotional experience which arises from real or possible tissue damage. Pain is a mental experience that may be accompanied with a variety of symptoms and emotional disturbances, in particular mood and anxiety disorders, because of the unpleasant sensual

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and emotional components of pain.

These unpleasant emotional experiences are rooted in psychological causes. There is no formal way of recognizing tissue damage; therefore, these mental experiences, which are based on individuals' report, are considered as pain (Childs et al., 2008).

Back pain is pain felt from the margin to the groin. According to its duration, back pain can be defined as acute (less than 4 weeks), sub-acute (between 4 weeks and 3 months), or chronic (more than 3 months) (Frymoyer, 1988).

Back pain is one of the most common diseases in developed and developing countries with a 70 to 80% prevalence among the mature population. In 10 to 20% of cases with back pain, pain can be transformed into chronic pain (Carey, Garrett, & Jackman, 2000). Patients with chronic back pain make up 73 to 77% of the population with back disabilities, 85% of whom have no real reason for their pain (Indahl, Velund, & Reikeraas, 1995; Coste, Delecoeuillerie, Cohen de, Parc, & Paolaggi, 1994). Chronic back pain accounts for 70 to 85% of all kinds of chronic pain (Hansen, Daykin, & Lamb., 2010).

Based on the years of disability, the prevalence rate of debilitating back pain is 2.1%. Regardless of intentional and inadvertent damage, chronic back pain is recognized as the third most common disease among Iranians aged between 15 and 69 years (Mousavi et al., 2011)

In most cases, the psychological aspects of pain perception are the main reason for patients' referral to clinics. Psychological aspects impact chronic reactions to pain and interfere with the daily life of individuals (Nicholas Asghari, & Blyth, 2008). Even patients with similar risk factors and clinical status show a significant difference in physical and psychological disabilities (Jensen, Keefe, Lefebvre, Romano, & Turner, 2003).

Experimental evidence reveals that psychological factors have a stronger correlation with general disabilities compared to other parameters (Sharpe, 2014; Koleck, Mazaux, Rascle, & Bruchon-Schweitzer, 2006). Chronic pain is usually associated with other disorders like depression (Miller & Cano, 2009), anxiety (Asmundson & Katz, 2009), disability (Tripp, VanDenKerkhof, & McAlister, 2006), lower quality of life (QOL) (Dillie, Fleming, Mundt, & French, 2008) and defective social relations (Turk et al., 2008). Hence, the recognition of creating and continuing factors such as psychological, biological, and social parameters are necessary (Fashler & Katz, 2014).

In patients suffering from chronic pain, the main focus is on reducing symptoms and stabilizing functional status. Therefore, the understanding of mechanisms involved in the progress of disease at early stages is valuable, which can predict unpleasant long-term consequences in patients or even prevent them from happening (Evers, Kraaimaat, Geenen, Jacobs, & Bijlsma, 2003).

The duration and severity of pain are unpredictable and there is no direct relation between them and the amount of damage or the type of treatment (Lee, Chronister, & Bishop, 2008).

The fear-avoidance model of pain has been developed as a result of the increased risk of physical disability in patients with chronic back pain (Vlaeyen & Linton, 2000). If severe pain is interpreted mistakenly as a threat factor, it can results in pain catastrophizing, characterized by helplessness, mental rumination, and the magnification of symptoms (Sullivan et al., 2001). Catastrophe beliefs exacerbate disability in patients by drawing permanent focus toward body signs and preventive activities (Evers et al., 2003).

Recently, it has been proved that, in addition to psychological parameters, attention factors play a vital role in pain perception (Vlaeyen & Linton, 2000; Pincus & Morley, 2001; Eccleston & Crombez, 1999). According to the study carried out by Todd, Sharpe, Johnson, Nicholson, Colagiuri, & Dear (2015), attentional bias affects the mechanisms of interpreting chronic pain.

Attentional bias is the cognitive bias that refers to the tendency of individuals towards the way of interpreting environmental stimuli (Pincus & Morley, 2001).

Attentional bias is characterized as an increase in hypervigilance or a decrease in attention toward a specific group of stimuli (Keogh, Thompson, & Hannent, 2003). Some previous researches have reported attentional bias in patients with chronic pain, but some others have reported avoidance of attentional bias (Pincus & Morley, 2001; Crombez, Heathcote, & Fox, 2015; Dear, Sharpe, Nicholas, & Refshauge, 2011; Haggman, Sharpe, Nicholas, & Refshauge, 2010).

It has been showed that there is bias in the attention of patients with chronic back pain compared with controls (Crombez, Heathcote, & Fox, 2015; Franklin, Holmes, Smith, & Fowler, 2016; Baum, Huber, Schneider, & Lautenbacher, 2011; Schoth, Nunes, & Liossi, 2012). Moreover, it has been experimentally observed that attentional bias leads to an increase in the activity of brain regions which are involved in attention (Taylor et al., 2016). Furthermore, the results of the research done by Liossi, White, and Schoth (2011) demonstrated that there is no significant difference in attentional bias between patients and controls.

In general, it has been proved that psychological parameters are connected with arising, developing, and persistence of chronic pain (Gatchel, Peng, Peters, Fuchs, & Turk, 2007). The better understanding of the processes of attention toward pain stimuli compared with the healthy group could be helpful for the diagnosis and management of pain (Taylor et al., 2016). Woud, Zhang, Becker, Zlomuzica, and Margraf (2016) declared that from among physical symptoms, catastrophizing maladaptive interpretation can result in psychosomatic symptoms like somatoform pain. Pain catastrophizing is responsible for transforming post-surgery pain into chronic pain (Khan et al., 2011).

A low muscular endurance in the back in patients with chronic pain is related to pain catastrophizing (Lariviere, Bilodeau, Forget, Vadeboncoeur, & Mecheri, 2010) which can have impact on the severity of musculoskeletal pain (Meyer, Tschopp, Sprott, & Mannion, 2009; Linton et al., 2011; Richardson, Ness, Doleys, Banos, Cianfrini, & Richards, 2009; Wideman, Adams, & Sullivan, 2009). However, Fashler and Katz (2014) found no significant difference in pain catastrophizing between patients and controls.

As was mentioned, psychological parameters play important role in transforming an acute pain into chronic pain in patients with chronic back pain. Since there are many contradictions with respect to the results of pain catastrophizing and attentional bias in patients with chronic back pain, the present study was conducted to compare these parameters between patients with chronic back pain and healthy people by focusing on the attentional bias model.

Methods

This descriptive-analytical study was conducted on patients with chronic back pain referred to a neurosurgeon in Isfahan (Iran) during July and August of 2017. The study inclusion criteria were ages of 19-59 years and confirmed chronic back pain (experiencing pain for at least 3 months in the past 6 months), ability to complete the questionnaires through self-report or interview, ability to perform the dot-probe task (lack of mental and physical disability, lack of intake of medicine that affect the central nervous system), and informed consent for participating in the study.

This study was approved by the Ethics Committee of Azad University of Khorasgan, Isfahan, and verbal consent was obtained from all patients.

All participants completed the Pain Catastrophizing Scale (PCS), and attentional bias was assessed through a dot-probe task. After being diagnosed by a specialist, patients were referred to trained interviewers, filled out the self-administered

questionnaires, and were assessed using the dot-probe task software.

At first, patients were examined. After matching the two groups in terms of demographic characteristics (including gender, age, and educational level), the controls were selected from an educational institute in Isfahan city during September of 2017.

The subjects of this study were 41 woman and 26 men. The sampling method used was convenience sampling method. The average age of the participants was 39.40 ± 9.79 years, and 38.8% of them were men.

The dot-probe task software was designed by the researcher based on the theoretical model of the dot-probe task. The word images used in this study were obtained from the research performed by Asmundson and Katz (2009). In this task, both emotional pictures and emotional words about pain can be used. However, the use of emotional words instead of emotional pictures is suggested (Asmundson & Katz, 2009). In this study, the dot-probe-task software was designed using visual basic programming language and MATLAB (MathWorks, Natick, MA, USA).

We used the modified version of the dot-probe task in which the order of showing stimuli was as presented below:

In the first step, the program showed a fixed point in the middle of the screen for 200 milliseconds. Then, the fixed point disappeared and two images were shown at the top and bottom of the screen, one of which had emotional meaning related to pain experience and the other one had a neutral meaning.

The images and their positions were randomly chosen. After 300 ms, images disappeared and the fixed point reappeared simultaneously in the middle of the screen.

After 100 ms, the fixed point disappeared and one arrow appeared at the top or bottom of the screen the direction of which would change from right to left accidentally. The position of the arrow was exactly the same as the words.

Participants were asked to press the keyboard key corresponding to the direction of the arrow they had seen at the minimum time possible. The maximum time given was 1500 ms. After that, the task was repeated from the first step. After the arrow appeared, the answering time for the participants started. The important factor was the reaction speed of each individual. The participants were given the opportunity to do 5 practices in order to see if there were any ambiguities for them. Then, they were assessed by the main task.

The appearing time settings were arranged based on the time needed for saccade and decision-making (Fischer & Weber, 1993). One of the most important factors in time settings was the time interval between the three phases, including showing the fixed point, showing the words, and showing the arrow. In order to prevent the eye movement toward the first point on the screen, the time of showing the fixed point was 100 ms which was shorter than the time needed for saccade (Fischer & Weber, 1993). The fixed point was a black point in 64 pixels and appeared exactly in the middle of the screen.

The size of the word pictures was 350*350 pixels and were placed 50 millimeters (mm) lower and higher than the fixed point position.

The background of the screen was white. The time strings are shown in figure 1.

The PCS is one of the most commonly applied and well-validated questionnaires for the assessment of catastrophizing thoughts and behaviors regarding pain (Sullivan et al., 2001). The PCS contains 13 items scored on a 5-point scale (0 to 4) and covers 3 dimensions of pain catastrophizing, including rumination, helplessness, and magnification. These three scales evaluate negative thoughts related to pain.

Participants were asked to choose one number between 0 (never) and 4 (always) to determine the frequency of 13 different situations related to painful experiences. The linguistically validated and reliable Persian version of the PCS was used in this study (Davoudi, Zargar, Mozaffaripour, Nargesi, & Molah, 2012).

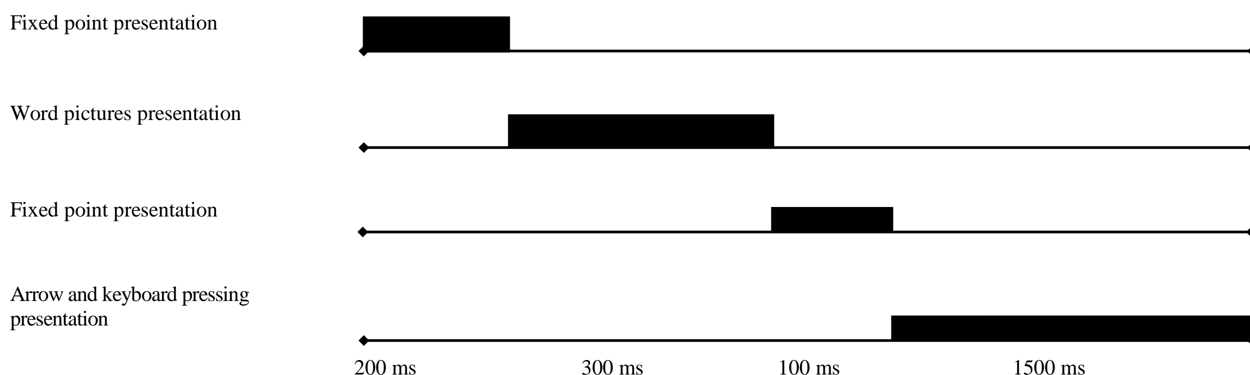

Figure 1. The order of presentation and timing in the dot-probe task

An interviewer was available if the patients required an explanation for completing the questionnaire.

In a study on patients with musculoskeletal pain, this scale was found to have acceptable reliability (Cronbach's alpha = 0.92) (Meyer et al., 2009). The correlation coefficient between PCS and the Beck Depression Inventory for Primary Care (BDI-PC) has been calculated in Iran. The results showed that there was a significant positive correlation between PCS and BDI-PC (r = 0.46) (Davoudi et al., 2012).

In this study, the K-alpha coefficient for PCS was 0.77 that was an acceptable ratability.

Results

Type 1 error probability and power were considered as 0.05 and 0.95, respectively. Data were analyzed in the SPSS software (version 20, SPSS Inc., IBM Corporation, Armonk, NY, USA). Quantitative data were presented as mean and standard deviation [Mean ± SD (n = 67)] and qualitative data were presented as percentage. Statistical comparisons were made using independent sample t-test.

The study participants consisted of 34 patients with chronic back pain and 33 healthy individuals. The average age of the participants in the patient group was 39.61 ± 9.36 years and that of the controls was 39.27 ± 10.35 years.

Table 1 shows mean and standard deviation of pain catastrophizing themes.

Table 1. Mean and standard deviation of pain catastrophizing themes

Subscales	Patients group	Healthy individuals group
	Mean ± SD	Mean ± SD
Helplessness	6.76 ± 5.08	4.06 ± 3.47
Rumination	4.47 ± 2.84	3.97 ± 2.80
Magnification	4.71 ± 2.01	3.57 ± 2.22

SD: Standard deviation

As seen in table 2, there is a significant difference in the helplessness parameter between patients with chronic back pain and controls (P < 0.05) (df = 103.98; t = 2.548). However, the rumination and magnification parameters were not significantly different between the experimental and control groups (P < 0.05).

In table 3, it can be seen that (df = 110.62; t = 2.557) there is a significant difference between the patient group and control group in the incongruent situation of the dot-probe task, whereas there is no significant difference between them in the incongruent situation of the dot-probe task.

Table 2. Comparison of pain catastrophizing (t-test results)

	Mean	df	Mean difference	t	Standard error difference
Rumination	0.571	65	0.501	0.726	0.689
Magnification	0.365	65	1.130	2.185	0.517
Helplessness	0.013	58.407	2.704	2.548	1.067

df: Degree of freedom

Table 3. Comparison of reaction time between the two groups

	Mean	df	Mean difference	t	Standard Error difference
Congruent	0.616	65	1.749	0.069	40.112
Incongruent	0.053	61.708	94.086	2.557	36.801

df: Degree of freedom

Discussion

Our findings revealed a significant difference in pain catastrophizing parameters between the two groups. Similarly, there was a significant difference between the groups in terms of the incongruent presenting situation in the dot-probe task.

The results related to pain catastrophizing were consistent with previous studies. However, the results of the present study did not support the results of the research performed by Fashler and Katz (2014). In their study, the participants were not diagnosed by a specialist and the criteria were based on individual reports about pain duration and severity.

It is possible that, in present study, pain catastrophizing was the consequence of experiencing long-term pain. Based on the wrapped model, pain catastrophizing can result in the transformation of acute pain into chronic pain. Over-processing pain symptoms affect the severity of pain experienced by patients. In fact, patients with chronic pain magnify minor pain signs several times. The frequent use of the magnifying mechanism put the patient in a situation called “catastrophizing wrapped”. Those patients who are catastrophizers experience more difficulty in managing thoughts related to pain in comparison with non-catastrophizers. Catastrophizers ruminate on painful thoughts and their cognitive activity is reduced by “pain expectations”. The findings on attentional bias were in line with that of previous researches. However, the findings of the present study were in contrast with the research conducted by Liossi et al. (2011).

The second phase of the “motivational attention model toward pain” states that if a person is seeking a goal that is related to pain, especially with focus on pain management, it is predictable that a greater amount of attentional bias will be assigned to pain. The schemas of patients with chronic back pain are formed based on catastrophizing and magnifying of pain symptoms. These individuals consciously try to manage and avoid pain experience, which is a pain-related goal. Therefore, more attentional bias is observed in the patient with chronic back pain.

In the comparison between healthy individuals and patients, the longer the reaction time was in incongruent situation, the more attentional bias was observed. Incongruent presenting is the situation in which the place of presenting the arrow on the screen is not the same as the place of presenting the pain stimuli. The longer reaction time in an incongruent situation in patients with chronic back pain compared to controls indicates that facing pain stimuli causes patients to pay more attention to pain. Thus, it takes more time and effort to withdraw attention from stimuli and direct attention and involvement toward the arrow.

Previous studies have shown that the average reaction time in patients with chronic back pain is longer than that in healthy individuals. This means the patients have more inclination toward pain stimuli which is called “tendency bias”. These patients’ long-term involvement with pain renders them more vulnerable and sensitive to pain stimuli.

Therefore, patients with acute pain or short-term pain experiences display less attentional bias compared to patient with chronic pain.

The differences in the results of the current study and those of Liossi et al. (2011) could be the consequence of representing time of stimuli and assessing the different stages of attention simultaneously. Longer presentation leads to a more conscious

reaction by the respondents because they deal with the stimuli for a longer time, and therefore, have more time to use schemas and make meaning of the stimuli. Hence, increasing the presenting time could lead to more significant differences between groups.

Conclusion

Patient with chronic back pain show more attentional bias toward pain stimulus and magnify the symptoms related to painful experiences.

The importance of psychology in the expression, understanding, and treatment of pain was recognized in early researches, and there are a number of cases for whom the extent of damage is not consistent with the experience of pain. There are also a number of cases for whom the extent of damage and pain are not consistent with the experience of disability. In addition to personality, gender, age, and culture, there are some specific psychological factors that affect individuals' experience of pain (Eccleston, 2001).

Recent studies have suggested that reassuring patients with an acute bout of low back pain and encouraging a return to normal activities may be helpful in preventing the development of chronic disability (Linton, Boersma, Jansson, Svard, & Botvalde, 2005).

Psychologists play an important role in the management of pain in patients with chronic back pain, and to guarantee a successful outcome, knowing the exact mechanism of patients' cognitive schemas of pain perception seems to be necessary. As demonstrated in this research, patients with chronic back pain catastrophize pain signs and pay more attention to pain stimuli than healthy individuals.

The limitation of this study were the lack of access to equipment for measuring eye-tracking and a delay between the start of attention process and pressing the key on the keyboard by respondents. Moreover, the place of respondents' hand could affect the reaction time; therefore, we suggest that similar studies be conducted on other chronic pain patients in order to discover whether the delay time is effective on attentional bias in this group of patients.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Psychodrama Therapy on Quality of Life, Social Adjustment, and Hopefulness in Patients with Diabetes Mellitus

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Quantitative Study

Abstract

Background: The purpose of this study was to investigate the effectiveness of psychodrama on quality of life (QOL), hopefulness, and social adjustment in patients with diabetes mellitus (DM). The study population consisted of patients with DM referred to clinics and medical center in Ahvaz, Iran.

Methods: DM can result in many psychological and physical dilemmas. Diabetic patients may suffer heart disorders, weakness, chronic kidney damage, myocardial infarction, loss of appetite, muscle spasm, excessive fatigue, depression, and cognitive impairment with delirium and occasional illusions.

Results: The subjects were 24 individuals from the mentioned community selected through convenience sampling method (12 people in the experimental group and 12 people in the control group). This semi-experimental research was conducted with pretest, posttest, and follow-up and a control group. For data gathering, the 40-item Miller Hope Scale (MHS) (1991), Social Adjustment Scale-Self-Report (SAS–SR) (1989), and Quality of Life Inventory (QOLI) were use. The experimental group received psychodrama intervention in 8 sessions (120 minutes). Data analysis was performed using multivariate and univariate analysis of covariance in SPSS software.

Conclusion: The results of data analysis showed that psychodrama enhanced QOL and social adjustment in patients with DM.

Keywords: Psychodrama, Quality of life, Hopefulness, Social adjustment, Diabetes mellitus

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Introduction

Diabetes mellitus (DM) is a metabolic disease and abnormal carbohydrate oxidation state that increases the blood and urine sugar levels. DM is a disease associated with serious failure to produce insulin, which, in turn, has adverse effect on sugar metabolism. DM can result in many psychological and

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physical dilemmas; diabetic patients may suffer heart disorders, weakness, chronic kidney damage, myocardial infarction, loss of appetite, muscle spasm, excessive fatigue, depression, and cognitive impairment with delirium and occasional illusions. The early symptoms of DM include increased levels of blood glucose and the presence of sugar in the urine (Johari Fard, 2011).

Treatment for DM requires personal discipline and the success of treatment depends on good and responsible patient-doctor cooperation. However, in addition to stress, DM can lead to poor cooperation in patients. Obtaining complex skills needed to control the disease is not easy and many diabetic patients are easily disappointed. Their moods change quickly and they blame all family members due to their depression and anger and create unbearable tension, and thus, all caring people avoid helping them (Johari Fard, 2011).

Quality of life (QOL) is a broad concept covering all dimensions of life, including health. These terms are also used in different political, social, and economic fields. It is often applied in medical studies, and according to most specialists, it includes different physical, physiological, social, physical, and spiritual aspects (Afzali, 2011).

Previous studies have shown that stress accelerates the progression of DM (Zare Bahramabadi, Ghaderi, Taghvaei, & vafaei Baneh, 2012), while patients with DM have stress in different dimensions such as concern about the quality of treatment, lack of understanding of difficult diabetes management tasks, the feeling of inability to manage diabetes well, and therapeutic regimens. This type of stress is called diabetic stress. Therefore, it can be said that diabetic patients face many problems in terms of QOL dimensions (physical, psychological, and social) (SaadatJoo, Rezvani, Tabiei and Ayoudi, 2012).

Social adjustment, as the most important symptom of mental health, is one of the discussions that have attracted much attention in recent decades. The dimensions of adjustment include social, emotional, physical, and ethical adjustment. Social adjustment is the most important dimension and considered as a prelude to achieving emotional and ethical adjustment. Adjusting to the surrounding environment is necessary and essential for each person and without this adjustment, many human needs will not be met; in addition, an individual who has not adjusted to his/her surrounding environment is strongly rejected by the community and his/her social interactions reach their lowest level. Social adjustment is a process by which the relations between individuals, groups, and cultural elements achieve a satisfactory status. The basis of social adjustment is a balance between personal demands and expectations of the community that can affect all dimensions of the individual's life (Keshmiri, 2018).

In the last few decades, the concept of psychological-social adjustment to disease has received much attention, not only in psychiatry, but also in other medical areas. The diagnosis of chronic diseases, such as diabetes, is the initiation of a continuous evaluation process through which the patient adjusts to the needs and constraints imposed by the disease. Good adjustment allows the patient to apply the changes that ensure his health. Non-adjustment is presented as anxiety, depression, helplessness, and behavioral problems. Adjustment to disease is considered as a process to maintain a positive view on the self and the world in dealing with health problems. Psychological-social adjustment is considered as one of the most important variables in diabetes because there is a direct relationship between it and self-care behaviors. In diabetic patients, good and high adjustment to disease is associated with better control of blood glucose (Sharp & Curran, 2006).

Life expectancy is defined as an inner force that can enrich life and enable patients to see a vision beyond their current, unorganized status, which is full of suffering. Lack of life expectancy and a goal-directed

life leads to a reduction in QOL and creation of hopeless beliefs (Curtis, 2017).

Snyder (2000) has noted that when individuals are faced with barriers, agency thinking or the power of will becomes particularly important in the construct of expectancy. In facing such barriers, the power of will provides the individual with the motive required to find the best alternative. Therefore, both agency thinking and pathway are necessary and complementary to hope. According to Benzein and Berg, 2005, life expectancy physiologically and emotionally helps the patients to endure the disease crisis. Promotion of hope has been taken into account as an important factor in predicting the course of disease (Sadegh, 2011).

One of the therapeutic approaches that can be effective for diabetic patients is psychodrama therapy. Psychodrama therapy is a therapeutic approach that uses practical methods such as sociometry, role-playing, role training, and group dynamics in order to facilitate constructive changes in the lives of users. This approach is based on Mourinho's theories and methodology (1988-1794) (Askian, Bagher Sanaei, & Navaei Nezhad, 2008).

Psychodrama is like a tree with a wide variety of gestalt therapies, family therapy, exchange analysis, and etcetera. Psychodrama, group psychotherapy, and sociometry form a triangle that can be defined as a science seeking the truth through dramatic methods (Askianet al ., 2008). Considering the abovementioned regarding the factors affecting mental illness, the aim of the present study was to determine whether psychodrama has positive effects on QOL, life expectancy, and social adjustment of patients with DM.

Methods

The present study was a field experiment with pretest and posttest, and control group. The experimental and control groups were randomly selected and pretest was performed on both groups before implementing experimental interventions. In both groups, the difference between the results of pretest and posttest was examined in terms of being significant. Accordingly, the effectiveness of psychodrama therapy was considered as an independent variable and QOL, life expectancy and social adjustment were considered as dependent variables. The study population included all patients with DM admitted to clinics and healthcare centers in Ahvaz, Iran, in 2016. Of the population, 30 individuals were selected using convenience sampling method and randomly assigned to the control and experimental groups (n = 15 in each group). During the intervention, 3 participants from each group withdrew from participation in the present research due to specific reasons. Thus, 24 participants remained in the two control and experimental groups (n = 12 in each group). The inclusion criteria included being diabetic according to the diagnosis of a physician, having the ability to write and read, and being 20-55 years old.

Research tools: The 40-item Miller Hope Scale: The 40-item Miller Hope Scale (MHS) is a personality test designed by Miller (1991). The MHS was first used to assess hopefulness in cardiac patients in the United States. The MHS includes 41 aspects of hopefulness and hopelessness, and its items have not been selected based on apparent or hidden behavioral manifestations in hopeful or hopeless individuals. Each item represents a behavioral symptom and it is score on a 5-point scale (options: strongly disagreed, disagreed, indifferent, agreed, and strongly agreed). An individual selects that option that is true about him/her and the sum of the scores shows his/her hopefulness. In this test, the score range is 41-205, with the scores of 41 and 205 representing a completely hopeless individual and maximum hopefulness, respectively. Hosein (2009) has correlated this test with the standard question to assess its reliability and has estimated its reliability coefficient at the significance level and the results showed a positive correlation. Hosein (2009), in his research, has used Cronbach's' alpha and the

split-half method to estimate the reliability of this test and they were estimated as 0.90 and 0.89, respectively, which show a good reliability. In the present study, Cronbach's alpha was used to estimate the reliability of the MHS and it was estimated as 0.88 for the whole scale, which shows the desirable reliability of this test. Quality of life Inventory: The Quality of Life Inventory (QOLI) was simultaneously developed in more than 15 countries in 1998 by the World Health Organization (WHO) and translated into various languages. Therefore, the concepts of questions are the same in different cultures. On the other hand, each question was designed based on the statements of patients with various disease severities, healthy people, and health professionals; therefore, the answers of these groups can be compared using this inventory in different cultures. The QOLI assesses the 4 fields of physical health (7 questions), mental health (6 questions), social relations (3 questions), and environmental health (8 questions) using 24 questions. In addition, this inventory has two other questions that are not placed under any of the mentioned fields and assess health status and QOL in general. The questions are scored based on a 5-point Likert scale. Khodayari Fard, Hejazi, & Hoseininezhad, (2015) has used Cronbach's alpha (α = 0.88) and split-half method (coefficient = 0.88) to estimate the reliability of this inventory. They showed that its reliability is acceptable. In order to investigate its validity, Hoseini Nejad (2009) used standard questions (general quality of life and health status) and showed that the coefficients of the correlations between these scales and the standard questions were significant and this illustrated the structural validity of this scale. In the preset study, Cronbach's alpha was used to estimate the reliability of this inventory, and it was estimated as 0.90 for the whole inventory, which indicates the desirable reliability of this inventory. Social Adjustment Scale: The Social Adjustment Scale-Self-Report (SAS–SR) was developed by Peen, Pecal, and Prosof. This scale is a revised version of an organized interview test used for adjustment assessment in which its main questions were modified and its scale was changed. The SAS has 54 questions that assess social function during a two-week period. It is used to more accurately differentiate the effects of treatment on patients' daily lives, in particular the effect of psychotherapy, its interaction with drugs, and patients' social and family adjustment. The SAS consists of an interview form (qualitative) and a scored form (quantitative). The duration of the test is 15 to 20 minutes. All the questions are scored on a scale ranging from 1 to 5, except for some questions that are scored on a scale ranging from 1 to 7. Higher scores show poor adjustment and lower scores illustrate greater adjustment.

The validity of the SAS has been examined through the ability scale method (used for differentiating damaged and healthy groups) and the sensitivity of the scale to change.

In a study by Khodayari Fard, Hejazi, & Hoseininezhad, (2015), its reliability was estimated as 81% and 79% using the Cronbach's alpha and split-half method, respectively. In the present study, Cronbach's alpha of the whole inventory was estimated as 0.75, which indicates its desirable reliability.

The intervention program included 8 two-hour sessions of psychodrama therapy. Each session included the 3 stages of psychodrama including warm-up, action, and sharing. The main objective of the warm-up stage is to create a spontaneous and improvised atmosphere, which is one of the most important elements of psychodrama (Johari Fard, 2013). In the action stage, one of the participants (protagonist) raises a problem and presents it in the presence of the director (therapist) with the help of other participants. In this way, he/she faces his/her thoughts, excitements, and reactions on time and the problem. The actors of the play are tested by acting out difficult life scenes and experiencing the feelings related to those scenes.

Table 1. Summary of the program of the sessions and the techniques used in each stage of psychodrama therapy based on Bloner's model

Session	Warm-up techniques	Action techniques	Introspection techniques: behavioral practice, participation and ending
1	Introduction, empty seats (helper)	Monologue technique, behavioral practice, elimination of sensitivity	• Providing feedback information with the protection of self-disclosure by the group members with the guidance of the therapist • Conclusion of adjustment of items learned through daily life • Providing a summary • Planning for the next session • Support
2	Positional test	Monologue technique, role reversal	Repeating the first session
3	Guided imagination	Looking ahead	Repeating the first and second sessions
4	Magic shop	Dark room	Repeating the previous sessions
5	Guided imaginations	Monologue technique, role reversal	Repeating the previous sessions
6	Dreamy	Monologue technique	Repeating the previous sessions
7	Positional tests	Monologue technique, mirror technique, role reversal	Repeating the previous sessions
8	Practical sociometry	Looking ahead with relaxation technique	Repeating the previous sessions

At this stage, the therapist uses different psychodramatic methods such as mirror technique, self-talking technique, empty seats, role reversal, psychodrama, and etcetera to find solutions, and then, plays the solution in the presence of the participants. In the stage of sharing, the audience (all participants) talks about their experiences and feelings with the protagonist (Table 1).

Results

The mean and standard deviations of QOL, life expectancy, and social adjustment scores of patients with DM in the experimental and control groups in the pretest, posttest, and follow-up stages are presented in table 2.

As shown in table 3, with the pretest control, the significance levels of all tests show that there is a significant difference between the diabetic patients of the control and experimental groups at least in terms of one of the dependent variables (QOL, life expectancy, and social adjustment) ($P < 0.0001$ and $F = 23.920$). Therefore, the main hypothesis is confirmed.

As shown in table 4, with pretest control, there is a significant difference between the control and experimental groups in terms of QOL ($P < 0.0001$; $F = 41.22$). In other words, after implementing the intervention, psychodrama increased the QOL of the experimental group participants compared to control group participants. Moreover, with pretest control, there is a significant difference between the control and experimental groups in terms of life expectancy ($P < 0.0001$; $F = 27.92$). expectancy of the experimental group compared to that of the control group. With pretest control, there was a significant difference between the control and experimental groups in terms of social adjustment ($P < 0.0001$; $F = 22.46$).

Table 2. Mean and standard deviation of quality of life, life expectancy, and social adjustment scores of patients with diabetes mellitus in the experimental and control groups in the pretest, posttest, and follow-up stages

Test	Statistical power	Eta-squared	P-value	F	df Error	df	N
Pillai's trace	1.00	0.48	0.0001	23.920	21	3	0.765
Wilks' lambda	1.00	0.48	0.0001	23.920	21	3	0.235
Hotelling's trace	1.00	0.48	0.0001	23.920	21	3	3.262
Roy's largest root	1.00	0.48	0.0001	23.920	21	3	3.262

df: Degree of freedom

Table 3. Results of multivariate analysis of covariance on the mean posttest scores of quality of life, life expectancy, and social adjustment of patients with diabetes mellitus in the experimental and control groups with pretest control

Test	Value	Hypothesis df	Error df	F	P-value	Eta-squared	Statistical power
Pillai’s trace	0.765	3	21	23.920	0.0001	0.48	1.00
Wilks’ lambda	0.235	3	21	23.920	0.0001	0.48	1.00
Hotelling’s trace	3.262	3	21	23.920	0.0001	0.48	1.00
Roy's largest root	3.262	3	21	23.920	0.0001	0.48	1.00

df: Degree of freedom

In other words, after implementing the intervention, psychodrama increased the life In other words, after implementing the intervention, psychodrama increased the social adjustment of the experimental group compared to that of the control group.

As shown in table 5, with the pretest control, the significance levels of all tests show that there is a significant difference between the diabetic patients of the control and experimental groups at least in terms of one of the dependent variables (quality of life, life expectancy, and social adjustment) ($P < 0.0001$; $F = 16.88$).

As shown in table 6, with post-test control, there is a significant difference between the control and experimental groups in terms of QOL ($P < 0.005$; $F = 9.43$). Therefore, question 1-1 was confirmed at the follow-up stage. In other words, after implementing intervention, the QOL score of the experimental group increased compared to the control group. Furthermore, with posttest control, a significant difference was observed between the control and experimental groups in terms of life expectancy ($P < 0.019$; $F = 6.38$). Therefore, question 1-2 was confirmed at the follow-up stage. In other words, after implementing the psychodrama intervention, an increase was observed in the life expectancy of the experimental group compared to the control group. With posttest control, there was a significant difference between the control and experimental groups in terms of social adjustment ($P < 0.023$; $F = 5.95$). Therefore, question 1-3 was confirmed at the follow-up stage.

Discussion

The results showed that, with pretest control, the significance levels of all tests show that there is a significant difference between the diabetic patients of the control and experimental groups at least in terms of one of the dependent variables (QOL, life expectancy, and social adjustment). This difference is equal to 0.48. In other words, 48% of the individual differences in the posttest scores of QOL, life expectancy, and social adjustment are related to the effects of psychodrama.

Table 4. Results of one-way analysis of covariance in the multivariate analysis of covariance text on the mean posttest scores of quality of life, life expectancy, and social adjustment of patients with diabetes mellitus in the experimental and control groups with pretest control

Variable	Source of changes	Sum of squares	df	Mean of squares	F	P-value	Eta-squared	Statistical power
Quality of life	Pretest	133.68	1	133.68	57.63	0.0001	0.57	1.00
	Group	276.212	1	276.212	41.22	0.0001	0.46	0.992
	Error	115.555	23	12.48				
Life expectancy	Pretest	38.34	1	38.34	23.63	0.0001	0.51	0.992
	Group	107.355	1	107.355	27.92	0.0001	0.45	0.999
	Error	382.730	23	166.11				
Social adjustment	Pretest	75.44	1	75.44	16.52	0.0001	0.49	1.00
	Group	328.33	1	328.33	32.46	0.0001	0.43	1.00
	Error	100.329	23	43.88				

df: Degree of freedom

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Table 5. Results of multivariate analysis of covariance on the mean posttest scores of quality of life, life expectancy, and social adjustment of patients with diabetes mellitus in the experimental and control groups with posttest control

Test	Value	Hypothesis df	Error df	F	P-value	Eta-squared	Statistical power
Pillai's trace	0.786	3	21	16.88	0.0001	0.31	1.00
Wilks' lambda	0.214	3	21	16.88	0.0001	0.31	1.00
Hotelling's trace	3.666	3	21	16.88	0.0001	0.31	1.00
Roy's largest root	3.666	3	21	16.88	0.0001	0.31	1.00

df: Degree of freedom

In the explanation of this result, it can be said that psychodrama therapy is a method that helps patients to discover the psychological dimensions of their problem; thus, an individual can review his/her problem by representing it and not just through dialogue. Psychopathology and health pathology is based on the 3 elements of emotion, thought, and behavior, and psychodrama therapy is used in any area where it is needed to reveal the psychological dimensions of a problem. In other words, psychodrama can focus on one or all areas of behavior, emotion, thoughts, and interpersonal relations, depending on what the patients need to experience.

Moreover, the results showed that, with pretest control, there is a significant difference between the control and experimental groups in terms of QOL. In other words, after implementing the psychodrama intervention, the QOL of the experimental group increased compared to the control group. This result is consistent with the results of the studies by Gram and Dehghan (2015), Zare, Shafiabadi, Pasha Sharifi, and Navabinejad (2007), and Michael (1996).

As an explanation of this result, it can be said that low QOL affects the physical symptoms of patients with DM. Low QOL can lead to the use of ineffective coping and adjustment mechanisms, and thereby, increase tension in them. There is a direct relationship between increased tension and physical symptoms and it can increase the severity of the disease in patients. Many researchers have studies the relationship between QOL and individual traits and have identified the factors effective on QOL. These factors include self-awareness, imposed tension, achievement of life goals, coping strategies, and level of adjustment. The factors affecting QOL have been studied in terms of importance and the inclusive scope of QOL. Furthermore, the role of patients with DM seems essential in the progress of QOL.

According to the results of the present study, it can be said that education based on psychodrama improves QOL in terms of physical function, physical role-playing, physical pain, general health, vitality, social function, emotional role-playing, and emotional well-being.

Table 6. Results of one-way covariance analysis in the multivariate analysis of covariance text on the mean posttest scores of quality of life, life expectancy, and social adjustment of patients with diabetes mellitus in the experimental and control groups with posttest control

Variable	Source of changes	Sum of squares	df	Mean of squares	F	P-value	Eta-squared	Statistical power
Quality of life	Posttest	1.42	1	1.42	0.04	0.84	0.002	0.054
	Group	336.12	1	336.12	9,43	0.005	0.29	0.837
	Error	819.03	23	35.61				
Life expectancy	Posttest	4.11	1	4.11	0.05	0.820	0.002	0.056
	Group	497.02	1	497.02	6.38	0.019	0.21	0.678
	Error	1789.11	23	77.78				
Social adjustment	Posttest	85.19	1	85.19	4.71	0.041	0.17	0.54
	Group	107.75	1	107.75	5.95	0.023	0.20	0.64
	Error	416.03	23	18.08				

df: Degree of freedom

The results showed that, with pretest control, there was a significant difference between the control and experimental groups in terms of life expectancy. In other words, after implementing the psychodrama intervention, life expectancy increased in the experimental group compared to the control group. This result is consistent with the results of the study by Sardaripour (2008).

As an explanation of this result, it can be said that life expectancy is one of the most important indicators of health and well-being in humans.

Today, in addition to practices mostly applied in the field of health, one of the methods that have received much attention is psychodrama. Psychodrama uses mental imagery, imagination, physical actions, and group dynamics. It is a combination of art, play, emotional sensitivity, and explicit thinking that helps individuals learn new and more effective behaviors, open up unnamed pathways, solve conflicts, and understand themselves by facilitating the release of unexpressed emotions (Blatner, 1996).

The results showed that with pretest control, there was a significant difference between the control and experimental groups in terms of social adjustment. In other words, after the intervention, social adjustment increased in the experimental group compared to the control group. This result is consistent with the results of the studies by Dadsetan (2007), Molavi, Mikaeili, Rahimi, and Mehri (2014), and Shokoohi-Yekta, Akbari Zardkhaneh, Alawinezhad, and Sajjadi Anari (2016).

As an explanation of this result, it can be said that social adjustment is the ability to communicate with others in a specific social context through a particular way that is acceptable and valuable in the community. In addition, it is a process that enables individuals to understand and predict the behaviors of others, control their behavior, and set their social interactions (Keshmiri, 2018). In the last few decades, much attention has been paid to the concept of psychosocial adjustment to disease, not only in psychiatry, but also in other medical areas. The diagnosis of chronic diseases such as diabetes is the initiation of the continuous evaluation process through which the patient adjusts to the needs and constraints imposed by the disease. Good adjustment allows the patient to apply the changes that ensure his/her health (Michael, 1996).

Using the psychodrama technique can greatly influence the adjustment of patients with DM. The psychodrama technique is performed with the 2 elements of action and active observation. Action means to capture the minds through dramatic movements, and this is done through special psychodrama techniques (duplication, mirror, displacement, hot seat, dark room, empty seat, dreamy fairy, and etcetera) and active observation means that, in every situation, we know exactly what we are experiencing. In the psychodrama technique, the time is always the present, even if one wants to depict parts of his past or future, he must depict them as occurring in the present. According to Mourinho, paying attention to time or philosophy of the moment increases the person's creativity and spontaneity. In the philosophy of the moment, the person is forced to act and observe. He must react to what is happening and do something to force others to act. People reduce their excitement through role-playing and their attention increases.

Conflict of Interests

Authors have no conflict of interests.

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Predicting the Feeling of Loneliness Based on Perceived Social Support, Satisfaction with Life, and Religious Attitude in Non-Indigenous Students Living in Dormitories

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Quantitative Study

Abstract

Background: Changes in the university course can create a cluster of diverse emotions in addition to feelings of excitement and expectation, such as loneliness and disappointment, in students. The purpose of this study was to investigate the relationships of perceived social support, life satisfaction, and religious attitude with the feeling of loneliness in students.

Methods: The research method was descriptive and correlational. The statistical population consisted of all non-indigenous students residing in Rasht city dormitories in the academic year 2016-2017. Using multistage cluster sampling method, 160 subjects were selected and answered the Multidimensional Scale of Perceived Social Support (MSPSS), Serajzadeh's Religious Attitude Questionnaire, the Satisfaction With Life Scale (SWLS), and UCLA Loneliness Scale (1996). Data were analyzed using regression and Pearson correlation in SPSS software.

Results: The findings showed that perceived social support, life satisfaction, and religious attitude had a relationship with the feeling of loneliness ($P < 0.01$). In addition, the results showed that perceived social support, life satisfaction, and religious attitude could explain 33% of the variance in the feeling of loneliness (criterion variable).

Conclusion: It can be concluded that the authorities of dormitories can increase the level of life satisfaction and reduce students' feeling of loneliness by promoting social support and religious attitudes among students.

Keywords: Perceived social support, Life satisfaction, Religious attitude, Feeling of loneliness

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Introduction

The feeling of loneliness is one of the most important crises in youth and even other life-stages; it causes individuals difficulty in adapting to their environment (Hosein Chari & Kayyer, 2003). Since the 1970s, researches in the fields of conceptualization, definition, and constituent elements of the feeling of

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loneliness have progressed and reported their prevalence in the general population and students (Wawrzyniak & Whiteman, 2011). In addition, some researchers believe that while adolescents experience loneliness more than any other age group, the risk factor for experiencing the feeling of loneliness increases in late adolescence and early stages of youth (Ang & Abu Talib, 2012). The feeling of loneliness can be influenced by the objective and quantitative characteristics of social relations (such as the frequency of interactions or the number of friends); however, it is further affected by the subjective and qualitative assessments of these relationships, such as satisfaction with communication or perceived social competence (Priest, Perry, Ferdinand, Kelaher, & Paradies, 2017).

A study has shown that the feeling of loneliness can be predicted by lack of a reliable friend and the level of perceived social support (Pamukcu & Meydan, 2010). In addition, perceived social support has a great effect on physical, mental, and life satisfaction and various aspects of the quality of life (QOL) of individuals (Lopez, Fernandez Munoz, Navarro-Pardo & Murphy, 2017). Received social support emphasizes the amount of support received by the individual, and perceived social support is the individual assessment of the availability of support in the time of necessity (Siedlecki, Salthouse, Oishi, & Jeswani, 2014). Additionally, social support as an appropriate and almost accessible tool can be used in interventions designed to increase the welfare level, especially mental well-being (Seeman, Lusignolo, Albert, & Berkman, 2001). Moreover, during the university course, there are many problems in each individual's personal and social life. Life satisfaction is one of the variables influenced by the feeling of loneliness; it includes cognitive-judgmental assessment of personal life which is a comparison of the living conditions of a person with the criteria he has set for himself. Life satisfaction represents the individual’s positive attitude towards the world in which he/she lives (Siedlecki et al., 2014; Seeman et al., 2001). Lack of consistency between goals, desires, and needs can have effect on dissatisfaction that often arises because of certain issues and problems (Vakili, Mirzaei, & Modarresi, 2017). Life satisfaction is a subjective and unique concept for every human being, it constitutes the essential part of mental well-being, and generally refers to personal cognitive life assessments (Delahaij, Gaillard & van Dam, 2010). Religion, as a way to cope with these problems, can play an important positive role including filling the empty spaces in life, increasing social support and management of stress, adapting to the situation, life and death conceptualization, and increasing the sense of happiness. Research has shown that religiosity and mental health have a negative and significant relationship with loneliness (Ciobanu & Fokkema, 2017). Moreover, students who received adequate social support from family and friends were more satisfied with life and suffered less from loneliness (Azarian, Aghakhani & Ashuri, 2016). Similarly, elderly people with a religious attitude have a greater sense of happiness and meaningfulness in their lives and feel less lonely than those lacking this attitude (Aliakbari Dehkordi, Peymanfar, Mohtashami, & Borjali, 2015). The prevalence of feeling of loneliness was lower among elderly people with a good general health (Hemmati Alamdarlou, Dehshiri, Shojaie & Hakimi Rad, 2008). Paolini, Yanez, and Kelly (2006) showed that social support perceived by friends and other important people did not have a significant relationship with mental health and life satisfaction; however, life satisfaction had a significant relationship with mental health. By studying loneliness, stress, and social support in young adolescents, Lee and Goldstein (2016) showed that the relationship between social support (from a friend or a romantic partner, but not a family member) and loneliness was negative and meaningful. Hu, Hu, Huang,

and Zheng, (2016) in a study on life satisfaction, self-esteem, and loneliness in adults and adults with the tendency toward the opposite sex in China, showed that life satisfaction can be predicted by demographic variables, feeling of loneliness, and self-esteem in both groups. Kearns, Whitley, Tannahill, and Ellaway (2015) examined the sense of loneliness, social relationships, health, and well-being in deprived societies. The results of the study showed that the place of residence is one of the predictors of the feeling of loneliness, and communication with neighbors is one way to deal with loneliness. In studying the impact of social support on the sense of coherence of users of mental health services, Langeland and Wahl (2009) showed that social support was a good predictor of coherence. Regarding the importance of the role of students in the advancement and excellence of societies, it is natural that the study of psychological factors affecting the physical and psychological well-being of this stratum is of particular importance (Anderson, Steen & Stavropoulos, 2017). Considering the role of psychological factors on students' mental health, this study was conducted to examine the prediction of the feeling of loneliness based on perceived social support, life satisfaction, and religious attitude in non-indigenous students living in dormitories.

Methods

This research was performed using a descriptive correlational method. The statistical population consisted of all non-indigenous female students of the University of Guilan, Rasht, Iran, living in dormitories in the academic year 2016-2017. Based on the number of variables and type of research, for each variable, 20 to 50 subjects were selected by multistage cluster sampling method (total: 160 participants). To select a sample, 2 dormitories were selected from among all Medical Sciences dormitories in Rasht. Then, 80 students were randomly selected from among the students in each dormitory. In each field of study, students of a class (specialized classes in the same field and 20 students from each class) were selected randomly. The study inclusion criteria included being students, non-indigenous, and living in student dormitories. The exclusion criteria included lack of interest in participation in the research and presence of physical and mental illness. To comply with ethical principles, students completed the pre-participation inform consent form for the research, and the code of ethics was issued with IR.IAU.RASHT.REC.1395.85 number from the Islamic Azad University, Rasht Branch, Iran. The Multidimensional Scale of Perceived Social Support (MSPSS), Serajzadeh’s Religious Attitude Questionnaire, and the Satisfaction With Life Scale (SWLS) were used. The MSPSS was designed by Stewart et al. (2000) to measure perceived social support from family, friends, and important persons in the individual's life. The MSPSS consists of12 items scored on a 7-point scale ranging from 1 (totally disagree) to 7 (totally agree). Bruwer, Emsley, Kidd, Lochner, and Seedat (2008) measured the internal reliability of this instrument in a sample of 788 high school students using Cronbach's alpha; they reported an internal reliability of 90 to 86% for the subscales of the tool, and 86% for the entire tool. Salimia and Jowkar (2011) have reported a Cronbach’s alpha coefficient of 89%, 86%, and 82% for the social support received from the family, friends, and other important persons in individual’s life, respectively. Furthermore, the Cronbach's alpha coefficient of the 3 dimensions of social support from family, friends, and important person’s in an individual’s life were reported as 0.69, 0.71, and 0.75, respectively.

The Muslim Religious Attitudes Questionnaire has been adapted to Islam (especially Shiite Islam) by Serajzadeh based on Golak and Sattar’s (1965) model. This questionnaire has a 4 dimensional measurement (subscale) of religiosity; belief, religious emotions, consequence, and rituals.

Belief is the truths expected to be believed by the followers of a religion (e.g., that on the Day of Judgment, our actions and behavior are accurately judged). The aspect of religious experience or emotions that concerns emotions, perceptions, and feelings is related to having a spiritual connection with God (e.g., sometimes I feel that I am close to God). The consequential aspect or effects of religion that supervise the influence of beliefs, deeds, experiences, and religious knowledge on the daily lives of followers of that religion (e.g., the phenomenon of non-veil must be resolutely fought). Certain religious rituals or practices that include worship and prayer, participation in certain religious ceremonies, fasting, and etc., which is expected to be followed by the followers of any religion (e.g., “Do you pray?”, or “How often do you go to the mosque for congregational prayers?”). All items of the questionnaire are scored on a 5-point Likert scale ranging from totally disagree to completely agree (Sharify, Mehrabizadeh, & Shokrkon, 2005). The formal validity of the questionnaire was obtained through a survey from some PhD students who had a complete knowledge of Islam. The relationship between their religiosity scores on Golak and Sattar’s scale and their self-assessment of religiosity was reported through a Pearson correlation coefficient of 0.61. This amount was considered as an external validity. In this research, the Cronbach's alpha coefficient of the four aspects of belief, experience or religious emotions, consequence, and ritual were obtained at 0.79, 0.69, 0.77, and 0.77, respectively. The SWLS was developed by Diener, Emmons, Larsen, and Griffin (1985) for all age groups and revised by Pavot and Diener (1993). The SWLS is a 5-dimensional scale and the items are scored on a 7-point scale ranging from 1 (totally disagree) to 7 (completely agree). Thus, the total score of the questionnaire ranges between 5 (low satisfaction) and 35 (high satisfaction). Diener, Suh, Lucas, and Smith, (1999) evaluated the reliability of this scale; they reported a Cronbach's alpha coefficient of 0.87 and the coefficient of re-test scores as 0.82 after 2 months of implementation. The reliability of the SWLS was verified. The reliability of this scale was obtained at 85% by Russell, Cutrona, Rose, and Yurko (1984) using Cronbach's alpha.

The UCLA Loneliness Scale designed by Russell et al. (1984) is used to measure loneliness, is the most well-known loneliness scale, and has more psychometric health questions than other scales. This scale consists of 20 questions scored on a 4-point Likert scale.. Cronbach's alpha of the scale ranged from 0.89 to 0.94. The reliability of this scale was reported as 0.77 using Cronbach's alpha. To analyze the statistical data, descriptive and inferential statistics were used. In order to describe the demographic characteristics of the subjects and the data of descriptive statistics, frequency, percentage, and mean and standard deviation were used. To determine the significance of the research hypotheses, multivariate regression and Pearson correlation were used. Data were analyzed in SPSS software (version 20, IBM Corporation, Armonk, NY, USA).

Results

Demographic data showed that the mean age of the subjects was 26.81 ± 4.47 years, with minimum and maximum age of 18 and 43 years, respectively. All the participants in the study were students, single, and female. Furthermore, descriptive measures indicated that the average score of feeling of loneliness of the students participating in this study was 13.55 ± 12.18. The students’ mean perceived social support score was 44.71 ± 10.36, and their average life satisfaction score was 14.5 ± 6.14. Among the dimensions of religious attitude, the highest average score was 20.68 ± 7.56.

Kolmogorov-Smirnov test was used to test the assumptions of using regression, including the normality of distribution. At a significant level of 0.12, the value of Ks-z = 1.04 represents the normal distribution of criterion variable, so parametric tests may be used in the hypothesis testing.

Table 1. Correlation matrix of perceived social supports, satisfaction with life, religious attitude, and feeling of loneliness

Variable	Feeling of loneliness	Social support	Life satisfaction	Belief	Religious emotions	Consequence	Ritual
Feeling of loneliness	-	0.51**	0.34**	0.43**	0.09	0.28**	0.12
Social support		-	0.34	0.25	0.15	0.14	0.22
Life satisfaction			-	0.49	0.29	0.35	0.17
Belief				-	0.11	0.19	0.31
Religious emotions					-	0.24	0.32
Consequence						-	0.14
Ritual							-

**: Significance at the level of 0.01

In addition, the multiplicity assumption was used by determining the amount of tolerance and the acting of aggregate factor. Moreover, to determine the independence of errors, the nonlinear relationship between the remaining data was checked and the Watson camera data values (D-W = 1.87) were obtained. Furthermore, Cook's distance index was 0.01. Therefore, the independence of the residuals (errors) and the same dispersion were confirmed and regression could be used.

As can be seen in table 1, the correlation of perceived social support, life satisfaction, and religious attitude (except for the religious attitude dimensions of religious emotions and rituals) with loneliness was statistically significant ($P < 0.01$).

The results of regression analysis using the concurrent method showed that perceived social support, life satisfaction, and religious attitude can explain 33% of the variance in loneliness (criterion variable) (Multiple correlation R: 0.57; Multiple correlation squared R^2: 0.33; Modified R^2: 0.31; Standard error: 9.9; F Changes: 13.51; P = 0.001).

As shown in table 2, the obtained value (F = 19.61, 15.39) is significant ($P < 0.01$); therefore, it can be concluded with confidence that the feeling of loneliness can be predicted based on perceived social support, life satisfaction, and religious attitude. The predictive variable (perceived social support, life satisfaction, and religious attitude) has the power of predicting the criterion variable (feeling of loneliness). Therefore, the results of regression are permissible to analyze and report.

According to the results presented in table 3, social support, life satisfaction, belief dimension, and consequential aspect with B-standard of -0.024, -0.154, -0.273, and -0.166, respectively, have inversely been able to predict the feeling of loneliness ($P < 0.01$); the dimensions of religious emotion and ritual did not have a significant role in explaining the variance in the feeling of loneliness.

Discussion

The results of this study showed that perceived social support, life satisfaction, and religious attitude had a relationship with the feeling of loneliness in single female students. Moreover, the correlation of perceived social support, life satisfaction, and religious attitude (except for the dimensions of religious emotions and rituals) with the feeling of loneliness, was statistically significant. Social support, life satisfaction, belief dimension, and consequential dimension had an inverse relationship with the feeling of loneliness. This finding is consistent with the results of researches by Mellor, Stokes, Firth, Hayashi, and Cummins (2008), Vahedi and Nazari (2011), and Aliakbari Dehkordi et al. (2015).

Table 2. Results of analysis of variance for the significances of variables prediction

Sources of changes	Sum of squares	df	Mean square	F	P-value
Regression	10664.26	6	1777.38	19.15	0.001**
Remaining	14199.98	153	92.81		
Total	24864.24	159			

**: Significance at the level of 0.01
df: Degree of freedom

Table 3. Summary of regression results of loneliness prediction based on perceived social support, life satisfaction, and religious attitude

Model	Non-standard coefficient (b)	Standard error	Standard coefficients b	t	P-value
Constant amount	99.88	4.84	-0.312	20.62	0.01
Social support	-0.51	0.08	-0.420	-6.70	0.01
Life satisfaction	-0.31	0.14	-0.154	-2.25	0.03
Belief	-0.61	0.16	-0.273	-3.78	0.01
Religious emotions	-0.12	0.14	-0.055	-0.85	0.40
Consequence	-0.54	0.21	-0.166	-2.62	0.01
Rituals	0.07	0.11	-0.042	-0.62	0.54

Chen et al. (2017) concluded that there was a more inverse relationship between students' loneliness and their QOL. Dastgheib (2014) did not find a meaningful relationship between religious orientation and QOL in students.To clarify this finding, it can be pointed out that social support is of particular importance for several reasons; first, the human being is a social being and social relation is considered as one of the main factors in the QOL of individuals. A strong evidence to confirm this is the undesirable effects of social isolation or loss of social links on people's lives. In addition, social protection as an appropriate and almost accessible tool may be used in interventions designed to increase the welfare level, especially mental well-being (Priest et al., 2017). Social support can increase people's resistance to the negative effects of stressful conditions (Kobasa & Puccetti, 1983). Therefore, the existence of supportive resources, such as friends, family, and important persons in an individual’s life, can reduce the effects of loneliness. In addition, lack of trust among peers may lead to loneliness. Due to lack of financial autonomy, dormanent students are less likely to be supported by the family and have low social interactions with friends. The lack of acceptance of peers and the lack of peer relationships may reduce the sense of social value and this can increase loneliness in these individuals (Lotvonen, Kyngas, Koistinen, Bloigu, & Elo, 2017). Therefore, dormitory life can provide a ground for the feeling of loneliness in students because of academic and job problems. Furthermore, non-indigenous students living in a dormitory experience more problems in life and are require more relationships with friends and in the community. Lack of satisfactory relationships and inadequate support sources from family, friends, and other persons in an individual’s life make these students unenthusiastic about having relationships with others, which is one of the reasons for their feeling of loneliness. Moreover, life satisfaction can be attributed to internal traits and adaptive processes. These internal traits and psychological processes, along with access to supportive resources, can explain the negative relationship between life satisfaction and feeling of loneliness (Carlson, Hunter, Ferguson, & Whitten, 2011). Religion and faith create motivations towards the world in humans and help them in facing the horrific events of life. Moreover, an individual’s life goals are determined so as to prevent mental problems in their life. In fact, religious attitudes help people to have a more tolerable life and add to their feeling of existential value. Religious systems, in this context, provide comprehensive and complete frameworks that provide a comprehensive definition of the universe and identify the position of man in it. Present-day modern cities have changed the shapes of social networks in the city and have weakened them.

This instability in social relationships and the weakness of the networks itself is increasing the feeling of loneliness. Religion affects the health of the community as a coherent factor that brings people together and reestablishes social links (Carlson et al., 2011). The more developed the religion is, the healthier, more integrated, and socially supported the people

are in that society. The level of isolation and loneliness will reduce with the development of social health and religions' expansion, and therefore, social relations and social support in societies. A limitation of this research was the lack of control of some variables such as socioeconomic status that can affect the responses to questionnaire questions. In addition, the use of self-monitoring tools to measure variables may lead to inaccurate responses in some individuals.

Conclusion

According to the results of the research, there is a relationship between perceived social support, life satisfaction, religious attitude and feeling of loneliness. Therefore, the welfare department of the university can tailor recreational programs to the students' needs and interests to help them use their leisure time optimally. This will improve their mental health and the efficiency of dormitory students. It is suggested that descriptive indicators such as age, occupation, and socioeconomic level be considered in future studies in order to determine the effect of these factors on individual feeling of loneliness. Furthermore, it is suggested that, in addition to questionnaires, other methods (interview, observation, and etc.) be used to gather information.

Conflict of Interests

Authors have no conflict of interests.

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Effectiveness of Cognitive-Behavioral Group Therapy on Openness to Experience and Improving the Quality of Interpersonal Relationships

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Quantitative Study

Abstract

Background: This experimental study aimed to examine the effectiveness of cognitive-behavioral group therapy (CBGT) on openness to experience and improvement in the quality of interpersonal relationships.

Methods: The statistical population of this study consisted of all individuals referred to three accredited psychological centers in Tehran, Iran, in 2017. Using simple random sampling, 20 participants were selected, and after screening, were assigned to two groups (CBGT and control groups). Pretest was conducted for both groups. Then, the CBGT group received 12 sessions of intervention while the control group received no intervention. Ultimately, the posttest was performed for both groups. The research tools used included the Revised NEO Personality Inventory (NEO PI-R) (Costa and McCrae) which is a personality inventory and the Quality of Relationships Inventory (QRI) (Pierce and Sarason) which has recently been developed to measure the quality of interpersonal relationships.

Results: The obtained data were analyzed using analysis of covariance (ANCOVA). The results revealed that CBGT has a significant effect on openness to experience and improves the quality of interpersonal relations.

Conclusion: It is believed that social support helps stressful situations in three ways. First, family members, friends, and others can directly provide financial resources for a person. Second, members of social networks can provide informational support by giving suggestions and these various efforts can solve stressful problems. Such suggestions help the individual see the problem from a new perspective. Thus, he/she can solve it or minimized the resulting damages. Third, members of social networks can provide emotional support by reassuring a person that he/she is valuable, interesting, and honorable and increase his/her self-esteem and self-concept in life.

Keywords: Cognitive behavioral therapy, Openness to experience, Quality improvement, Interpersonal relations

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Introduction

The human being is a social creature and one of his responsibilities in this world is to establish, develop, perpetuate, and strengthen his interpersonal relations (Yalom, 2010). Interpersonal relationships are the most important factors of our life from birth to death (Yalom, 1996). The

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greatest punishment for a human is loneliness
(e.g., solitary confinement). Therefore, none of the potential abilities of human beings can grow, unless in the context of interpersonal relations and they are not able to learn, create, establish, and ultimately survive, unless in the context of their social relations (Herman & Lawrence, 2010). Human beings cannot establish effective interpersonal relationships without learning to do so from birth. This is a lifelong learning, which continues as long as the human being is alive. The continued existence of life and society depends on improving the quality of interpersonal relationships (Yalom, 2011). Openness, as one of the main dimensions of personality, has been less acknowledged among psychologists and experts compared to neuroticism and extroversion. The constituent elements of openness (including active illusions, sensitivity to beauty, attention to inner emotional experiences, and independent judgment) often play a considerable role in theories and assessment of personality. Often, the unity of these features is in the desired index. Open-minded individuals are curious about their surrounding world and their lives are full of experiences (Haghshenas, 2011). Since personality is defined with relatively stable characteristics in thought, behavior, and emotions and, contrary to what the existential and interpersonal theorists believe, the tools that have been made to assess personality throughout the history of psychometrics are developed according to this definition. The Five-item Personality Questionnaire is a reliable personality test that examines five aspects of personality including neuroticism, extraversion, openness, agreeableness, and conscientiousness (Schultz and Schultz, 2013). The human being is generally a social creature. Stories, movies, plays, and poems approve the fact that our sadness and happiness (the misery and propriety) rely on our relationship with each other. We spend most of our life interacting with others or thinking of it. The more effective and successful relationships we have with each other, the more we achieve success. Moreover, our mental health has a full correlation with the quality of our relations with others (Hofmann & Smits, 2008). Many scholars and scientists suggested that one of the health indicators could be the relationship with others, its maintenance, and collaboration with others (Pasha & Atashpour, 2006). Those who are unable to establish relationships due to some reasons are often faced with stress, feeling of emptiness, and increasing isolation. Accordingly, we should have interaction with each other in order to avoid isolation and its harmful impacts. Warm and sincere relationships with others can be the source of confidence, comfort, and tranquility for each of us. Social supports are the social bounds of humans that cause security, peace, importance, and respect (Corey & Corey, 2012). Interpersonal relations are the foundation of human identity and perfection and form the primary basis of relationships. Effective communications result in the improvement of the quality of relationships, while ineffective communications prevent humans from flourishing, and thus, they can become toxic and destroy their relationships (Herman & Lawrence, 2010). We form relationships in order to find our identity and strengthen our relationships to solve our problems and find facilities. Generally, these interpersonal relations can create the basis of our life and happiness. Interpersonal relations can be the vital blood and vein for purposeful relations (Wood, 2005). Establishing a relationship or improving existing relationships are among the most positive events throughout life. This would lead to the improvement of the quality of relationships and a more favorable future. On the contrary, loss of a relationship can be one of the worst and the most uncomfortable experiences (Atashpour & Kazemi, 2003). Intimate relations with

others are the most involving experiences throughout life. Falling in love, having good friends, and having good relations with parents, children, and sisters or brothers are considered to be important in interpersonal relationships (Hofmann, 2004). Most people consider good relationships for their happiness more important than any other affair, which is approved by empirical studies. Campbell, Converse, and Rodgers (1976) examined the significance of different issues for individuals in their lives. They found that good friends, marriage, and successful familial life are more important to individuals than financial and professional improvements (Prochaska & Norcross, 2016). When Klinger (1977), in his research, questioned "What makes your life meaningful?" all the participants answered to love somebody and to be loved (Nadaf Shargh, 2014). The correlation between good relationships and a peaceful feeling has been proved by many researches. Researchers found a significant relationship between having few friends and the problems involving depression, stress, and fatigue (Mojarrad Kahani, Ghanbari Hashem Abadi, & Modares Gharavi, 2012). An interesting finding is that individuals deprived of relationships with others often experience hallucination, physiological disorders, depression, and confusion. Kingsley Davis, An American sociologist and demographer, (1940, 1947) argued that imprisonment and isolation is one of the most oppressive punishments. The majority of people are able to tolerate hunger and pain more than social isolation. The human being needs social relations and connections throughout his life (Cassidy, 1999). Even those who have social connections throughout their life are affected by the deprivation of such relations (Wood, 2005). The findings astonishingly revealed that isolated individuals or those without any attachment are more likely to have health problems involving apoplexy, tuberculosis, cancer, alcoholism, and accidents compared to those who remarried and lived within a network of intimate relationships (Mennin, 2006). They also have a higher rate of death and suicide (Mennin, 2006). The cessation of an intimate relationship due to divorce or the death of one of the parents, a friend, or spouse is one of the most stressful life experiences (Forgas, 1994). Mental problems mainly result from interpersonal relationships, in other words these problems appear in relationships with others; thus, treatment should be provided for both simultaneously. Group therapy presents individuals the best opportunity to correct their communications first in the group, and then, in the outside world (Yalom, 2011). Group therapy not only discards disorder symptoms and recreates personality in a short time, but also, through discarding disorder symptoms, increases the capacities of patients in continuous self-awareness (Godoy et al., 2005). That is, group therapy provides an opportunity for individuals to improve the quality of their relationships by obtaining insight into the self and their communicational world, transmitting knowledge, gaining emotional experience, and being in a small social environment (Corey, 2006). Moreover, the individual's ability to analyze and perceive others' mental states is associated with reasoning on why such mental states exist and predicting them. Understanding the minds of others and self-awareness (conscious knowledge of one's own character, feelings, motives, and desires) are parallel to each other. Therefore, those who have a deeper cognition of themselves can also understand others better and accurately predict others' behaviors, and as a result, they experience fewer problems in relationships with themselves and others (Lantz & Gregoire, 2000). Group therapy helps individuals better understand themselves and others (Latifian & Seif, 2007). Cognitive therapy (CT) examines the impacts of false thoughts on mental disorders by focusing on the importance of emotions and behaviors in individual's

mental functions. Beck, in working with his clienteles, recognized the distortions or cognitive errors which affect the individual's feelings, thoughts, and behaviors. There is a complete assessment to change the individual's beliefs through the tools designed by Beck et al. In group therapy, the cognitive therapist assesses behavioral change with the help of authorities (Overholser, 2005). Several researches have shown the considerable effect of the cognitive approach on public mental disorders compared with behavioral approaches and pharmacotherapy (Navabinejad, 2014). Changes in individuals in the treatment group have not originated from group relationships, but are due to the use of cognitive-behavioral therapist guidelines. Hence, the cognitive approach is focused on special changes in each group session and problem-based structures (Kolko, et al, 2010). In these therapy patterns, it is suitable if the changes are evaluated before each session to study the signs and adjust the solutions including Beck's Depression Inventory. In addition, cognitive group interventions focus on performing cognitive and behavioral practices. Some cognitive group interventions may apply specific types of techniques such as problem-solving techniques, while others may be designed to help people who suffer from mental disorders such as depression (Navabinejad, 2014). Cognitive-behavioral therapy (CBT) approaches vary greatly, but they have in common the features of therapist-client relationships, psychological distress resulting from chaos in cognitive processes, focusing on changing the cognitions to establish the desired changes in feeling, and short-term therapy and training based on special problems (Corey, 2012). CBT approaches are based on the regular training model and all of them are focused on the role of assignment, giving responsibility to the client so that he/she will accept an active role in therapy sessions and outside the sessions, and using cognitive and behavioral guidelines in order to make change. CBT is based on the hypothesis that recreation of personal expressions by the individual results in equal recreation of his/her behavior. Therefore, behavioral texts including classic conditioning and reactant and behavioral exercise assignment may be used for unclear processes of mental thought and inner dialogue (Free, 2003). To the author's knowledge, no research has been conducted on the efficacy of cognitive-behavioral group therapy (CBGT) on openness to experience and improvement of the quality of interpersonal relationships in Iran. Hence, it is a subject of great importance. The questions raised here are whether CBGT can have a significant effect on openness to experience and improvement of the quality of interpersonal relationships, and whether the cognitive correction of individuals' beliefs and drafts and familiarity with fundamental beliefs is effective or not.

Methods

This research was an experimental research. The statistical society consisted of all the people who referred to three psychological centers in Tehran, Iran. From among 450 individuals, 20 individuals were selected through simple random sampling and were randomly divided into two groups. After riddling, 12 individuals were selected from each group, and finally, the groups (CBGT and control group) consisted of 10 members. The CBGT group received 12 sessions of CBGT and the control group received no therapy program.

Research Tools

A) Quality of Relationships Inventory: In this research, the Quality of Relationships Inventory (QRI) designed by Pierce, Sarason, and Sarason (1991) was used to evaluate the efficacy of existential therapy and CBGT on people in order to study the support received in relationships with important persons in the individual's life.

The QRI consists of 29 questions with the 3 subscales of social support (7 items) importance and depth of relationships (6 items), and interpersonal difference (12 items), and the 4 remaining items are not scored. Pierce et al. (1991) reported the reliability of the QRI as 75% and 92% through retesting on 94 boy students and 116 girl students, respectively, within a 2-week interval (Ebrahimi, Bolhari & Zolfaghari, 2002.). Cronbach's alpha coefficients for the subscales of social support, relationships depth, and different relationships was 83%, 88%, and 86%, respectively. Ebrahimi (1990), in Iran, translated this questionnaire into Persian and calculated its reliability through Cronbach's alpha coefficient (73%).

B) The Revised NEO Personality Inventory: The Revised NEO Personality Inventory (NEO PI-R) was designed by Costa and McCrae for normal population. Costa and McCrae revised the original version of the inventory in 1992 to evaluate the five-factor personality model (neuroticism, extraversion, openness, agreeableness, and conscientiousness). The reported alpha coefficient for neuroticism, extraversion, openness, agreeableness and conscientiousness was 85%, 72%, 68%, 69%, and 79%, respectively. The long-term validity of NEO PI-R was also assessed. In a 6-year longitudinal study on the indicators of O, E, and N, the validity coefficients reported ranged from 68% to 83%. Validity coefficients of the indicators A and C were, respectively, 79% and 63% in 3 years. In a 7-year longitudinal study on individuals of the same age, the validity coefficients of 18 subaltern adjectives of O, E, and N were in the range of 51%-82% and 63%-81% for the 5 main factors of men and women. In Iran, Haghshenas (1999) approved the five-factor structure of this questionnaire and reported the inner Cronbach's alpha coefficients for the main factors of N, E, O, A, and C as 86%, 73%, 56%, 68%, and 87%, respectively (Garousi Frashi, 2001).

Behavioral-Cognitive Group Therapy Guideline

The first session consisted of familiarization with group members, thinking and feeling, visual guided peace and home assignments, enabling participants to receive primary superficial thought between event and excitation reaction.

The second session consisted of activating event belief consequences (ABC), thoughts and belief, excitation consequence, studying logical errors and self-concept, behavioral excitation consequence, and writing ABC in three separated columns as an assignment.

The third session involved finding core beliefs through the down arrow technique, evaluating home assignments, placing active events and self-concept with excitation consequences under the same column, determining logical errors as the foundation of beliefs and thoughts by participants, defining imagination by the mental revision of a space to express an image.

The fourth session consisted of reviewing previous assignments and types of beliefs, classifying beliefs, working on downward arrows and beliefs in interpersonal relationships, and creating a situation to talk about beauty, and aestheticism of thoughts and beliefs.

The participants were asked to classify 10 negative and popular drafts as their practice.

The fifth session consisted of reviewing assignments, creating cognitive plans and grading mental sorrow units, assignment on individuals' mental sorrow units and the openness to experience (which helps to correct the negative beliefs of the participants), determining the relation between negative beliefs, and listing negative beliefs and cognitive plans. Moreover, beliefs were graded on mental sorrow units based on the excitation severity related to them as assignment.

The sixth session consisted of changing beliefs, objective analysis and standard analysis of created beliefs, discussing opposite beliefs so that the participants can accept this idea.

Table 1. Frequency distribution of gender, educational degree, and marital status of participants in the two groups

Groups	Gender		Educational degree			Marital status		
	Female	Male	Pre-diploma and diploma	Diploma and advanced diploma	University degree	Single	Married	Divorced
Control	6	4	3	3	4	4	5	1
CBGT group	6	4	3	2	5	4	5	1
Total	12	8	6	5	9	8	10	2

CBGT: Cognitive-behavioral group therapy

The seventh session consisted of efficient analysis, corresponding analysis, discussing the effects of thoughts on feelings and excitation, studying the cognitive excitation model, presenting the assignment for the following week, and performing efficient analysis and corresponding analysis on all the main list beliefs.

The eighth session consisted of logical analysis and assignment, logical analysis of beliefs supposed to be true on all the conditional and total drafts, expressing values as people's beliefs, and discussing the different values of participants.

The ninth session consisted of creating a hierarchy and practicing opposing and starting oppositions. After listing the cognitive distortions, the cognitive therapist opposes these cognitive distortions through different techniques or provides evidence to repudiate them.

As home assignment, the participants were asked to express evidences to repudiate the main list of beliefs.

The tenth session consisted of perceptive change and cortex voluntary prohibition.

As an exercise, the participants were asked to practice cortex voluntary prohibition.

As their assignment, they were asked to reported perceptive change in all beliefs, practice cortex perceptive prohibition at least 2-3 times per day, perceptive change, and cortex voluntary prohibition.

The eleventh and twelfth sessions consisted of self-punishment and self-award, maintenance techniques and growth practice, extending a maintenance program, conclusion ceremony, and getting feedback from participants (Free, 2009).

Results

The 20 participants of this research were divided into two groups of CBGT and control (10 members in each group). The mean age of the participants in the control group and CBGT group was 28.60 years and 29.70 years, respectively (with the minimum age of 20 years and maximum age of 41 years). The demographic characteristics of the participants are presented in table 1.

Distribution of research variables in the pretest: Kolmogorov–Smirnov test was used to study the distribution of research variables in the two groups. The results are presented in table 2.

As table 2 shows, data are distributed normality at 0.05, and sig. > 0.05 is a meaningful level for research variables in the two groups in pretest.

Table 2. Kolmogorov–Smirnov test results of the normality of research variables in the two groups in pretest

Variables	levels	Control		CBGT	
		K-S	P-value	K-S	P-value
Social support	Spouse	0.491	0.697	0.504	0.661
	Friend	0.496	0.595	0.589	0.779
	Parent	0.630	0.661	0.599	0.666
Importance and depth of relationships	Spouse	0.486	0.519	0.572	0.799
	Friend	0.628	0.825	0.607	0.656
	Parent	0.557	0.716	0.705	0.603
Interpersonal conflicts	Spouse	0.443	0.474	0.849	0.467
	friend	0.632	0.819	0.565	0.607
	parent	0.599	0.766	0.504	0.762
Openness to experience		0.503	0.662	0.550	0.623

CBGT: Cognitive-behavioral group therapy; K-S: Kolmogorov–Smirnov

Table 3. Kolmogorov–Smirnov test results of the normality of the research variables in the two groups in posttest

Variables	Relationship levels	Control		CBGC	
		K-S	P-value	K-S	P-value
Social support	Spouse	0.739	0.646	0.666	0.767
	Friend	0.648	0.796	0.587	0.880
	Parent	0.489	0.870	0.680	0.744
Importance and depth of relationships	Spouse	0.539	0.834	0.897	0.396
	Friend	0.727	0.667	0.824	0.506
	Parent	0.677	0.749	0.754	0.620
Interpersonal conflicts	Spouse	0.546	0.827	0.714	0.687
	Friend	0.592	0.874	0.605	0.858
	Parent	0.567	0.704	0.746	0.634
Openness to experience		0.513	0.755	0.598	0.867

CBGT: Cognitive-behavioral group therapy; K-S: Kolmogorov–Smirnov

Therefore, mean and standard deviations were used to describe the above variables and parametric tests were used to assess the research hypotheses.

Distribution of research variables in posttest: Kolmogorov–Smirnov test was used to study the distribution of the research variables in the two groups in posttest. The results are presented in table 3.

As shown in table 3, data are distributed normality at 0.05, and $P > 0.05$ is a meaningful level for research variables in the two groups in posttest. Analysis of covariance (ANCOVA) or meaningful effect on posttest and homogeneity of regression line gradient in the two groups are presented in table 4 in order to evaluate the two hypotheses of ANCOVA.

The results presented in table 4 show that the effect of pretest on posttest is meaningful, since its meaningful level is less than 0.05. Therefore, the control of this effect with covariance is logical. Therefore, regression line gradient of the two groups is equal. The equal gradients show that there is no relationship between pretest and CBT. Equal variances are for responding to pre-hypotheses of scores normality and the effect of pretest on posttest is meaningful, while the relationship of interference and pretest is meaningless and ANCOVA can be used. The results of ANCOVA are presented in table 5.

Based on the results presented in table 5, there is a meaningful difference between the control group and experimental group in terms of interpersonal relationships quality score ($f = 21.314$, $P < 0.05$). In fact, after adjustment the posttest scores, CBT has a meaningful effect on the interpersonal relationships quality of the CBGT group. Hence, the research hypothesis is confirmed. In other words, CBT improved the quality of interpersonal relationships of clients in psychological centers. The last column of this table shows the coefficient or Eta-squared. It is clear that 55.6% of variance in the quality of interpersonal relationships is depicted by the independent variable or CBT. Based on the collected data, it can be concluded that CBT has a meaningful effect on the quality of clients' interpersonal relationships. The meaningful effect of pretest on posttest and homogeneity of regression line gradient in the two groups to study the two main hypotheses of ANCOVA are illustrated in table 6.

Table 4. Analysis of covariance hypotheses

Change sources	Square total	Liberty	Square mean	F	Meaningful level
Pretest effect	128.130	1	128.130	9.94	0.001
Pretest vs. CBGT	31.049	1	31.049	2.408	0.154
Error	206.292	16	12.89		

CBGT: Cognitive-behavioral group therapy

Table 5. Results of analysis of covariance of a variable on pretest and posttest scores of the control and experimental groups

Variant source	Square total	Liberty	Square mean	F	Meaningful level	Eta-squared
Pretest effect	168.481	1	168.481	41.252	0.001	0.708
CBGT effect	87.050	1	87.050	21.314	0.001	0.556
Error	69.431	17	4.084			

CBGT: Cognitive-behavioral group therapy

The results given in table 6 indicate that the effect of pretest on posttest is meaningful, since its meaningful level is less than 0.05. It is logical to control this effect by ANCOVA. Therefore, the slope of the regression line is the same. Equal dips indicate that pretest and cognitive-behavioral intervention did not have an interactive impact. Therefore, in order to confirm the above hypothesis, as the assumptions for the distribution of normality of scores, equality of variances was established. The effect of the test was significant after the test, and the interaction between the intervention and the pretest was not significant. ANCOVA could be used in this regard. The results of ANCOVA for the effect of CBT on openness to experience are illustrated in table 7.

Based on the results presented in table 7, there is a significant difference between the experimental group and the control group in terms of the scores of openness to experience ($f = 26.888$; $P < 0.05$). After adjusting posttest scores, CBT caused a greater difference in openness to experience in the experimental group. Therefore, the research hypothesis is confirmed.. The last column of the table (Eta-squared) shows that 52.9% of variance in openness to experience is defined by the independent variable, CBT. It can be concluded that CBT has a meaningful effect on openness to experience.

Discussion

The results obtained from the study were consistent with the results of the studies by Horowitz, Rosenberg, and Bartholomew (1993), Horowitz, Weckler, Saxon, Livaudais, Boutacoff (1991), Schmidt et al., (2000), Siev and Chambless (2007), Lopes, Salovey, and Straus (2003), and Newman, Castonguay, Borkovec, Fisher, and Nordberg (2008). It is believed that social support helps stressful situations in three ways. First, family members, friends, and others can directly provide financial resources for a person (Seidler & Wagner, 2006). Second, members of social networks can provide informational support by giving suggestions and these various efforts can solve the stressful problems. Such suggestions help the individual see the problem from a new perspective. Therefore, he should solve it or minimized the resulting damages. Third, members of the social network can provide emotional support by reassuring a person that he/she is valuable, interesting, and honorable and increase his/her self-esteem and self-concept (Beigifard, 1999). The main purpose of CBGT and individual CBT is to eliminate errors, cognitive constructs, and policies in thoughts so that people can act more efficiently (Carmeli, Brueller, & Dutton, 2009). Information processing method puts to rest abhorrent behaviors and feelings, and the cognitive errors of a person or all members of the group are challenged and discussed, and thus, positive thoughts and feelings replace the negative ones (Huppert & Alley, 2004).

Table 6. Analysis of covariance hypotheses

Variant source	Square total	Liberty	Square mean	F	Meaningful level
Pretest effect	4502.473	1	4502.473	1341.215	0.001
Pretest vs. CBGT	0.258	1	0.258	0.077	0.785
Error	53.712	16	3.357		

CBGT: Cognitive-behavioral group therapy

Table 7. Results of analysis of covariance a variable on pretest and posttest scores of control and experimental groups

Variant source	Square total	Liberty	Square mean	F	Meaningful level	Eta-squared
Pretest effect	4933.030	1	4933.030	1553.864	0.001	0.989
CBT effect	85.379	1	85.379	26.888	0.001	0.529
Error	53.970	17	3.175			

CBGT: Cognitive-behavioral group therapy

As a minor purpose, the cognitive therapist focuses on prioritizing special purposes and cooperative tasks with clients. These purposes can be designed in behavioral, thought, and emotional contexts (Moras & Strupp, 1982). The more clearly the purpose is defined, the easier the selection of ways for defining belief systems, feelings, and behaviors will be (Navabinejad, 2013). Accordingly, members of the CBT group are familiarized with cognitive distortions, beliefs correction and drafts, exact and true concepts of aestheticism, imaginations, feelings, different viewpoints of values correction, false and distorted beliefs, and independent judgment.

Conflict of Interests

Authors have no conflict of interests.

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Effectiveness of Acceptance and Commitment Therapy on Hardiness, Procrastination, and Frustration Tolerance in Students of Islamic Azad University, Ahvaz Branch, Iran

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Original Article

Abstract

Background: The aim of this study was to investigate the effectiveness of acceptance and commitment therapy (ACT) on procrastination, hardiness, and frustration tolerance in students of Islamic Azad University, Ahvaz Branch, Iran.

Methods: The current semi-experimental study was conducted through a pretest-posttest design with follow-up and control group. The statistical population of this study consisted of all students of Islamic Azad University, Ahvaz Branch, from among which 32 individuals were selected. The participants were randomly divided into two experimental and control groups, each containing 16 individuals. The experimental group took part in 8 sessions of ACT; each session lasted 90 minutes. After completing the sessions, both groups responded to Tuckman's Impact Questionnaire, Kobasa's Hardiness Questionnaire,and the Frustration Discomfort Scale. The multivariate analysis of covariance (MANCOVA) was used to analyze the collected data.

Results: A statistically significant reductions in procrastination and increase in frustration tolerance and hardiness was observed ($P < 0.001$) in the experimental group after ACT. These changes were also preserved in the follow-up phase.

Conclusion: Therefore, based on the results, ACT is recommended for reducing procrastination and increasing frustration tolerance and hardiness.

Keywords: Acceptance and commitment therapy, Procrastination, Hardiness, Frustration tolerance

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Introduction

Higher education has always encountered some problems in terms of educational and research constraints. Achievement of predetermined goals, to a large extent, has a direct bearing on the success rate of students. One of the problems is the student's ostracism. Procrastination is typically defined as an unreasonable tendency to delay the

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tasks to be completed (Flett, Blenkstein, Hewitt, & Koledin, 1992). Proof, negligence, nonchalance, and postponement Dropping the job. 15 to 20% of adults suffer from procrastination (Steel, Brothen, & Wambach, 2001). This is a behavioral problem that many adults experience in daily routines (Janssen & Carton, 1999). It is important to neglect this aspect, which is one of the most important obstacles to students' academic achievement (Sokolowska, 2009). One of the other components directly related to student's progress is hard work. Hard work is one of the most important personality traits in relation to stress and includes a set of psychological features that prevent people from reacting to potentially stressful situations or events. Khoshaba and Maddi (1999) introduced hard work as a personality construct consisting of the 3 main components of commitment, control, and combat. Hard-working people devote themselves to what they are doing; they feel they are dominant and self-determining, and life changes are challenges and opportunities for growth and development, not constraints and threats (Kobasa, 1979). Individuals with a high level of psychological hardiness are more vulnerable to a set of stressors and, despite high levels of stress, tend to behave well and stay healthy (Kelly, Matthews, & Bartone, 2014). Another factor that has an inverse relationship with ostracism and direct connection with psychological hardiness in students is enduring failure; failure to tolerate a person's ability to withstand frustration without having any problem in psychological adjustment (Jaffer, & Rajpal, 2017). Inability to tolerate failure results in psychological disturbances, incompatibility, and communication problems. Failure is a prelude to aggression. A person who has the ability to withstand a failure is less aggressive than someone who has less ability in this regard. People with a low failure rate tend to present anti-social or inappropriate behavior. Most psychosocially disadvantaged people have a low tolerance. When a person fails to succeed, he will have a lower tolerance in achieving the next goal (Rosenbaum and Lasley, 1990). To reduce the problems of inertia, and increase psychological hardiness and tolerance in students, different therapeutic approaches are used, one of which is acceptance and commitment therapy (ACT). ACT, instead of focusing on behavior and reducing and eliminating symptoms such as thoughts and excitement, emphasizes the creation of a valuable and meaningful life (Hayes, 2004). In ACT, admission and mindfulness interventions are used along with strategies for adherence and behavior change in order to increase psychological flexibility in therapists (Flaxman, Blackledge, & Bond, 2011). In ACT, the main goal is to create mental flexibility, that is, the ability to make practical choices from among those possible, rather than merely to avoid disturbing thoughts, feelings, memories, or desires (Forman, & Herbert, 2009). In a study, Flaxman et al. (2011) placed 107 subjects under the three conditions of acceptance and adherence, stress induction, and waiting lists. The analysis of the results showed that the effect of ACT was associated with increased psychological flexibility (Flaxman et al., 2011). Halliburton and Cooper, (2015), in their research, showed that ACT reduces negative and distorted thoughts. Folke, Parling, and Melin (2012), in their research, showed that ACT reduced anxiety and depression in people. Therefore, with regard to the stated content and lack of coherent studies on the effectiveness of this therapeutic model on the variables of the present research, the purpose of this study was to investigate the effectiveness of ACT on negligence, hardiness, and failure of students in Islamic Azad University, Ahvaz Branch, Iran.

Methods

This semi-experimental study was conducted with a pretest-posttest design, a control group, and follow-up. The statistical

population of this study included all students of Islamic Azad University, Ahvaz Branch, which included 552 individuals. Students were matched in terms of educational status and occupation. Participants were all graduate students in the field of psychology and their ages ranged from 20 to 35 years. To select the subjects, all volunteers were examined using Tuckman's Impact Questionnaire, Kobasa's Hardiness Questionnaire, and the Frustration Discomfort Scale. From among all students of the Islamic Azad University, Ahvaz Branch, in the academic year of 1995-96, a sample of 32 individuals was selected, 16 of ubjects were randomly assigned to the experimental group and 16 ubjects in the control group were randomly assigned. The experimental group of 16 people was trained by ACT.

. The experimental group participants took part in 1 session lasting 90 minutes each week. However, the control group did not receive any intervention in this regard. The study inclusion criterion was lack of addiction, and the study exclusion criterion was incomplete and inaccurate information. Based on the ethical charter in the research, ACT was carried out for the control group during follow-up.

The difference between pretest and posttest in each group was statistically significant. Thus, the efficacy of ACT as an independent variable was determined. Its effect on procrastination, hardiness, and failure among students as a dependent variable was determined. A follow-up test was performed 1 month later. After collection, the data were analyzed in SPSS software (version 22, IBM Corporation, Armonk, NY, USA). In order to analyze the information, descriptive statistics (frequency, graph, mean, and standard deviation) and inferential statistics [presumption and multivariate analysis of covariance (MANCOVA)] were used.

Tools

Tuckman's Impact Questionnaire (1991): This questionnaire contains 12 items scored directly and 4 items (10, 12, 14, 16) inversely. The items are scored on a scale ranging from 1 to 4. High scores on this scale indicate a high outage. This questionnaire was translated by Bayat Moghaddas (2003) and obtained a rate of 73% among students of Azad University of Roudhan Branch, Iran. Its validity was determined through its correlation with the test by Schuazar et al. (2000). Tuckman (1999) found that the reliability of this questionnaire was 86% and its Cronbach's alpha coefficient was 0.81.

The Persian version of Kobasa's Hardiness Questionnaire: The hardiness questionnaire was translated into Persian by Besharat and Hoseinzadeh Bazargani (2006). This questionnaire consists of 45 questions in the 3 subscales of commitment, control, and struggle. The questions are scored based on a 4-point Likert scale ranging from 0 to 3. Each subscale of this test contains 15 questions (Janda, 2001). The test-retest reliability of the scale and its subscales were confirmed in two groups with a correlation coefficient ranging from 0.77 to 0.88. The internal consistency of this scale was also evaluated using Cronbach's alpha coefficient and the internal consistency of this scale was confirmed with correlation coefficients in the range of 0.56-0.78. The scores of subjects in the subscales of psychological well-being, psychological distress, positive perfectionism, and negative perfectionism were examined and confirmed (Besharat & Hoseinzadeh Bazargani, 2006).

The Frustration Discomfort Scale: The Frustration Discomfort Scale (FDS) was created by Harrington (2005) to measure the degree of failure of an individual to achieve a goal. The items are scored based on a 5-point Likert scale. A low total score indicates a high failure rate and a high score indicated a low level of failure. The results of Cronbach's alpha coefficient showed that the reliability of this tool for all participants was 84%, 50% for the non-emotional component, 61% for the incontinence component, 52% for the component, and 71% for the eligibility component. In

addition, the alpha coefficient in the external sample (Harrington, 2005) is higher than the Iranian sample, ranging from 87% (incontinence component) to 94% of the total scale. In the present study, the reliability of the FDS was obtained as 65%, 57%, and 50%, respectively, in the pretest, posttest, and follow-up using Cronbach's alpha. Waltz and Hayes (2009) reported a reliability of 84% for all subjects using Cronbach's alpha coefficient.

Procedure

After obtaining the license for performing the study and after the intervention, the questionnaires and consent form were completed by the participants of both groups. The subjects were randomly divided into control and experimental groups. In the present study, an ACT program was implemented in which subjects received a 90-minute treatment session each week. Before the main sessions of the treatment, 1 session was held to explain the research, establish a good relationship with the participants, perform tests, and collect information about problems that have caused disturbances (Table 1).

Results

Based on descriptive statistics of the demographic variables, the highest average age of the students in the control group in the age range (24-28) was equal to the highest average age of the students in the experimental group (20-23). There were 3 (18.75%) married individuals in the experimental group and 5 (31.25%) in the control group. To assess the hypothesis of the study, the effect of the independent variable was studied on several dependent variables in the two groups. Before implementing the analysis of covariance (ANCOVA), the study hypotheses were analyzed. The assumptions included the existence of a linear relationship (direct line) between dependent variables that was examined by scattering diagrams between each pair of dependent variables (regression mapping), homogeneity of the matrix variance and covariance (box test), and normal distribution of multivariate and equal variables of data (Loon).

According to results presented in table 2, the data indicates that the mean procrastination score in the pretest was higher than that in the post-test; thus, the intervention has caused a significant decrease in procrastination scores of the participants. The results also indicate that the mean hardiness score in the pretest was lower than the posttest; this difference was statistically significant. Moreover, the mean scores of failure tolerance had significantly increased in the posttest compared to the pretest.

The effect size was calculated using Vickers' Hardness Test; 92% of the total variance of the experimental group and the control group are due to impact of independent variable (Value: 0.07, F: 107.95; Df: 3; Df error: 25; P = 0.001). The test power was equal to 1, which indicates the adequacy of the sample size and the significant difference between the experimental and control groups in one of the domains.

Table 1. The contents of the 8 sessions of the 90-minute acceptance and commitment therapy

Session 1:	General explanations for acceptance and commitment therapy
Session 2:	The relationship with the present, training exercises, and metaphors
Session 3:	Seeing oneself as the field-home and furniture metaphor and chess
Session 4:	The role of non-Hebrew languages metaphors of the bus
Session 5:	Reviewing the assignments of the pre-admission meeting of negative experiences, the metaphor of the wrap-around, and the male monsters in the well
Session 6:	Educating creative philanthropy
Session 7:	The purpose of concept and value difference with purpose
Session 8:	Conclusion, summary of the stages, and implementation of the posttest

Table 2. Mean and standard deviation of scores of procrastination, hardiness, and failure tolerance in pretest, posttest, and follow-up in the two groups

	Group	Number	Pretest		Posttest		Follow-up	
			Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Procrastination	Experimental	20	47.75	11.08	30.25	10.21	32.68	10.63
	Control	20	31.68	9.78	32.62	8.93	29.56	9.58
Hardiness	Experimental	20	50.43	23.38	92.93	32.63	88.68	34.65
	Control	20	109.06	28.99	110.81	29.97	112.37	29.47
Failure tolerance	Experimental	20	47.75	11.08	30.25	10.21	32.68	10.63
	Control	20	31.68	9.78	32.62	8.93	29.56	9.58

According to the results presented table 4, the F value for the irregularity variable was 56.19 (P < 0.0001), meaning, the treatment reduced procrastination among the experimental group participants. The F value for hardiness was 137.55 (P < 0.0001), illustrating that the treatment has increased hardiness in the experimental group. For the failure tolerance variable, the gain was 272.42, which is significant (P < 0.0001) and illustrates that the treatment has increased failure tolerance in the experimental group. Moreover, according to the calculated effect size, there was 67% variation in the irregularity variable, 83% in hardiness, and 91% in failure tolerance due to the effect of the independent variable (ACT).

According to the results presented in table 4, it can be stated that ACT has led to a reduction in procrastination, and increase in hardiness and failure tolerance in the follow-up phase.

Discussion

The results of the present study showed that treatment based on ACT, hard work, and failure tolerance is effective on students. These findings are in line with that of the researches by Halliburto, & Cooper (2015). Kanter, Baruch, & Gaynor (2006), and Seligman, Schulman, DeRubeis, & Hollon (1999) . In the explanation of this finding, it can be stated that since procrastination is clearly defined as the avoidance of a task and ACT prevents avoidance of tasks, ACT decreases procrastination. People who avoid their experiences and practices spend more time on activities that distract their attention from the subject matter or private experience. These activities include eating, drinking, rumination, thinking about the past, sometimes even positive activities, and etcetera. These activities cause distraction which keeps individual from performing task and experiencing internal events and, as a result, he is neglected. This distraction is left out by use of creative ,distress. As a result, by, leaving aside distraction an opportunity to perform tasks is provided Halliburto, & Cooper (2015). reported that ACT reduced negative and distressing thoughts.

Table 3. Multivariate analysis of covariance of Ankawa in terms of mean posttest scores of procrastination, hardiness, and failure tolerance in the two groups

Variable	Source of variations	Mean of squared	Degrees of freedom	F	Level of statistical significance	Level of the squared	Statistical Power
Procrastination	Group	994.79	1	56.2	0.0001	0.675	1
	Pretest	631.95	1	13.65	0.001	0.333	0.942
	Error	46.98	37				
Hardiness	Group	6462.81	1	137.55	0.0001	0.836	1
	Pretest	631.95	1	13.45	0.001	0.333	0.942
	Error	46.98	27				
Failure tolerance	Group	8333.73	1	272.46	0.0001	0.91	1
	Pretest	1750.01	1	57.21	0.0001	0.679	1
	Error	30.58	27				

Table 4. The results of covariance analysis of the follow-up of the acceptance and commitment therapy to the rates of overspending, hard work and failure

Variable	Total sum of changes	df	Average squares	F	P-value	EI
Procrastination	Follow-up	1	243.258	7.13	0.0001	0.97
Hardiness	Follow-up	1	6912.185	75.33	0.0001	0.722
Failure tolerance	Follow-up	1	73.64.83	26.11	0.0001	0.474

Folke et al. (2012) showed that ACT reduced anxiety and depression in individuals. Seligman, et al, 1999 divided 231 students from Pennsylvania University randomly in two groups of experimental and control groups, each consisted of 10 people in an attempt to prevent anxiety and depression, they were trained by mindfulness- based cognitive therapy (one of components of acceptance and commitment therapy). After a one- year follow- up period. Participants in training courses showed significantly less anxiety and depression and ineffective attitude than the control group (Seligman, et al 1999). Regarding the findings, it can be argued that ACT increases the rate of hard work in life. In the explanation of this finding, it can be argued that ACT increases the commitment to goals in line with values, and commitment and combat are two components of hard work. In explaining the finding that ACT increases hard work, it can also be argued that, through ACT, people who have a low level of hard work in their lives learn to devote most of their energy to hard work instead of fighting negative thoughts, feelings, and memories and undesirable physical feelings. ACT eliminates these negative experiences in hard-working individuals using hybrid strategies and self-conceptualization, and creates a space for these individuals to accept negative experiences and feelings and stop fighting these experiences. When you accept negative experiences and no longer fighting them, much of the energy that was spent on fighting negative experiences is released.

The energy that is released through ACT is guided in the path of compulsive action (one of the components of ACT), and thus, increases hardiness.

The findings showed that ACT is effective on failure tolerance. In explaining this finding, it can be argued that a person who is receiving ACT finds a transcendent sense of self. This transcendental sense of self is superior to all the components of the individual (feelings, thoughts, body, desires, and etcetera), and is known as "self-context", according to Heidegger, reaches individuals from" being within life" to "being above life" and places individuals in the position of subject. Since and individual who is in subject\s position toward his components is aware of everything and sees himself as isolated from what has happened. he/she shows less reaction to the trade involved, including denial of satisfaction of a need. And as a result, his/her degree of frustration tolerance becomes greater.

If false cognitive like, I must always meet all my needs and assumptions like if my need has not been met, then I have to react is one of the causes of frustration of intolerance, so, cognitive defusion leads to increase in frustration tolerance. frustration tolerance is the ability of an individual to tolerate failure (Rosenweig, 1994). This resistance to the failure expressed by Rosenwijde is obtained totally transparent in psychological acceptance. In psychological admission, people only look at different experiences, such as feeling highly frustrated, but do not escape from the experience of frustration. They do not react to feelings of failure of tolerance and feel frustrated. The ultimate goal of ACT is psychological flexibility. Flexible people have a high degree of adaptability to various conditions, including failure. People with high flexibility would face openly and flexibly to that dissatisfaction if they are dissatisfied with a physiological or psychological need. Given the facts noted above, it can be concluded that ACT

increases failure tolerance in individuals through increasing unconscious flexibility. One of the limitations of this study was that its results do not determine which psychological properties increase the chance of healing. Another limitation in this research was that the subjects were students of Islamic Azad University, Ahvaz Branch, thus making it impossible to generalize the results of the research to people in other societies. Due to the efficacy of ACT in the reduction of symptoms of neuroticism, and increased failure tolerance and hard work, it is suggested that psychological services and counseling services be provided based on appropriate guidelines drawn from the findings of this research.

Conclusion

One can conclude that ACT makes people aware of their thoughts and emotions, such as denial of satisfaction and the anxiety of doing homework, and the world around them. ACT disrupts and separates one's own thoughts, and makes individuals more aware of the exact values and goals of their existence for themselves and increases their commitment to to accomplishing these goals; therefore, ACT can play an important role in adjusting the ostracism, hard work, and failure scores of students. Previous studies have shown that ACT and changes in the context of inappropriate thoughts and behavior lead to positive health-related behaviors. The findings of this study confirmed that of previous researches that have shown that adherence is reduced by increasing mental admission rather than experiential avoidance, and procrastination is reduced and the rate of hard work increased through creating goals and adherence to those goals. In this study it was shown that acceptance and commitment therapy increases frustration tolerance against adversities by accepting exprіences and viewing of self from subjective position as a context. Therefore, considering the mentioned issues and considering that the difference in the mean scores (in the pretest) of students was meaningful, the effectiveness of ACT in decreasing procrastination, and increasing hardiness and failure tolerance can be seen. Hard-working people who have a high tolerance of failure progress more in different aspects of life and are more successful. Finally, according to the findings of this study, ACT is recommended for the reduction of overspending, and increasing of failure tolerance hardiness.

Conflict of Interests

Authors have no conflict of interests.

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Towards Establishment of Psychocardiologic Setting and Guideline in Iran

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Due to their high rates of mortality and disability, cardiovascular diseases (CVDs) are considered as one of the most prevalent chronic diseases all around the world. Despite advancements in the prevention, diagnosis, treatment, and rehabilitation of cardiac diseases, the rate of mortality due to cardiac diseases is still increasing. The World Health Organization (WHO) reported that annually more than 12 million people all around the world die due to CVDs and cerebrovascular accidents (CVA). Moreover, the WHO predicts a 25% loss in healthy life years due to CVDs by 2020 in developing countries.

Studies conducted in Iran in 2003 indicated that CVDs are the first cause of mortality. It is estimated that CVDs are the cause of loss of 1183188 life years (26% of total lost years). Additionally, the burden caused by such diseases equals 105 million years. In addition to all these effects (mortality, disability, and burdens), CVDs have many severe effects on the psychological and social life of individuals.

The estimation for disability-adjusted life year (DALY) is predicted to increase to a loss of 150 million in 2020 from the loss of 85 million in 1990; therefore, it remains the first somatic cause of disability and unproductivity. Considering all these, patients disabled due to CVDs need a care approach that covers different aspects of their psychological, physical, and social life. The aim of these approaches has to be planning effective ways and measures to improve these patients' quality of life (QOL). The correlation between psychological problems and CVDs has been indicated in many researches. A 15% rate of major depressive disorder (MDD) was reported among patients after myocardial infarction (MI) or coronary artery bypass grafting (CABG). It is noteworthy that anxiety in patients with unstable angina persisted 1 year after their cardiac event (Linden, Phillips, & Leclerc, 2007). Almost 20% of patients who survive

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acute MI have the diagnostic criteria of major depression; this increases the risk of death due to cardiac problems by 5 times in 6 months (Rees, Bennett, West, Davey, & Ebrahim, 2004). Conversely, anxiety can also be the cause of cardiac diseases. In a meta-analysis that was conducted on 20 studies, it was reported that anxiety increased the risk of heart diseases by 26% (95% CI, 1.15–1.38); this increase was 48% for the risk of cardiac death (95% CI, 1.14–1.92) (van Dixhoorn & White, 2005).

Many meta-analyses have been published on psychological interventions for cardiac patients and more specifically on CAD patients (Linden et al., 2007; Rees et al., 2004; van Dixhoorn & White, 2005; Whalley et al., 2011), which show that psychotherapy improves psychological outcomes, but not cardiovascular outcomes. However, psychotherapeutic interventions reduce the occurrence of anxiety, depression, and other psychological disorders, and thus, improve QOL as well as the rate of morbidity and mortality in patients with ischemic heart disease (IHD). Psychotherapy can improve patients' adherence to evidence-based treatments and prevent sudden psychological effects caused by CVD on patients; thus, it is very helpful (Biondi-Zoccai, Mazza, Roever, van Dixhoorn, Frati, & Abbate, 2016).

The first symposium on psychocardiology

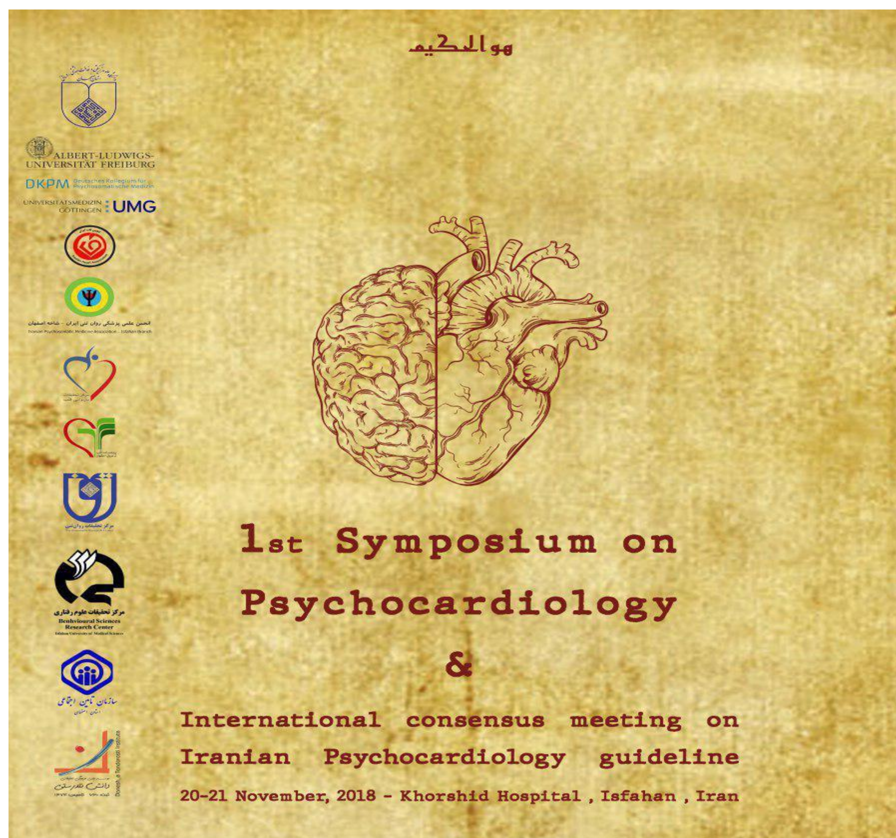
The first symposium on psychocardiology in Iran was held in the presence of psychiatrists, cardiologists, health psychologists, and fellows and specialists in psychosomatic medicine on 20-21 November 2018 in Khorshid Hospital, Isfahan, Iran.

In this symposium, Prof. Dr. Christoph Herrmann-Lingen – Director, Department of Psychosomatic Medicine and Psychotherapy, University of Göttingen Medical Center, Göttingen, Germany, Co-founder of psychocardiology working groups in both, the German College of Psychosomatic Medicine (DKPM) and the German Society for Cardiology (DGK) – and Prof. Dr. Carl Eduard Scheidt – Professor at the Department of Psychosomatic Medicine and Psychotherapy, University Medical Center, Freiburg – participated as the main lecturers and advisors of research projects.

Two one-day workshops were held in this symposium including lectures, team work, clinical case discussions, clinical supervision, and Balint group. University faculty members of psychiatry and community medicine, residents, and post-doctorate candidates of psychosomatic medicine participated in this program.

The first expert panel session was held on the afternoon of the first day for developing a clinical guideline for psychocardiology. This draft was approved in 2016 in office for standards and clinical practice. Since then, it has been worked on cooperatively by Cardiac Rehabilitation Research Center,

Psychosomatic Research Center of Isfahan University of Medical Sciences, Danesh-e Tandorosti Institute, and Social Security Organization under the supervision of Freiburg University and University of Göttingen. In this panel, cardiologists, internists, psychiatrists, fellows of psychosomatic medicine, psychologists, community physicians, and invited guests – Prof. Dr. Lingen and Prof. Dr. Schiedt – studied and commented on the first draft of the clinical guideline on psychocardiology.



Conflict of Interests

Authors have no conflict of interests.

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