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The Doctor as Mechanic: Using an Analogy in the Doctor-Patient Communication

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Editorial

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Doctor-patient communication has a pivotal role in the improvement of patient care. This is especially true in patients with functional gastrointestinal disorders (FGID) in the expression of which psychosocial issues play an important role. During consultations, many patients have difficulty effectively communicating about or understanding their illness; many have previously formed beliefs relating to the mind-body illness dichotomy. Using examples and applying analogies during the discussion can be employed as a method to ease the process of explaining pathophysiology and answering "why" questions. The present draft demonstrates a doctor-patient interaction by providing a narration of a real clinical encounter and providing brief remarks that may be presented to the patient. The function of a car is a familiar and understandable example for nearly all patients, and thus, can be applied as an analogy to a FGID, as was done in this situation.

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It was 3 p.m. when a middle aged lady entered my office, dressed in a dark blue manteau and a precious silk scarf. Her daughter was accompanying her carrying a child and a large plastic bag. "No one knows what is wrong with my stomach", the patient stated while extracting her cell phone from a natural leather purse, "let me read from my notes in my phone".

Medical consultation begins with the observation of non-verbal behavior and general atmosphere of communication. Why is my patient accompanied by her daughter when she looks generally healthy? Does she require social support for her illness or has it created anxiety within her family? In a patient who reads symptoms and complaints from a written list, the doctor must consider perfectionistic tendencies, obsessive behavior, or cognitive decline.

After a long day of inpatient educational rounds, and starting the outpatient clinic consultation of a patient with a flare of inflammatory bowel disease (IBD) and another with a history of colon cancer surgery, I was now confronted with my third patient and I was looking for a pattern within her complaints

and findings.

The physician's job is to fix a variety of problems from primarily somatic to primarily psychological through prevention to palliation. A high degree of awareness is necessary to understand the nature of the malady in each patient. The consideration of all the dimensions of biopsychosocial interactions and the use of analytic and non-analytic reasoning in diagnosis are also essential.

"I just returned from a six month trip to the USA and rushed to your office", she continued. Her daughter was an orthopedic surgeon and informed me that her mother had an episode of acute gastroenteritis when overseas. This was at a time she was trying to resolve a marital conflict between her brother and his wife. She then received antibiotics, but developed acute dyspepsia after one day of treatment. Within a week, she had a throat discomfort unrelated to change in position or meals. There was a burning sharp discomfort just below her right ribs and also an annoying ache in her legs at night.

The existence of several stressors can lead to major distress and can make a patient prone to illness. Travel stress and sleep deprivation were added to here chronic illness and may have induced neuroautonomic and neurosensory dysregulation leading to an exacerbation of symptoms. The patient reported globus sensation, subchondral discomfort, and restless leg syndrome.

They told me that she saw a large number of doctors after these symptoms began, and provided me with a pile of medical records all showing normal or inconclusive findings unrelated to her current symptoms; hypertriglyceridemia, fatty liver, minor bulging of L4-5 intervertebral disc in lumbar MRI, non-specific colitis in the colonoscopy report , and antral gastropathy in upper endoscopy. There were also equivocal changes in her exercise test and she had a negative CT angiogram.

Health anxiety is a major contributing factor in the development and aggravation of functional medical disorders especially with psychological comorbidities. The condition forces patients to seek care from different medical disciplines to confirm and guarantee perfect health. During this process, various paraclinical data are accumulated. The face validity, reliability, and definition of reference values of each set of lab data must be determined. Therefore, the patient and care provider team may find a series of incidentally detected borderline or non-relevant pathologies.

The orthopedic surgeon opened the bag she was carrying and emptied a large number of pill, capsule, and syrup bottles on table 1. I held my breath when she was describing what medications she uses for which specific problem and when and how they should be ingested.

One of the major problems in management of functional problems, especially when the patient's presentations are in multiple organ-systems, is over utilization of health care services and multiple drug use. The use of many drugs may induce possible adverse events itself and also the scheduling of several items is stressful itself.

"Doc! You're going to fix my problem, right?! Something's wrong in me! I checked my symptoms on the internet and I know I have pancreatic cancer. Look! Pancreatic cancer patients have back pain" she said as she showed me a bundle of the medical records. "They also eat and breathe", I said to myself. I smiled as I got the papers and started looking through them.

Fear of cancer is quite prevalent in functional disorder cases. To overcome this fear, they frequently check their symptoms in accessible data resources like symptom checker websites, medical blogs, and patient support groups on the internet. Most patients do not understand the difficulty and complexity of medical reasoning, and thus, fall into overinterpreting the information which can be a huge trap.

Her daughter informed me that her mother had difficulty sleeping during the past months, easily cries when talking about family troubles, and has slowed down in her activities.

In the current practice of functional disorders, we frequently see smartly dressed patients with good self-care, but behind this appearance may be an atypical depression. All patients with such presentations must be checked for psychological symptoms and risk factors.

The patient continued: "I never could drink milk; it makes me sick." She complained of dairy induced cramps and diarrhea. I am also not able to eat cucumbers and eggplants. "Last night, my sister cooked a spicy eggplant omelet; I could not sleep the whole night. No one else had any such problem! So, doc! Why me?"

"I see, anything else?" I ask. Insisting on understanding her sensation and suffering, I informed her gently that she had developed a series of non-malignant non-lethal functional problems. She seemed tentative about my diagnosis, because her experience of bothersome food intolerance was so worrisome to her.

"Mrs. Carson", I invited my patient to look outside from my office window that opened onto a busy square. "Look at these cars," I continued. A black mid-size sedan was stopping behind the red-light next to a three-axis truck. That black one is mine. "Can I use gasoline in it?" I explained to her that not all types of vehicles can use gasoline, some use natural gas, some petrol, and some electricity. "Although many cars can use gasoline, some may shut-down entirely if you use it." "You may be a luxurious car that needs high octane fuel, just like your body is more sensitive and it feels more than others do."

"Do you ever take your car for regular service?" inviting her to sit down again, I continued: "Not all engines may use similar types of lubricating oils; there is a user booklet for each car that shows which type will ease the motor action."

Looking at me, astonishingly, she smiled for the first time: "Doc! I think you were a mechanic for a long time before entering the medical profession."

"We sit around the table each day, but I have no appetite. When I have breakfast, it is only about half of what my husband eats." She expressed this with a deep sigh and a sense of sorrow. "Mr Carson is a long vehicle truck that needs 20 liters per 100 kilometers and you are an efficient car with 6 liter per 100 kilometer consumption." I asked if she had weight loss, in consideration of a possibility of organic disease. "Even your close relatives like your sisters may be similar in shape, but have different energy needs. A car manufacturer may put a variety of engines on a similar car models. Toyota Camry is a brand, but there are three types of engines on cars under this brand. Thus, if a car is running without stopping, it is getting enough fuel." "No two people are the same and they require different understandings and treatments. It is not fair to compare yourself to others; we need to understand what is unique for you."

Relaxed in her chair, she seemed to be more confident in speaking: "This is the first time that a doctor has trusted me in this manner." After this ice-breaking introduction, it was time to open the discussion on possible psychosocial contributions to the problems. Therefore, I continued with Mrs. Carson, a recently retired school principal with sharp intonations in her speech and a cell phone in her hand, reading the details of her medically unexplained symptoms while simultaneously pointing to parts of her body. For over 30 years, she had started her tasks from 6 a.m. by managing the breakfast of the family, and then, rushing to the school. She was active in charitable works and involved in resource generation for low-income families. Mrs. Carson handled negotiations, was a key participant in marital conflicts of her expanded family, and was involved in ceremonies and major catastrophes like hospitalization of a family member. Now, however, this self-motivated perfectionist lady was burned-out following a series of major psychological stressors of unresolved conflict and international long-haul flights along with the somatic stress of

acute gastroenteritis.

"You have been a haul truck, Mrs. Carson!" I continued and raised my eyes from my note page. "More powerful than other vans or pick-ups that could carry 1 ton or 2 tons of goods. A haul truck that has been on the job 14 hours a day for 30 years, running uphill and downhill without any problem, carrying 30 tons of hard rocks. "On its way, this truck could carry another small 10 kg bag of potatoes and another 20 kg box of tomatoes." "You have even had the experience of easily towing small cars and other trucks on your way to town, but now, your truck had to carry 50 tons of rock, and you were trying to do it when a 100 kg box of apple was added." "Your front tire punctured and as you were trying to keep the role in a straight line and push the pedal to make the engine more powerful, the engine burned and started to smoke!" She understood that although she was a person with high stress tolerance, stress loads and poor coping along with minor distress may result in burnout for her.

"OK, fix the problem in my engine and use a spare tire, Doc! You seem to be a good serviceman!" She smiled. "The problem is that your truck needs an overhaul, but your model is no longer in the factory production line and the spare parts are not easily available!" I continued, "Just joking" and they both laughed. "Mrs. Carson! After a major problem in the engine or even the floating system of a car, the central computer and the electrical systems will be damaged. In such cases, the dashboard instruments may show incorrect alarms; the fuel gauge may be shown as empty, although there is enough gasoline, the tire barometer may show deflation, when they are full of air, and the tachometer may swing between the highest and lowest torque, when you did not change anything. This may force you check each part several times and go to several technicians, but I remind you, your central computer needs maintenance to prevent the alarms." Then, I tried to bring the whole family together to form a unique team, repeating my description in medical terms to her daughter, informing her that the patient had developed bodily-distress syndrome on basis of mixed anxiety-depressive disorder.

Table 1. The simile of the human body and a car

Target	Source
Different energy intake in different individuals	Fuel consumption in different cars
Individuals' inability to eat similar foods	Gasoline versus petrol versus natural gas vehicles
Individuals' inability to use similar food additives	Different lubricants for different engines
Dissimilar psychological/nutritional needs of family members	Different engines and specifications in different models of the same brand
Variance in ability to cope with stress and workload	The ability to carry things by a haul truck versus small pick-up
Volume of stress exceeding a capable persons coping abilities	A truck with 10 tons capacity damaged due to carrying 30 tons
Burnout induced by long term stress and workload	A haul truck out of power after years of being on service
The autonomic system, including neurosensorium, of the human body	The car's central computer with electrical wires
The possibility of functional disorders being psychosomatic in nature although presenting bothering symptoms	Dashboard alarms not due to real problems but because of a problem in the car computer
Nutritional consultations including abstinence and modifications are needed	Changing the fuel and lubricants to make the car work better and more tuned
The necessity of psychological-oriented treatments	The necessity of the car's computer undergoing maintenance

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A Journey from Reductionism in Neuroscience to Reductionism in Psychiatry

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Letter to Editor

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Dear Editor-in-Chief, I was motivated to review the relevance of the most representative philosophies of mind and mind-body theories/problems for three reasons. The first reason was the journal's objections to body-mind-culture arguments. The second was its current issue's articles, particularly a report on an introductory workshop focusing on a critical philosophical reflection on medical schools and its importance in medical research and practice. The final reason was a recent workshop on critical neuroscience that I attended. Based on the recent controversies over cognitive neuroscience and the initiative of critical neuroscience as a framework founded by, among others, Suparna Choudhury, I will briefly talk about the relationship of the mind-body problem with neuroscience and how this concept is applied in psychiatry practice.

For centuries, philosophy, religion, psychology, and cognitive science have tried to develop an understanding of the nature of the mind. As a branch of philosophy, philosophy of mind focuses the key issues of the nature of the mind, the relationships between mind/mental phenomena and body/physical phenomena (i.e., mind-body theories), and how thought, feeling, perception, action, and other mental phenomena are related to the events in the human nervous system (i.e., the mind-body problem. Mind-body theories and the mind-body problem, the core subject matter of the philosophy of mind, suggest different perspectives on understanding the relationship between mental phenomena and physical phenomena. Mind-body theories break down into two broad categories (monistic theories and dualistic theories) and several subcategories that are all concerned with the relationship between mental and physical phenomena (Jaworski, 2011).

Monistic theories claim that mind and body are different aspects of the same entity; in other words, there is fundamentally one kind of entity. However, different theories of monism, including mental, physical, and neutral monism, have different views on what that one kind of entity is (Figure 1). Mental monism, also called idealism, claims that fundamentally everything is mentally constructed or otherwise immaterial and can be described and explained

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using prescientific psychological concepts such as belief, desire, and feeling. The Hindu idealists in India and the Greek Neoplatonists in the 4th century CE made the earliest arguments that the world of experience is grounded in the mental drive. In 18th-century Europe, idealism was revived by a subjective idealist, George Berkeley, who was an anti-realist in terms of a mind-independent world (Fogelin, 2001). In the 19th century, Immanuel Kant claimed that according to idealism, "the reality of external objects does not admit of strict proof. On the contrary, however, the reality of the object of our internal sense (of myself and state) is clear immediately through consciousness" (Kant, & Guyer, 1999).

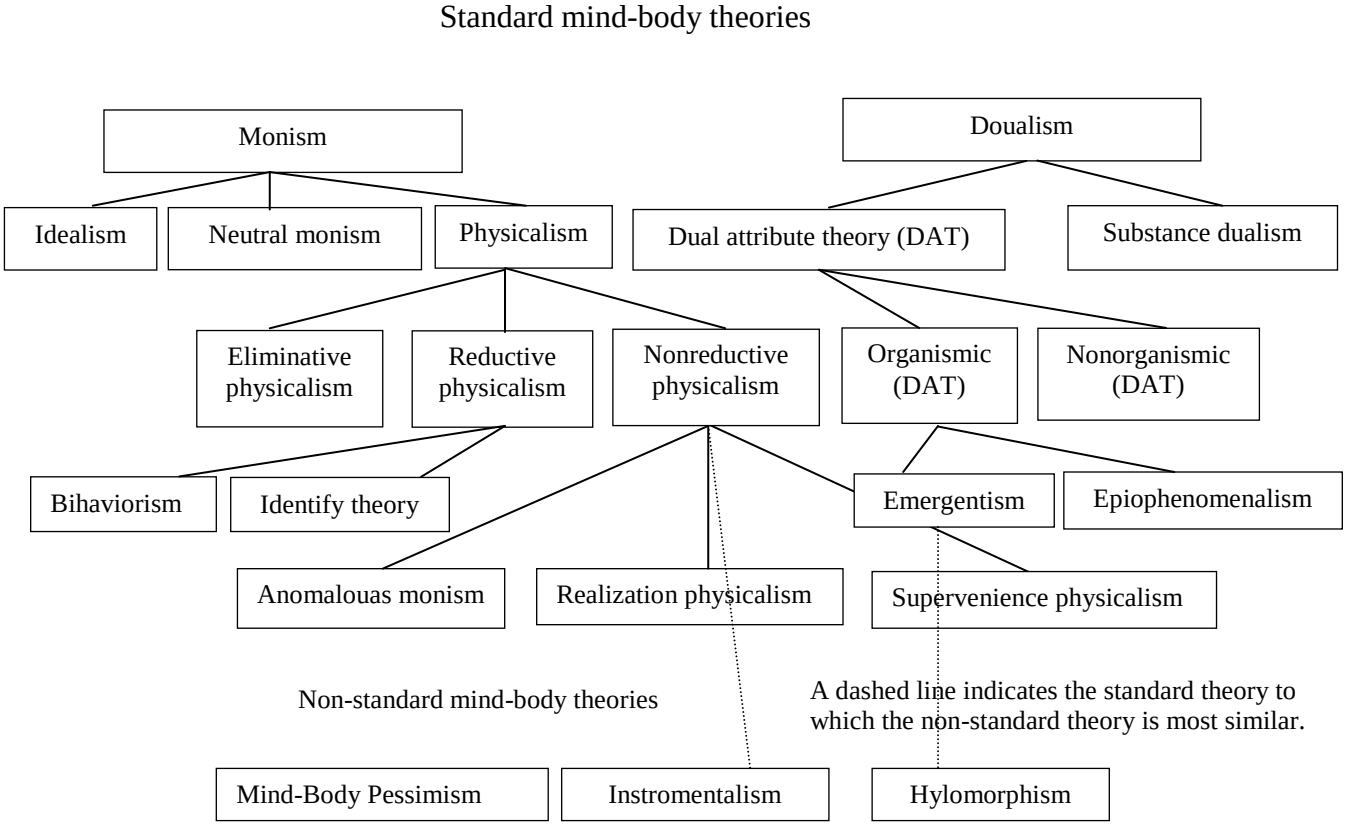

Figure 1. Standard and non-standard mind-body theories **(**Jaworski, 2011 Philosophy of Mind: A Comprehensive Introduction**)**

In contrast, physical or material monism, also called physicalism, claims that everything is fundamentally physical and that all phenomena, including mental phenomena and consciousness, can ultimately be described and explained by material interactions or physics. All three broad types of physicalism, including eliminative, reductive, and non-reductive physicalism, rely on the descriptive and explanatory power of science that is driven by past scientific success. However, these different theories of physicalism differ in terms of the legitimacy of conceptual frameworks such as ordinary psychological discourse. Eliminative physicalism claims that mental phenomena do not exist; in other words, in reality, psychological discourses, such as beliefs, desires, hope, joy, and pain, correspond to nothing. However, on the other hand, reductive and non-reductive physicalists give legitimacy to mental

phenomena and do not deny the existence of beliefs, desires, and other psychological discourses. These groups of physicalists, who are the majority of physicalists, claim that all these psychological discourses are really physical states such as the states of the brain. and mental and physical conceptual frameworks are two different frameworks that describe and explain the same set of physical phenomena. Reductive physicalism (behaviourism and identity theory), driven by Smart's and Feigl's materialism in the late 1950s, suggests that all special sciences (e.g., biology, chemistry, biopsychology, and economy) and not strictly scientific discourses, such as ordinary psychology, would eventually be reduced to physics (Jaworski, 2011). Current debates on the body-mind problem originated in two classic papers; Herbert Feigl's "The Mental and The Physical," published in 1958, and J.J.C. Smart's "Sensations and Brain Process," published in 1959. The approach that they proposed to the nature of mind became the basis of what is now called the mind-body identity theory, central-state materialism, the brain-state theory, or type (reductive) physicalism (Kim, 2000).

Reductive physical (here, identity theory) theories dominated philosophy of mind for many years. Nevertheless, they were criticized by opponents of the identity theory, such as supporters of multiple realizability theories and functionalism, a theory of mind based on the computational model of psychological discourse. These supporters formed the basis of a new type of mind-body theory (non-reductive physicalism) which has at least three subcategories, including realization physicalism, supervenience physicalism, and anomalous monism. Donald Davidson was the first to describe a broadly non-reductive physicalist approach by using the term "supervenience" in the 1970s. According to supervenience, mental phenomena supervene on physical phenomena. Davison stated that "supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respects, or that an object cannot alter in some mental respects without altering in some physical respects" (Davidson, 2001). Based on realization physicalism, mental phenomena are realized by physical phenomena. In general, like other categories of physicalism, non-reductive physicalism claims that everything can be described and explained by physics; however, it legitimizes many different ways of describing physical reality. According to non-reductive physicalism, since the special sciences (such as psychology, economy, and sociology) are more abstract than fundamental physics, even though these sciences are related to physical individuals, properties, and events, they cannot be reduced to physics. The special descriptive and explanatory interests of special sciences cannot be fulfilled by the conceptual resources of physics, but can be satisfied using the mentalistic description. Finally, anomalous monism/physicalism claims also that everything is physical; however, it differs from other theories of physicalism in its ontology and its account of psychological language. For example, anomalous monism theory is contrasted with substance-attribute theory ontologically. According to the substance-attribute ontology, events are distinguished by their constituent individuals, properties, and times. However, based on the anomalous monism ontology, events are distinguished by their causes and effects. According to this anomalous theory, all events are physical; however, we can use different vocabularies (physical or mental) to describe physical events. In other words, mental events are physical events that are described by mental vocabularies. In addition to ontological difference, anomalous physicalism has a different account of psychological language. Psychological discourses are anomalous and interpretive; this means there is no strict law to connect the mental description to the physical description. We use mental description to interpret someone's behaviour, to rationalize

that behaviour. Because of the difference in the interests that mental and physical descriptions imply, psychological discourse cannot be reduced to the physical theory. In other words, physics cannot take over the descriptive and explanatory roles rooted in psychological discourse (Jaworski, 2011). Physicalism has become the most popular part of body-mind theories and has dominated the philosophy of mind for more than five decades.

Another side of mind-body theories is dualism, that is, the mind and body are not identical. Dualism theories are associated with René Descartes, who, for the first time, claimed that the mind is a nonphysical substance, a claim that created the contemporary form of mind-body problem. He clearly distinguished mind (consciousness and self-awareness) from brain (the seat of intelligence). Dualistic theories claim that we cannot describe and explain mental and physical phenomena by using a single conceptual framework. Individuals can have two fundamentally distinct kinds of properties; mental properties that need a mental framework to be described and explained vs. physical properties that need a physical framework to be described and explained.

There are two broad theories within the dualistic theories; dual-attribution theories and substance dualistic theories. While both of these theories perceive mental properties and physical properties as two different unrelated entities, they differ in terms of the different properties that an individual can have. According to dual-attribution theories, an individual can have both mental and physical properties, but substance dualistic theories deny this claim. The latter believe that there are two different individuals; those with mental properties and those with physical properties. Persons (you and I) are only mental beings without any physical properties, and persons' bodies (human organisms) are purely physical. Due to this claim that the mind and body are two fundamentally distinct kinds of entities, substance dualistic theories are contrasted with all forms of monism. However, not all dualistic theories are contrasted with all forms of monism. In fact, some forms of dual-attribution theories are considered forms of non-reductive physicalism since both deny that the special sciences can be reduced to fundamental physics. If we consider the mind-body theories in a spectrum, dual-attribution theories stand somewhere between substance dualism and physicalism (Kim, 2000; Jaworski, 2011).

In addition to the standard form of mind-body theories, there are three more theories that fall outside of this monism-dualism category. these theories consist of instrumentalism, mind-body pessimism, hylomorphism. Instrumentalism denies a realistic understanding of psychological discourse. Mind-body pessimism denies the possibility of describing and explaining how mental and physical phenomena are related. Hylomorphism denies that human behaviours can be accurately described and explained through the mind-body distinction. Hylomorphism theory differs significantly from most forms of mind-body theories due to its claim that mental states are patterns of social and environmental interactions and involve social and environmental factors. Patterns might integrate with physical states, such as the states of the nervous system. However, they are essentially embodied and cannot be described and explained independently of specific human bodily parts and the environments and communities in which humans live. Finally, according to the hylomorphic view of embodiment, because thoughts, feelings, perceptions, and actions, and the substructures and subjectivity they compromise, are essentially embodied, they cannot be described and explained as non-physical phenomena. Therefore, high-level human activities are described as social, psychological, biological, and also physical phenomena (Jaworski, 2011).

Through this brief review of body-mind theories, I hope the next part of this essay, which

aims to explain the place of neuroscience within mind-body theories and the way that these theories apply to psychiatry, is better understood.

As previously explained in this essay, the radical proposal suggested in the late 1950s and early 1960s that the mind is no more than the function of the brain established the reductionist physicalism theory of mind-body theories. By reductionism, philosophers refer to the claim that because the mind is in the brain and the science of the brain is neuroscience, the science of the mind is also neuroscience, and therefore, neuroscience can explain mental life. Furthermore, if we want to understand mental life, the place would be just the brain. When a particular theory takes over the explanatory effort, that explanatory model is reduced to the new theory. Outside neuroscience, there are only a few examples of reductionism, for example, the way in which molecular biology takes over the explanation of inheritance from Mandelian genetics. In this example, the first model (explanatory efforts), Mandelian genetics, has been reduced to molecular biology. According to Ian Gold, the Canada Research Chair in Philosophy and Psychiatry at McGill University in Montreal, although psychology has not been completely reduced, the consequences of this idea that neuroscience will explain all we need to know about the mind will eventually reduce psychology to neuroscience. Even though, in fact, there is not enough scientific evidence to prove that neuroscience as it is now or will be in the near future will ever be able to explain high-level mental phenomena such as poetry or learning. In his paper, "Reduction in Psychiatry," Gold emphasizes that reduction in neuroscience is not impossible, but the claim that psychological phenomena arise because of the way that the brain is, and so, we expect to understand psychological phenomena in terms of the brain is a claim about science. Moreover, his claim depends on a huge range of notions, such as what scientists have actually discovered and what human beings are capable of discovering. Relying on claims such as "We know that mind is the brain" (Hooker, 2002) and on Insel's notion that neuroscience will tell us what psychopathology or consciousness is (Insel, & Quirion 2005) would have a serious scientific consequence because it implies that we know where science will go. However, saying that it is a mistake to predict the future of science without robust actual scientific findings does not mean that investing in neuroscience research is a mistake. Gold emphasizes the role of neuroscience as an essential part of the theory of any psychological phenomenon, but this does not mean that neuroscience has told or will tell us all or even most of the story about psychological phenomena. It may or it may not. The mistake is claiming that investing in any other approach is just performing placeholder science (e.g., investing in other kinds of research such as psychology would be assumed as investing in the soft side of a real thing, and therefore, it should not be done). Sooner or later cognitive neuroscience will act as a reducing theory for psychiatry, and will eventually provide an exhaustive explanation of mental illness and form the basis for treating it successfully (Gold, 2009). A clear example of this is Thomas Insel's and Remi Quirion's claim that psychiatry is a discipline of "clinically applied neuroscience," a kind of psychiatry that relies mainly on genetics and neuroimaging research (Insel, & Quirion, 2005). This, in fact, proposes that a mental illness will ultimately be understood and treated by a successful theory of the brain. However, this epistemological reductionism was challenged by Kirmayer and Gold (2012). They argued that "one cannot understand mental illness without reference to social causes of mental illness, then no theory that is exclusively about the brain can be complete." They believed that behind their enthusiasm for neuroscience as a foundation for psychiatry is a reductionistic view of the origins and nature of human behavior and experience as rooted in neurobiology. This neuroreductionism

seems attractive and even compelling for several reasons. First, the technologies of neuroscience have made the activities of the brain visible in new and vivid ways. Second, in some instances, neuroscientific research has generated partial explanations for specific symptoms, diseases, or disorders. Third, in the social sphere, neurobiological explanations for mental illness have been embraced by many because they shift causality away from human agency, and so, work to exculpate individuals and their families as the causes of their own suffering. Forth, the biological turn has been heavily promoted with many inflated claims because this serves powerful interests in the pharmaceutical industry. Fifth, more broadly, the emphasis on neurobiology diverts attention from social, structural, and economic factors that are politically contentious. Ultimately, neurobiological reductionism in psychiatry serves a larger ideology that locates human problems in our brains and bodies rather than in our histories and social predicaments (Kirmayer, & Gold, 2012).

Finally, despite the fact that neuroscience has made dramatic progress in recent decades, promoting such reductionism in psychiatry has serious consequences for the explanatory models of psychological phenomena, the production of knowledge, and ultimately, for person-centered and integrative clinical practice. Responding to these concerns is one of the aims of critical neuroscience. It is hoped that critical neuroscience projects, as defined by their aim, trace the social origins and implications of neuroreductionistic claims, particularly as they are applied in psychiatry, and integrating the findings of those projects into new experimental and interpretive directions (Choudhury, & Slaby, 2011).

In the current era, scientific communities have continually stressed the necessity of interdisciplinary work in scientific research. They increasingly encourage the notion that any effort to understand human behaviors should situate the person's physical (brain) and mental world within his social and cultural world.

This summary shows that in line with the interdisciplinary orientation of IJBMC, the current issue assembles report, theoretical, review, and qualitative articles from different scientific conceptual and methodological approaches with one interest in common, the impact on medical education and practice. It is only through such interdisciplinary perspectives that science (not only psychiatry and psychology, but also philosophy and social sciences) enriches its findings. Thus, I hope that this international journal provides scholars from different corners of the world an opportunity to discuss psychological and behavioral phenomena from different cultural and disciplinary perspectives.

Note

1- My reading of these articles coincided with a workshop I attended on Critical Neuroscience offered by the 21st Summer School in Social and Cultural Psychiatry, McGill University. (https://www.mcgill.ca/tcpsych/training/summer#CRITICAL%20NEUROSCIENCE)

2- Critical Neuroscience brings together multi-disciplinary scholars from around the world to explore key social, historical and philosophical studies of neuroscience, and to analyze the socio-cultural implications of recent advances in the field. Original, interdisciplinary approach explores the creative potential for engaging experimental neuroscience with social studies of neuroscience. It also furthers the dialogue between neuroscience and the disciplines of the social sciences and humanities, transcends traditional scepticism, and introduces novel ideas about 'how to be critical' in and about science. (http://www.critical-neuroscience.org)

3- Suparna Choudhury is an assistant professor at the Division of Social and Transcultural Psychiatry, McGill University and an investigator at the Lady Davis Institute for Medical Research. She most recently directed an interdisciplinary research program on critical

neuroscience and the developing brain at the Max Planck Institute for History of Science in Berlin.

4- Ian Gold is the Canada Research Chair in Philosophy & Psychiatry at McGill University in Montreal.

Conflict of Interests

Authors have no conflict of interests.

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Mourning after Perinatal Death-Prevalence of Symptoms and Treatment; A Narrative Review

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Review Article

Abstract

Perinatal loss, especially in the advanced stages of pregnancy, is associated with severe psychological distress. Insufficient processing of the loss experience can result in a psychological disorder for some of those affected. This holds true especially for women who have suffered a pregnancy loss after the 20th week of pregnancy. Depressive disorders, symptoms of anxiety, post-traumatic stress disorders, and functional physical complaints can also be observed in the foreground. Following an evaluation of a current Cochrane review, the available studies on the evaluation of psychotherapeutic measures after perinatal loss provide no conclusive indicators for evidence-based approaches within the realm of secondary prevention. Health risks in women affected by the loss of a pregnancy have been alternatively proven by a number of studies. Thus, a noticeable desideratum of research exists with regards to empirically-controlled psychotherapeutic studies on evaluation of the treatment of grief reactions after the loss of a pregnancy.

Keywords: Mourning, Perinatal death, Prevalence, Symptoms, Treatment

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Introduction

Definitions

The terms prenatal and perinatal loss, respectively, encompass miscarriages and stillbirths, and deaths occurring after birth (Leon, 1992). The term perinatal mortality is defined as death during the period shortly before, during, and after birth until the seventh day. The commonly used American term "perinatal death" denotes the loss of a child until the 28th day after birth (Beutel, 2002).

The World Health Organization (WHO) defines a stillbirth or "intrauterine death" (Beutel, 2002; Conway, & Russell, 2000) as being limited to a minimum birth weight of 500g. In German-speaking areas, the term "abort" is used to describe a non-artificial loss of pregnancy before the stage of viability. From a clinical standpoint, it is reasonable to make a distinction between early miscarriages (between the 12th and 14th weeks of pregnancy) and late miscarriages (after the 14th week of pregnancy). In diagnosed pregnancies, the

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prevalence stands internationally at 20% (Robinson, Baker, & Nackerud, 1999).

Since the age of the pregnancy at the time of loss is merely one factor among many which determine psychological reactions and processing, all non-artificial pregnancy losses after the 12th week of pregnancy will be considered in the following overview. Deviating from the aforementioned terminology, we will speak comprehensively of these differing situations as "prenatal and perinatal loss" and subsume among them all non-artificial pregnancy losses after the 12th week of pregnancy until birth.

Prevalence

Miscarriages within the first weeks of pregnancy are a common occurrence. Its prevalence, in the cited literature, fluctuated according to the underlying definitions and study criteria. According to Beutel (2002), at least 30% of all pregnancies detected by use of a pregnancy test (pregnancy hormone hCG) end in a miscarriage. The prevalence of stillbirths (20th-27th weeks) lies between 5 and 12 per 1,000 births (Schauer, Kalousek, & Magee, 1992). Roughly as many children die during birth as during the first seven days of life. This data corresponds with the information provided by the German Federal Statistics Office from the year 1999; in Germany 0.4% of fetuses are born dead upon birth and the perinatal fatality rate is at 0.62% (Statistisches Bundesamt Deutschland, 2015).

Grief processing after prenatal and perinatal loss

Psychological consequences

Normal vs. pathological grieving processes

Grief is the universal emotional reaction to losing a loved one (Stroebe, Hansson, Stroebe, & Schut, 2001). It is associated with intense psychological pain and an increased risk of developing a number of psychosocial and somatic complaints (Laursen, Precht, Olsen, & Mortensen, 2005; Parkes, 2001; Middleton, Raphael, Martinek, & Misso, 1993; Zisook, & Shuchter, 1993) including increased mortality (Precht, Mortensen, & Olsen, 2003; Lichtenstein, Gatz, & Berg, 1998).

Grief is described in the literature as a temporary, functional disorder with a phasic progression, which is characterized by specific thought and behavioral patterns and serves the integration of a difficult loss experience (Bowlby, 1983; Horowitz, 1997; Klier, Geller, & Ritsher, 2002). We speak of a "normal" course of grieving, in other words appropriately coping with the loss and the resulting reorganization, occurring within 6-12 months after the initiating event (Beutel, 2002). Studies, however, show that the bereaved, despite appropriately coping with the loss, still experience symptoms of grief even years after the loss of a relative, reporting commonly-occurring dreams of the deceased, as well as intense longing for her/him (Zisook, Devaul, & Click, 1982; Zisook, Shuchter, & Lyons, 1987).

The term "*pathological grief reaction*" refers to unusually intense, prolonged, delayed or inhibited reactions to a personal experience of loss. In the past years, two study groups have attempted to develop and empirically validate diagnostic criteria for pathological grief (Horowitz, Siegel, Holen, Bonanno, Milbrath, & Stinson, 1997; Prigerson et al., 1999). The traumatic aspect, however, is specifically accentuated by the described criteria, so that all forms of pathological grief cannot be subsumed under the proposed classification of Horowitz et al. (1997) and Prigerson et al. (1999). There are neither standardized, nosological criteria available for the diagnosis of pathological grief, nor are there treatment guidelines for dealing with it [Beutel, 2002; Kersting, Fisch, Suslow, Ohrmann, & Volker, 2015; Tomita, & Kitamura, 2002). Because of this, the symptom spectrum of pathological grief is referred to in the present literature in multiple ways.

Depression, anxiety and panic disorders, generalized anxiety disorders, post-traumatic

stress disorders, somatoform complaints, and increased alcohol and medication abuse are all clinical correlates of prolonged (chronic) grief (Zisook, Schneider, & Shuchter, 1990). They are often prevalent even 6-9 months after the loss in a clinically-relevant manifestation (Condon, 1986; Lasker, & Toedter, 1991). Characteristics of complicated or traumatic grief include the abrupt change of intrusions (overstimulation through stressful, uncontrollable memories of the deceased person or the closer circumstances of the death) and denial or avoidance of everything, which could bring about memories of the loss (Horowitz, Siegel, Holen, Bonanno, Milbrath, & Stinson, 1997; Kersting et al. 2001).

In the context of a perinatal loss experience, pathological grief reactions can take the following specific forms:

1. Compulsive occupation with thoughts of the dead baby or fetus;
2. Hallucinatory feelings of having "empty arms";
3. Hostility towards clinical personnel or members of the primary family;
4. Feelings of guilt or failure;
5. Desperate search for explanations or negative feelings upon seeing living babies.

Persisting psychosomatic symptoms or manifested psychological disorders, such as depression or anxiety, can present as clinical symptoms of intense pathological grief (Chambers, & Chan, 2004). Negative effects on family relationships and sensitivity to the perception of parental roles were also described.

Clinical consequences

The International Statistical Classification of Diseases and Related Health Problems (ICD-10) (World Health Organization, 1992) places grief reactions under the category of "factors, which influence the state of health and lead to requiring health services" (Z63.4 "Disappearance or death of a family member"). Prolonged and intensified grief reactions are classified as "adaptation disorders" (F43.28). In the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (American Psychiatric Association, 1994), grief is assigned to the category of "further clinically-relevant problems" (V62.82). If "feelings of guilt related to the actions of the survived, thoughts about death, a pathological occupation with feelings of worthlessness, prolonged and marked encroachment of functionality and hallucinatory experiences" are still present two months after the loss, the DSM-IV suggests a diagnosis of major depression (296.2X).

Scientific studies show that many women mourn their child even years after a miscarriage [McCabe, 2002; Kersting et al. 2005). Moreover, 20-30% of all women suffer from significant psychiatric and somatic symptoms after a perinatal loss (Chambers, & Chan, 2004; Turton, Hughes, Evans, & Fainman, 2001). These symptoms are prevalent in a clinically relevant intensity even years after the loss in close to 25% of all women affected by the loss of a child (Clarke, & Williams, 1979; Dorner, & Atwell, 1985; Forrest, Standish, & Baum, 1982). A pathogenic bereavement process, therefore, presents a considerable risk of impairments in the psychological, physical, and social status of affected women (Franche, & Bulow, 1999; Janssen, Cuisinier, de Graauw, & Hoogduin, 1997; Toedter, Lasker, & Janssen, 2001). Data on the prevalence of mental and psychosomatic illnesses after a perinatal loss are presented below.

Depressive reactions can be observed directly after the loss of a pregnancy in 20-36% of all affected women, regardless of it being a stillbirth or miscarriage (Toedter, Lasker, & Janssen, 2001; Beutel, Deckardt, Schaudig, & Rolvering, 1993; Neugebauer et al., 1992). Up to a fifth of the affected women exhibit elevated depression scores a year after the experienced loss (Lasker, & Toedter, 1991; Cougle, Reardon, & Coleman, 2003; Beutel, Deckardt, von, & Weiner, 1995; Beutel, Kuse-Isingschulte, Hahlweg, Stauber, 1995; Hughes, Turton, & Evans, 1999).

Anxiety disorders have been previously

inadequately considered (Geller, Kerns, & Klier, 2004). Due to the small amount of research, a higher risk of developing anxiety symptoms could only be determined with certainty through the fourth month after a miscarriage (Forrest et al., 1982; Beutel, Deckardt, von, & Weiner, 1995; Thapar, & Thapar, 1992; Lee, & Slade, 1996). There is a higher risk of developing an anxiety disorder during the first 6 months after experiencing the loss (Geller, Kerns, & Klier, 2004; Thapar, & Thapar, 1992; Lee, & Slade, 1996).

The risk of developing obsessive-compulsive disorders (OCDs) is significantly higher within the first 6 months after the loss in comparison to non-pregnant women of the general population; 3.5% after pregnancy loss vs. 0.04% in non-pregnant women (Neziroglu, Anemone, & Yaryura-Tobias, 1992).

According to Bowles et al. (2000) up to 10% of all women fulfill the DSM-IV criteria for an acute stress disorder directly after the loss of a pregnancy (< 20th week of pregnancy). Of these, 1% exhibits the signs of a post-traumatic stress disorder after 1 month (American Psychiatric Association, 1994). In a long-term study by Engelhard, van den Hout, & Arntz, 2001), 25% of women (M = 11.4 pregnancy week) fulfilled the diagnostic criteria of posttraumatic stress disorder (PTSD) 1 month after experiencing the loss.

Anxiety and a depressive state after a perinatal loss present themselves frequently in the form of somatic complaints (Beutel, 2002; Thapar, & Thapar, 1992). The correlation between a functional or somatization disorder and unresolved symptoms of grief, however, often remains unrecognized. According to clinical observations, significant somatic or somatoform disorders appear in association with depression, anxiety, and pathological grief (Hunfeld, Wladimiroff, & Passchier, 1997), yet not in the context of normal grieving processes (Beutel, 2002; Beutel, Deckardt, von, & Weiner, 1995; Beutel, Kuse-Isingschulte, Hahlweg, Stauber, 1995).

Factors influencing pathological grief

Despite the frequency of clinically relevant assimilation disorders after perinatal losses, very little is known about the factors influencing pathological grief (Chambers, & Chan, 2004) in comparison to normal grief. Empirical long-term studies are comparatively rare and provide partially contradictory findings due to their divergent samples and/or collection tools (Geller, Kerns, & Klier, 2004; Lee, & Slade, 1996). Manfred Beutel (2002) names the following risk characteristics for complex grief after miscarriages and stillbirths (p.150):

1. Single, adolescent mothers;
2. Low formal education/social status;
3. Conflicting nature regarding the pregnancy (desire to terminate/risk behavior);
4. High stress during the pregnancy/in the past year;
5. Previous miscarriages or stillbirths;
6. No children of their own;
7. Fertility problems;
8. Further unresolved experiences of loss (during childhood, or previous miscarriages or stillbirths of the mother);
9. Uncertain developmental representation;
10. Preexisting psycho-social or psychiatric stress (former depression, anxiety);
11. Stressful concomitant circumstances regarding the loss (no contact with the child or the burial);
12. Insufficient understanding/discussion opportunities with the partner or close family;
13. Discontent with occupational circumstances and the situation at home.

Protective factors for an adaptive grieving process after a prenatal and perinatal loss are considered to be the following:

1. Care and emotional support (Beutel, 2002; Callan & Murray, 2015);
2. A good partnership (Beutel, 2002; Lasker, & Toedter, 2015), Friedman & Gath, 1989; Toedter, Lasker, & Alhadeff, 1988);
3. Support from friends (Lasker, & Toedter, 1991; Day, & Hooks, 1987);
4. Presence of one's own children (Beutel, 2002; Lapple, 1991);
5. Mental and physical premorbid health

(Beutel, 2002).

Grief processing after prenatal and perinatal losses from the perspective of attachment theory

Grief resulting from a perinatal loss experience is explained by attachment theory (Bowlby, 1983) through an already incipient relationship between the mother and the unborn child during the early stages of pregnancy. This dissolution leads to a loss of concrete visions, expectations, and hopes. Bowlby (1983) and Beutel et al. identified the orientation to a growing embryo or fetus in fantasy and reality (e.g., concrete preparations) as a binding affinity (Beutel, 2002; Beutel, Deckardt, Schaudig, Franke, & Zauner, 1992). Pregnancy is seen as a preparatory phase for the mother, and serves as the training of a cognitive and affective representation of herself as caregiver (Bowlby, 1983). Requiring reciprocity, the term attachment is on the other hand reserved for the postnatal relationship between parents and a specific, distinguishable child (Beutel, 2002).

Dealing with the loss of a pregnancy can reactivate earlier (unresolved) losses, such as the loss of one's parents (Bowlby, 1983) or previous miscarriages or stillbirths (Beutel, 2002). Unresolved loss experiences worsen the grieving process. Assimilation disorders, after a perinatal loss, can be traced back to unprocessed loss experiences from the past Bakermans-Kranenburg, Schuengel, & van Ijzendoorn, 1999).

The first studies examining the correlation between mothers with states of disorganized attachment caused by a loss or trauma and the development of binding behavior to their children over the course of the first year are available.

In a long-term study by Hughes, Turton, Hopper, McGauley, and Fonagy (2001), highly significant correlations presented themselves between a previous stillbirth and the mother's unresolved attachment state during the next pregnancy, and the pregnant mother's unresolved binding status and the disorganized attachment behavior of her child at 12 months.

These correlations remained significant even when the demographic variables (depression and anxiety levels, or elapsed time since the stillbirth) were examined (Hughes, Turton, Hopper, McGauley, & Fonagy, 2001). Unresolved loss experiences can be observed in children who experienced disorganized attachment from their parents in the past more frequently than in children whose parents provided organized attachment (primary classification A-B-C) (Main, & Solomon, 1990). Loss experiences in mothers, however, are not a risk factor per se (Ainsworth, & Eichberg, 1991). They only pose a risk to their health when a loss is not fully processed and in turn leads to disorganization in the mental representation of the attachment experience. Because of this, supporting women who have suffered a perinatal loss is a central, important concern in terms of secondary prevention.

A mother's unresolved grief as a risk factor for a subsequently born child

Children born after the loss of a pregnancy are more vulnerable to developing psychological and physical problems. Findings from predominantly uncontrolled, cross-sectional, and long-term studies suggest that disorganization in attachment among small children partially explains this increase in psychological morbidity (Bakermans-Kranenburg et al., 1999; Heller, & Zeanah, 1999; Hughes, Turton, Hopper, & Evans, 2002; Turton, Hughes, Fonagy, & Fainman, 2004). In empirical attachment researches, attachment disorganization in small children has been proven to be a risk factor for infantile developmental disorders (Jacobvitz, & Hazen, 1999; Lyons-Ruth, Easterbrooks, & Cibelli, 1997; van Ijzendoorn, Schuengel, & Bakermans-Kranenburg, 1999).

In an uncontrolled study by Heller and Zeanah (1999), 45% of 19 children aged 12 months and born after a perinatal loss were attached in a disorganized manner. In a controlled study by Hughes Hughes et al. 2001), a significantly higher manifestation of attachment disorganization ($P < 0.04$) presented itself in children born after a perinatal loss. In a

study by Bakermans-Kranenburg et al., after an early perinatal loss, an association was found between the mother's unresolved grief [obtained through Adult Attachment Interviews (AAI)] and attachment disorganization in the child born thereafter (r = 0.30; P = 0.05) (American Psychiatric Association, 1994). These rates are clearly in contrast with the expected percentage of attachment disorganized infants in normal samples, which stands at approximately 15% at the age of 12 months (Heller, & Zeanah, 1999; Hughes et al., 2002).

The correlations between perinatal loss experience, mothers' unresolved attachment status in the subsequent pregnancy, and attachment disorganization in the succeeding child suggest that mothers' unresolved attachment state after experiencing a loss can be classified as a developmental risk for the subsequently child (Bakermans-Kranenburg et al., 1999; Hughes et al., 2001; Heller, & Zeanah, 1999).

In summary, the prenatal or perinatal loss of a child present one of the most common complications of pregnancy (15-20%) (Beutel, 1994;- Swanson, 1999; Nikcevic, 2003) and is associated with considerable psychological consequences. Recent studies show that depression, anxiety, somatic complaints, self-accusations, anger, and conflicts among partners are common reactions (Lasker, & Toedter, 1991; Forrest et al., 1982; Toedter et al., 2001; Beutel, Deckardt, Schaudig, & Rolvering, 1993; Neugebauer et al., 1992; Beutel et al., 1995; Beutel et al., 1995; Hughes et al., 1999; Hughes et al., 2001; Hughes et al., 2002). Furthermore, the perinatal loss of a child can affect the quality of the relationship with the subsequently born child. Preliminary studies show the beyond coincidental high manifestation of disorganized attachment in infants whose mothers experienced a loss (Bakermans-Kranenburg et al., 1999; Hughes et al., 2002).

Psychotherapeutic treatment

Very few controlled and randomized intervention studies after a perinatal loss exist (Beutel, 2002), although practical and economical intervention methods are described in the literature. Previous studies are encouraging and speak of the value of temporary help, although it has not yet been resolved as to which specific treatment elements are the most effective. The most important controlled and randomized intervention studies will be summarized below. Their depiction will be chronological. We will be commenting on each study individually, the differences between the study designs and consistent or contradictory findings.

As one of the first authors, Forrest et al. (1982) researched the effects of one-time grief counseling after a perinatal loss in a controlled and randomized study. The counseling consisted of elements such as encouragement to see and keep the deceased child, give it a name, look at photographs of the child, contact the medical personnel and midwife, and seek counseling with the responsible gynecologist. In total, 50 couples were examined, of whom half were randomly assigned to the intervention group and the other half to the control group. The control group received routine medical care. The therapeutic intervention was performed directly after the loss, and the outcome measurements took place, respectively, 6 and 14 months after the intervention.

The results showed that, 6 months after the loss, the intervention group had significantly lower scores on the anxiety and depression scales and a significantly lower amount of psychological illnesses in comparison to the control group. These differences were, however, no longer existent 14 months after the perinatal loss. At this point in time, 80% of the women had recovered from their symptoms. The authors infer from these findings that the intervention influenced the overall outcome to a lesser extent than the length of the grief reaction.

The study by Forrest et al. (1982) exhibits several flaws. For example, no measurements

were taken before the intervention, although the amount of stress directly after the loss and the question of possible progression predictors are of particular interest. The intervention in the supposed "routine care" is not described any further. Potential effects on therapy in the control group could possibly be blurred. The evaluated intervention in the experimental group is based on recommendations from The National Stillbirth Study Group (Health Education Council, 1979), which were relevant in 1979. Today, these recommendations can no longer be seen as valid.

In 1987, Lake et al. evaluated a manualized intervention, which encompassed 4 sessions over a period of 4-6 months with women after a stillbirth or neonatal loss. The intervention contained the elements of consolation and support, allowing the loss to become real, description of ambivalent grieving processes, support of emotional expression, support of open communication with family members, exploration of the partner relationship and etcetera. In the study, 78 women were included. Half of the subjects were randomly assigned to the intervention group and the other half to the control group. The control group received routine hospital care. The probands were examined by means of a grief questionnaire (self-evaluation) 6 months after the loss experience. However, only 34 (of the original 78) could be included in the follow-up examination (16 in the control group, 18 in the intervention group). The results showed that there was no difference between the control and intervention groups in terms of the total score. Only in 2 subscales of the questionnaire (anger/hostility and physical afflictions) did probands from the intervention group exhibit lower values.

In the study by Forrest et al. (1982), there was also no measurement performed prior to the beginning or at the end of the therapy. Therefore, no information regarding pre-progress and post-progress is available, instead information solely regarding the difference between the groups at the time of catamnesis is available. The high amount of dropouts during the time of catamnesis (more than 50%) does not allow one to draw any general inferences about the effectiveness of the treatment. Moreover, this study did not further describe the treatment in the routine care.

The study by Lilford, Stratton, Godsil, and Prasad (1994) also used a catamnesis study design. In their study, 57 couples who suffered the loss of a child (early pregnancy termination due to medical indications, perinatal death) were randomly assigned to an intervention or control group, respectively. Open-ended, non-manualized, focal counseling with an experienced psychotherapist was offered. The control group received routine hospital care. A follow-up examination was conducted 16-20 months after the intervention, in which structured interviews and self-evaluation methods were utilized for the assessment of grief, anxiety, and depression. In this examination, the women in the treatment and control groups showed no significant differences in terms of the main outcome variables of grief, anxiety, and depression. Nevertheless, data was only collected one single time with a large interval between loss and intervention. Therefore, the study cannot indicate if the length of the grieving process was influenced by the intervention or not. Similar to the results of the aforementioned studies, the results of this are also hardly usable due to a high dropout rate during the catamnesis period (approximately 50% in the intervention group).

Murray, Terry, Vance, Battistutta, and Connolly, (2000) examined 65 fathers and 79 mothers, who either lost a child after the 20th week of pregnancy, or suffered a perinatal or postnatal loss in a prospective long-term study. Due to practical reasons related to the recruiting, the parents were psychologically examined 4 weeks after the loss. The experimental group (n = 84) received an intervention, which aimed at making the loss a reality, and supporting the

expression of emotional pain and the grieving process. This intervention was performed by a specifically trained social worker. The control group (n = 60) received the customary medicinal care. Measurements were taken at 3 stages; before the intervention, and 6 and 15 months after the loss, respectively. The intervention and control group participants were not randomly assigned, but instead consecutively recruited. The comparability of the groups was retroactively reviewed by comparison of important variables. The hypotheses addressed particularly the expectation that serious psychological disorders could be prevented through intervention in high-risk probands. Prospective assessments of risk factors related to a complicated grieving process comprised of lack of social support, ambivalent relationship with the child, traumatic circumstances related to the loss, other difficult life circumstances, problematic personality traits, and unsatisfactory family relationships. Depression, anxiety and psychological symptoms, partner adaptation, and coping strategies were also examined as outcome variables.

The results show that the probands in the experimental group were less burdened in all researched variables than those in the control group. This result could be largely traced back to the fact that the intervention proved itself effective in the probands with a high risk exposure. The probands with a lesser risk exposure, however, showed no difference between the intervention and control groups.

Alongside the proof of the intervention's efficacy, this study also contributes to the question of "Which individuals even show an indication for secondary preventive actions?" Interesting observations have also been reported concerning the differing effects of intervention on men and women. If one puts the methodological shortcomings aside (for example, the formation of the control group), this study is exemplary in its thorough approach and comprehensiveness.

In a controlled study, Carrera, Diez-Domingo, Montanana, Monleon, Minguez, and Monleon (1998) examined the effectiveness of a yearlong intervention. They compared 3 groups of intervention and control 1 and control 2. The intervention group consisted of 23 women who received intervention after a perinatal loss. Control group 1 consisted of 34 women who received no intervention after a perinatal loss, and control group 2 of 37 women who gave birth to a healthy child. Measurements were taken directly after perinatal loss or birth, and 6 and 12 months postpartum. Only the women from control group 1 were examined once 12 months after the loss. The intervention was oriented in accordance with the study by Lake, Johnson, Murphy, & Knuppel (1987) in terms of the following components:

1. Recognition of the child as part of the family
2. The possibility to see and touch the dead infant
3. The possibility to conduct an official burial
4. Psycho-educative components (grieving process)
5. Facilitation of the grieving process
6. Caution regarding a new pregnancy in the subsequent year in order to prevent postponement of the grieving process
7. Encouragement of the parents to freely and openly express their feelings regarding the deceased child

The Beck Depression Inventory was used as the measurement method. The intervention group was shown to exhibit higher depression values directly after the perinatal loss compared to the mothers of healthy children. The intervention group exhibited significantly lower depression values than the women who suffered the loss of a child and received no intervention 12 months after completion of the intervention. By this time, the intervention group's depression values nearly matched those of the control group.

These results clearly indicate the effectiveness of intervention with regard to depressiveness.

The particularity of the study by Carrera et al. (1998) lies in the inclusion of a second control group containing mothers of healthy children. This allows the researcher to prove that through the intervention, the intervention group's depression values after one year lie nearly in non-clinical territory. On the other hand, the question remains open as to what explains the increased long-term effectiveness of the intervention in comparison to the results from other studies.

First, the considerably longer duration of intervention is apparent. The authors unfortunately provide no information on whether a higher amount of therapy is behind the longer duration. This could possibly be the reason for the higher (more long-term) effectiveness. Furthermore, detailed information is missing regarding the assignment of participants to their respective groups. It is not explicitly stated that the intervention group and control group 1 were indeed randomly formed. Since control group 1 was only examined once (12 months after the loss), it is impossible to determine whether the intervention group and the group of women, who lost a child and received no intervention, were different before the intervention.

Swanson (1999) examined the effect of 3 1-hour long supportive counseling sessions within the scope of a randomized controlled study. Of 242 women who suffered a miscarriage (≤ 20th week of pregnancy) and participated in the study, 116 were randomly assigned to the intervention group, and 126 to the control group. An empirical miscarriage process model (Swanson, 1991; Swanson-Kauffman, 1986) derived by the author served as treatment guidelines. This model contained the elements of realization of the loss's inescapability, loss experience as a crisis and chance, social disclosure of the loss experience, use of help offered, and clarification of the question concerning another pregnancy attempt. The control group did not receive intervention. Measurement was conducted directly after the beginning of the study and before the first intervention, 6 weeks later, 4 months later, and after a year. Self-evaluation questionnaires were used as the measurement instrument. The documented variables were feeling of self-esteem, mood, effects of the loss, and etcetera. The examined hypotheses refer to the effectiveness of the intervention, and the influence of time and the diagnostic measures on the process.

The results concur with important points from the preliminary examination. In particular, it shows that the influence of the intervention is measurable after only 6 weeks, but not after more than 4 months or after a year. These findings confirm the results of the study by Forrest et al. (1982), which were also unable to substantiate any differences between the intervention and control groups after catamnesis intervals of 6 and 14 months. In contrast, time seems to have a more substantial healing effect. It significantly impacts self-worth, anxiety, depression, anger, and confusion after 4 months and after a year. Hence, the study by Swanson provides proof that reorganization over the course of time is possibly a more important factor for the grieving process than the (mostly very short) interventions.

The summarizing of the results of the depicted studies shows that numerous studies indicate the minimal effectiveness [e.g., Lake et al., (1987)] and/or short longevity (Forrest et al., 1982) of a short intervention after perinatal loss. Time, as a healing factor, seems to play a more important role (Swanson, 1999). This is the reason why differences are no longer found between control and intervention groups in several studies after a long catamnesis. It is conclusive that the influence of time as a distinct factor was examined and confirmed in its significance in later studies (Swanson, 1999). This finding concurs with the clinical experience that grief resulting from a loss paired with the absence of aggravating risk factors frequently

leads to a new equilibrium. This is due to the fact that the goal of the grieving process is in fact a "reparation process". The question of reviewing effectiveness in short-term interventions, therefore, shifts in the direction of the question of which social circle exhibits specific risk factors and what specific provisions of care they should receive within the scope of secondary prevention (Beutel, 2002).

Murray et al. (2000) evaluated an intervention and simultaneously examined risk factors of the grieving process. This study provides results, which could also possibly provide a key to understanding the contradictory results of other studies. This shows that the effectiveness of the intervention is verifiable in the high-risk group, yet not in the low-risk groups. In the latter, a normal grieving process virtually overtakes the results of the therapy. When inconvenient risk constellations are present, which prevent the normal course of the grieving process, interventions are indicated and promising.

The methodological quality of the referred studies differs. A number of methodological discrepancies have already been outlined. According to a survey study from the Cochrane Database of Systematic Reviews released in 2004, none of the portrayed studies adequately fulfills the methodological standards, which must be applied to a controlled, randomized intervention study. These concern primarily:

1. Sample size (range and statistic power)
2. Description of the selection criteria; use and description of standardized (reliable, valid, and objective) outcome measures
3. Description of outcome measures (information regarding reliability and validity)
4. Randomized allocation of the treatment and control groups
5. Comparability (parallelism) of the treatment and control groups
6. Detailed description of the intervention
7. Information regarding further interventions
8. Blind data collection and analysis concerning the group membership
9. Examination and indication of systematic differences between the study's participants and those who chose not to participate

According to the Cochrane Review, these discrepancies do not allow for a clear and evidence-based assertion regarding the superiority of either counseling focused on perinatal grief processing or psychotherapeutic intervention over nonspecific psychosocial care. A straightforward assessment of the results from various intervention strategies, and the differential indicators for various therapeutic approaches is also virtually impossible regarding the aforementioned conclusions at the present time.

In conclusion, the hitherto performed controlled and randomized studies exhibit explicit methodological inadequacies, limiting the generalizability of the results (Chambers, & Chan, 2004; Schneiderman, Winders, Tallett, & Feldman, 1994). In particular, the perspective of the importance of therapeutic measures for the mental health of subsequently born children was very rarely taken into consideration. Due to this, the continued performance of methodologically sound studies regarding the validation of the effectiveness of psychosocial interventions after perinatal loss, especially with the aspect of secondary prevention as a research desideratum, should be considered.

Conclusion for use in practice

The prenatal or perinatal loss of a child is one the most common pregnancy complications. It is associated with considerable psychosocial consequences including depression, anxiety, somatic complaints, self-accusations, anger, and partnership conflicts. Furthermore, the prenatal or perinatal loss of a child can affect the quality of the relationship with a subsequently born child. Despite the high risk of developing a pathological grief reaction and other psychological disorders, neither psychosocial interventions nor counseling options are part of a routine medicinal care in Germany. Advisory

services should be offered to women at the very least when the corresponding risk constellations are present.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Cognitive Behavioral Therapy on Symptoms Intensity, Quality of Life, and Mental Health in Patients with Irritable Bowel Syndrome

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Quantitative Study

Abstract

Background: Irritable bowel syndrome (IBS) is a functional gastrointestinal disorder with chronic abdominal pain, bowel habit variations, and lack of structural causes. Symptom intensity has a statistical relation with patients' quality of life (QOL) and mental health. The first objective of the present study was to develop and provide a therapeutic plan based on cognitive behavioral therapy (CBT) for IBS that was operated for the very first time in Iran. The second objective was to determine the effectiveness of these treatments on IBS symptoms intensity, health-related QOL, and psychological health among patients with IBS.

Methods: The participants were 15 women with IBS. The participants were diagnosed on the basis of Rome-III diagnosis criteria. The data collection tools consisted of IBS Symptom Severity Scale (IBS-SSS), the Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire, and the Symptom Checklist-90-Revised (SCL-90-R) used to evaluate mental health. Data were collected during the weeks of 0, 4, 12, and 24, during the treatment process. The extracted data was examined statistically via repeated measures MANOVA in SPSS software.

Results: CBT has a significant effect on IBS symptoms reduction, QOL improvement, and mental health promotion of the patients. The effect of the therapeutic plan persisted until the follow-up stage.

Conclusion: According to the results, applied CBT can be specifically implemented as an effective treatment for IBS. Therefore, the use of this treatment is advised.

Keywords: Irritable bowel syndrome (IBS), Quality of life (QOL), Mental health, Cognitive behavioral therapy (CBT)

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Introduction

Functional gastrointestinal disorders (FGIDs) comprise a remarkable percentage of digestive diseases. Psychological factors have impact on all features of these disorders including, onset, intensity, and continuation (Sadock, & Sadock, 2007). Irritable bowel syndrome (IBS) is the most common, costly, and disabling among the gastrointestinal disorders (Lackner and Gurtman, 2005). It is estimated that IBS affects 10-20% of the population around the world with a female predominance (Longo et al. 2011; Owyang, 2008). According to Choung and Locke (2011), gastroenterologists spend 25% of their work hours on treating patients with IBS (Choung, & Locke, 2011). The second most common cause of outpatient referral (25%) to the Tehran Specialized Gastrointestinal Clinic, Iran, is IBS (Ganji et al., 2006).

IBS pathogenesis is not well known; however, the roles of abnormal bowel movement and visceral perception, mucositis, central nerves dysfunction, stress and mental disorders, bowel canal internal factors, changes in bowel bacterial floor (Longo et al., 2011), brain-gut interaction, food allergies, and carbohydrates intolerance have been reported (Occhipinti, & Smith, 2012). Genetic factors are the cause of inflammation or local immune responses that render individuals susceptible to IBS.

Symptoms intensity differs from person to person and it can decrease quality of life (QOL). In many researches, patients had low QOL, compared with the public population and healthy individuals (Longo et al., 2011; Tamannaifar, & Akhavan Hejazi, 2013; Masaeli et al. 2013; Brun-Strang, Dapoigny, Lafuma, Wainsten, & Fagnani, 2007). Factors such as gender, symptoms intensity, and age of symptoms onset have been reported to be effective on QOL (Amouretti et al., 2006).

Digestive diseases have the first rank among medical diseases in terms of demanding psychiatric consultation that is a reflection of the high prevalence of these diseases and the relevance between psychiatric disorders and physical symptoms of the digestive system (Sadock, & Sadock, 2007). Researches show that patients with IBS have poor mental health compared with healthy individuals (Alpers, 2008; Minakari, Zali, Heydari, & Arabalidousti, 2006; Mahvi-Shirazi, Fathi-Ashtiani, Tabatabaei, Amini, 2009). In some studies, the mental health of patients with IBS was compared to that of healthy individuals and patients with digestive system organic disorders. These studies demonstrated that patient with IBS had a lower mental health score in all psychological health scales than patients with organic digestive system disorders and healthy individuals (Taheri, Hasani, & Molavi, 2012; Solati Dehkordi, Rahimian, Abedi, & Bagheri, 2006; Nicholl et al. 2008).

IBS treatment requires a multidimensional approach. IBS is a chronic disease that has no certain cure; thus, its treatment must aim at removing the symptoms and identifying patients' concerns. Cognitive behavioral therapy (CBT) has a strong theoretical base among psychological treatments. Moreover, several studies have approved the effectiveness of CBT on treating IBS and easing its symptoms (Lackner et al., 2008; Blanchard et al., 2006).

Remarkable explanations of IBS have been proposed through cognitive theories. It is assumed that patients engage in cognitive distortions and dysfunctional patterns of thinking toward the self, future, environment, and their disease. On the other hand, a kind of irregularity and imbalance in the central nervous system (CNS), nervous hormone systems, and enteric nervous system (ENS) are indications of the disease (Lackner, & Gurtman, 2005).

CBT impacts IBS by reducing mental and physical symptoms, and evidence of CBT effectiveness has increased during recent years (Tang, Lin, & Zhang, 2013; Reme et al., 2011; Andersson et al., 2011). In addition, several

studies have demonstrated a reduction in IBS symptoms intensity and frequency through CBT (Jang, Hwang, & Kim, 2014; Moss-Morris, McAlpine, Didsbury, & Spence, 2010; Chilcot, & Moss-Morris, 2013). However, Boyce, Gilchrist, Talley, and Rose (2000) have not reported any significant increase in intestinal symptoms frequency. CBT influences patients' QOL and psychological symptoms associated with IBS (Hunt, Moshier, & Milonova, 2009; Haghayegh, Kalantari, Molavi, & Talebi, 2010) such as anxiety and depression (Wang, Pan, & Qian, 2002; Palsson, & Whitehead, 2013; Khan & Chang, 2010).

However, there is not enough evidence of the efficacy of CBT (Andersson et al., 2011) and some studies have not reported a significant effectiveness for CBT on IBS improvement (Blanchard et al., 2007). On the other hand, some studies reported the short-term effectiveness of CBT that means that its effect did not persist until the follow-up stage (Haghayegh et al., 2010; McCrone et al., 2008).

Due to the contradictory and different results in this field, it is necessary to provide and use a CBT specialized plan for IBS.

Thus, the first research objective was to provide a CBT protocol for IBS that was performed for the first time in Iran. The second aim was to determine its effectiveness on bowel symptoms intensity, QOL relevant to IBS, and psychological health

Methods

In the first stage of the study, a CBT protocol was written using quantitative methods. Its structure and content were developed and provided based on available resources (Blanchard, 2001; Toner, Segal, Emmott, & Myran, 2000). In the second stage, a randomized clinical trial was designed with pre-test, post-test, and fallow-up assessment. Patients were selected from the Psychosomatic Research Center (Gastroenterology Clinic) and private offices in Isfahan, Iran. Patients were visited by gastroenterologists and diagnosed with IBS based on the Rome–III Diagnostic Criteria for IBS. The inclusion criteria consisted of diagnosis of IBS based on Rome-III (including all C, D, and M types), female, 20-50 years of age, and a diploma and higher academic degrees. Patients were excluded if they presented nightly symptoms, currently used antibiotics, had a family member with colon cancer, were reluctant to attend the treatment, appearance of white blood cells (WBC), blood or parasite in stool, had a history of thyroid disorders and abnormal thyroid test, abnormal levels of calcium, history of respiratory and heart diseases, abnormal rectosigmoidoscopy or colonoscopy, anemia, eosinophils, psychiatric acute disorders, and neurological diseases. Therefore, 15 patients who met the inclusion criteria were allocated to the CBT intervention group. Intervention and fallow-up was held in the Isfahan Psychosomatic Researches Renter located in Shariati Street. Due to personal and occupational problems, 3 participants dropped out of treatment. Thus, 12 patients continued the treatment sessions. Participants completed the IBS Symptom Severity Scale (IBS-SSS) to measure IBS intensity, Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire to examine QOL, and the Symptom Checklist-90-Revised (SCL-90-R) to measure mental health in several stages. CBT had a 12-session plan, once a week on Thursdays, each session lasting 90 minutes. Papers were distributed among the participants at the end of each session to explain their criticisms and attitudes, and provide their feedback to the therapist. at the questionnaires were completed by the participants at the beginning of the study, end of the 4th week, and at the end of the 12th week. In order to follow-up, an assessment was done 12 weeks after the end of treatment.

Data was analyzed using repeated measures ANOVA in SPSS software (version 20, SPSS Inc., Chicago, IL, USA).

Research tools:

Demographic Characteristics Questionnaires: This questionnaire contained items on age, gender, occupation, education, type of the disease diagnosed by gastroenterologist, type and history of treatment, beginning of treatment, and symptoms intensity.

ROME–III Diagnostic Criteria for IBS: This questionnaire has been accepted around the world as a standard criterion for IBS diagnosis, with a high validity (Longo et al., 2011).

IBS Symptom Severity Scale (IBS-SSS): This scale has been designed based on the Rome Diagnostic Criteria in five segments that assess IBS symptoms including pain, bowel habit changes, bloating, and disease impact on daily activities. The total score of the questionnaire is 500. Slight, moderate, and severe disease symptoms are indicated by scores of 75-175, 175-300, and higher than 300, respectively. The interclass correlation coefficient of the scale is 0.86 and Cronbach's alpha is 0.69 (Francis, Morris, & Whorwell, 1997).

Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire: This questionnaire was designed by Patrick and Drassman (1998) and is valid in this field with a high sensitivity and specificity regarding all types of IBS. This questionnaire consists of 34 items scored based on a 4-point Likert scale (never = 1, rarely = 2, usually = 3, often = 4, and always = 5). Factor analysis revealed 8 factors including dysphoria, activity interference, body image, health concerns, interpersonal relations, food abstinence, social reaction, and sexual concerns. The Persian version of the questionnaire showed an acceptable diagnostic validity and internal reliability of subscales. The lowest and highest amount of Cronbach's alpha belonged to food abstinence (52%) and dysphoria subscales (88%), respectively. Its total reliability was 92% (Haghayegh, Kalantari, Solati, Molavi, & Adibi, 2008).

Symptom Checklist-90-Revised (SCL-90-R): The SCL-90-R includes 90 questions to assess mental symptoms. This checklist was developed by Drewgatis et al. in 1973 and was reviewed based on clinical experiences and psychometric analysis to improve its final form. The score of each item ranges from 0 reflecting "non-" to 4 indicating "severely". It has 90 questions on 9 dimensions of the disorder and 3 general indexes. Its validity and reliability have been reported as acceptable.

Cognitive Behavioral Therapy Protocol: This protocol is dedicated to patients suffering from IBS. This specialized treatment protocol has been written using 2 books; Cognitive-behavioral Treatment of Irritable Bowel Syndrome: The Brain-Gut Connection written by Toner et al. (2000) and Irritable Bowel Syndrome: Psychosocial Assessment and Treatment written by Blanchard (2001). This intervention plan includes 12 sessions, each lasting 90 minutes.

The first session familiarized the participants with the treatment and related concepts. In the second session, the relation between thoughts, feelings, behavior, and bowel symptoms was explained. In the third session, cognitive distortion was explained. In the fourth session, the participants were trained on pain management. In the fifth session, anxiety-related bowel performance was discussed. In the sixth session, the feeling of shame due to IBS was discussed. In the seventh session, the participants were trained on assertiveness-anger management. In the eighth session, problem-solving and self-efficacy were discussed. In the ninth session, social approval and perfectionism were discussed. In the tenth session, the participants were trained on control strategies. In the eleventh session, group needs were discussed. In the twelfth session, the treatment was ended and the participants were trained on prevention techniques.

All sessions are run in a standard format. They begin with practicing relaxation (5 to 10 minutes). Then, the researcher enquires about the participants' last session (5 minutes). Subsequently, the participants' homework is checked (15 to 20 minutes). Then, the session's

topic and its related skills are introduced (15 to 20 minutes). Next, the sessions' homework is proposed (10 minutes). Subsequently, a summary of the session is given (5 minutes). Finally, the participants' attitudes toward the present session are asked (5 minutes)

Results

In the present study, 12 patients with IBS diagnosed based on ROME–III completed the treatment. Among the patients, 25% were single, 75% married, 41.7% had a diploma, 58.3% had higher academic education, 50% were employed and 50% housewives, and 58.3% had previously undergone treatment and 41.7% had not. The mean age of the participants was 29.4 ± 5.35.Post hoc test results show significant differences between the IBS scores in pre-test (289.17 ± 79.25), middle-test (139.17 ± 71.15), post-test (100.00 ± 41.34) and follow-up (75.00 ± 46.42) stages of assessment (F = 4098; P = 0.001).

Figure 1 shows mean scores of IBS-SSS in the four stages of assessment

The SCL-90-R mean scores in pre-test, post-test, and follow-up stages are illustrated in table 1.

According to table 1, there was a significant reduction in all subscales of SCL-90-R from the first stage (pre-test) until the fourth stage (follow-up). In some of these subscales, there was

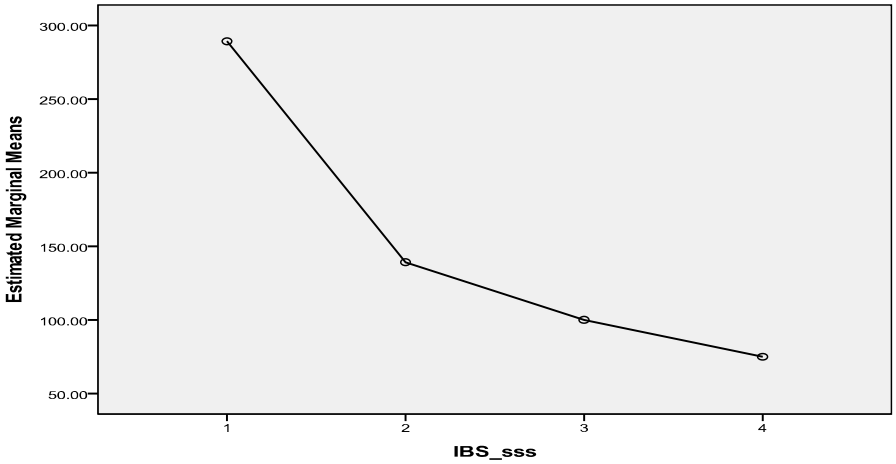

Figure 1. Mean scores of Irritable Bowel Syndrome Symptom Severity Scale (IBS-SSS) in the four stages of assessment

Table 1. Comparison of mean scores of Symptom Checklist-90-Revised (SCL-90-R) and its subscales in the 4 stages of cognitive behavioral therapy (CBT) treatment by repeated measures ANOVA

Mental health indexes	Assessment stages (mean ± SD)				F	P
	Pre-test	Middle-test	Post-test	Follow-up		
Physical complaints	1.69 ± 0.86	1.30 ± 0.84	0.93 ± 0.48	0.67 ± 0.56	10.34	0.001
Obsessive compulsive disorder	1.99 ± 0.83	1.20 ± 0.68	0.97 ± 0.65	0.85 ± 0.55	13.57	0.001
Interpersonal sensitivity	1.84 ± 0.63	1.22 ± 0.79	0.90 ± 0.54	0.73 ± 0.61	15.11	0.001
Depression	2.24 ± 0.73	1.44 ± 0.92	0.92 ± 0.51	0.72 ± 0.53	17.66	0.001
Anxiety	1.93 ± 0.80	1.31 ± 0.79	1.02 ± 0.49	0.63 ± 0.37	14.80	0.001
Aggression	1.43 ± 0.78	1.17 ± 0.81	0.75 ± 0.40	0.46 ± 0.28	9.88	0.001
Phobia	1.62 ± 1.25	0.82 ± 0.66	0.68 ± 0.45	0.38 ± 0.32	9.06	0.003
Paranoid thoughts	2.22 ± 0.87	1.50 ± 0.98	1.35 ± 0.84	0.96 ± 0.77	20.27	0.001
Psychosis	1.39 ± 0.69	0.74 ± 0.49	0.58 ± 0.43	0.51 ± 0.46	15.18	0.001
GSI	70.58 ± 13.87	55.58 ± 0 26.03	53.17 ± 017.61	41.25 ± 020.31	9.56	0.001

SD: Standard deviation; GSI: Global severity index

Table 2. Mean scores of Irritable Bowel Syndrome Quality of Life (IBS-QOL) questionnaire subscales during the four stages of cognitive behavioral therapy (CBT) treatment assessment

QOL indexes	Assessment stages (mean ± SD)				F	P
	Pre-test	Middle-test	Post-test	Follow-up		
Dysphoria	29.33 ± 4.96	16.42 ± 5.40	13.58 ± 5.05	12.25 ± 3.31	33.87	< 0.001
Activity interference	11.67 ± 2.74	8.25 ± 2.99	6.67 ± 2.96	6.00 ± 1.65	15.71	< 0.001
Body image	21.42 ± 4.23	15.33 ± 4.83	12.00 ± 3.36	11.33 ± 2.57	27.18	< 0.001
Health concerns	11.50 ± 1.83	6.92 ± 2.87	6.08 ± 1.98	4.75 ± 1.48	28.11	< 0.001
Interpersonal relations	11.25 ± 4.27	8.58 ± 3.09	8.08 ± 2.91	7.42 ± 2.31	5.05	0.010
Food abstinence	13.75±4.03	9.42 ± 2.87	6.67 ± 2.71	6.42 ± 1.24	17.24	< 0.001
Social reaction	8.17 ± 1.95	6.25 ± 2.70	4.50 ± 1.31	4.17 ± 1.40	17.00	< 0.001
Sexual concerns	5.50 ± 3.32	2.58 ± 1.68	2.17 ± 1.34	1.92 ± 1.08	15.60	< 0.001

QOL: Quality of life; SD: Standard deviation

a rapid and great reduction from the first stage to second stage, and then, it continued with a mild inclination until the follow-up stage. Repeated measures ANOVA revealed that these differences were significant ($P < 0.001$). Then, post hoc test showed that mean scores of physical complaints, aggression, and phobia indices in the pre-test differed significantly from those in post-test and follow-up. In obsessive-compulsive disorder (OCD) and psychosis indices, only mean scores of the pre-test stage were significant different from the other stages. There were significant differences in mean scores of interpersonal sensitivity, depression, paranoid thoughts, and global intensity indices between pre-test and other stages, and middle-test and follow-up. Significant differences were observed in mean score of the anxiety index among all stages except between middle-test and post-test.

The effectiveness of CBT on QOL of patients with IBS was assessed. Table 2 presents the results of repeated measures ANOVA on patients' QOL in the four stages of the study.

Table 2 results show that all subscales of the IBS-QOL questionnaire through the first stage (pretest) until the forth stage (follow-up) had a significant reduction. There was a rapid reduction in all items from the first stage to the second stage, then, it continued with a mild inclination until the follow-up stage. Analysis of variance (ANOVA) revealed a significant difference in all four stages of assessment in the subscales of the IBS-QOL questionnaire. This indicates that CBT improved QOL indexes.

Discussion

The findings of this research confirm that CBT for IBS has been influential in decreasing the severity of IBS symptoms during a therapeutic period. This finding is concordant with previous researches (Jang et al., 2014; Moss-Morris et al., 2010; Wang et al., 2002; Hunt et al., 2009). It seems that patients' attitudes toward symptoms and the outcomes of symptoms changed and that led to underestimation of their symptoms.

The findings of this study also showed that CBT for IBS was influential in the reduction of psychological symptoms severity ($P < 0.01$). This finding supports the results of previous studies (Wang et al., 2002; Hunt et al., 2009). CBT companied with dysfunctional attitudes and cognitive distortion modification is likely to decrease depression and anxiety symptoms. Therefore, a decrease in the psychological distress process brought about a decrease in perceived IBS symptoms.

On the other hand, CBT for IBS caused an increase in patients' QOL. This finding was in agreement with that of previous studies (Hunt et al., 2009; Haghayegh et al. 2010; Blanchard et al., 2007) and supports the efficiency of CBT to improve patients' QOL. Decreased depression and anxiety symptoms may be the result of changes in

patients' attitudes toward somatic symptoms, self, world, future, and others through the CBT process. Consequently, dysfunctional attitudes modification, psychological distress reduction, and IBS symptoms improvement result in an increase in patients' QOL.

Limitations

The most important limitation of this study was that the study population was limited to female patients. Another limitation was that low educated patients were excluded.

Conclusion

The findings of the present research support the efficiency of CBT for IBS in decreasing somatic and psychological symptoms and increasing patients' QOL. Based on these results, it is recommended that CBT be placed in comprehensive IBS treatment plans.

Conflict of Interests

Authors have no conflict of interests.

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The Effectiveness of Unified Treatment Approach on Quality of Life and Symptoms of Patients with Irritable Bowel Syndrome Referred to Gastrointestinal Clinics

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Quantitative Study

Abstract

Background: Irritable bowel syndrome (IBS) is a functional disorder of the lower gastrointestinal tract caused by stress, and may benefit from a psychological intervention such as unified treatment approach. The aim of this study was to evaluate the effectiveness of unified treatment approach on the symptoms and quality of life (QOL) of patients with IBS.

Methods: The study population included all patients with IBS referred to gastrointestinal clinics of Ahwaz, Iran. Therefore, in a semi-experimental method, patients diagnosed with IBS were selected and underwent 8 2-hour group interventions. The data collection tools included Rome-III Diagnostic Criteria for Irritable Bowel Syndrome and the Irritable Bowel Syndrome Quality of Life (IBS-QOL) Questionnaires which were completed in three stages of pre-test, post-test, and follow-up. The collected data were analyzed using repeated measures MANCOVA in SPSS software.

Results: The results of repeated measures MANCOVA and the follow-up study indicated significant decrease in the scores of symptoms and significant increase in the scores of QOL.

Conclusion: According to the results of the present research, we can conclude that devising a treatment plan based on the unified treatment approach is effective in the increasing of QOL and decreasing of IBS symptoms.

Keywords: Unified treatment approach therapy, Quality of life, Symptoms

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Introduction

The body and mind and the relationship between them have been studied and examined throughout history. The role of psychological factors such as thoughts, beliefs, emotions, and behaviors on the body and physical diseases, in other words, the relationship between body and mind, are not novel notions. Most theorists believe that a human being is a biopsychosocial unit and these three dimensions have mutual effect on each other. It is this belief that caused the appearance of psychosomatic medicine. As

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they are common and based on common psychopathology such as the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition, Text Revision (DSM-IV-TR), psychosomatic disorders are defined as a group of physical diseases and psychological factors have a determining role in their formation or progression. Usually diseases such as asthma, blood pressure, gastrointestinal disorders, and some cancers are included in this group. Shoarinejad (1996) in 'The Dictionary of Behavioral Sciences' writes that psychosomatic disorder is any physical disorder caused by psychological factors. Therefore, psychosomatic does not necessarily mean psychogenic, because psychological factors can be the basis, initiator, continuant, or booster of physical disorders. Moreover, in psychosomatic medicine, a systemic approach (such as biopsychosocial model) is implemented in all diseases.

Gastrointestinal disorders are caused by stress and are the most common psychosomatic disorders. Gastrointestinal disorders include a number of disorders, one of which is bowel function disorder. Bowel function disorder itself is divided into a number of subcategories one of which is irritable bowel syndrome (IBS). Patients with this disorder experience many changes in bowel habits. Stomachache is the main symptom of IBS. Usually, stomachache is experienced after the movement of the bowels and eating. In IBS, constancy or continuity cannot be seen, but intensification or improvement periods and even improvement or recurrence of the factors can be seen that is associated with the patient's mood ambiguity. IBS is a chronic condition that undulates irregularly, but does not disappear completely. IBS is in most patients a debilitating condition and a chronic and recurrent functional disorder of the digestive system determined by stomachache, emphysema, and changes in bowel habits in the absence of structural disorders. Studies show that IBS is a common disorder and affects a significant number of individuals in the general population and requires counseling with general physicians and specialists. Its prevalence is 10 to 20% in the general population and it is one of the most common and recognized psychosomatic disorders in the field of gastrointestinal diseases (Lin, Hsu, Chang, Hsu, Chou, & Crawford, 2010).

This disease affects both sexes, but its prevalence is higher in women compared to men. For example, in the United States of America, most European countries, China, and Japan, its prevalence is reported to be 14 to 24% in women and 5 to 19% in men (Lin et al., 2010). Although IBS is not a deadly disease, it brings about discomfort for the patients. IBS has 3 clinical forms. In the first form, the patient complains of chronic stomachache and constipation. In the second form, the patient has alternative chronic diarrhea that is mostly without pain. In the third form, patients suffer from both clinical problems and suffer from constipation and diarrhea alternatively (Lazarus, & Folkman, 1984).

The therapeutic approach for patients with difficulty in regulating emotions must include treatments that have the ability to increase emotional awareness and regulate and modify internal distresses and emotional arousal states through cognitive processes. Cognitive behavioral therapy (CBT) for treatment of anxiety and mood disorders are effective treatments that are increasingly used today. A deep understanding of the nature of emotional disorders reveals that similarities of these disorders in case of etiology and latent structures render the differences among them unimportant. Thus, based on the tentative nature of the fields of learning, growth, emotion regulation, and cognitive science and from a series of psychological protocols, a unified intervention was prepared for emotional disorders. Unified protocol (UP) is a unified treatment approach to CBT. UP focuses on the adaptive and functional nature of emotions and aims to identify and modify maladaptive attempts for regulating emotional experiences in order to facilitate appropriate processing and

eliminate extreme emotional responses to internal (physical) and external symptoms. Psychosomatic medicine is a field that examines physical diseases and emotional problems from the psychopathological point of view. Thus, taking some measures that include pharmacological and nonpharmacological treatments is necessary to solve and reduce emotional problems in these patients (Johari-fard, 2011).

Treatment strategies can reduce the negative consequences of this disease and can be effective on improving quality of life (QOL). It is assumed that patients with gastrointestinal functional disorders can benefit from interventions based on emotion. It seems that this therapeutic method has not been implemented in psychosomatic gastrointestinal diseases that emotional components are a part of.

Considering the abovementioned factors, the present study was conducted with the aim to determine whether unified treatment approach therapy is effective on QOL and symptoms of patients with IBS referred to gastrointestinal clinics in Ahvaz, Iran

Methods

The statistical population of this study consisted of all female patients with IBS referred to gastrointestinal clinics in Ahvaz. Available sampling method was used to select the participants. The researcher visited the gastroenterology clinics and coordinated with the gastroenterologist. Then, individuals with IBS who had the Rome III Diagnostic Criteria for IBS and the inclusion criteria, and did not have the exclusion criteria were referred to the researcher. As a result, 15 patients were selected and received the group intervention for 2 months in Rayan Clinic in Ahvaz. The researcher explained the subject and the aim of the study and the way of completing the questionnaire for the participants. The posttest was implemented after the completion of the intervention. Posttest was repeated after 1 month as a follow-up. To analyze data in terms of descriptive statistics, frequency, mean, and standard deviation, and in terms of inferential statistics, repeated measures MANCOVA were used.

The Rome III Diagnostic Criteria for IBS and Irritable Bowel Syndrome Quality of Life (IBS-QOL) Questionnaire were used in the present study. These two questionnaires are explained in the following sections.

Rome III Diagnostic Criteria for IBS: The Rome III Diagnostic Criteria for IBS is used to assess the symptoms of IBS. The Rome III Diagnostic Criteria was presented to the scientific community after various modifications with the cooperation of many gastroenterologists from around the world and it is of high standard (Thompson, 2006). This questionnaire contains some items that assess the existence or lack of the symptoms of IBS. High scores indicate the severity of the disease. This questionnaire contains 14 multiple choice items scored based on a Likert scale. For each option that confirms the diagnosis of IBS, the patient receives 1 score. At the end, the total of positive scores of the patients is calculated and the severity of their disease is determined. The higher scores illustrate that the diagnostic criteria are in favor of the disease (the severity of the disease is higher). It is noteworthy that the kind of IBS disease can be identified with this questionnaire. The questionnaire was completed by a gastroenterologist during the process of examination. The Persian version of the questionnaire was normed in Iran and has a Cronbach's alpha reliability of higher than 0.70 (Zomorodi, Rasoulzadeh Tabatabaei, Mohammad Arbabi, Ebrahimi Daryani, & Azad Fallah, 2013). The reliability of 0.64 and 0.68 was obtained for this questionnaire using Cronbach's alpha and test-retest method.

Irritable Bowel Syndrome Quality of Life (IBS-QOL) Questionnaire: As IBS is a chronic disease, the QOL of patients with IBS is low and different fields of their life such as occupational functioning, travelling, interpersonal relationships, and leisure are disrupted. In

recent years, researchers and specialists have shown great interest in assessing the QOL of these patients. Considering the disagreement between the patient and the therapist, in determining the amount of improvement it is important that QOL is measured by the patients themselves. This is possible through the use of questionnaires that their validity, reliability and sensitivity toward the treatment are confirmed. In 1998, the first IBS-QOL Questionnaire was made by Patrick and Drossman. This questionnaire has used the method of the World Health Organization (WHO) as a pattern and is made based on a need-oriented model. It assesses QOL based on the extent to which patients' needs are fulfilled. In exploratory factor analysis of the last version, 8 factors were clearly distinguished from each other. These 8 factors include dysphoria, activity interference, body image, health concerns, food abstinence, social reaction, sexual concerns, and interpersonal relation. The main questionnaire and its European and Asian versions have internal reliability and high re-test, sensitivity, and special responsiveness to different treatments (pharmacological and psychotherapies).

The IBS-QOL-36 and IBS-QOL-34 are valid and commonly used questionnaires. Nevertheless, the IBS-QOL-34 was an international attempt and has stronger methodology compared to the IBS-QOL-36 and more versions of it have been validated in other cultures and countries (Haghayegh, Kalantari, Molavi, & Talebi, 2010). IBS-QOL-34 is one of the best tools for assessing QOL in patients with IBS.

The internal consistency coefficient of the whole scales is 0.94 and its reliability using Cronbach's alpha has been reported as 0.95. This questionnaire consists of 34 items that are scored based on a 5-point Likert scale (Never = 1, Hardly ever = 2, Usually = 3, Often = 4, Always = 5). The minimum and maximum scores of this questionnaire are 34 and 170. Lower scores indicate higher QOL (Najarian Noosh-Abadi, Rezaei, & Ebrahimi-Daryani, 2014).

Psychometric properties (reliability, concurrent reliability, and diagnostic reliability of the Iranian version of the IBS-QOL-34 in patients with IBS was examined by Haghayegh et al. (2010). They reported a reliability of 0.93 and validity of 0.61. In general, the questionnaire has acceptable validity. The results of the present study showed that the 8 subscales of this questionnaire and the whole scale had acceptable internal consistency coefficients (alpha of subscales: dysphoria = 0.88, activities interference = 0.68, body image = 0.72, health concerns = 0.57, food abstinence = 0.52, social reaction = 0.71, sexual concerns = 0.76, interpersonal relation = 0.62, and the whole scales = 0.93). In general, the Persian version of the questionnaire has acceptable diagnostic validity. The results of diagnostic validity examination by Haghayegh et al. (2010) showed that the items of the questionnaire particularly assess the daily problems of these patients. The diagnostic ability of this questionnaire has also been reported to distinguish between the QOL in patients with IBS and QOL in patients with other digestive disorders (Haghayegh et al., 2010). The reliability of this questionnaire was reported as 0.91 and 0.90, respectively, using Cronbach's alpha and test-retest method.

Intervention sessions: In order to examine the efficiency of unified treatment approach, the new instruction of integrated unified treatment approach (Barlow et al., 2011) was used. This therapeutic protocol consists of 8 parts with flexibility in the number of sessions. Considering this feature, 12 individual sessions lasting almost 50 to 60 minutes were implemented. The order of parts and the number of sessions were the same for all subjects. The sessions were held in Rayan Psychology and Counseling Center in Ahvaz.

This protocol contains 8 parts, 5 main parts and 3 secondary parts. Through emphasizing the main principals of cognitive-behavioral treatments and combination of new advances in researches related to emotion regulation, it tries to use cognitive-behavioral strategies to

treat individuals with emotional disorders. Examples of cognitive-behavioral strategies used are elimination of behavior, techniques for preventing cognitive and behavioral avoidance, behavioral, emotional, and within-body encountering, and identification and modification of non-adaptive cognitions. Parts of this protocol include increase in motivation, psychological or treatment-based training, awareness of emotion training, cognitive re-evaluation, behaviors due to emotions, viscera and situational encountering, awareness and tolerance of physical feelings, and prevention of recurrence (Barlow et al, 2011). Treatment sessions were based on therapeutic targets and were presented to the clients with focus on various parts of the protocol. A summary of the content of the sessions can be seen in table 1.

Results

Table 2 shows the mean and standard deviation of scores of QOL and symptoms of patients with IBS in pre-test, posttest, and follow-up.

Table 1. The content of the therapeutic intervention

Meetings	Content of meetings
First	Increasing motivation, motivational interview for participation and involvement of patients during the treatment, presenting the treatment logic, and determining the treatment objectives
Second	Presenting the mental training, recognizing the emotions and tracking the emotional experiences, and training the three-component model of emotional experiences and ABC model
Third and fourth	Training emotional awareness, learning the observation of emotional experiences (emotions and reactions to emotions), especially by using mindfulness techniques
Fifth	Assessment and cognitive assessment, creating awareness of effects of and interaction between thoughts and emotions, identifying the automatic incompatible assessments and common pitfalls of thought and cognitive assessment, and increasing flexibility in thought
Sixth	Identifying emotion avoidance patterns, familiarization with different strategies of emotion avoidance and its effect on emotional experiences, and awareness of contradictory effects of emotion avoidance
Seventh	Investigation of behaviors resulting from emotion-driven behaviors (EDBs), familiarization with and identification of behaviors due to emotions and understanding their effects on emotional experiences, identifying incompatible EDBs, and creating alternative practice trends through facing behaviors
Eighth	Awareness of and tolerance of physical feelings, increasing awareness of the role of physical feelings in emotional experiences, performing exercises for visceral confrontation in order to become aware of physical feelings, and increasing the tolerance of these symptoms
Ninth to eleventh	Visceral confrontation and situation-based emotion confrontation, awareness of the logic of emotional confrontation, training how to develop the hierarchy of fear and avoidance, and a plan for frequent and effective, visual and objective exercises of emotional confrontation, and preventing avoidance
Twelfth	Preventing recurrence, general review of treatment concepts, and discussion about the recovery and treatment improvements of patients

Table 2. The mean and standard deviation of scores of quality of life and symptoms in pretest, posttest, and follow-up

Variable	Statistical index	Follow-up	Posttest	Pretest
Symptoms	Mean ± SD	15.76 ± 5.60	17.18 ± 8.12	34.86 ± 5.16
Quality of life	Mean ± SD	128.30 ± 13.51	123.85 ± 23.07	76.37 ± 19.98

SD: Standard deviation

As can be seen in table 1, the mean ± standard deviations of the scores of pretest, posttest, and follow-up of symptoms were 34.86 ± 5.16, 17.18 ± 8.12, 15.76 ± 5.60, respectively. The mean QOL scores were 76.37 ± 19.98, 123.85 ± 23.07, and 128.30 ± 13.51, respectively. Tables 1 to 4 show the mean scores of symptoms and QOL in pre-test, post-test, and follow-up.

Table 3 shows the summary of repeated measures MANOVA on the total score of the dependent variable.

Table 3 shows that unified treatment approach therapy was effective on the severity of symptoms of patients with IBS in all stages of the research. Moreover, the means of the dependent variable significantly differed in the three stages of the study. Therefore, it can be said that unified treatment approach therapy is effective on the severity of the symptoms in patients with IBS.

The results of Mauchly test was P = 0.075, df = 2, Square = 5.179 and Mauchly factor = 0.671.

The spherical Mauchly test evaluates the assumption that the matrix of the covariance of the error related to the normal converted dependent variables is an identity matrix. This test determines the structure of the variance-covariance matrix through implementing spherical test on the dependent variable. The amount of spherical Mauchly test (0.671) was not significant in the error level of lower than 0.01. Therefore, the sphericity of the variance-covariance matrix of the dependent variable can be accepted.

Table 4 shows the results of within-subject effects test.

In table 4, since the significance level of all four tests is lower than 0.05, it can be said that there is a significant difference between the mean score of symptoms of subjects at various times.

Table 5 shows the summary of the results of repeated measures ANOVA on total scores of the dependent variable.

Table 5 shows that unified treatment approach therapy was effective on symptoms of patients with IBS in all stages and the mean of the dependent variable significantly differed in the three stages of the research. Therefore, it can be said that unified treatment approach therapy is effective on QOL in patients with IBS.

Discussion

The aim of the present study was to examine the effectiveness of unified treatment approach therapy on QOL and symptoms in female patients with IBS referred to gastrointestinal clinics in Ahvaz.

Table 3. The summary of the results of MANOVA

Test	Effect	P	df	df hypothesis	F	Value
Pillai's Trace	0.957	0.001≤	13	2	144.23	0.957
Wilk's Lambda	0.957	0.001≤	13	2	144.23	0.043
Hotelling's Trace	0.957	0.001 ≤	13	2	144.23	22.190
Roy's Largest Root	0.957	0.001≤	13	2	144.23	55.004

df: Degree of freedom

Table 4. Within-subject effects test

Test	Eta coefficient	P	F	Mean squares	df	Total squares
Sphericity Assumption	0.827	0.001≤	66.703	1698.889	2	3397.777
Greenhouse-Geisser	0.827	0.001≤	66.703	2257.176	1.505	3397.777
Huynh-Feldt	0.827	0.001≤	66.703	2062.889	1.647	3397.777
Lower-bond	0.827	0.001 ≤	66.703	3397.777	1	3397.777

df: Degree of freedom

Table 5. The summary of the results of repeated measures ANOVA

Test	Effect	P	df	df hypothesis	F	Value
Pill's Trace	0.926	≤ 0.001	13	2	80.81	0.926
Wilks's Lambda	0.926	≤ 0.001	13	2	80.81	0.074
Hotelling's Trace	0.926	≤ 0.001	13	2	80.81	12.586
Roy's Largest Root	0.926	≤ 0.001	13	2	80.81	12.586

df: Degree of freedom

The results showed a significant difference between the mean symptoms of IBS and QOL scores of subjects in the pre-test, post-test, and follow-up. Therefore, unified treatment approach improved QOL and reduced the symptoms in patients with IBS and its results persisted after one month in the follow-up. The total result of the study is consistent with the results of the studies by Mazaheri, Mohammadi, Daghaghzadeh, and Afshar (2014), Francis (2011), Lahmann et al. (2010).

Solati Dehkordi, Kalantari, Adibi, and Afshar (2008) examined the effectiveness of various emotional regulation, relaxation, yoga, meditation, and mindfulness techniques and methods on anxiety, the severity of gastrointestinal symptoms, and QOL in patients with IBS. They showed that through the decreasing of anxiety and improving of gastrointestinal symptoms, QOL improved in these patients. Therefore, unified treatment approach therapy accompanied with pharmacological treatments is effective on reducing the severity of symptoms and increasing QOL in patients with IBS. The results of the present study are consistent with the results of the abovementioned study.

In explaining this finding, it can be said that patients with IBS tend to experience negative emotions such as anxiety, anger, sadness and feeling of guilt, and have more limited social relationships compared to healthy individuals. These individuals experience higher levels of anxiety and apprehension. The enteric nervous system is extremely sensitive to emotional states. In emotional situations, the motor function of the small intestine decreases and motor function of the colon increases. This may be the cause of intestinal symptoms such as IBS. Neuroticism is in contrast to emotional stability and includes an expanded range of negative emotions including anxiety, sadness, irritability, and depression. Thus, it can be inferred that patients with IBS show higher levels of anxiety compared to healthy individuals, are more likely to become irritable and nervous about various issues (Gheshlaghi, & Khalilzad Behrouzian, 2011).

Stress has different effects such as anxiety and depression, increased physical distresses and psychological distresses, releasing of adrenalin and noradrenalin, disruption in the digestive system function, increased heartbeat, disruption in breathing, contraction of blood vessels, ,decreased attention and focus, increased work absenteeism and avoidance of activities, and disruption in sleep pattern. Moreover, stress can have negative and destructive effects on emotional and physical health. Many individuals with chronic stress have a sense of lack of control on their life and social isolation and suffer from anxiety and depression. In addition, stress can reduce immune performance, which is one of the main factors in physical health. Researches have shown that, on the one hand, there is a relationship between stress and anxiety, and on the other, physiological responses to the digestive system. Anxiety can disrupt the performance of the digestive system through central controller mechanisms and releasing of catecholamines. Researches about electric stimulation indicate that autonomic responses are developed in the sympathetic nervous system in the lateral hypothalamus, a place that has neuronal interactions in the anterior brain of the limbic system. Autonomic responses of the

parasympathetic nervous system are effective on the digestive system function. Acute stress can develop physiological responses in some digestive organs. It decreases antral motor activity in the stomach and intestines that can result in functional problems such as nausea and vomiting. In acute stress, the motor activity of the small intestine decreases and that of the colon increases. This state can justify the intestinal symptoms related to IBS (Sadock, & Sadock, 2007). IBS is assumed to be a stress-related disease. Furthermore, associated psychological disorders such as depression, anxiety disorders [panic, pervasive anxiety, and posttraumatic stress disorder (PTSD)], obsessive-compulsive disorders, sleep disorder, and sexual function disorder are reported in most patients with IBS. Thus, psychological interventions such as stress management and cognitive treatments decrease the psychological symptoms of this disease to a large extent.

Anxiety has physiological, cognitive, and behavioral dimensions. The physiological dimension is accompanied with increase in heartbeat and blood pressure, shaking, perspiration, and muscular tension. Its cognitive dimension is associated with negative thoughts such as "this problem is bigger than I can be able to tolerate" or "I will have a heart attack". The behavioral dimension is associated with tense and stressful activities. These effects extremely increase through stimulating each other. Particularly, physiological and cognitive dimensions can make a vicious circle and result into sympathetic changes that they themselves change negatively. The result is a spiral producing anxiety. One of the ways of breaking this cycle is relaxing and reducing the anxiety through a relaxation method.

Development and formation of the unified treatment approach is associated with parallel researches about the nature and classification of anxiety and mood disorders. One of these researches is by Brown and Barlow (2009) who showed that different disorders of DSM-IV in the whole range of anxiety and mood diagnostic categories can be adapted or integrated into a dimensional classification system. This finding can be a confirmation of obtained clinical changes in this range of disorders due to the unified treatment approach. The UP model proposes a flexible approach to diagnosis and treatment of emotional disorders regarding their sources, especially when the dimensional classification system proposed by Brown and Barlow is used (2009). Actually, the results of this study were consistent with the results of the studies that targeted central emotional factors instead of specific signs through UP which resulted in significant clinical changes in the range of anxiety and mood disorders including main diagnosis or comorbid diagnosis. According to Brown and Barlow, UP treatment is a unified treatment approach to cognitive behavioral treatment based on emotion in which emotional processes are the main target of the treatment. This protocol can be implemented for anxiety disorders, anxiety, and possibly, other disorders that have strong emotional components. Therefore, cognitive regulation of emotions helps the individuals manage their emotions after experiencing stressful events. Individuals who use adaptive cognitive strategies of emotion regulation when experiencing stressful events, through changing their evaluations can manage the severity of negative emotions. When these negative emotions are effectively and adaptively regulated, the individuals' tolerance is possibly increased. Therefore, considering the changes reported in table 2 for higher level common factors in emotional disorders and the changes in the symptoms severity of the main and comorbid disorder, it can be concluded that unified treatment approach creates a significant reduction in the symptoms severity of the disorders. It causes this reduction possibly through affecting higher level and unified treatment approach common factors.

Considering the efficacy and applicability of this method in creating change and improvement in patients with pervasive anxiety disorder (Brown, & Barlow, 2009) and comorbid disease, the treatment of this disorder can possibly have applicable implications for other emotional disorders. The studies by Ellard, Fairholme, Boisseau, Farchione, and Barlow (2010), Boisseau, Farchione, Fairholme, Ellard, and Barlow (2010), and Farchione et al. (2012) were conducted on the efficacy of unified treatment approach in patients with emotional anxiety and mood disorders. They showed that this treatment, in addition to creating change and improvement in the severity of main emotional disorder symptoms, can cause significant change in comorbid emotional disorder symptoms through targeting higher level emotional central factors.

The effectiveness of emotion-based CBT on QOL and health of patients with IBS and functional dyspepsia was evaluated in this research. It was found that strategies that individuals apply to regulate their emotions can promote their health level in various biological, psychological, social, and moral dimensions and through this their level and efficacy of QOL increases. In other words, individuals with high emotional intelligence who consider stressful events as a challenge and an opportunity for learning, not a threat to security, experience lower physiological and emotional disorders, and therefore, have higher QOL. Therefore, CBT based on emotion regulation that aims to increase emotional awareness, flexibility in evaluation, prevent emotional avoidance and confrontation of emotional signs, promotes emotional intelligence and QOL in individuals.

The present study has some limitations. One is that this research was conducted on patients with IBS referred to gastrointestinal clinics in Ahvaz. Therefore, generalization of the results to other populations must be done cautiously.

Considering the results of the study, it is recommended that future researches consider other groups with other psychological interventions beside the experimental group for more comparisons and examine various psychological treatments.

Conflict of Interests

Authors have no conflict of interests.

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Coping with Stress in Patients with Inflammatory Bowel Disease and Its Relationship with Disease Activity, Psychological Disorders, and Quality of Life

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Quantitative Study

Abstract

Background: Inflammatory bowel diseases (IBD) are chronic diseases with significant impact on patients' well-being. The aim of this study was to determine stress coping strategies in IBD patients and their association with disease activity, psychological health, and quality of life (QOL).

Methods: This cross-sectional study was conducted on IBD patients referred to a gastroenterology clinic in Isfahan city (Iran). Disease activity, severity of anxiety and depression symptoms, stress coping strategies, and QOL were assessed using self-administered questionnaires. Coping strategies in IBD patients were compared to an unaffected control group.

Results: In the present study, 80 patients with mean age of 52.9 years (57.5% female) and mean disease duration of 6.5 years were studied. Compared to the controls, IBD patients had higher scores in the maladaptive coping styles (evasive and palliative) ($P < 0.05$). Association between coping strategies and disease activity was not significant. Severity of anxiety and depression was directly correlated with the maladaptive strategies (fatalistic and emotional) ($r = 0.283$ to 0.468) and inversely correlated with the adaptive strategies (confrontive, optimistic, and self-reliant) ($r = -0.320$ to -0.534). In addition, QOL was inversely correlated with the maladaptive strategies (fatalistic and emotional) ($r = -0.278$ to -0.327) and directly correlated with the adaptive strategies (confrontive and optimistic) ($r = 0.262$ to 0.355).

Conclusion: Patients with IBD use more maladaptive and less adaptive stress coping strategies which are associated with their psychological health and QOL. Larger and prospective studies on the dynamic and interactive network of biopsychosocial factors in IBD patients are required.

Keywords: Anxiety, Crohn's disease, Depression, Inflammatory bowel disease, Quality of life, Stress, Ulcerative colitis

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Introduction

Crohn's disease (CD) and ulcerative colitis (UC) are inflammatory bowel diseases (IBDs) accompanied by periods of relapse and remission, and generally require lifelong treatment (Podolsky, 2002). Due to their chronicity and unpredictable clinical course, IBDs have a significant impact on psychological health (Graff, Walker, & Bernstein, 2009) and quality of life (QOL) of the patients (Sainsbury, & Heatley, 2005). Anxiety and depression are common in these patients and not only impair their QOL (Guthrie, Jackson, Shaffer, Thompson, Tomenson, & Creed, 2002), but may also affect the clinical course of the disease (Mittermaier et al., 2004). Recent data have shown that (psychological) stress can aggravate symptoms and even increase the risk of relapse in patients with IBD, probably by changing the function of the hypothalamic-pituitary-adrenal axis and proinflammatory effects (Mawdsley, & Rampton, 2005). However, not all patients react similarly to stress, and the way they perceive and deal with stress may mediate the association between stress and the clinical course of the disease (Goodhand, & Rampton, 2008).

People show different physical, emotional, and behavioural reactions to stress (Schneiderman, Ironson, & Siegel, 2005), and have different ways of coping with stress (Folkman & Lazarus, 1980). Folkman and Lazarus defined coping as "the constantly changing cognitive and behavioural efforts to manage the specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Folkman, & Lazarus, 1980). Stress coping styles can be divided into two main categories of adaptive problem-focused and maladaptive avoidant or emotion-focused strategies (Folkman, & Lazarus, 1980). Problem solving, consulting with others, and looking on the bright side of the situation are examples of adaptive and active strategies. Avoiding the situation or people, sleeping too much, self-blame, having the desire that the situation would go away, and smoking and using alcohol or drugs are examples of avoidant and emotional maladaptive strategies (Folkman, & Lazarus, 1980).

Relatively few studies have evaluated stress coping strategies in patients with IBD. Some studies showed that patients with IBD use less adaptive (problem solving) and more maladaptive (avoidance and emotional) coping strategies compared with non-IBD controls (Jones, Wessinger, & Crowell, 2006). However, some other studies found no difference between IBD and non-IBD subjects in terms of adaptive strategies (Graff et al., 2009). The association of coping styles with disease outcomes has been less investigated, but in previous studies adaptive styles have been associated with lower risk of relapse (Gandhi et al. 2014; Parekh, McMaster, Nguyen, Shah, Speziale, & Miller, 2015) and maladaptive styles with more severe disease and relapse (Graff et al., 2009). Moreover, most studies found an association between maladaptive coping styles, particularly emotion-focused strategies, and psychological disorders, mainly anxiety and depression (Iglesias-Rey et al., 2013; Knowles, Wilson, Connell, & Kamm, 2011; McCombie, Mulder, & Gearry, 2015) and impaired QOL in patients with IBD (McCombie et al., 2015; Moskovitz, Maunder, Cohen, McLeod, & MacRae, 2000; Smolen, & Topp, 1998; van der Zaag-Loonen, Grootenhuis, Last, & Derkx, 2004).

Regarding the role of psychological factors and stress in the clinical course of IBD and patients' QOL, investigators have evaluated the effectiveness of psychological interventions in the treatment of IBD (McCombie, Mulder, & Gearry, 2013b). Although there has been some promising results (Keefer, Kiebles, Martinovich, Cohen, van Denburg, & Barrett, 2011), review studies have found the efficacy of such treatments for IBD to be mixed, and minimal at best, even for psychological health and QOL (Knowles, Monshat, & Castle, 2013b; McCombie et al., 2013b). Psychological interventions may

not be equally beneficial for all patients with IBD and how the treatment protocol is tailored to the patients' needs may affect its outcomes (Knowles et al., 2013b). A prerequisite for psychological interventions for stress is knowledge of the common coping strategies applied by the target population. Knowledge of the coping strategies of patients with IBD and the mediating/moderating factors can help in the designing of coping training courses appropriate to the needs of patients with particular internal and external supporting resources. There is a lack of studies on coping strategies of patients with IBD, especially in our society (Iran), and there are cross-cultural variations in coping styles (O'Connor, & Shimizu, 2002). Thus, this study was performed with the aim to identify coping strategies in a sample of Iranian patients with IBD and the relationship of these strategies with disease activity, psychological health, and QOL.

Methods

This cross-sectional study was conducted on patients with IBD referring to the Poursina Hakim Gastroenterology Clinic and Research Institute, in Isfahan city (Iran), between August 2013 and February 2014. The inclusion criteria consisted of age of between 18 and 65 years, diagnosis of IBD by a gastroenterologist based on symptoms, physical examination, and serologic tests and confirmation through endoscopic and pathologic studies, and the ability to complete the study questionnaires either through self-administeration or interview. Data from another study in a sample of unaffected adult population of Isfahan city was used for comparison (Bagherian Sararoudi, Ahmadzadeh, & Mahmmodi, 2009). The study was approved by the Ethics Committee of Isfahan University of Medical Sciences and verbal consents were obtained from patients to participate in the study.

Patients' demographic characteristics included age, sex, education level, and marital status. Data on characteristics of the disease, including type and duration of disease (from diagnosis), were collected from the patient records. Disease activity, stress coping strategies, severity of symptoms of anxiety and depression, and QOL were assessed using the following self-administered questionnaires. A trained interviewer was present to interview the patients while completing the questionnaires, if necessary.

Disease activity in patients with CD was measured using the Simplified Crohn's Disease Activity Index (SCDAI) (Thia Faubion, Loftus, Persson, Persson, & Sandborn, 2011), a simplified version of the CDAI (Best, Becktel, Singleton, & Kern, 1976). The SCDAI contains items on the number of liquid/soft stools, severity of abdominal pain, and general wellbeing. A total score of higher than 150 is indicative of active disease status in this scale (Thia et al., 2011). In patients with UC, activity was measured using the Simple Clinical Colitis Activity Index (SCCAI) (Walmsley, Ayres, Pounder, & Allan, 1998), containing items on bowel frequency, urgency for defecation, bloody stool, and general well-being. The total score of this scale ranges from 0 to 16 with scores of 6 and above indicating active disease state (Walmsley et al., 1998).

To evaluate stress coping styles, the Jalowiec Coping Scale (JCS) was used (Jalowiec, Murphy, & Powers, 1984). The revised version of the scale contains 60 items evaluating frequency of various coping behaviors. Each item was graded on a four-point Likert scale; 0-3 (never to most of the time). This measure covers the confrontive, evasive, optimistic, fatalistic, emotive, palliative, supportive, and self-reliant coping styles. Confrontive coping style is defined as dealing with the situation directly and trying to change it, and evasive coping style as avoiding the situation. Optimistic coping style is thinking positively in dealing with the situation and fatalistic style is hopelessness and sense of lack of control. Emotive coping style is described as showing emotional response and worrying in

the face of the situation. Palliative coping style is engaging in some activities in order to obtain a sense of control but not directly dealing with the challenging situation. Supportive coping style is defined as using support resources and self-reliant coping style as action or decision based on own volition and without relying on others. The score of each dimension is a mean of its composing items' scores (Jalowiec et al., 1984). This questionnaire was translated to Persian by Bagherian Sararoudi et al. (2009). The Persian version has good psychometric properties (Cronbach's alpha = 0.65 to 0.84) (Bagherian Sararoudi et al., 2009).

The Hospital Anxiety and Depression Scale (HADS) was used to measure the severity of psychological symptoms (Zigmond, & Snaith, 1983). The questionnaire includes 14 questions (7 for each dimension) with scores ranging from 0 to 3 representing the severity of anxiety and depression symptoms. Total score for each dimension ranges from 0 to 21. The Persian version of the questionnaire was standardized by Montazeri, Vahdaninia, Ebrahimi, & Jarvandi (2003) with appropriate psychometric characteristics (Cronbach's alpha = 0.78 to 0.86) (Montazeri et al. 2003).

The short form of the Inflammatory Bowel Disease Questionnaire (IBDQ-9) was used to assess the patients' QOL (Casellas, Alcala, Prieto, Miro, & Malagelada, 2004). Through 9 items, the IBDQ-9 measures the four dimensions of bowel and systemic symptoms, emotional function, and social impairment. Items are scored on a Likert scale from 1 to 7 [lowest level of function (extreme problem) to excellent function (no problem at all)], and the total score ranges from 1 to 63; higher score indicates better QOL. The questionnaire was translated into Persian by Gholamrezaei, Shemshaki, Tavakoli, & Emami (2011) with appropriate psychometric characteristics (Cronbach's alpha = 0.76) (Gholamrezaei et al. 2011).

The SPSS software (version 16.0, SPSS Inc., Chicago, IL, USA) was used for data analysis. Descriptive data are shown as mean ± SD or number (%). Chi-square test was used to compare qualitative variables and independent sample t-test was used to compare quantitative variables. Pearson test (or Spearman test for non-parametric data) was used to investigate the association between quantitative variables. A P value of less than 0.05 was considered statistically significant in all analyses.

Results

Patients and disease characteristics

During the study period, 92 patients with IBD who had the inclusion criteria were invited to participate; 10 patients were not willing to participate and 2 patients had extremely missing data. Finally, data on 80 patients with a mean age of 52.9 years (57.5% female) and disease duration of 6.5 years were entered into the study. Patients' and disease characteristics are summarized in table 1.

Table 1: Patients' and disease characteristics (n = 80)

Variable	
Age (years) (mean ± SD)	52.9 ± 13.4
Gender (female) [n (%)]	46 (57.5)
Marital status (married) [n (%)]	66 (82.5)
Education	
Elementary to diploma [n (%)]	46 (57.5)
Bachelor's degree and higher [n (%)]	34 (42.5)
Disease subtype	
Ulcerative colitis [n (%)]	55 (68.8)
Crohn's disease [n (%)]	21 (26.2)
Indeterminate colitis [n (%)]	4 (5)
Disease duration (years) (mean ± SD)	6.5 ± 5.2
Disease activity (active) [n (%)]	13 (16.2)

Coping with stress

Scores of the JCS dimensions in patients with IBD compared with the control population are shown in table 2. Compared with controls, patients with IBD had a lower, though not statistically significant, score in the confrontive coping style (2.0 ± 0.6 vs. 2.2 ± 0.6, P = 0.056). They had significantly higher scores in the evasive (1.5 ± 0.4 vs. 1.4 ± 0.3, P = 0.033) and

palliative (1.0 ± 0.4 vs. 0.7 ± 0.3, P < 0.011) coping styles compared with the control group.

Correlation of coping strategies with the study variables

Regarding demographic characteristics, patients' age had no significant relationship with coping styles (r = -0.156 to 0.116, P > 0.05). The use of fatalistic and emotive styles was more frequent in women, while the use of confrontive and self-reliant coping styles was more frequent in men (Table 3). The level of education was directly related to the confrontive coping style (r = 0.253, P = 0.024) and inversely related with the fatalistic style (r = -0.358, P = 0.001). There was no significant relationship between marital status and coping styles (P > 0.05).

There was no difference between patients with UC and CD in terms of coping strategies (all P values > 0.05). The relationships of coping strategies with duration of illness, disease activity, anxiety and depression, and the QOL of the patients are presented in table 4. In patients with UC, there was a weak but not statistically significant inverse relationship between the severity of disease activity and optimistic style (r = -0.238, P = 0.072). In patients with CD, a direct and moderate but not statistically significant association was observed between disease activity and fatalistic (r = 0.380, P = 0.081) and evasive strategies (r = 0.368, P = 0.092). Severity of anxiety and depression was directly correlated with the maladaptive strategies (fatalistic and emotional, r = 0.283 to 0.468) and inversely correlated with the adaptive strategies (confrontive, optimistic, and self-reliant, r = -0.320 to -0.534). Moreover, QOL was inversely correlated with the maladaptive strategies (fatalistic and emotional, r = -0.278 to -0.327) and directly correlated with the adaptive strategies (confrontive and optimistic, r = 0.262 to 0.355) (Table 4).

Table 2: Comparison of coping strategies between patients and controls

Coping strategies	Patients [(n = 80)]	Controls [(n = 100)]	P*
Confrontive	2.0 ± 0.6	2.2 ± 0.6	0.056
Evasive	1.5 ± 0.4	1.4 ± 0.3	0.033
Optimistic	2.0 ± 0.6	1.9 ± 0.5	0.502
Fatalistic	1.5 ± 0.5	1.5 ± 0.6	0.786
Emotive	1.4 ± 0.6	1.4 ± 0.5	0.896
Palliative	1.0 ± 0.4	0.7 ± 0.3	< 0.011
Supportive	1.8 ± 0.6	1.7 ± 0.4	0.687
Self-reliant	1.9 ± 0.6	2.0 ± 0.5	0.140

Data are displayed as mean ± SD
*Independent t-test

Table 3: Comparison of coping strategies between male and female patients

Coping strategies	Male (n = 34)	Female (n = 46)	P*
Confrontive	2.24 ± 0.58	1.85 ±0.70	0.010
Evasive	1.57 ± 0.45	1.61 ±0.42	0.666
Optimistic	2.13 ± 0.58	1.94 ± 0.73	0.213
Fatalistic	1.38 ± 0.48	1.71 ± 0.60	0.014
Emotive	1.23 ± 0.58	1.53 ± 0.59	0.024
Palliative	1.04 ± 0.41	1.04 ± 0.45	0.924
Supportive	1.73 ± 0.62	1.87 ± 0.58	0.318
Self-reliant	2.09 ± 0.56	1.83 ± 0.60	0.050

Data are displayed as mean ± SD
*Independent t-test

Table 4: Correlation of the study variables with coping strategies

Variables	Stress coping strategies							
	Confrontive	Evasive	Optimistic	Fatalistic	Emotive	Palliative	Supportive	Self-reliant
Age	0.116	-0.105	0.104	-0.156	0.133	-0.097	0.042	-0.027
Education	0.234*	-0.072	0.134	-0.385†	-0.159	-0.188	-0.081	0.077
Disease duration	0.046	0.077	0.026	0.027	-0.060	0.130	0.100	0.055
SCCAI	-0.113	-0.181	-0.238††	0.025	0.179	-0.174	-0.169	0.020
SCDAI	-0.133	-0.368	-0.046	0.380††	0.296	0.100	-0.263	0.276
Depression	-0.416†	-0.105	-0.534†	0.283*	0.422†	-0.183	0.002	-0.305†
Anxiety	-0.320†	-0.009	-0.374†	0.379†	0.468†	-0.081	0.057	-0.156
Quality of life	0.262†	0.089	0.355†	-0.278*	-0.327†	0.120	0.003	0.174

Abbreviations: SCCAI: Simple Clinical Colitis Activity Index; SCDAI: Simplified Crohn's Disease Activity Index
* $P < 0.05$; † $P < 0.001$; †† $P < 0.1$

Discussion

Although it is not yet proven that psychological stress can increase the risk of developing IBD, studies have shown that stress has adverse impacts not only on QOL (Iglesias-Rey et al., 2014; Moradkhani, Beckman, & Tabibian, 2013; Tabibian et al 2015) and psychological health (Goodhand et al. 2012; Keegan, et al. 2015), but also on disease outcomes in patients with IBD (Bernstein, et al, 2010; Duffy, et al., 1991; Maunder, & Levenstein, 2008). In the present study, stress coping strategies were investigated in a sample of Iranian patients with IBD. We found that these patients, compared with the unaffected population, use less adaptive (e.g., confrontive) and more maladaptive (e.g., evasive and palliative) strategies for coping with stressful situations. This finding was relatively similar to that of other previous studies (McCombie, Mulder, & Gearry, 2013a). Stress coping strategy varies over time (Folkman, & Lazarus, 1985) and each person in different situations uses different coping strategies depending on stress type and severity and the available internal and external resources (Folkman, & Lazarus, 1985). Disease duration in the majority of patients in our study was 2 years and higher. Accordingly, we cannot be certain whether the trend toward more maladaptive and less adaptive coping approaches in these patients is related to the chronicity of the disease and the resultant helplessness or to the natural tendency of these patients to such stress coping strategies. Studying a large sample of patients with various disease durations and longitudinal studies with long-term follow-ups on changes in coping strategies of patients with IBD over time can help to better clarify this issue.

Adaptive coping strategies (e.g. optimistic, confrontive, and self-reliant) were more frequently applied in our sample of patients, while maladaptive styles (e.g. palliative and emotive) were less applied. In the study by Parekh et al. on adult patients with IBD in the USA, confrontive style was the most common and fatalistic strategy was the least common way of coping with stress (Parekh et al., 2015). In contrast, the most common strategies used to deal with stress in patients with IBD in Spain were maladaptive strategies (e.g., emotion-focused) (Iglesias-Rey et al., 2014; Iglesias-Rey et al., 2013). Disease characteristics (duration and activity), psychological health, and cultural factors may explain some of the differences between studies in coping strategies among patients with IBD. Furthermore, various research designs and coping instruments are involved in this issue and highlight the necessity for standardization of future studies (McCombie et al., 2013a).

Regardless of the order of various coping styles in patients with IBD, use of maladaptive strategies are associated with worse outcomes in these patients (McCombie et al., 2013a). Previous studies found association between coping and disease activity (McCombie et al., 2013a). In contrast, in our study, a clear relationship was

not observed between the severity of the disease and stress coping strategies. We believe this is due to the small sample of patients in each IBD subtype and small number of patients with active disease in our study (16.2%). A cause and effect relationship between coping and disease activity cannot be concluded from cross-sectional studies; however,, a few cohorts (some prospective) have found association between disease flares and using more maladaptive and less adaptive coping strategies (Bitton et al., 2008; Gandhi et al., 2014; Graff et al., 2009; Parekh et al., 2015). Therefore, stress coping strategies may mediate the effects of psychological stress on IBD activity, highlighting the necessity for identifying patients with maladaptive coping strategies and addressing their needs in clinical practice (Goodhand, & Rampton, 2008).

There is also an interaction between coping and psychological health in patients with IBD. Similar to other studies (Iglesias-Rey et al., 2013; Knowles, Cook, & Tribbick, 2013a; Knowles et al., 2011; McCombie et al., 2015), we found an association between stress coping styles and psychological health. Adaptive coping styles were associated with lower severity of anxiety and depression and maladaptive styles were associated with worse psychological health. Moreover, coping strategies were associated with QOL, as an important outcome, in our study. This finding was in agreement with that of most previous investigations (Dorrian, Dempster, & Adair, 2009; Graff et al., 2009; McCombie et al., 2015; Moskovitz et al., 2000; Petrak et al., 2001; van der Zaag-Loonen et al., 2004). It must be noted that perceived psychological stress, coping, psychological disorders, and disease activity act in a complex interactive network. More importantly, these factors and the interactions among them are not stable over time (McCombie et al., 2015). Accordingly, larger and prospective studies are required to clarify the dynamic and complex interactive relationship between various biopsychosocial factors in IBD. Such information is needed for designing comprehensive care programs for the treatment of patients with IBD.

Our study had a number of limitations. It was a cross-sectional study, and thus, cannot conclude the cause and effect relationship between the studied variables. We did not have a real control group for comparison between patients with IBD and the unaffected population. Furthermore, the study sample size was small and multivariate analysis was not possible to clarify the model of interactions between the study outcomes. In this regard, other important mediating/moderating psychosocial factors such as perceived stress and perceived social support should also be evaluated. Finally, our study results cannot be generalized to all patients with IBD in our society as our sample was selected from a single private outpatient clinic.

Conclusion

Our sample of Iranian patients with IBD applied more maladaptive and less adaptive coping strategies compared to the unaffected population. Patients who more frequently used adaptive coping strategies had less severe anxiety and depression and better QOL. In contrast, those who relied on maladaptive coping strategies had worse psychological symptoms and poorer QOL. Before these findings can be used in designing comprehensive care programs for patients with IBD, larger multicenter and prospective studies are required to better understand the complex and dynamic interactive network of biopsychosocial factors in patients with IBD.

Conflict of Interests

Authors have no conflict of interests.

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Association of Personality Traits with Psychological Factors of Depression, Anxiety, and Psychological Distress: A Community Based Study

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Quantitative Study

Abstract

Background: Personality can be defined as the dynamic arrangement of psycho-physical systems. This study was conducted with aim to assess the prevalence of personality traits and their relation with psychological factors in the general population.

Methods: The present research was designed as a cross-sectional study. We extracted our data from the framework of the Study on the Epidemiology of Psychological, Alimentary Health, and Nutrition (SEPAHAN), in 2013. Participants (4763 adults) were selected from among healthy people in 20 counties across Isfahan Province, Iran, through convenience sampling. Personality traits and psychological factors including depression, anxiety, and psychological distress were assessed using the NEO Five-Factor Inventory (NEO-FFI), Hospital Anxiety and Depression Scale (HADS), and General Health Questionnaire (GHQ). Binary logistic regression analysis was used to find the association among the personality traits and psychological variables. Odds ratios were reported with the corresponding 95% confidence intervals.

Results: The mean score ± SD of neuroticism, extraversion, openness, agreeableness, and conscientiousness were 18.72 ± 7.87, 29.03 ± 7.08, 24.04 ± 5.28, 31.05 ± 6.37, and 36.26 ± 7.22, respectively. In depressed and anxious subjects and subjects with high psychological distress, the score of neuroticism was higher, but the scores of other factors were significantly lower ($P < 0.05$). Through multivariate analysis, high levels of neuroticism and low levels of extraversion and agreeableness were associated with being depressed, anxious, or having significantly high psychological distress.

Conclusion: In conclusion, in our population, high levels of neuroticism and low levels of agreeableness and extraversion were associated with being depressed or anxious, or having high psychological distress.

Keywords: Personality, Trait, Depression, Anxiety, Stress

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Introduction

Personality is an individual's patterns of feelings, thoughts, and behavior. It can be defined as the dynamic arrangement of psycho-physical systems. Human behavior is determined by personality, and depends on the emotional state and existing social or environmental situation of the individual (Ozer, & Benet-Martinez, 2006). Behavior modification is influenced by personality traits and this characteristic is correlated with individual health consciousness (Kikuchi et al., 1999). Stable psychological characteristics, such as impulsivity, anxiety, affiliation, dominance, or persistence, differ from one human being to another. Personality characteristics are present since adolescence or early adulthood, and are to some extent heritable, and mainly determine the biography of the individual (Bienvenu et al., 2001).

Usually, personality is measured on the basis of the five factor model (FFM) which has strong empirical support and is used to distinguish between personality profiles of healthy individuals (Chapman, Lyness, & Duberstein, 2007b). The five factors consist of neuroticism, extraversion, openness, agreeableness, conscientiousness. Neuroticism (N) is the tendency to experience negative affect and affective instability (anxiety, angry hostility, depression, impulsivity, and vulnerability). Extraversion (E) is the disposition toward energetic activity and sociability (warmth, gregariousness, assertiveness, excitement-seeking, and positive emotion). Openness (O) is the interest in experiencing novel people, ideas, and things, as well as intellectual and esthetic tendencies (fantasy, feelings, values). Agreeableness (A) is a tendency toward warmth and amiability (altruism, trust, compliance, tender-mindedness, straightforwardness, and modesty). Conscientiousness (C) entails qualities such as diligence, goal-orientation, fastidiousness, and dependability (self-discipline, competence, order, dutifulness, achievement striving, and deliberation) (Chapman et al. 2007b; Chapman, Duberstein, & Lyness, 2007a)

These five factors can be influenced by age, gender, and educational level. There are significant differences between men and women in terms of factors such as neuroticism, conscientiousness, and extraversion (Costa, Terracciano, & McCrae, 2001; Lameiras, & Rodriguez, 2004; McCrae, & Terracciano, 2005). The score of different factors may change during the transition from school to college (Ludtke, Trautwein, & Husemann, 2009). In adults, the mean level of different factors may change during this period and some factors may reach a peak score after the age of 40 (Rantanen, Metsapelto, Feldt, Pulkkinen, & Kokko, 2007; Specht, Egloff, & Schmukle, 2011)

These factors include the main axes of behavioral and psychological variation in people, and each factor has been associated with a number of prominent health related behaviors and outcomes which include higher levels of overall morbidity and self-rated health (Matthews, Yousfi, Schmidt-Rathjens, & Amelang, 2003; Neeleman, Sytema, & Wadsworth, 2002; Roberts, Walton, & Bogg 2005; Bogg, & Roberts, 2004). The FFM has received increased attention among clinical psychopathology researchers. Researches which have examined such models have obtained strong support for higher levels of neuroticism across mood and anxiety disorders (Weinstock, & Whisman, 2006; Bienvenu et al., 2004; Trull, & Sher, 1994) and lower levels of extraversion in social anxiety, depression, and agoraphobia (Brown, 2007; Rosellini, Lawrence, Meyer, & Brown, 2010; Weiss et al. 2009). In some researches, low conscientiousness and extraversion, and high neuroticism were risk factors for major and minor depression (Weiss et al. 2009; Hayward, Taylor, Smoski, Steffens, & Payne, 2013).

Previous studies have implicated that neuroticism, with increased levels of negative emotional states, leads to emotional disorders such as depression. However, extraversion, with reduced positive emotionality, activity levels, and

sociability, is related to depression and anxiety. Low conscientiousness also causes lack of self-control in planning and organization which leads to more severe levels of depression (Bienvenu et al., 2001; Trull, & Sher, 1994; Brown, 2007).

The prevalence of personality traits has not been assessed in the general population in Iran, and also the relation of personality traits with psychological factors may be different in various sociocultural settings. Therefore, in this study, we wanted to assess the prevalence of different personality traits and their relation with psychological factors including depression, anxiety, and psychological distress in the general population.

Methods

This was a cross-sectional study. We extracted our data from the framework of the Study on the Epidemiology of Psychological, Alimentary Health, and Nutrition (SEPAHAN), in 2013. The SEPAHAN study described the epidemiological concepts of functional gastrointestinal disorders and their association with lifestyle and psychological factors in 2010 (Adibi et al. 2012). In the SEPAHAN study, the studied population was selected from among 4 million people in 20 counties across Isfahan Province, Iran. Convenience sampling was performed by geographical region to determine the number of participants needed in each region. The participants were selected from among healthy individuals who live in Isfahan Province. The inclusion criteria were being older than 18 years of age, willing and able to comply with study procedures, and willing and able to provide a written informed consent. The exclusion criteria consisted of the presence of any serious medical or psychiatric conditions that require long-term drug consumption. All data was collected anonymously and with consideration of confidentiality. Participation in the study was completely optional and the response rate was 86.16%. The data on 4763 adults regarding demographic characteristics, personality traits, and psychological factors including depression, anxiety, and psychological distress was used.

Self-administered questionnaires were used to assess demographic data, personality traits, and psychological factors. The questionnaires were distributed among the participants at their home and workplace, they answered the questionnaires in their leisure time, and questionnaires were received as sealed envelopes. Detailed information about this survey has already been published (Hayward, Taylor, Smoski, Steffens, & Payne, 2013). To measure personality traits, the NEO Five-Factor Inventory (NEO-FFI) was used. The NEO-FFI is a 60-item self-report version of the 240-item NEO Personality Inventory-Revised (NEO-PI-R) and measures the five personality domains of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (Chapman et al., 2007b). To permit the examination of each personality domain's specific elements, item cluster subcomponents have been developed and cross-validated (Saucier, 1998; Chapman, 2015). Each domain is measured by 12 items. The items are scored based on a 5-point Likert-type scale (0-4), ranging from strongly disagree (0) to strongly agree (Chapman et al., 2007b). Scores are summed totals in each domain separately (after reversing negatively scored items) and have a range of 0-48 for each of the five personality domains. A total of 28 NEO-FFI items are reverse-worded (Chapman et al., 2007b). The forward-translation and back-translation method was used to ensure the validity of the Persian version of the NEO-FFI (World Health Organization, 2015). The reliability of of the questionnaire was assessed using Cronbach's alpha coefficient ($\alpha = 0.86$).

To evaluate depression and anxiety, the Hospital Anxiety and Depression Scale (HADS) was used. It is a brief instrument widely used to measure psychological distress. A recent review of the literature on the validity of the HADS clearly indicates that it is efficient in assessing symptom severity and case-ness of anxiety disorders and depression in primary care

patients and even in the general population. The HADS contains 14 items and consists of 2 subscales of anxiety and depression. Each item is rated on a 4-point scale, with the anxiety and depression subscales separately obtaining a maximum score of 21. Scores of 8 or more on either subscale are considered to be a significant case of psychological morbidity, and 0-7 normal (Bjelland, Dahl, Haug, & Neckelmann, 2002). The validated Persian version of HADS with alpha of 0.78 and 0.86 for anxiety and depression subscales, respectively, was used (Montazeri, Vahdaninia, Ebrahimi, & Jarvandi, 2003a).

Mental health and psychological distress were evaluated using the General Health Questionnaire (GHQ-12). The GHQ-12 is a self-administered screening instrument designed to detect current diagnosable mental disturbances such as distress. It is a 12-item questionnaire that assesses psychological distress. The scale asks whether the respondent has experienced a particular symptom or behavior recently. Each item is rated on a 4-point scale (less than usual, no more than usual, rather more than usual, or much more than usual), with the 0-0-1-1 method yielding scores between 0 and 12 (Pevalin, 2000). The validated Persian version of the GHQ-12 ($\alpha = 0.87$) was used in this study (Montazeri et al. 2003b).

The protocol of our study was approved by the Medical Research Ethics Committee of Isfahan University of Medical Sciences, Isfahan, Iran (#189069, #189082, and #189086).

Using data of the SEPAHAN study, we assessed the prevalence of different personality traits and their relation with psychological factors including depression, anxiety, and psychological distress in the general population.

Continuous variables were expressed as mean ± SD. Student's t-test was used for continuous variables and chi-square test for discrete variables. Binary logistic regression analysis was used to find the association among the personality traits and psychological variables. Odds ratios (OR) were reported with the corresponding 95% confidence intervals. We considered the subjects as high and low groups, according to the median of total score and made a dichotomous variable for each personality trait. The data were analyzed using the SPSS software (version 20, SPSS Inc., Chicago, IL, USA). All P values of less than 0.05 were considered as statistically significant.

Results

In our study, the mean score ± SD of neuroticism, extraversion, openness, agreeableness, and conscientiousness were 18.72 ± 7.87, 29.03 ± 7.08, 24.04 ± 5.28, 31.05 ± 6.37, and 36.26 ± 7.22, respectively. The mean score of neuroticism, openness, and agreeableness were significantly higher in subjects who were 40 years or older. The mean score of extraversion was higher in men, but of neuroticism, openness, and agreeableness were significantly higher in women. The mean score of openness was significantly higher in graduate and unmarried subjects (Table 1). In depressed and anxious subjects and subjects with high psychological distress, the score of neuroticism was higher, but the scores of other factors were significantly lower (Table 1).

We considered the subjects as high and low groups, according to the median of total score in each factor. The majority of subjects in high neuroticism, and high openness groups were 40 years or older. The number of men was higher in low neuroticism, low openness, low agreeableness, and high extraversion groups. The number of women was significantly higher in high neuroticism, high agreeableness, and low extraversion groups. Undergraduate subjects were significantly more in low openness and low agreeableness groups and unmarried subjects were significantly more in high openness and low conscientiousness groups (Table 2). Depressed and anxious subjects and subjects with high psychological distress were significantly more in high neuroticism, low extraversion, low openness, low agreeableness, and low conscientiousness groups (Table 2).

In univariate analysis, odds ratios showed

that in our population, a high level of neuroticism was associated with being depressed (10.76), being anxious (16.96), and having high psychological distress (10.18), respectively. In contrast, low levels on the other four traits were associated with being depressed, being anxious, and having high psychological distress (Table 3). With multivariate analysis and considering all five traits and adjusting for age, sex, educational level, and marital status, these associations were modified, but were still significant for neuroticism, extraversion and agreeableness. The association of conscientiousness remained significant only with having high psychological distress (Table 3).

Discussion

In this study, we assessed the prevalence of different personality traits and their relationship with demographic and psychological factors (depression, anxiety, and high psychological distress) in the general population.

There are many studies regarding personality traits and demographic characteristics. Age-related differences have captured attention for many years and there are differences in personality attributes (Donnellan, & Lucas, 2008). Previous studies concluded that openness, extraversion, agreeableness, and conscientiousness reach a peak score up to age 60, and the mean-level of these factors increased across 10 years from age 30 to 40 (Rantanen et al., 2007; Specht et al., 2011). The results of the present study were consistent with these studies. In our population, openness and agreeableness were significantly higher in adults of 40 years or older. Another study also found that average levels of neuroticism generally declined with age (Terracciano, McCrae, Brant, & Costa, 2005). However, contrary to the finding that neuroticism showed relative gradual decrease with age, in our study neuroticism was higher in adults of 40 years and older. This difference was not surprising, because age differences in the FFM have been identified in cross-cultural researches. McCrae et al. (1999) used samples from various cultures and found that results were different for neuroticism. It was found to be lower in older versus younger participants in Germany, Portugal, and Korea, whereas age differences were not statistically notable in Italy and Croatia. Donnellan, & Lucas found that the neuroticism factor was somewhat negatively

Table 1. Mean score of personality traits according to demographic characteristics and psychological variables

Variable		Personality trait				
		Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
Overall		18.72 ± 7.87	29.03 ± 7.08	24.04 ± 5.28	31.05 ± 6.37	36.26 ± 7.22
Demographic characteristics						
Age category (year)	≥ 40	19.28 ± 8.01*	29.12 ± 6.83	24.51 ± 4.96*	31.46 ± 5.93*	36.51 ± 6.64
	< 40	17.78 ± 7.39	28.85 ± 7.37	23.22 ± 5.62	30.46 ± 6.80	36.17 ± 7.84
Sex	Male	17.56 ± 7.54	29.88 ± 7.18*	23.67 ± 5.31	30.26 ± 6.51	36.03 ± 7.55
	Female	19.65 ± 7.99*	28.35 ± 6.93	24.33 ± 5.24*	31.67 ± 6.19*	36.44 ± 6.95
Educational level	Undergraduate	19.47 ± 7.72	28.61 ± 7.51	22.92 ± 5.39	30.14 ± 6.74	35.92 ± 7.78
	Graduate	18.18 ± 7.90	29.37 ± 6.67	24.91 ± 4.95*	31.79 ± 5.90	36.56 ± 6.66
Marital Status	Single	18.78 ± 8.17	29.10 ± 7.09	25.03 ± 5.40*	31.16 ± 6.61	36.50 ± 7.21
	Married	18.71 ± 7.79	29.04 ± 7.05	23.85 ± 5.20	31.07 ± 6.27	36.24 ± 7.17
Psychological variable						
Depression	No	16.30 ± 6.57	30.94 ± 6.10*	24.54 ± 4.83*	32.20 ± 5.62*	37.51 ± 6.22*
	Yes	25.27 ± 6.70*	25.13 ± 6.25	23.54 ± 4.94	29.11 ± 5.78	34.23 ± 6.83
Anxiety	No	17.43 ± 6.92	30.04 ± 6.40*	24.32 ± 4.86*	31.77 ± 5.71*	36.99 ± 6.41*
	Yes	27.72 ± 6.60*	24.52 ± 6.43	23.81 ± 5.04	28.45 ± 5.88	33.94 ± 6.96
Psychological distress	Low	16.69 ± 6.66	30.71 ± 6.18*	24.41 ± 4.85*	31.96 ± 5.77*	37.41 ± 6.37*
	High	26.03 ± 6.94*	24.23 ± 6.28	23.57 ± 5.30	28.97 ± 5.96	33.41 ± 6.90

All variables are presented as mean ± SD; * = P < 0.05

Table 2. Prevalence of personality traits according to demographic characteristics and psychological variables

Variable		Personality trait									
		Neuroticism		Extraversion		Openness		Agreeableness		Conscientiousness	
		Low	High	Low	High	Low	High	Low	High	Low	High
Overall		2395 (50.3)	2368 (49.7)	2386 (50.1)	2377 (49.9)	2473 (51.9)		2290 (48.1)	2324 (48.8)	2439 (51.2)	2552 (53.6)	2211 (46.4)
Demographic characteristics											
Age category (year)	≥ 40	1394 (29.3)	1480* (31.1)	1436 (30.2)	1438 (30.2)	1402 (29.4)	1472* (31.0)	1349 (28.3)	1525 (32.0)	1520 (32.0)	1354 (28.0)
	< 40	1001 (21.0)	888 (18.6)	950 (19.9)	939 (19.7)	1071 (22.5)	818 (17.1)	975 (20.5)	914 (19.2)	1032 (22.0)	857 (18.0)
Sex	Male	1173*(24.6)	933 (19.6)	910 (19.1)	1196* (25.1)	1145* (24.0)	961 (20.2)	1118* (23.5)	988 (20.7)	1140 (23.9)	966 (20.3)
	Female	1222 (25.7)	1435 (30.1)	1476 (31.0)	1181 (24.8)	1328 (27.9)	1329 (27.9)	1206 (25.3)	1451 (30.5)	1412 (29.6)	1245 (26.2)
Educational level	Undergraduate	964 (20.2)	1090* (22.9)	1031* (21.6)	955 (20.1)	1226* (25.8)	760 (15.9)	1061* (22.3)	925 (19.4)	1074 (22.5)	912 (19.1)
	Graduate	1431 (30.1)	1278 (26.8)	1355 (28.4)	1422 (29.9)	1247 (26.2)	1530 (32.1)	1263 (26.5)	1514 (31.8)	1478 (31.1)	1299 (27.3)
Marital Status	Single	438 (9.2)	436 (9.1)	439 (9.2)	435 (9.1)	391 (8.2)	483* (10.2)	428 (9.0)	446 (9.4)	439* (9.2)	435 (9.1)
	Married	1957 (41.1)	1932 (40.6)	1947 (40.9)	1942 (40.8)	2082 (43.7)	1807 (37.9)	1896 (39.8)	1993 (41.8)	2113 (44.4)	1776 (37.3)
Psychological variable											
Depression	No	2128 (44.7)	1187 (24.9)	1285 (27.0)	2030 (42.6)	1611 (33.8)	1704 (35.8)	1376 (28.9)	1939 (40.7)	1574 (33.0)	1741 (36.6)
	Yes	267 (5.6)	1181* (24.8)	1101* (23.1)	347 (7.3)	862* (18.1)	586 (12.3)	948* (19.9)	500 (10.5)	978* (20.5)	470 (9.9)
Anxiety	No	2273 (47.7)	1730 (36.3)	1792 (37.6)	2211 (46.4)	2029 (42.6)	1974 (41.5)	1789 (37.6)	2214 (46.5)	2020 (42.4)	1983 (41.6)
	Yes	122 (2.6)	638* (13.4)	594* (12.5)	166 (3.5)	444* (9.3)	316 (6.6)	535* (11.2)	225 (4.7)	532* (11.2)	228 (4.8)
Psychological distress	Low	2172 (45.6)	1389 (29.2)	1446 (30.4)	2115 (44.4)	1773 (37.2)	1788 (37.6)	1523 (32.0)	2038 (42.8)	1695 (35.6)	1866 (39.2)
	High	223 (4.7)	979* (20.5)	940* (19.7)	262 (5.5)	700* (14.7)	502 (10.5)	801* (16.8)	401 (8.4)	857* (18.0)	345 (7.2)

All variables are n (%); * = P < 0.05

Table 3. Logistic regression of psychological factors with personality traits

Variable	Depression			Anxiety			Psychological distress		
Personality trait	Univariate OR (95%CI)	Multivariate OR (95%CI)		Univariate OR (95%CI)	Multivariate OR (95%CI)		Univariate OR (95%CI)	Multivariate OR (95%CI)	
		Unadjusted	Adjusted#		Unadjusted	Adjusted		Unadjusted	Adjusted
Neuroticism	10.76* (9.09,12.74)	7.79* (6.42,9.46)	7.47* (6.14,9.08)	16.96* (12.53,22.98)	12.29* (8.72,17.30)	11.26* (7.98,15.89)	10.18* (8.43,12.30)	7.02* (5.65,8.72)	6.72* (5.40,8.36)
Extraversion	0.20* (0.17,0.23)	0.34* (0.28,0.41)	0.36* (0.30,0.44)	0.22* (0.18,0.26)	0.44* (0.34,0.55)	0.47* (0.37,0.60)	0.17* (0.14,0.20)	0.30* (0.24,0.36)	0.31* (0.25,0.38)
Openness	0.68* (0.60,0.78)	1.03 (0.88,1.22)	1.08 (0.91,1.28)	0.82* (0.70,0.97)	1.21 (0.99,1.47)	1.29 (0.95,1.59)	0.76* (0.66,0.87)	1.20 (0.98,1.43)	1.21 (0.91,1.45)
Agreeableness	0.38* (0.33,0.44)	0.80* (0.67,0.95)	0.77* (0.64,0.91)	0.34* (0.28,0.41)	0.73* (0.59,0.91)	0.69* (0.56,0.87)	0.37* (0.32,0.43)	0.81* (0.67,0.97)	0.78* (0.65,0.94)
Conscientiousness	0.44* (0.39,0.51)	1.02 (0.85,1.22)	0.98 (0.81,1.17)	0.46* (0.38,0.55)	1.01 (0.81,1.27)	0.99 (0.79,1.25)	0.35* (0.30,0.41)	0.74* (0.61,0.90)	0.73* (0.60,0.89)

= adjusted based on age category, sex, educational level, and marital status; * = P < 0.05

associated with age in British households, but somewhat positively associated with age in German households (Donnellan, & Lucas, 2008). Future work using samples from Iran and other nations is needed to examine other potential cross-national differences in the association between age and neuroticism.

In the FFM, sex-related differences are also important and combined sociocultural and biological explanations have been suggested to explain these differences in personality traits (Lippa, 2010; Schmitt, Realo, Voracek, & Allik, 2008). In our study, extraversion was higher in men, but neuroticism, openness, and agreeableness were significantly higher in women. Budaev proposed an evolutionary hypothesis that agreeableness and neuroticism together represent a single dimension with low agreeableness and neuroticism at one end and high agreeableness and neuroticism at the other. His data suggested men and women fall at opposite ends of this dimension, which is consistent with our results (Budaev, 1999). On the other hand, these differences in our study are broadly consistent with gender stereotypes. Costa et al. replicated them across 26 different nations in data comprising over 23,000 individuals (Costa et al., 2001) and McCrae, & Terracciano replicated them in observer reports of FFM traits across 50 cultures (McCrae, & Terracciano, 2005).

Educational levels can be correlated with the FFM traits. A previous study showed that scores on openness, agreeableness, and conscientiousness may increase during the transition from school to college, whereas scores on neuroticism decrease (Ludtke et al., 2009). Another study showed that adolescents with higher levels of conscientiousness faced fewer study delays (Klimstra, Luyckx, Germeijs, Meeus, & Goossens, 2012). Our results also showed that agreeableness, conscientiousness, extraversion, and openness are higher and neuroticism is lower in graduate subjects, but this difference was significant only in the openness dimension.

In Association with psychological factors, multivariate analysis (unadjusted and adjusted) showed that in our population, high level of neuroticism and low levels of agreeableness and extraversion were associated with being depressed or anxious or having high psychological distress. High level of conscientiousness was associated with having high psychological distress. Previous researches examining such models have also provided strong support for high levels of neuroticism and low levels of extraversion or conscientiousness across mood and anxiety disorders. Such studies found that depression was related to higher neuroticism and to lower extraversion and conscientiousness, and also concluded that high neuroticism and low conscientiousness and combinations of high neuroticism with low extraversion were risk factors for major depression (Weiss et al. 2009; Hayward et al. 2013). Another study also found that low conscientiousness and high openness predicted a diagnosis of major depressive disorder (MDD) during lifetime (Bienvenu et al. (2004) This is in line with the theory which has implicated higher levels of negative emotional states (i.e., high neuroticism) as prominent across the affective disorders while decreased positive emotionality, activity levels, and sociability (i.e., low extraversion) are related to depression and anxiety (Brown, 2007; Rosellini, & Brown, 2011). Some studies showed that higher level of neuroticism is related with anxiety disorders and low conscientiousness is related to diagnosis of generalized anxiety disorder during lifetime (Bienvenu et al., 2004; Rosellini et al., 2010). Moreover, lower levels of extraversion are related with situational avoidance, and possibly agoraphobia (Bienvenu et al., 2004; Rosellini et al., 2010). High conscientiousness may reflect perfectionist tendencies caused by an intolerance of uncertainty (Brown, & Barlow, 2009; Dugas, Gagnon, Ladouceur, & Freeston, 1998). Collectively, this suggests that greater

self-control in organization and planning is associated with the uncontrollability of tension and anxiety over minor matters, across the course of clinical disorders (Rosellini, & Brown, 2011).

In conclusion, in our population high level of neuroticism and low levels of agreeableness and extraversion were associated with being depressed or anxious or having high psychological distress. This is an important point for primary health care programming. It means that subjects with high level of neuroticism could be prone to developing of depression or anxiety, and thus, should be observed closely.

Our study and a few others have examined how the FFM domains predict some clinical outcomes (e.g., in depression, or anxiety without consideration of diagnosis) (Miller, 1991). Nevertheless, additional research is needed to examine longitudinal relations between the FFM and other emotional disorders. Furthermore, more studies are needed to further evaluate the exact nature of the relation between FFM domains and depressive and anxiety disorders. For example, a longitudinal study following subjects from premorbid periods through the incidence and remission of clinical disorders is suggested to clarify if specific personality traits increase the risk for psychopathology or if psychopathology changes personality. On the other hand, the relationship between combinations of psychopathology and different traits can be clarified by future studies.

Limitations

In this study, in association with psychological factors, we adjusted the results for age, sex, educational level, and marital status, but we did not check social factors which could influence psychological factors. Moreover, our study shows association between personality traits and psychological factors and does not show a causal relationship.

Conflict of Interests

Authors have no conflict of interests.

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Cross-Cultural Adaptation of the Physical Appearance Comparison Scale-Revised in Iran

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Quantitative Study

Abstract

Background: The comparison of physical appearance may play an important role in many body-related variables. The Physical Appearance Comparison Scale-Revised (PACS-R) is a recently developed instrument for measurement of physical appearance comparisons in a number of contexts. The aim of the present study was to validate the Persian version of this scale.

Methods: The scale was administered following a standard back-translation procedure. The sample consisted of 206 female university students. The Body Appreciation Scale (BAS), Life Orientation Test (LOT), Interest in Aesthetic Rhinoplasty Scale (IARS), and Body Mass Index (BMI) were used for assessment of concurrent validity. The factor structure of the scale was investigated using exploratory factor analysis (EFA). Analysis of variance (ANOVA), bivariate correlation coefficients, and one-sample t-test were used in SPSS software for statistical analysis. Effect sizes were also computed in comparisons between the Iranian sample and the American sample on which the scale was developed. Moreover, the reliability of the scale was evaluated using Cronbach's alpha.

Results: All items had adequate psychometric qualities in item analysis. The instrument was internally consistent (alpha = 0.97) and one-dimensional. It was positively correlated with BMI and interest in aesthetic rhinoplasty. Furthermore, PACS-R was inversely associated with optimism and body appreciation. Cross-cultural comparisons suggested that Iranian female participants had lower scores in physical appearance comparison.

Conclusion: The Persian version of the PACS-R is a reliable and valid psychometric scale and may be used in clinical and research settings.

Keywords: Psychometrics, Validity and reliability, Body image, Test adaptation, Physical appearance

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Introduction

A well-established theoretical ground for clear understanding of how people evaluate and appraise themselves is Festinger's social comparison theory (Festinger, 1954). Social comparison theory posits that people generally possess an innate drive to evaluate their attitudes, opinions, and abilities. Broadly, individuals tend to perform self-evaluation based on objective sets of standards; however, the theory suggests that when such information is not present, people do so based on drawing comparisons with similar others. The social comparison theory has been shown to be an

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effective theory for the better understanding of individuals' way of gaining self-knowledge in a large number of aspects. This strength has led some researchers to conclude that social comparison may be one of the most important processes in acquiring self-knowledge (Wood, 1989; Buunk, & Gibbons, 2007).

Historically, the theory solely addressed comparisons of opinions and abilities. Yet, it has recently been generalized to incorporate personal attributes such as physical appearance (Thompson, Heinberg, Altabe, & Tantleff-Dunn, 1999; Schachter, 1959; Strahan, Wilson, Cressman, & Buote, 2006; Myers, & Crowther, 2009; Bailey, & Ricciardelli, 2010). Several studies have shown significant relations between men's tendency to engage in appearance comparisons and self-esteem, anxiety, drive for muscularity, sexual satisfaction, obligatory exercise, and body dysmorphic disorder (BDD) symptoms (Boroughs, Krawczyk, & Thompson, 2010; Cash, & Smolak, 2012; Smolak, & Stein, 2006; McCreary, & Saucier, 2009; Davison, & McCabe, 2005). This may result in eating pathology (Stice, 2002; Van den Berg, Thompson, Obremski-Brandon, & Coovert, 2002; Pinkasavage, Arigo, & Schumacher, 2015; Brechan, & Kvalem, 2015; Fardouly, Diedrichs, Vartanian, & Halliwell, 2015a; Dakanalis et al. 2015), demanding cosmetic surgeries (Sarwer, Wadden, Pertschuk, & Whitaker, 1998; Frederick, Lever, & Peplau, 2007), self-objectification (Fardouly, Diedrichs, Vartanian, & Halliwell, 2015b), depression (Nesi, & Prinstein, 2015), and etc. Moreover, findings indicate that men engage in appearance-related comparisons to a lesser degree compared to their female counterparts (Davison, & McCabe, 2006; Jones, Vigfusdottir, & Lee, 2004). Gender moderates this relationship, with women showing a stronger relationship between appearance comparison and body dissatisfaction in comparison with men. The research literature proposes the existence of the detrimental role of physical comparison in men's and women's mental health and body-related variables.

Thus far, several psychometric scales have been developed in order to measure individuals' interest in engaging in appearance comparisons; however, each of these instruments has demonstrated at least a few limitations. The Body Comparison Scale (BCS) (Thompson, Coovert, & Stormer, 1999) is a 25-item instrument which measures the desire for comparing one's specific body parts. Nevertheless, this scale is limited in addressing a direct comparison of one's weight or adiposity. This is a shortcoming of this psychometric instrument, considering that weight and thinness are two important facets of appearance which are crucial to body image (Dunn, Lewis, & Patrick, 2010; Striegel-Moore, & Franko, 2002). Moreover, the context of the comparison is also unclear in this scale. Another set of scales were developed in order to measure the tendency for engaging in downward and upward comparisons (O'Brien et al., 2009). These scales are limited in that they cannot assess lateral comparisons. The Body, Eating, and Exercise Comparison Orientation Measure (BEECOM) is also limited in its use among female participants (Fitzsimmons-Craft, Bardone-Cone, & Harney, 2012).

The Physical Appearance Comparison Scale (PACS) is probably the most widely used instrument for measuring appearance comparison; however, it has sometimes suffered from psychometric insufficiency (Davison, & McCabe, 2005; Keery, van den Berg, & Thompson, 2004). In addition to psychometric issues, the scale was recently found to have important theoretical issues. More recent research has shown that body image concerns differ between men and women (Thompson, & Cafri, 2007; Ahern, & Hetherington, 2006). Comparisons of shape and weight were not incorporated into the PACS which may be considered as another limitation in view of the aforementioned gender differences. The PACS may be considered as limited as it only addresses comparisons which occur in "social situations" or at "parties or social

events". This limited range of contexts precludes a psychometrically sound assessment of appearance comparisons which may take place during a typical day (Leahey, Crowther, & Mickelson, 2007).

A recent study revised the PACS as a widely utilized psychometric scale of appearance comparison in order to address a number of limitations in the original version of PACS (Schaefer, & Thompson, 2014). Thus, the Physical Appearance Comparison Scale-Revised (PACS-R) was development and validated. In this revised version, the psychometric characteristics of the instrument were specifically improved to examine different facets of appearance that might be the basis of comparison for genders, and to practically include a broad range of contexts for appearance-related comparisons. The PACS-R is a valid and reliable measure of appearance comparisons and may be used in clinical and research settings.

The current study aimed to investigate the psychometric properties of the Persian version of the PACS-R in Iran. The availability of a valid and reliable Persian version of the PACS-R would provide Iranian researchers and clinicians with a recently developed measure of physical appearance comparisons. It would also improve the possibility of using the PACS-R in cross-cultural studies. Moreover, there has been a rise in the number of studies on body image and related topics such as cosmetic surgery in Iran (e.g. Alipour, Farhangi, Dehghan, & Alipour, 2015; Bagheri, & Mazaheri, 2015; Shahidi, & Jannesari, 2015; Donyavi, Rabiei, Nikfarjam, & Nezhady, 2015; Khazir, Dehdari, & Mahmoodi, 2014; Naragh,i & Atari, 2015a; Zojaji, Arshadi, Keshavarz, Farsibaf, Golzari, & Khorashadizadeh, 2014; Naraghi & Atari, 2015b; Mohammadshahi, Pourreza, Orojlo, Mahmoodi, & Akbari, 2014). Additionally, replicating research findings across different cultures and countries requires the utilization of psychometric instruments for which satisfactory psychometric characteristics have been showed.

Methods

Since the scale developers (Schaefer, & Thompson, 2014) used an all-female sample, the same was done in this study and a sample of 206 female students was recruited from the University of Tehran in the capital of Iran. Tehran may be considered as the cultural, economic, and political center of Iran. Participants ranged in age from 18 to 50 years (mean ± SD = 25.2 ± 3.7) and in BMI from 15.78 to 33.20 (mean ± SD = 21.7 ± 2.9).

PACS-R. An 11-item revised version of the PACS (Schaefer, & Thompson, 2014) was used in this study. The questions were scored based on a 5-point Likert scale ranging from "never" to "always". This one-dimensional scale measures the frequency of an individual's comparison of his/her physical appearance with others in different places. For the purposes of the current study, the PACS-R was translated into Persian, the official language of Iran, using the standard back-translation procedure. Two professional translators initially translated the PACS-R into Persian and a third translator then translated all items back into English. The differences between translation and back-translation were settled by authors.

BAS. Participants completed the Body Appreciation Scale (BAS) (Avalos, Tylka, & Wood-Barcalow, 2005), a 13-item measure of positive body image. Items were rated on a 5-point Likert scale ranging from never to always (1 = never, 5 = always). A recent study examined the factor structure and psychometric properties of the Persian version of the BAS and concluded that only 10 items of the scale had psychometric adequacy in Iranian context (Atari, Akbari-Zardkhaneh, Mohammadi, & Soufiabadi, 2015). The 10-item version of this scale was used in this study. The alpha coefficient of the 10-item BAS was 0.92 in this study.

LOT. The Life Orientation Test (LOT) was developed (Carver, Scheier, & Weintraub, 1989) in order to measure individual differences in generalized optimism versus pessimism. The

LOT is an 8-item test; 4 items are positively worded and 4 others are negatively worded. Response options are provided based on a 4-point Likert scale ranging from 1 to 4. Adequate psychometric properties of the LOT have been reported in Iranian samples (Hasanshahi, 2002). Internal consistency coefficient of the scale was 0.61 in the present study.

IARS. The Interest in Aesthetic Rhinoplasty Scale (IARS) is an 8-item scale developed by Naraghi and Atari (2015c) to measure interest in aesthetic rhinoplasty as the most popular cosmetic surgery in Iran (Lenehan, 2011; Motakef, Motakef, Chung, Ingargiola, & Rodriguez-Feliz, 2014). Response options were provided based on a 4-point Likert scale ranging from "completely disagree" to "completely agree". The IARS showed high internal consistency in the current study ($\alpha = 0.92$).

Demographics. Participants self-reported their demographic details consisting of age, sex, weight, height, and television viewing hours per day. Weight and height were used to calculate the participants' BMI. Moreover, TV viewing hours was considered a measure of media consumption.

Participants were selected using an accidental sampling method from the university's public locations such as library, dining hall, dormitory, conference room, and classrooms. Verbal informed consent was obtained from each participant, and then, a paper-and-pencil survey was administered. Surveys were treated anonymously, and respondents were debriefed on the study once they had provided their answers. No remuneration was given to the participants.

In order to examine the factor structure of the Persian version of the PACS-R, a principal-axis exploratory factor analysis (EFA) with quartimax rotation was performed as only one factor was expected (Pedhazur, & Schmelkin, 1991) based on the theoretical background of the instrument (Schaefer, & Thompson, 2014). The number of factors to be extracted in EFA was determined by factor eigenvalues above 1.0 (EGV1 procedure) and also based on the scree plot (Cattell, 1966). To examine between-group differences in factor scores, analysis of variance (ANOVA) and independent t-test were used. Furthermore, bivariate correlations between PACS-R and related scales were computed for concurrent validity assessment.

Results

Item analysis

Prior to EFA, an item analysis was conducted. Different indices of each item are presented in table 1.

Factor structure

The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.953. Moreover, Bartlett's statistical test was significant ($P < 0.001$). Therefore, the data matrix was factorable. Scree plot suggested the extraction of one factor with an eigenvalue of 7.905 accounting for 71.86% of the total variance. Loadings ranged between 0.728 (item 11) and 0.907 (item 8).

Concurrent validity

The Pearson correlation coefficients between PACS-R and related instruments were calculated to evaluate the concurrent validity of the Persian version of the PACS-R. Results are presented in table 2.

Cross-cultural differences

Every item of the scale was compared with the same item in the study which developed the PACS-R in the United States (Schaefer, & Thompson, 2014). Comparisons are summarized in table 3. Since both studies used all-female samples, gender differences did not affect the comparisons.

Reliability

The internal consistency of the scale was assessed using Cronbach's alpha coefficient. The Cronbach's alpha of the scale was 0.97.

Table 1. Descriptive statistics and corrected item-total correlations for Physical Appearance Comparison Scale-Revised (PACS-R) items

Item no.	Item	Mean ± SD	Range	Skewness SE	Kurtosis SE	Corrected ITC	Alpha if item deleted
1	When I am out in public, I compare my physical appearance to the appearance of others.	1.72 ± 1.029	0-4	0.169	0.337	0.716	0.965
2	When I meet a new person (same sex), I compare my body size to his/her body size.	1.44 ± 1.119	0-4	0.169	0.337	0.848	0.961
3	When I am at work or school, I compare my body shape to the body shape of others.	1.36 ± 1.121	0-4	0.169	0.337	0.882	0.959
4	When I am out in public, I compare my body fat to the body fat of others.	1.08 ± 1.117	0-4	0.170	0.338	0.865	0.960
5	When I am shopping for clothes, I compare my weight to the weight of others.	1.31 ± 1.237	0-4	0.170	0.338	0.825	0.961
6	When I'm at a party, I compare my body shape to the body shape of others.	1.78 ± 1.121	0-4	0.169	0.337	0.862	0.960
7	When I am with a group of friends, I compare my weight to the weight of others.	1.52 ± 1.112	0-4	0.169	0.337	0.851	0.960
8	When I am out in public, I compare my body size to the body size of others.	1.32 ± 1.145	0-4	0.169	0.337	0.888	0.959
9	When I am with a group of friends, I compare my body size to the body size of others.	1.52 ± 1.112	0-4	0.169	0.337	0.876	0.960
10	When I am eating in a restaurant, I compare my body fat to the body fat of others.	0.94 ± 1.067	0-4	0.170	0.339	0.795	0.962
11	When I am at the gym, I compare my physical appearance to the appearance of others.	2.10 ± 1.234	0-4	0.169	0.337	0.715	0.965

SD**:** Standard deviation; SE: Standard error; ITC: Item total correlation

Table 2. Pearson correlations for study variables

	PACS-R	Optimism	BAS	IARS	BMI	TV
PACS-R	1					
Optimism	-0.234**	1				
BAS	-0.456**	0.358**	1			
IARS	0.368**	-0.057	-0.175*	1		
BMI	0.279**	-0.028	-0.330**	-0.024	1	
TV	0.057	0.033	-0.063	-0.013	-0.019	1
Age	-0.060	0.093	0.073	-0.079	0.243**	0.094

PACS-R: Physical Appearance Comparison Scale-Revised; BAS: Body Appreciation Scale; IARS: Interest in Aesthetic Rhinoplasty Scale; BMI: Body mass index

* P < 0.05; ** P < 0.01

Table 3. Comparison of items' means between Iranian and American samples

Item no.	American (mean ± SD)	Iranian (mean ± SD)	One-sample t-test	Effect size
1	2.45 ± 1.08	1.72 ± 1.03	10.13*	0.71
2	2.30 ± 1.14	1.44 ± 1.12	11.01*	0.77
3	2.32 ± 1.12	1.36 ± 1.12	12.31*	0.86
4	2.16 ± 1.18	1.08 ± 1.12	13.86*	0.96
5	2.13 ± 1.24	1.31 ± 1.24	9.46*	0.66
6	2.33 ± 1.19	1.78 ± 1.12	7.08*	0.49
7	2.22 ± 1.18	1.52 ± 1.11	8.98*	0.63
8	2.21 ± 1.15	1.32 ± 1.15	11.15*	0.77
9	2.22 ± 1.17	1.52 ± 1.11	8.98*	0.63
10	1.86 ± 1.26	0.94 ± 1.08	12.29*	0.85
11	2.40 ± 1.20	2.10 ± 1.23	3.52*	0.24
Total	2.24 ± 1.03	1.46 ± 0.98	11.34*	0.80

SD: Standard deviation; *P < 0.01

Discussion

The primary objective of the present study was to examine validity and reliability of the PACS-R in an Iranian context. Item analysis, EFA, reliability evaluation, and correlational analyses were performed in order to check different aspects of the validity and reliability of the scale. Moreover, a preliminary cross-cultural comparison was performed for all 11 items and total scores between American and Iranian samples.

Item analysis indicated that all items initially had the required properties for a psychometric scale. Item 8 had the highest item-scale correlation coefficient (r = 0.888, P < 0.01), while item 11 had the lowest correlation coefficient (r = 0.715, P < 0.01). The lowest mean belonged to item 10 (pertaining to physical appearance comparison in a restaurant), and item 11 (pertaining to physical appearance comparison in a gym) had the highest mean. Findings of this part are consistent with the general view of physical appearance comparisons and results from the American sample based on which the instrument was developed.

EFA suggested that one general factor (physical appearance comparison) was conceptually underlying the whole scale. Results of the factor structure of PACS-R are consistent with previously found factor structure of PACS-R in the United States. PACS-R had a very high reliability coefficient which, surprisingly, was exactly the same as in the original paper (Schaefer & Thompson, 2014).

PACS-R was endorsed for concurrent validity in the current Iranian sample as it was significantly correlated with the expected variables. PACS-R was significantly correlated with BMI. Physical appearance comparison was also significantly associated with interest in aesthetic rhinoplasty as the most popular cosmetic surgery in Iran. This finding is consistent with previously reported data, that is, high interest in cosmetic surgery among female undergraduates is strongly and negatively correlated with positive body image (Swami, 2009; Sarwer, Cash, Magee, Williams, Thompson, Roehrig, & Romanofski, 2005). Moreover, PACS-R was strongly and inversely correlated with body appreciation and optimism. Consequently, those who compare their physical appearance more often are less likely to have optimistic attitudes toward their body.

The preliminary cross-cultural comparisons indicated that Iranian college students had lower scores in all items of PACS-R compared to the American college students. While, the cross-cultural differences between Iran and western societies require more complex methodology (Soh, Touyz, & Surgenor, 2006), the findings of the present study may serve as initial results in this concern. A study on Iranian women living inside Iran and in the United States reported that, despite the fact that Western media has

been banned in Iran since the Islamic revolution in 1978, there were comparatively few differences in eating pathology between the two groups (Abdollahi, & Mann, 2001). Women who lived in Iran at the time were more likely to exercise vigorously to control their weight or body shape and were more interested in keeping an empty stomach (Abdollahi, & Mann, 2001). Furthermore, a study in 1998 reported Iran as having no access to western media and hypothesized that lack of access to high-standard-setting western media would result in higher body esteem among Iranians (Akiba, 1998). This hypothesis was accepted by a cross-cultural research on a small group of participants from Iran and the U.S. However, it seems that such hypotheses could no longer apply to the present social condition of Iran, as western media are largely consumed in the Iranian society today. In addition, there was a statistically insignificant positive correlation between TV viewing and physical appearance comparisons in this study. Nevertheless, the present findings are consistent with the notion that Iranian participants score higher in positive body-related variables. It seems that individuals compare their physical appearance less when in a restaurant in both cultures. Though, gyms are found to be places in which the highest rate of physical comparison is seen. While a considerable difference was observed between item 11 (comparison in gym) and other items in the Iranian sample, the American sample did not show such a difference.

The present study has several limitations. First, the current study used a female sample. Since women engage in appearance comparisons to a higher extent and women's comparisons are more closely associated with body dissatisfaction (Myers, & Crowther, 2009; Jones, et al. 2004), gender differences in physical appearance comparisons should be addressed in future researches. Additionally, the present sample of participants was recruited from a university setting and consisted of females mostly from Tehran who were between the ages of 22 to 28. Third, the 40-item version of the instrument was not incorporated into this study. Despite these limitations, the current study provided evidence that the Persian version of the PACS-R has sound psychometric properties. Therefore, it can be confidently used as a reliable and valid instrument in clinical and research settings.

Conflict of Interests

Authors have no conflict of interests.

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A Study on the Effect of Self-Review Method on Women's Happiness

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Quantitative Study

Abstract

Background: The present study was conducted with the aim to investigate the effectiveness of self-review technique on women's happiness.

Methods: This experimental study was conducted with a pre-test and post-test and a control group. The Oxford Happiness Inventory (OHI) was used to measure the dependent variable. In order to implement the research project, 22 individuals were randomly assigned to the control and experimental groups in the pre-test phase based on acquisition of the lowest happiness scores. The 8-session self-review single intervention was presented to the experimental group. Repeated measures ANOVA was used in order to analyze the data.

Results: The research findings indicated that the rate of happiness of individuals in the experimental group had significantly increased in the post-test and even follow-up stages ($P < 0.01$).

Conclusion: In conclusion, the self-review method can be considered as a positive activity-based intervention.

Keywords: Self-review, Positive activity-based interventions, Happiness

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Introduction

Happiness is considered as a central criterion for mental health (Taylor, & Brown, 1988). Moreover, it is associated with many concrete benefits such as increased physical health, decreased psychological injuries, increased compatibility skills, and even increased longevity (Lyubomirsky, King, & Diener, 2003). Previous research have provided evidences of other benefits of positive emotion and happiness; sociability, better health status, success, self-regulation, and adjuvant activity (Boniwel, 2012). Happiness is pursued by the majority of people all over the world (Diener, 2000) and many people are searching for ways to make themselves happy (Bergsma, 2008). Therefore, it is not astonishing that being happy and having a complete life has been the subject contemplated by philosophers and enthusiasts over the years (Kesebir and Diener, 2008). Nevertheless, most of the studies carried out by psychologists in the twentieth century have

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focused on disorders such as depression, anxiety, and affective disorders rather than positive emotions such as happiness and well-being. The motivation for psychological studies has been to investigate mental illnesses and very few researches have been devoted to this category. However, it seems that happiness studies have increased significantly in recent years (Chamorro-premuzic, Bennett, & Furnham, 2007).

Lyubomirsky, Sheldon, and Schkade (2005) stated that three main factors play a role in individuals' level of happiness; happiness fixed point, living conditions, and goal-oriented activities. Happiness fixed point is the constant level of happiness which has been determined genetically and explains 50% of the difference variance in individuals' happiness. Living conditions consist of factors such as income, marital status, and religiosity which explain 10% of the difference variance in individuals' happiness. Goal-oriented activities are positive cognitive and behavioral activities that approximately explain 40% of the difference variance in individuals' happiness (Sheldon, & Lyubomirsky, 2007). It seems that increase in an individual's happiness fixed point and changes in their living environment are not useful methods for a sustainable increase in their happiness (Lyubomirsky et al., 2005; Layous, & Lyubomirsky, 2012). Therefore, performing goal-oriented activities is probably one of the best and most possible ways to increase happiness.

Positive activity interventions which include simple cognitive and behavioral strategies that are performed by the individual and have been designed to display thoughts and behaviors of normal, happy individuals, in turn, increase individuals' happiness (Layous, & Lyubomirsky, 2012). A number of positive activity interventions have shown their effectiveness in increasing happiness and reducing negative symptoms in randomized controlled interventions. These interventions include writing of words of gratitude (Layous, & Lyubomirsky, 2011; Lyubomirsky, Dickerhoof, Boehm, & Sheldon, 2011), calculation of an individual's blessings (Chancellor, & Lyubomirsky, 2012, Froh, Sefick, & Emmons, 2008), practicing of optimism (Lyubomirsky et al., 2011; Boehm, Lyubomirsky, & Sheldon, 2011), performance of acts of kindness (Della Porta, & Lyubomirsky, 2012), embodiment of a bright future (Boehm et al., 2011), and efforts for a significant target (Snyder, & Omoto, 2001). The main goals of positive activity interventions (PAIs) are the invention of procedures for successful increasing of happiness, discovering the how and why of the effectiveness of these activities in increasing happiness, and identifying the optimal conditions for happiness (Nelson, & Lyubomirsky, 2012).

The self-review method, which is fundamentally a cognitive restructuring method, familiarizes individuals with perceptions, thoughts, and feelings in relation to the self and replaces their negative perceptions, thoughts, and feelings with positive perceptions, thoughts, and feelings. This replacement leads to a change in individuals' thoughts in relation to the self and phenomena and causes emotional change in individuals (Pourhosein, 2010). Additionally, the more the individual is conscious of his/her internal and external features as well as self as a unified whole, the more appropriate his view and understanding of internal and external realities. Therefore, this consciousness of the whole self, along with organism form elements, has a direct significant correlation with a healthy human personality.

In general, the following theoretical and practical steps are traversed in the self-review therapy method:

1. Self-description
2. Self-review for self-consciousness
3. Recognition of negative thoughts
4. Reflection of the positive and negative thoughts to the individual

5 Reduction of psychic energy caused by negative thoughts using reflection technique

6. Substitution of positive thoughts for negative thoughts through assignment and reduction of negative thoughts generalization (performed through continuing sentences with the word "instead")

7. Keeping track of the previous steps (Pourhosein, 2010)

Regarding the self-review implementation method, we realize that simultaneously to the use of cognitive techniques to reduce cognitive errors such as overgeneralization, selective perception, over responsibility, self-reference, and biconceptual thinking in this method, the individual performs positive cognitive activity. In other words, the individual is trying to observe not only her/his negative features, but actively strives to seek out positive features and review her/his attributes, both positive and negative. In this method, the individual is asked to substitute one of his/her negative features with a positive feature using the word "instead" when he/she states that negative feature. In other words, the individual learns to pay attention to both negative traits and positive traits. Simultaneous and active attention to positive attributes fosters the individual's mind orientation for focusing on the positive attributes and this activity strengthens mind orientation toward positive cognitive activities. Furthermore, it transfers cognitive orientation from paying attention to negative features to paying attention to positive features. Thus, given that the self-review method is a positive intentional and active interventional activity to change attitude, it is expected to increase happiness.

Most of the researches conducted on self-review method have tried to investigate the effectiveness of this therapy method on the reduction of negative emotions such as depression and anxiety (Pourhosein, & Saberi, 2009). Moreover, its effectiveness on reducing depression and negative emotions has been confirmed. However, no research has been carried out concerning the effectiveness of this method on enhancing positive emotions. Therefore, the main objective of this study was to investigate the effectiveness of self-review as an educational method on women's happiness.

Methods

(A) Research design: Since the main goal of this research was the investigation of the effect of self-review on women's happiness, the full-experimental design with pretest-posttest and two experimental and control groups was utilized in the present study.

(B) Statistical population, the sample groups, and the process of implementing the research: The statistical population consisted of all women in Tehran, Iran, in 2013. For the selection of samples, some of the women were invited to participate in the research via available sampling and through announcements. Following this notification, 68 volunteers were entered into the study. Then, the Oxford Happiness Inventory (OHI) was distributed among and completed by the subjects.

Based on the acquisition of the lowest scores in happiness, 44 individuals had the inclusion criteria. Thus, 22 subjects were randomly assigned to the experimental group and 22 individuals to the control group. The inclusion criteria were a happiness score one standard deviation lower than the average (equivalent to score 33), being a women, and willingness to participate in the research and presence in treatment sessions.

(C) Measurement tool: In this study, the OHI was used to measure subjects' happiness. The OHI (Argyle, Martin, & Crossland, 1989), as a widespread personal happiness measurement tool, was invented mainly for domestic use in the late 1980s in the experimental psychology department of Oxford University. The scale and some its features were developed by Argyle, Martin, and Lu (1995). Today, the inventory is widely used in researches related to happiness. In the Beck's Depression Inventory (Beck, Ward, Mendelson, Hock, & Erbaugh, 1961), was designed based on the Oxford Happiness Inventory; 20 items related to happiness were

reversed. Other items were added to these items and 29 items were placed on the final scale in order to cover other aspects of happiness. Each item is scored on a 4-point Likert scale ranging from 0 to 3. Robbins, Francis, and Edwards (2010) reported a Cronbach's alpha or internal consistency equal to 0.92. Additionally, Hills, and Argyle (2001) reported a reliability of 0.91 and internal consistency ranging between 0.4 and 0.65.

Sabet and Lotfi Kashani (2010) conducted a study on 500 students for the normalization of the OHI. The results showed that the alpha coefficient for 29 items was equal to 0.9 and reliability coefficient of the inventory using Cronbach's alpha was equal to 0.88 and 0.91 for groups of boys and girls, respectively. The validity of the inventory was evaluated through construct validity and was found to be acceptable. The factor analysis also shows that the factor analysis of the inventory stresses on the existence of a factor in measurement. Additionally, in another study by Abedi, Mirshah jafari, and Liaghatdar (2006) conducted on 727 students to standardize the OHI, the results showed that the OHI had an appropriate reliability and validity. Its internal consistency, using Cronbach's alpha, was calculated as equal to 0.85. The reliability of the inventory was also calculated as equal to 0.79 and 0.78 using the Spearman-Brown prediction formula and Gutmann method, respectively. In this study, the mean ± standard deviation of happiness was 4.44 ± 3.13.

The implementation method: After completion of the OHI in the pretest stage, participants whose happiness score was one standard deviation below the mean value (equivalent to 33) were selected as members of the sample group. Accordingly, 22 individuals were randomly assigned to the experimental group and 22 individuals to the control group. The members of the experimental group received 8 weekly therapeutic sessions lasting 1 hour. The OHI was again completed after the treatment sessions as posttest and 5 months later as follow-up by both experimental and control group participants at Tehran University.

Results

In this study, the basic hypothesis of the self-review therapeutic method increases happiness in the experimental group was investigated. In the final analysis, 19 subjects were present in the experimental group and 18 subjects in the control group. The withdrawal of individuals from the study was because of personal problems. The indicators related to the age of the experimental and control group participants are presented in table 1.

Independent t-test showed a significant difference in relation to mean age of participants between the experimental and control groups (t = 0.72). The repeated measures ANOVA test was used to investigate the main hypothesis of the study. Using this test requires the establishing of two conditions, namely non-significance of Mauchly's sphericity test and homogeneity of covariance.

Mauchly's sphericity test results showed that the research data in this scale had single exponential distribution and a multivariate normal distribution (w Mauchly = 0.90, χ^2 = 12.25, and df = 2). Covariance test results also revealed the homogeneity of covariance (M-Box = 8.92, F = 1.34, df_1 = 6, df_2 = 8.79, P > 0.05). Table 2 shows ANOVA results between the main factors and the interaction between them.

Table 1. Indicators related to the age of individuals in experiments and control groups

Group	n	Mean ± SD	Maximum	Minimum
Experiment	19	25.63 ± 4.63	32	18
Control	18	26.88 ± 5.91	40	20
Total	37	26.24 ± 5.26	40	18

SD: Standard deviation

Table 2. ANOVA of main and interactive factors in happiness

Factor / Index	Wilks's Lambda Index	df	P	Test power
Within-subjects	0.34	2	0.001	1.00
The interaction between the within-subject factor and between-subject factor	0.26	2	0.001	1.00
Group	F index 29	1	0.001	0.99

df: Degree of freedom

Table 3. The results of contrast between the pretest-posttest, posttest-follow-up, and pretest-follow-up scores of the happiness scale

Source	Time	Total squares	df	Mean squares	F	P	Test power
Within-subject	Pretest-posttest	365.97	1	365.97	27.83	0.001	1.00
	Posttest-follow-up	1.00	1	1.00	0.127	0.72	0.05
	Pretest-follow-up	2751.84	1	2751.84	61.93	0.001	1.00
Interactive	Pretest-posttest	2480.14	1	2480.14	180.87	0.001	1.00
Factor	Posttest-follow-up	0.46	1	0.46	0.59	0.81	0.33
	Pretest-follow-up	4307.62	1	4307.62	96.94	0.001	1.00

df: Degree of freedom

The MANOVA table with regard to Wilks's Lambda Index showed that the MANOVA for intragroup factor (time) and the interaction between group and time was significant. Additionally, the group effect was also significant (F = 29), demonstrating the difference between the scores of experimental and control groups. The significance of within-subjects factor (time) means that there is a significant difference between scores of individuals' happiness at pretest, posttest, and follow-up. Additionally, the significance of interaction effects of group and time means that there is a significant difference between the experimental and control groups during that time period. The contrast tests related to repeated measures and the repeated and simple options were used for further investigation of the differences observed in the interaction between time and group. The results of the analysis are illustrated in table 3.

The results in relation to interaction effect of time and group show that the difference between pretest and posttest in both experimental and control groups is significant. This means that the increase in mean happiness scores in the experimental group (pretest = 26.21 and posttest = 44.00) was significant compared to the control group (pretest = 28.72 and posttest = 28.22). This significant increase can be relevant to the independent variable (self-review therapeutic method). Non-significance of differences observed in follow-up (experiment = 45.63 and control = 26.55) means that the increase in happiness score in the experimental group has persisted until follow-up. Moreover, regarding the persistence of the therapeutic effect until follow-up, the results concerning the significance of interactive effect of time and group indicate that in the pretest-follow-up comparison the difference between control and experimental groups was significant. The increase in the mean happiness scores in the experimental group (pretest = 26.21 and follow-up = 45.63), compared to control group scores (pretest = 28.72 and follow-up = 26.55), was significant. This significant increase during the time from pretest to follow-up can be relevant to the independent variable (self-review therapeutic method). The process of change in happiness scores at pretest, posttest, and follow-up in both experimental and control groups is depicted in figure 1.

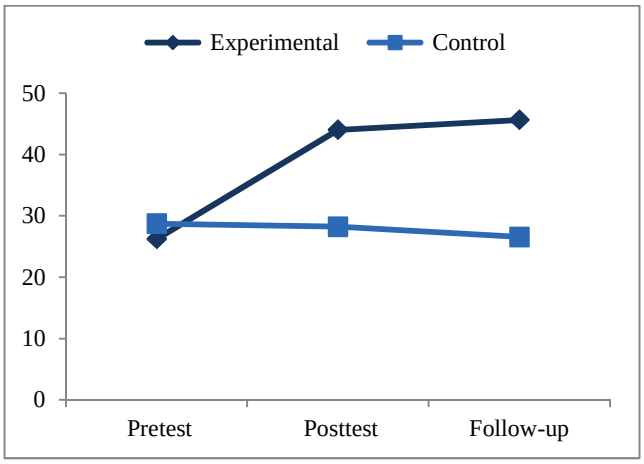

Figure 1. The process of change in happiness scores in the experimental and control groups at pretest, posttest, and follow-up

Discussion

The findings of this study showed a significant increase in individuals' happiness in the experimental group in comparison to the control group. A 5-month follow-up of individuals' happiness revealed that the effectiveness of this method has persisted during this time. This method improved positive emotions and reduced negative emotions through voluntary effort, orientation toward positivism, and the reduction of valuation of negative events. This intervention was presented on the premise that reduced attention to and valuation of negative characteristics and increased attention to and valuation of positive attributes (positive cognitive activity) leads to increased happiness. Various researches have shown that paying attention to the key features of self (Brown, & Kobayashi, 2002) and the calculation of assets or blessings as a positive cognitive activity (Chancellor, & Lyubomirsky, 2012, Froh et al., 2008) leads to increased happiness. In the self-review method, the individual is asked to write a positive feature in continuation of any of the features that are perceived to be negative and review these positive features. This process is paying attention to positive features and a kind of positive cognitive activity leading to increased happiness. Additionally, capitalizing on negative characteristics is reduced through correction of cognitive errors, decreased generalization, and normalization, which eventually result in the enhancing of an individual's feelings.

Positive activities, emotions, behaviors, and thoughts increase positive behaviors and satisfaction of needs and all of these, in turn, increase happiness (Lyubomirsky, & Layos, 2013). In the study by Lyubomirsky and Layos (2013), positive activity of self-review in the experimental group led to increased happiness. Several factors can contribute to the effectiveness of this approach on a significant increase in happiness. These factors may include participants' interest and motivation, and intensity and duration of these positive activities that will be discussed in the following section.

The existence of several characteristics in a person may increase the effectiveness of this method. For example, those who enter into treatment with an extra incentive, report more happiness (Deci, & Rian, 2000; Lyubomirsky et al., 2011). Additionally, those who perform the exercises actively and diligently report more happiness (Lyubomirsky et al., 2011). The subjects participated in this study voluntarily, so it is likely that they had entered this study with interest and motivation. Furthermore, keeping track of home exercises per session may also have been effective on the effectiveness of this method through regular cognitive exercises.

Features of positive activities —including their dosage, variety, sequence, and built-in social support— all influence success in increasing happiness. For example, as with any medical or psychological treatment, the dosage (i.e., frequency and timing) of a positive activity matters. In one study, performing 5 kind acts in 1 day each week (for 6 weeks) resulted in more significant increases in wellbeing than did performing 5 kind acts throughout the week (Lyubomirsky et al., 2005). However, positive activities can easily be performed too often. For example, in another study, the calculation of

blessings three times a week had less impact on increasing happiness than once a week (Lyubomirsky et al., 2005). What is interesting is that both studies suggested that positive activities performed once a week are maximally effective, possibly because many cultural routines (involving work, worship, and even television) are conducted weekly (Lyubomirsky and Layous, 2013). The participants in the present study were participating in individual weekly sessions. In these sessions, cognitive activities performed at home were investigated and appropriate feedback was provided. The possibility exists that in accordance with several studies (Lyubomirsky et al., 2005; Lyubomirsky, & Layos, 2013; Boehm, & Lyubomirsky, 2009), the weekly performance of exercises may have a prominent role in the significant increase of happiness. The impact of the duration of activities in the increase in happiness also requires attention. The individuals should not overregulate this activity or perform it in small pieces, but in order to achieve maximum benefit from activities they must perform all of them occasionally. Finally, the increase in happiness necessitates change in a person's activity. In order to maintain the flow of novel positive experiences, one must continually adjust and alter factors such as when, how, where, and with whom one does the activity, thereby, forestalling the effects of hedonic adaptation. These include when, how, where, and with whom to perform the activity (Sheldon & Lyubomirsky, 2007).

Sheldon and Lyubomirsky (2007) argue that the pursuit of happiness requires effort, in other words, deliberate actions. Fortunately, positive activities include those that feel like playing. This activity is more effective when it is appropriate to an individual's durable incentives, tasks, and interests. As a result, the activity is continuously stimulating and the possibility of its continuation increases. Increased happiness may require awareness of happiness, confirmation of its effectiveness, and determination of the purpose of the activity which increases happiness. If people do not want to be happy, do not believe in the effectiveness of these activities, and be reluctance to invest in this conspectus, change in happiness is unlikely. However, over-focusing on the effects of happiness-enhancing activities may also have negative effects.

It seems that there is a need to pursue happiness and strive to achieve it in order to achieve happiness. Sheldon and Lyubomirsky (2006) stated that effort is needed in order to maintain long-term interest in pleasurable activities. Therefore, it seems that enabling individuals to perform cognitive, behavioral, and positive goal-oriented activities leads to more happiness. Thus, it can be concluded that happiness must be sought.

Conflict of Interests

Authors have no conflict of interests.

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