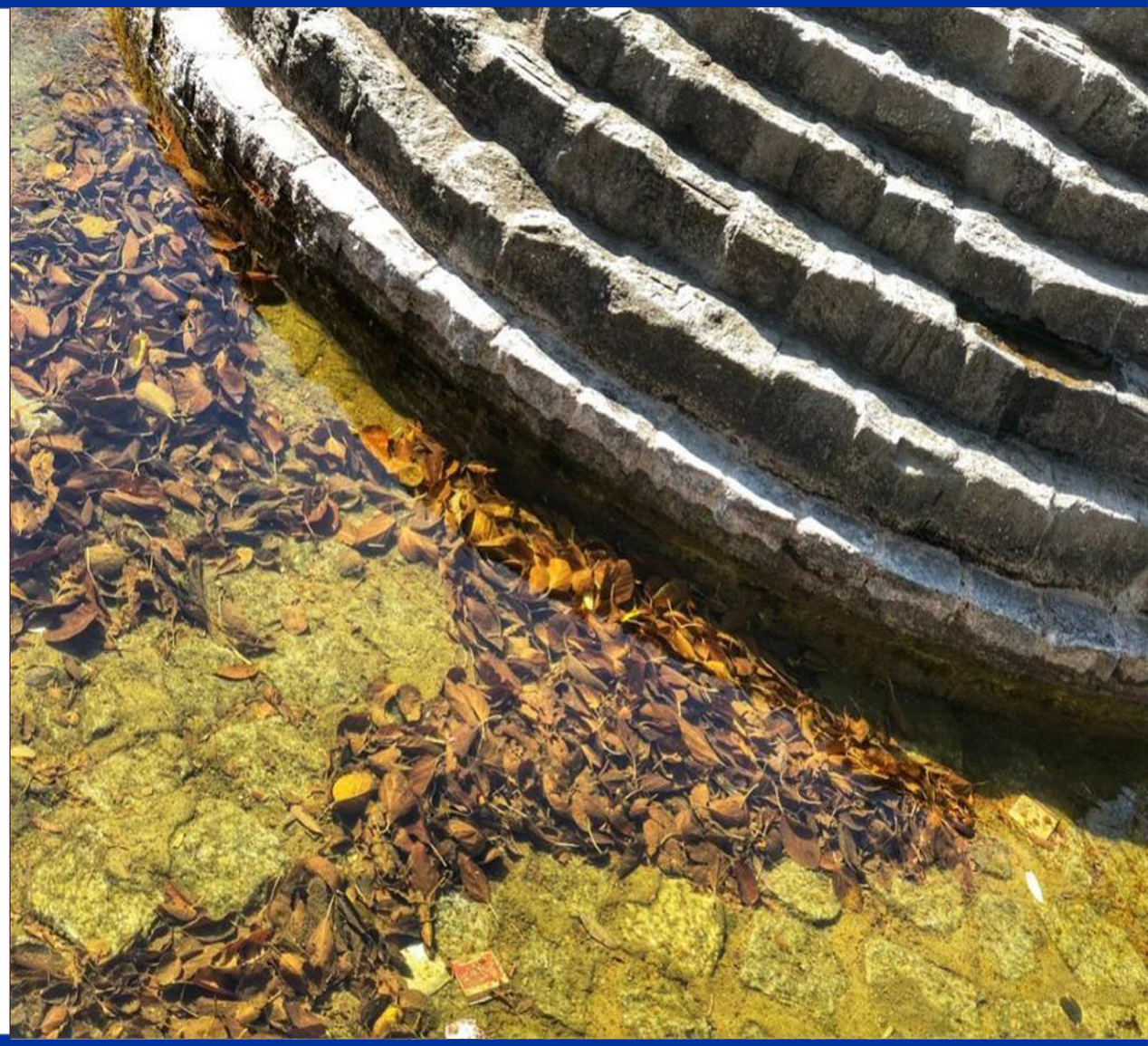
Cross-Cultural, Interdisciplinary Health Studies

International Journal of Body, Mind & Culture

eISSN: 2345-5802
http://ijbmc.org

Volume 7, Issue 4, 2020



International Journal of Body, Mind & Culture

Vesnu Publications

Volume 7, Issue 4, 2020
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International Journal of
Body, Mind & Culture

Cross-Cultural, Interdisciplinary Health Studies

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Vesnu Publications

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Website: vesnupub.com
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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.239 Published by Vesnu Publications

International Journal of Body, Mind and Culture

Reproductive and Sexual Health Facilitators and Needs of Vulnerable Adolescent Girls

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Qualitative Study

Abstract

Background: Meeting the reproductive and sexual health needs of vulnerable adolescent girls is a priority of every community. Lack of attention to this dimension of health can be associated with issues such as unwanted pregnancy, unsafe abortion, sexually transmitted infections. Thus, the identification of these needs is a necessary step for purposive planning, operational intervention, and resource and facility allocation. The present study was conducted to explain the needs and facilitators of reproductive and sexual health in vulnerable adolescent girls.
Methods: The present qualitative study was a part of an extensive study conducted using a mixed method to develop a reproductive and sexual program for vulnerable adolescent girls. Purposive sampling as utilized in the present study to select 16 adolescent girls of 12-19 years of age and 22 well-informed key experts. The experts participated in semi-structured interviews to provide the article with their experiences about the needs and facilitating factors of vulnerable adolescent girls' sexual and reproductive health. The data were coded and classified following content analysis using MAXQDA software.
Results: After scrutinizing and analyzing the data, the category of the needs were obtained under the title of the vulnerable adolescents' reproductive and pregnancy health needs. The category of facilities was also obtained under the title of targeted prevention of adolescents' vulnerability.
Conclusion: Risky sexual behaviors in adolescent girls are associated with negative physical and psychological consequences for reproductive health. Family and the Welfare Organization play a significant role in supporting vulnerable adolescent girls and meeting their reproductive and sexual health needs.
Keywords: Vulnerable adolescent girls; Need; Facilitator; Reproductive and sexual health; Qualitative research

Citation: Pourkazemi R, Janighorban M, Mostafavi F, Boroumandfar Z. **Reproductive and Sexual Health Facilitators and Needs of Vulnerable Adolescent Girls.** Int J Body Mind Culture 2020; 7(4): 184-95.

Received: 30 Aug. 2020
Accepted: 25 Sep. 2020

Introduction

Reproductive health includes components such as counseling, information, education, and treatment of reproductive system infections and sexually-transmitted diseases (STDs), especially AIDS, timely and appropriate prevention and treatment of complications of abortion, providing information, education, and counseling on sexual relations, and creating responsibility in both sexes by observing the cultural conditions of the community, family planning and providing services in this area, education and providing prenatal care, providing a safe delivery and postpartum care, especially education and promotion of breastfeeding, and preventing infertility and appropriate treatment of infertility (Kayvani Sadr et al., 2014). Development of programs related to reproductive health and investigation of its various components and dimensions at the national and international level is one of the basic steps in ensuring the health of the community and the family (with a focus on the health of women and girls) (Hatami, Eftekhar Ardabily, & Majlesi, 2016).

Adolescents are amongst the most important target groups in reproductive health programs due to their greater exposure to drug and alcohol abuse, and hence, to risky sexual behaviors (L'Engle, Mangone, Parcesepe, Agarwal, & Ippoliti, 2016). Therefore, ensuring their health in all aspects, including reproductive health, should be a priority of the health programs of any community (Simbar, Alizadeh, Hajifoghaha, & Golezar, 2017). Studies conducted around the world have shown that adolescents in general (especially those under 18 years of age) are more exposed to drug use, smoking, and alcohol consumption, and as a result, to high-risk sexual behaviors due to their lack of ability to cope with difficulties and crises, and to make timely and suitable decisions (El Mhamdi, Wolfcarius-Khiari, Mhalla, Ben Salem, & Soltani, 2011).

The research conducted by Sarrami, Ghorbani, and Minooei (2013) shows that alcohol consumption is increasing among adolescents. Factors like having an unstable family as a result of the father's separation from the mother, death of one of the parents, and/or imprisonment of one of them turn youths and adolescents into vulnerable individuals highly prone to seeking refuge in narcotics in order to cope with their problems (Sarrami et al., 2013). Sexual relationships, especially in unprotected forms, lead to the creation of problems with irreparable consequences. The statistics show that likelihood of sexual relations establishment before marriage and at 21 years of age is 3.7 times higher in contrast to 18 years of age (Vakilian, Mousavi, & Keramat, 2014). Research findings in Iran indicate that 56% of adolescents have experienced sexual relations (Zadehmohammadi & Ahmadabadi, 2008). Moreover, according to the results of a study conducted at the Centers for Disease Control (CDC) in 2013, 46.8% of high school students reported that they had had sexual intercourse (Kann et al., 2014).

Statistics released by the Welfare Organization also show that 50% of street women referred to rehabilitation centers are 15 to 19 years of age (Garmaroudi, Makarem, Alavi, & Abbasi, 2010).

The ascending trend of the reduction in the sexual relations establishment age to below 15 during recent years (18.6%) (Goncalves et al., 2015) and an increase in illegal sex (55.6%) between the ages of 16 and 21 has set the grounds for infliction with sexually transmitted infections and unwanted pregnancies (Sarrami et al., 2013) and a shift in AIDs transmission from injection to sexual contact (UNICEF, 2015), and this adversely influences not only the individual, but also his or her family and the society.

According to global statistics, 41% of people under the age of 15 and older have been affected by a variety of STDs (UNICEF, 2010). Statistics obtained from the international community on the prevalence of HIV among adolescents indicate that 250,000 adolescents aged 15-19 years have recently been affected by STDs, of which 23% are girls and 17% are boys (UNICEF, 2011). In Iran, the third wave of AIDS, transmitted through sexual relationships, is on the rise. According to the latest data collected by the National Center for AIDS Prevention in Iran (2014), 30,183 people have been diagnosed with the infection in Iran, of which 85% are men and 15% are women, and 52% of recorded cases are within the age group of 21- 35 years (National Center for AIDS Prevention in Iran, 2014).

In addition to AIDS, other STDs such as chlamydia, syphilis, and gonorrhea are on the rise among young people and adolescents, leading to pelvic inflammatory disease (PID), infertility, and ectopic pregnancies (Centers for Disease Control and Prevention, 2014; British Association for Sexual Health and HIV, 2006).

One of the other most important outcomes of sexual relations in adolescent girls is unwanted pregnancy, and the resulting side effects and problems. Since adolescents are physically between childhood and adulthood and may not have reached full maturity in some aspects, pregnancy in adolescents is within the high-risk range and more problematic than other age groups (World Health Organization, 2018). This issue is important from a health, economic, cultural, and social point of view (Shafieian, Bhadoran, Amini, Amini, Jafarpour, & Hematian, 2014).

In fact, adolescents are more likely to engage in risky behaviors than other age groups because they are simultaneously experiencing physical and psychological changes, have abandoned their former childish habits, and have adopted new patterns of behavior and attitudes. Statistics published in recent years in this regard have also confirmed this issue and highlighted the necessity of needs assessment and planning to prevent the occurrence of harmful behaviors in regards to reproductive health. The development of such a program, which not only affects the individual and family, but also has wider impacts, is the basis for promoting the economic, social, and cultural growth of society. The aim of this study was to explain the needs and facilitators of reproductive and sexual health in vulnerable adolescent girls.

Methods

The present qualitative research was conducted between April 2019 and June 2020. After acquiring the ethics code (IR.MUI.RESEARCH.REC.1398.396) from the research vice chancellorship of Isfahan University of Medical Sciences, Iran, the researcher took measures in line with the use of purposive sampling for selecting 16 vulnerable 12-19-year-old adolescent girls as the study sample and performing semi-structured interviews with 22 key individuals including 5 midwives, 3 reproductive health specialists, 2 gynecologists, 1 psychiatrist, 1 expert in social harms, and 2 policy-makers in the area of adolescents' health. Sampling was continued until data saturation (when the interviews were not making any contribution to the data). The data were coded and classified using qualitative content analysis in MAXQDA Software (version 10; VERBI GmbH, Berlin, Germany).

In the first step of the data coding process, all interviews and notes were transcribed. Then, the main topics of the texts were discovered before coding through reviewing them several times. The discovery of important and key phrases led to the formation of a unit of analysis. Then, initial codes were extracted based on the understanding of the researcher. Subsequently, codes with similar concepts were

merged using the inductive method and placed in one category, and formed the sub-sub-themes . Then, the sub-sub-categories were compared and sub-categories were formed through the classification of similar sub-sub-categories. Finally, the sub-themes with similar concepts were categorized and formed the themes. In order to evaluate the quality of data and findings, the 4 criteria of credibility, dependability, confirmability, and transferability were used**.**

Credibility of data in this study increased as a result of using the method of continuous and prolonged engagement with data, reviewing texts of interviews and manuscripts several times, member checking, peer debriefing, using various methods of data collection, and bracketing.

To achieve data credibility, a complete and continuous method of recording decisions and activities on the way of collecting and analyzing data was used and the initial codes were provided for each class by interpreting participants' experiences and examples of ways of extracting themes and a summary of texts of interviews. The data were also reviewed by an expert researcher as an outside observer.

For confirmability of data, the entire research process and decision-making process were recorded by the researcher, so that others could follow the results of the research, if necessary. Moreover, the text of a number of interviews, codes, and extracted themes were provided to peers and a number of faculty members who had knowledge on the analysis of qualitative research and did not participate in the research, and they were asked to correct the data coding process and their views on classes and classifications were applied.

Finally, for transferability of the data, the findings were reviewed by several people who had characteristics similar to the participants in the study, but did not participate in the present research process.

Results

Out of the 16 adolescent girls of 12-19 years of age who participated in the research, 12 were studying in high school, 2 in primary school, and 1 in university, and 1 of them was illiterate. The age at which they had sex for the first time was below 15 in 4 of participants and above 15 in the rest of them; 6 of them had led to pregnancy all of which ended in abortion. Over 70% of the participants were addicted to drugs or alcohol, or both. In half of them, the parents' addiction history was evident. In the present study, 22 well-informed key individuals were interviewed.

Findings of the present study regarding the reproductive and sexual health needs of vulnerable adolescent girls emerged in the form of the category of the need for comprehensive care during reproduction and pregnancy, including the 2 sub-categories of the need for psychological support during reproduction, and the need for physical care during reproduction (Table 1).

Table 1. Reproductive health needs of vulnerable adolescent girls

Category	Sub-category	Sub-sub-category
The need for comprehensive care during reproduction and pregnancy	The need for psychological support during reproduction	Psychological needs due to unwanted pregnancy
		Psychological needs caused by abortion
		The need for treatment of psychological disorders in vulnerable adolescent girls
	The need for physical care during reproduction	The need for care and follow-up after sexually transmitted infections
		The need for physical care in pregnant adolescent girls
		The need for physical care in terminating pregnancies in vulnerable adolescent girls

The need for comprehensive care during reproduction and pregnancy

The data analysis showed that vulnerable adolescents have risk factors for vulnerability or are harmed after entering the vulnerability cycle, and thus, they need physical and psychological support.

Psychological needs due to unwanted pregnancy

Following an unwanted pregnancy, adolescents experience a variety of psychological complications, such as depression during pregnancy, suicidal ideation, and self-harm, which require psychological support from multiple sources.

"When the adolescent becomes pregnant, she fights with everyone except the person who made her pregnant. They believe that they are undergoing a process that can find no way out of, and thus, they get depressed during pregnancy and tend to commit suicide. Therefore, they must be supported so that they can overcome their problems in this period" (Faculty member).

Psychological needs caused by abortion

An unwanted pregnancy and the subsequent attempt for abortion are associated with numerous psychological consequences and neglecting them can have irreparable consequences.

"Four months have elapsed since that issue. I burst into tears without any reason. I have stress. My heart beats faster, and I wake up all of a sudden with anxiety and high heartbeat. I am under so much pressure. I like being completely alone; I do not want to see anyone. I am struck by the thought of releasing myself from this life because nobody cares for me after that event, so why should I stay alive" (a participating adolescent).

The need for treatment of psychological disorders in vulnerable adolescent girls

Many vulnerable adolescent girls have numerous psychological problems that are often not diagnosed and/or subjected to treatment and follow-up.

"Some of the adolescents that we examine ... have borderline personality disorder (BPD) and do not distinguish between good and bad, so they easily trust anyone who loves them. I have a client who is a 21-year-old girl who has BPD, and she cannot distinguish between good and bad at all" (psychologist).

Infliction with psychological disorders and efforts for winning the support, attention, and affection of others are eventually accompanied with an increase in daring to engage in sexually risky behaviors.

"Some of our cases are inflicted with bipolar disorder … due to this maniac disorder and because they need to be treated kindly by others, they are drawn to the opposite sex" (wellbeing organization's psychologist).

The sub-category of the need for psychological support during reproductive period included the 3 sub-sub-categories of "psychological needs due to unwanted pregnancy", "psychological needs caused by abortion", and "the need for treatment of psychological disorders in vulnerable adolescent girls".

The need for care and follow-up following sexually-transmitted infections

Most vulnerable adolescent girls are affected by unprotected sex and STDs, such as gonorrhea, chlamydia, and genital herpes, and their complications such as pelvic infections, and constipation and hemorrhoids after anal sexual intercourse; in these cases, they try to self-medicateor refer to midwives, and in some cases to gynecologists.

"Other problems that girls who have unsafe sex suffer from are genital infections, genital warts, abnormal uterine bleeding (AUB), PID, anal problems such as constipation following anal sex and anal sphincter involvement .... in some cases,

they come to us after performing various self-treatments" (Obstetrician).

The need for physical care in pregnant adolescent girls

Some adolescents had unwanted pregnancies as a result of having sex, which often led to complications such as ectopic pregnancy, moles, severe pregnancy cravings, miscarriage, fetal abnormalities, etc., so they require special care and follow-up until the end of the pregnancy.

"Pregnancy in these children requires much care, since sometimes these children have abnormal pregnancies such as moles or ectopic pregnancy, followed by complications such as rupture of the uterus or terrible and sometimes fatal bleeding. In these cases, things get worse" (Reproductive Health Specialist).

The need for physical care at the end of pregnancy in vulnerable adolescent girls

Continuous effort to get rid of unwanted pregnancies leads to an increased rate of unsafe termination of pregnancy. Most of the adolescent girls who participated in the study with a history of pregnancy acknowledged that unsafe termination of pregnancy led to a number of physical complications, including excessive bleeding and increased need for medical services.

"I lay down on a bed, and then, I did not understand what happened. After I regained consciousness, I was bleeding for a few days. I really needed to go somewhere and get medicine. I was bleeding for a long time and my period was disrupted, and finally, went to the hospital (19-year-old adolescent).

The 3 sub-sub-categories of "the need for care and follow-up following sexually transmitted infections", "the need for physical care in pregnant adolescent girls", and "the need for physical care at the end of pregnancy in vulnerable adolescent girls" formed the sub-category of "the need for physical health during reproduction".

Findings of the study in explaining the factors facilitating the reproductive and sexual health of vulnerable adolescent girls revealed the role of the family in this regard in the category of targeted prevention of adolescents' vulnerability (including the 2 sub-categories of family awareness of adolescent vulnerability and protection of adolescents entangled in the vulnerability cycle) (Table 2).

Targeted prevention of adolescents' vulnerability

Family is amongst the main pillars and institutions in every community and it can play a significant role in supplying, preserving, and enhancing adolescents' health.

Parents' awareness of adolescents' reproductive and sexual health

Parents' awareness of puberty and high-risk sexual behaviors during adolescence leads to increased readiness and suitable management of the changes and developments of children in adolescence, and prevents the occurrence of many harmful behaviors in various aspects of health, including reproductive and sexual health.

Table 2. Factors facilitating reproductive health in vulnerable adolescent girls

Category	Sub-category	Sub-sub-category
Targeted prevention of adolescents' vulnerability	Family awareness of adolescent vulnerability	Parents' awareness of adolescents' reproductive and sexual health
		Continuous and efficient monitoring of children's performance
	Protecting adolescents entangled in the vulnerability cycle	Family support of the vulnerable adolescent girl
		Participation of the Welfare Organization in teaching reproductive health to vulnerable adolescents
		Welfare Organization supports in the form of providing pregnancy and childbirth care to pregnant adolescent girls

"I was shocked after my first menstruation and I was frightened. My mother told me that it is natural, everyone will start menstruating one day and it is related to maturity" (a 15-year-old girl).

Service providers emphasized the importance of paying attention to adolescent girls because of the physical and psychological changes during adolescence, and that parental awareness can reduce stress among adolescents.

"At 12 years of age when adolescents are on the verge of maturity, they develop a series of tendencies. Some fathers and mothers really know what to do to help their children grow well because they know that their child's sexual desire changes at this time one way or another. The children may exhibit many sexual behaviors like masturbation, which are deemed as age-appropriate issues, and this awareness contributes to the resolving of the problem" (psychologist).

Continuous and efficient monitoring of children's performance

The parents' correct and continuous supervision of their children's relationships with their peers and friends can directly or indirectly prevent risk-taking among them.

"Some parents also supervise their children's friends and assist them in this regard so that they exercise due care in choosing friends. I have seen that these children act more successfully" (wellbeing center's psychologist).

The sub-category of family awareness of adolescent vulnerability included the sub-sub-categories of "parents' awareness of adolescents' reproductive and sexual health" and "continuous and efficient monitoring of children's performance".

Protection of adolescents entangled in the vulnerability cycle

Some vulnerable adolescent girls reported receiving parental care, empathy, and emotional support when entangled in the consequences of risky sexual behaviors.

"My mother really took care of me during my pregnancy. She constantly talked to me so that I may not lose myself. She procured supplements from the neighbors for me. She watched over me so as to notice my delivery pain" (17-year-old girl).

Involvement of the Welfare Organization in teaching reproductive health to vulnerable adolescents

Increasing the awareness of adolescent girls referred to centers affiliated with the Welfare Organization on issues related to reproductive and sexual health through health care providers working in these centers leads to reduced stress due to lack of sexual awareness and more caution in interacting with the opposite sex.

"Our children are not aware of sexually transmitted diseases and infections. Here, we tell them about STDs, pregnancy, and the ways to prevent them. Many children do not know about the problems caused by anal sex and they think that they will not have any problems, and we are here to teach them. When we teach them about STDs and infections, they become fearful and are more careful in their dealings with boys" (Welfare Center Psychologist).

Welfare Organization support in the form of providing pregnancy and childbirth care to pregnant adolescent girls

Pregnant adolescent girls enjoy pregnancy and childbirth services and care services under the support of the Welfare Organization. This factor is important in achieving the Millennium Development Goals through reducing the maternal mortality rate.

"When we are here, we take care of her during her pregnancy, and we have trained the dormitory instructor to call the center's physician immediately if she has spotting or reduced fetal movements, and then, transfer her to the hospital" (Social

Emergency Nurse).

The sub-category of protecting adolescents entangled in the vulnerability cycle included the sub-sub-categories of "family support of vulnerable adolescent girls", "Involvement of the Welfare Organization in teaching reproductive health to vulnerable adolescents" and "Welfare Organization support in the form of providing pregnancy and childbirth care to pregnant adolescent girls".

Discussion

The participants of this qualitative study were vulnerable adolescent girls and key informants in the field of adolescent health. This choice was made because in the study of needs and facilitators in the field of health, due to the complexity of these concepts, a comprehensive view and the opinion of experts is required to claim that the information obtained is reasonably credible (British Association for Sexual Health and HIV; 2006 World Health Organization, 2018).

Psychological and psychical needs during pregnancy are the outcomes of the exhibition of sexually risky behaviors.

Thus, adolescents need support from various sources such as their family, the health system, and other organizations involved in adolescent health more than ever.

High-risk sexual behaviors in most adolescent girls lead to an increased risk of lower genital tract diseases. In such cases, diagnostic and therapeutic measures are required to alleviate and improve the symptoms and training is necessary to prevent their recurrence. Since STDs are one of the present-day problems of the community, the World Health Organization (WHO) and Joint United Nations Programme on HIV/AIDS (UNAIDS) have emphasized the necessity to provide the conditions for receiving integrated health care such as providing peer education, empowerment, and promotion of condom use, and effective treatment of STDs in high-risk groups such as vulnerable women and girls (Baral et al., 2012; Rigmor Berg, 2008).

The results of studies conducted on vulnerable women and girls suggest that due to the prevalence of STDs in this group, sexual health information and services should be provided clearly and based on needs and by using various methods (Mironski, 2010; Kalhor, Aj, Alipour, & Eghdam Poor, 2015).

Pregnancy is one of the main adverse consequences of sex outside the family in adolescent girls. It is associated with more adverse consequences at this age than other ages. The increasing of access to education, contraceptive programs, and appropriate prenatal care leads to a reduction in adverse maternal and neonatal outcomes and occurrence of unwanted pregnancies in adolescent girls [Udo, Ekott, & Ekanem, 2013]. Results of several studies indicate that improving the index of access to services and care will reduce complications during pregnancy (Panagopoulos et al., 2008; Alexander & Cornely, 1987; Godha, Hotchkiss, & Gage, 2013).

After realizing that they are pregnant, many teenage girls try to have an abortion, often unsafe. Illegal and unsafe abortions, in addition to individual effects on the physical and psychological dimensions, are also associated with various economic, political, cultural, and social consequences, such as the economic burden of treating the complications of unsafe abortion and increasing maternal mortality (Salter, Johnson, & Hengen, 1997). Providing facilities for adolescent girls to use abortion-related services will reduce its complications. In this regard, the WHO emphasizes the importance and necessity of increasing health care for the appropriate management of physical and psychological complications after abortion (Coleman, Coyle, & Rue, 2010). Results of several studies conducted in developing and

developed countries also show that, from the perspective of service providers and clients, receiving counseling and follow-up after abortion leads to a reduction in the number of complications (Lok, & Neugebauer, 2007; Gould, Perrucci, Barar, Sinkford, & Foster, 2012; Hajnasiri, Behbodimoghddam, Ghasemzadeh, Ranjkesh, & Geranmayeh, 2016; Droudchi, Chief, Qudsi, Wali, 2016).

In addition to the physical consequences, reproductive health damage in vulnerable adolescent girls is associated with psychological complications. Findings of several studies show that the process of vulnerability in adolescents has psychological consequences such as guilt, neurological disorders, depression, and suicidal ideation (Otten, Harakeh, Vermulst, Van den Eijnden, & Engels, 2007), thus resulting in an increased need for psychological support from various social resources, especially the family. Meeting this need will reduce the impact of peer pressure on adolescents' decisions and increase empowerment. Making suitable and responsible decisions on issues related to reproductive health reduces the likelihood of recurrence of risky sexual behaviors (Taleghani, Merghati Khoie, Noroozi, Tavakoli, & Gholami, 2017). The findings of Baral et al. (2012) and Rigmor Berg (2008), which are consistent with the results of the present study, indicate that parents' support and supervision are inversely associated with such risky behaviors as drug abuse, alcoholic drinks consumption, and risky sexual relations.

Increasing parents' awareness of issues related to reproductive and sexual health in adolescence leads to correct responses to their children's sexual problems and reduced drug use, alcohol consumption, and high-risk sexual intercourse (Dick, Viken, Purcell, Kaprio, Pulkkinen, & Rose, 2007; Urindwanayo & Richter, 2020; Tehrani Moghadam & Pourabbasi, 2019; Abedini, Tabibi, Ziaee, & Zarezade Kheibari, 2016; Aziato et al., 2016). Moreover, adequate parental monitoring of adolescents' health leads to increased empowerment in maintaining their reproductive and sexual health (Taleghani et al., 2017; Roshandel Arbatani & Amiri, 2011; Raji Saeedabad, 2015; Kohan, Mohammadi, Mostafavi, & Gholami, 2017).

In addition to family, the Welfare Organization is one of the most important organizations involved in social harms as its actions and decisions have a direct role in reducing high-risk behaviors in society. Findings of studies on the role of the Welfare Organization in the prevention of social harms also indicate that social workers in centers affiliated to the Welfare Organization play an effective role in preventing crime and harm in society through informing the target group of harmful factors and the ways to prevent them, and timely identification of vulnerable people and supporting them to achieve high levels of health (Shojaei, 2015; Zeinali, 2013).

Conclusion

The present study's participants referred to role of the family and Welfare Organization in providing full-scale support in regard to vulnerable adolescent girls' reproductive and sexual health. They asserted that family is the primary source for the provision of essential health needs and that it occasionally plays this role through supplying facilities and sometimes as a supervisor, an advisor, or a companion of the adolescents. In so doing, it leads to the maintenance and promotion of adolescents' health in various dimensions, including reproductive and sexual health that might be the most important aspect of health during adolescence.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This paper is a part of a PhD thesis (N. 398466). The authors would like to thank Isfahan University of Medical Sciences for supporting this research.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.206 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

Comparing Body Image in MS Patients and Healthy Individuals

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Quantitative Studty

Abstract

Background: Multiple sclerosis (MS) is of great importance due to its frequency, chronicity, and prevalence in young adults. The purpose of this study was to compare the body image of MS patients with that of healthy individuals.
Methods: In the present causal-comparative study, the study population consisted of all MS patients referred to the Neurology Clinic. The study participants consisted of 200 patients (100 patients with MS and 100 healthy individuals) selected through convenience sampling. Data were obtained using the Multidimensional Body-Self Relations Questionnaire (MBSRQ) (Cash, 1990). Data were analyzed using descriptive statistics, such as mean and standard deviation, and inferential statistics, such as analysis of covariance (ANCOVA) and repeated measures analysis of variance (ANOVA), in SPSS software.
Results: The results of the data analysis illustrated a significant difference between MS patients and healthy people in terms of Body Areas Satisfaction Scale (BASS) and weight variables ($P < 0.05$).
Conclusion: This study showed that MS could have psychological consequences to help us in psychosocial treatment approaches.
Keywords: Body Image; Multiple Sclerosis; Psychosomatic

Citation: Johari Fard R, Boroumand A, Yekta R. **Comparing Body Image in MS Patients and Healthy Individuals.** Int J Body Mind Culture 2020; 7(4): 196-202.

Received: 20 Aug. 2020
Accepted: 05 Sep. 2020

Introduction

Today, multiple sclerosis (MS) is one of the most important nervous system diseases due to its frequency, chronicity, and prevalence in young adults. The available literature shows the criticalrole of psychological factors in MS onset and decreasing disease progression (Ropper & Samuels, 2009). Due to the biopsychosocial aspects of MS, a systemic approach such as psychosomatic medicine has a significant role in the approach to the etiology and progression of MS, and the patient's quality of life (QOL). MS is a well-known disease with degenerative effects on the nervous system and a wide variety of symptoms and signs such as motor weakness, paraplegia, paresthesia, dysemmetry, double vision, nystagmus, dysarthria, target tremor, ataxia, impaired sense of proprioception, and bladder dysfunction (Ventling, 2003). These symptoms and signs usually have relapses and remissions. Epidemiological studies suggest an average age of 20-50 years in MS patients. Studies have shown that psychosomatic approaches can affect the patient's mental defense mechanisms, as well as the onset and progression of the disease. Psychosomatic studies have shown how personality traits explain most MS relapses in some patients (Ghodusi & Heidari, 2014).

Michael Menzel, as a body psychotherapist, after many observations, concludes that MS can be recognized as a psychosomatic disease, because from a clinical viewpoint for a body psychosomatist, it is suggestive of the lack of a positive connection experience, its deep emotion gradually goes to be stereotyped by the physical expression over time (Kindrat, 2007). Researches have revealed that MS is a commonly occurring disease in young people which is the most functional in society, it is more common in women than men and, in addition to its main symptoms, its psychological effects cause low self-esteem, depression, stress, and aggression (Farnam, Marashi, & Sana'tnama, 2017). Some researchers have reported differences in body image between patients with chronic diseases such as MS and the healthy population (Cash, Jakatdar, & Williams, 2004; Pilarski, 2008).

Body image is an internal representation of a patient's external appearance (outside in appearance) that incorporates physical and perceptual dimensions and can have extensive physical and psychological effects (Mousavi, Rostami, & Gholamali Lavasani, 2020). According to the biopsychosocial model, biological, psychological, and sociocultural factors have been found to be relevant in understanding the development of body image concerns. Throughout history, it has been very difficult for people to live according to the standards of society and what they have believed to be an ideal body. Many factors impact body image, including family dynamics, mental diseases, and environmental causes. Body image is an important aspect of our self-image that emerges in social situations and refers to the thoughts, beliefs, feelings, and behaviors associated with the body (Assady Gandomani & Teymourzadeh, 2014). Body image is influential factor that can affect behavior. Interference concerning appearance occurs in individuals'social function when their appearance is changed because of their impaired performance and social relationships (Samonds, & Cammermeyer, 1989).

It is well documented that a negative body image is associated with a range of adverse health outcomes, including low self-esteem, depressive mood, and eating disorder symptoms (Pfaffenberger et al., 2011; McFarland & Kaminski, 2009). However, the focus has mostly been on the status of negative body image as a risk factor for mental health problems. Previous studies suggest that adolescents who are dissatisfied with their bodies are more likely to perceive their health as fair or poor and more likely to show depression, low self-esteem, and low social functioning (Barak, Lampl, Sarova-Pinchas, & Achiron,

1999). Furthermore, the effects of body dissatisfaction do not appear to be limited to negative psychological outcomes; body dissatisfaction also negatively impacts health behaviors/outcomes, such as increased unhealthy weight control behaviors, stress, smoking behaviors, and reduced physical activity in adolescents and young adults (Sharifi Neyestanak, Ghodoosi, Seyedfatemi, Heydari, & Hoseini, 2012).

Holsen, Kraft, and Roysamb (2001) investigated body image in MS patients and examined the relationship between body image and the severity of the disability. They did not find a strong correlation between these two variables. However, they found that the older and more disabled patients who were more satisfied with themselves and their body image had a long disease duration (Holsen, Kraft, & Roysamb, 2001). Neumark-Sztainer, Paxton, Hannan, Haines, and Story found that patients with MS, especially women, are preoccupied with their body image, and mostly concerned about physical deficiencies, even in the mild form of the disease. Also, they felt that they are not attractive. Arnett and Randolph (2006) also found a direct relationship between the concept of body image and self-esteem in patients with MS. They suggested that coping with the disease requires positive self-esteem and a positive body image (Arnett & Randolph, 2006).

The aim of this study was to evaluate the concept of body image in MS patients and compare them with a healthy population. A difference in their body image compared to the healthy population can give us insight into the onset and progression of the disease. In addition, considering the biopsychosocial causes of this disease shows that a positive body image can help in the treatments.

Methods

In the present causal-comparative study, the study population consisted of all MS patients referred to the Neurology Clinic. MS was diagnosed by a neurologist according to the International Association of MS criteria. In addition to clinical observations and physical examinations, the diagnostic tools used were magnetic resonance imaging (MRI), computed tomography (CT) scan, and visual acuity potential (VEP). Sampling was carried out using a convenience sampling method. The study participants consisted of 200 patients, including 100 MS patients and 100 healthy individuals. Patients who had a disease duration of at least 1 year and were within the age range of 2040 years were selected for participation in the study. The diagnosis was performed by a neurologist based on the International Association of MS. Furthermore, the inclusion criteria included the lack of any psychological disorder or physical disability confirmed by a psychiatrist and neurologist. In the healthy population, the age range of 20-40 years was considered the inclusion criterion. The selection of the age group was due to the prevalence of these two diseases within this age range. The exclusion criteria included the disease duration a psychological disorder or physical disability, addiction, history of an accident, and the patient's reluctance to continue. The data collection tool used was the Multidimensional Body-Self Relations Questionnaire (MBSRQ).

The Multidimensional Body-Self Relations Questionnaire (Cash, 1990): The MBSRQ contains 68 items. It is designed to assess the individual's attitude about various aspects of the body image structure. The questionnaire consists of the 3 subscales of the body itself, BSRQ, Body Areas Satisfaction Scale (BASS), and the scale of the individual's attitude to their weight (Cash, 1990). The validity of the main sections of the questionnaire has been reviewed and confirmed, and its reliability has been reported as 0.81 (Swami, Todd, Mohd Khatib, Toh, Zahari, & Barron, 2019). The Cronbach's alpha coefficient of the

questions of each subscale for a sample of 217 students were 0.88, 0.85, 0.83, 0.79, 0.91, and 0.94, respectively. In this study, the reliability coefficients of the questionnaire were calculated using Cronbach's alpha. The Cronbach's alpha for each subscale's questions was calculated to be 0.80, 0.44, and 0.58 (Swami et al., 2019). Cronbach's alpha coefficient of the MBSRQ in the present study was 0.79.

Data were analyzed using descriptive statistics such as mean and standard deviation and inferential statistics, such as analysis of covariance (ANCOVA) and repeated measures analysis of variance (ANOVA), in SPSS. software (version 18, SPSS Inc., Chicago, IL, USA).

Results

The demographic characteristics of the participants are presented in table 1.

The mean and standard deviations of the dependent variables of the research are presented in table 2. The results of statistical tests showed that there was no significant difference between the participants in terms of demographic characteristics ($P > 0.05$).

The results of th e Kolmogorov–Smirnov test showed that data distribution in all 3 groups was normal in both pretest and posttest stages. F-Levin level for an equal variance of research variables in the posttest in the experimental and control groups showed that the variance of the research components was unequal in the groups, so the ANCOVA condition is F established.

The results presented in table 3 show that there is a significant difference between MS patients and the healthy population in terms of BASS and weight variables ($P < 0.05$). The mean of both variables in the MS group was higher than the healthy group. However, according to results presented in table 3, there was no significant difference between the MS group and the healthy group in terms of the dependent variable of BSRQ.

Discussion

The purpose of this study was to investigate and compare body image between patients with MS and healthy individuals. The results showed a significant difference between MS and healthy groups in terms of BASS and weight. The mean of both variables in the MS group was higher than the healthy group. This finding is consistent with the findings of other studies like Pfaffenberger et al. (2011), McFarland and Kaminski (2009), and Barak et al. (1999).

Table 1. The demographic characteristics of the participants

Variable		Groups	
		MS patients	Healthy individuals
Sex	Male	34	39
	Female	66	61
Marital status	Single	18	37
	Married	82	63
Education	Illiterate	13	2
	Pre-diploma	36	14
	Diploma	7	7
	Higher than diploma	15	33
Economic situation	Poor	35	7
	Normal	46	36
	Good	19	57
Age	Mean ± SD	23.37 ± 69.9	29.31 ± 69.11

MS: Multiple sclerosis; SD: Standard deviation

Table 2. Mean and standard deviations of variables

Variable	Index	MS Group	Normal group
BASS	Mean ± SD	28.33 ± 29.7	56.35 ± 29.6
Weight	Mean ± SD	89.15 ± 81.3	48.17 ± 11.4
BSRQ	Mean ± SD	64.187 ± 40.19	45.181 ± 44.21

MS: Multiple sclerosis; BASS: Body Areas Satisfaction Scale; BSRQ: Body-Self Relations Questionnaire; SD: Standard deviation

To understand the difference, first, the nature of this variable must be examined. Body image can be influenced by the physical and mental changes caused by disease (Pilarski, 2008). Body image is the perception that a person has of their physical appearance and the thoughts and feelings that result from that perception. These feelings can be positive, negative, or both, and are influenced by individual and environmental factors. It involves how individuals see themselves compared to the standards that have been set by their society (Feinstein, 2011). A person who has a negative body image faces a problem with their cognition. The results of the research on the relationship between body image and MS showed that, compared with the healthy population, MS patients, although they had little disability and a stable mood condition, reported that they had a great deal of concern about physical disabilities. While women suffered from physical problems and lack of attraction, men were more concerned about sexual problems. This means that body image is a mental factor (Pfaffenberger et al., 2011).

Although MS does not change the physical appearance of patients, as described above, it negatively affects the concept of body image. Perhaps, in order to understand the relationship, it is necessary to consider variables such as self-confidence or the reduction of sexual desire, as some studies have shown that self-confidence can change the body image of patients (Swami et al., 2019; Feinstein, 2011). Body image is an internal representation of the external appearance of patients (outside in appearance) that incorporates both physical and perceptual dimensions and can have extensive physical and psychological effects (Cash et al., 2004).

MS patients have certain disabilities that are induced by the disease and they observe these changes and disabilities, so the assessment of their bodies leads to negative commentary, which can cause a negative body image (Pfaffenberger et al., 2011). It is likely that mood changes in MS patients, such as depression, can play the role of a mediator variable in negative body image (Neumark-Sztainer et al., 2006; Arnett & Randolph, 2006). However, this requires further investigation. As stated in the introduction, MS patients develop negative thoughts about their appearance, low self-esteem, and negative self-esteem due to psychological disorders such as depression, anxiety, fatigue, and the like, which indirectly affect their perception of their body (their body image).

MS can have different psychological consequences for patients. Negative body image is one of the consequences that should be considered in the psychological treatment of individuals. Cognitive therapy can reduce the negative effects of negative body image on the QOL of MS patients by changing their negative thoughts.

This research had some limitations. One of the limitations of the present study is that the results cannot be generalized to other examples and disorders.

Table 3. Multivariate analysis of variance of research variables

	Variables	SS	df	MS	F	P-value
Group Effect	BASS	292.95	1	292.95	6.06	0.015
	Weight	162.26	1	162.26	9.95	0.002
	BSRQ	276.52	1	276.52	0.62	0.430

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

Moreover, gender differences may be involved in the impact of MS on body image. Therefore, this relationship should be investigated in future studies with respect to these differences.

Conclusion

The results of this study show that MS can have psychological consequences so that it can help us in psychosocial treatment approaches.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This research group would like to thank Dr. Farzad Goli for his efforts to guide this research.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.228 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

A Comparative Study on the Effectiveness of Mindfulness-Based Stress Reduction and Spiritual Therapy on Increasing CD4 Cells Count and Quality of Life in AIDS Patients

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Quantitative Study

Abstract

Background: AIDS is a medical and social problem, which has a high prevalence in Iran. The present study was conducted to compare the effect of mindfulness-based stress reduction and spiritual therapy techniques on increasing CD4 cells and quality of life (QOL) in AIDS patients.

Methods: The present quasi-experimental study was performed with a pretest-posttest design and a control group. The statistical population of the study included all AIDS patients who referred to health centers in Shahriar, Iran, in 2018. From among those referred to these health centers, 45 people were selected using a convenience sampling method and were assigned to 3 groups. The patients were evaluated using the World Health Organization Quality of Life-BREF Questionnaire (WHOQOL-BREF) (WHOQOL Group, 1998) and blood tests to check CD4 cells. Then, participants in the experimental groups received mindfulness-based stress reduction and spiritual therapy during 8 sessions of 90 minutes, but the control group did not receive any training. Multivariate analysis of variance (MANOVA) was used to examine the research data.

Results: The results showed that spiritual therapy and mindfulness-based stress reduction techniques had a significant effect on increasing CD4 cells and QOL in AIDS patients ($P < 0.001$).

Conclusion: It can be concluded that mindfulness-based stress reduction had a significant effect on increasing CD4 cells and QOL in AIDS patients. Moreover, mindfulness-based stress reduction was more effective than spirituality therapy on QOL.

Keywords: Mindfulness; Quality of life; Acquired immunodeficiency syndrome; Spiritual therapies

Citation: Tayyebi A. **A Comparative Study on the Effectiveness of Mindfulness-Based Stress Reduction and Spiritual Therapy on Increasing CD4 Cells Count and Quality of Life in AIDS Patients.** Int J Body Mind Culture 2020; 7(4): 203-13.

Received: 14 May 2020

Accepted: 12 Jul. 2020

Introduction

Since the diagnosis of its first case until now, AIDS has been a worldwide epidemic, and despite advances in pharmacotherapy, it remains one of the leading causes of death in the world (Wang, Li, Chen, Zhang, & Xiao, 2018). Based on the latest available statistics, there are about 40 million people infected with this virus in the world, and more than 30 million people have died due to this disease thus far. About 14000 people worldwide are infected with this virus every day; 90% of this rate is related to developing countries. India and Thailand have the highest rates of infection in Asia. Its prevalence in the Iranian population is reported to be less than 0.01%. AIDS is the result of being infected with HIV. Infection with this virus can weaken the immune system to the point that it will no longer fight against some infections. AIDS is a disease that influences the condition of patients not only physically, but also mentally through causing social stigma, thus leading to many problems in the activities and interests of patients (Huang et al., 2018). Hence, the diagnosis of AIDS causes significant emotional and physical suffering, especially in the area of treatment limitations, which include the lack of access to antiretroviral drugs (Surur, Teni, Wale, Ayalew, & Tesfaye, 2017). This disease changes the course of one's life, decreases self-confidence, increases the feeling of vulnerability to physical symptoms, and causes disturbed thoughts in patients (Betancur, Lins, Oliveira, & Brites, 2017). It also disrupts daily functioning, social activities, and peace of mind, and introduces new roles. All of the abovementioned problems, frequent visits to a physician, the high cost of treatment, and side effects of drugs reduce the patients' quality of life (QOL) (Surur et al., 2017).

QOL refers to the extent to which people are satisfied with meeting their needs (Ghiasvand, Waye, Noroozi, Harouni, Armoon, Bayani, 2019). It involves the subjective satisfaction of people with the conditions, opportunities, and consequence of their lives. It is considered as one of the most important components of the general concept of mental health (Cooper, Clatworthy, Harding, & Whetham, 2017). Most studies conducted worldwide have shown that community-based services, increasing the capacity of medical centers, and providing continuous and multifaceted care have particular importance in managing the patients' problems. Many studies have revealed a significant relationship between QOL and spirituality in chronic diseases. Based on the study conducted by Pirasteh Motlagh and Nikmanesh (2012), there is a positive relationship between spirituality and QOL in AIDS patients. Several studies have investigated QOL, especially health-related QOL, in patients with AIDS. However, a limited number of studies have investigated the role of spirituality in the QOL of AIDS patients.

The investigation of QOL in AIDS patients has indicated that psychological well-being, social support system, coping strategies, and spiritual therapy are important predictors of QOL in these patients. Mohamad Karimi and Shariatnia (2018) also revealed that spiritual therapy increases the QOL of women with cancer. Moreover, Mohamadi and Rahimzada Tehrani (2018) found that spiritual therapy increased QOL among women with AIDS. To the best of the author's knowledge, no study has investigated the effectiveness of spiritual therapy on CD4 cells. Health psychologists argue that spirituality and religious and moral beliefs play a key role in the health of the body and mind and development of the soul. The World Health Organization (WHO) has introduced health education through religion and spirituality as a healthy lifestyle solution. Spirituality, as one of the

positive coping strategies, protects the individual from the various effects of stress on health by influencing cognition, emotion, and behavior. The lifestyle of each person is influenced by his or her beliefs and values. Despite the psychosocial implications of AIDS, studies conducted in this area are limited to the physical characteristics, and less attention has been paid to the psychological aspects of this disease. Since the psychological consequences of this disease play a major role in exacerbating the disease and its transmission to other people in a society, it is necessary to pay attention to the psychological dimensions of this disease and its physical dimensions. Moreover, an effective psychological factor in patients with AIDS is mindfulness-based stress reduction. Mindfulness is defined as meta-consciousness, a state of consciousness that has the role of monitoring and modifying other experiences and acts in line with the improvement of behavioral and emotional-cognitive self-regulation (George, Wongmek, Kaku, Nmashie, & Robinson-Papp, 2017). This method is one of the most widely-used mind-body perspective techniques and its positive therapeutic impacts on a variety of chronic diseases, both patients and their caregivers, have been proven.

In a study conducted in this regard, modeling revealed that training mindfulness techniques could explain the relationship between pain intensity and catastrophizing in AIDS patients (Hecht et al., 2018). Other studies have indicated that mindfulness improves mood and its short-term training reduces depression. Mindfulness training affects depression, anxiety, and psychological adjustment in patients, and mindfulness-based therapy improves the symptoms of stress and anxiety and increases self-esteem (Parhoon, Masomzadeh, Moradi, Shakeri, & Mirmotahari, 2017). Based on previous studies, mindfulness training reduces the symptoms of anxiety and depression and affects self-efficacy and depression in patients (Armani et al., 2018), and improves QOL and reduces depression (Parhoon et al., 2017). The present study was conducted to investigate and compare the effectiveness of mindfulness-based stress reduction and spiritual therapy on CD4 cells and QOL of AIDS patients.

Methods

The present quasi-experimental study was conducted with a pretest-posttest design and a control group. The statistical population of the study included all AIDS patients who referred to health centers in Shahriar, Iran, in 2018. From among those referred to health centers in Shahriar, 45 people were selected using convenience sampling method and were assigned to 3 groups. They were divided into 3 groups in terms of gender characteristics and marital status. The study inclusion criteria included lack of history of taking non-AIDS-related drugs and other autoimmune diseases. The study exclusion criteria included absence from more than 2 sessions. After obtaining permission from the Welfare Organization of Tehran Province, Iran, and coordinating with health centers in Shahriar, an introductory session was held with patients at the center. Then, pretest was performed, and 1 week later, the intervention began for the 2 experimental groups. The sessions lasted for 2 months (1 session per week), and each session lasted 90 minutes. The posttest was performed 1 week after the intervention. The control group received no specific intervention other than their previous drugs. To observe the principles of research ethics, the importance of the research was explained to the participants, and complementary explanations were provided for all the participants after an informed consent for participation in the research was obtained from them. They were ensured that they could withdraw from the study at any stage. They were also ensured that their

information would remain confidential. Furthermore, the questionnaires were anonymously coded. Then, the protocol of spiritual therapy and mindfulness-based stress reduction was performed for the experimental groups. Finally, the data were analyzed using univariate analysis of variance (ANOVA) in SPSS software (version 23; IBM Corp., Armonk, NY, USA).

CD4 cell test: The CD4 cell test measures the number of these cells per cubic millimeter of blood. The normal number of these cells is between 500 and 1600. Since the number of CD4 cells varies greatly, some healthcare providers prefer the CD4 cell percentage. This percentage is more stable than the number of CD4 cells. A number of CD4 cells below 200 indicates severe damage to the immune system and is a sign of AIDS in people with HIV. Although the percentage of CD4 cells may be a better predictor of disease progression, the number of CD4 cells is better for deciding when to start treatment. A cell number of less than 300 indicates a weakened immune system and a predisposition to opportunistic infections. A cell number of less than 200 indicates an acquired immunodeficiency syndrome and a risk of opportunistic infections. The type of measurable sample was whole blood containing ethylenediaminetetraacetic acid (EDTA) anticoagulant or heparin. The required sample size was 5 cubic meters.

The World Health Organization Quality of Life-BREF Questionnaire: The WHO Quality of Life-BREF Questionnaire (WHOQOL-BREF) includes 26 items and the 4 subscales of physical health, psychological health, social relations, and environment. This questionnaire can also assess general health. The items of this questionnaire are scored on a 5-point Likert scale. A higher score indicates a better QOL. The discriminative and content validities and reliability of this questionnaire (Cronbach's alpha coefficient for physical health = 0.80, psychological health = 0.76, social relations = 0.66, and environment = 0.80) were reported to be at a good level. The validity and reliability of this questionnaire in Iran have been assessed among 1167 people in Tehran. The test-retest reliability of the subscales of physical health, psychological health, social relations, and the environment was reported at 0.77, 0.77, 0.75, and 0.84, respectively. Their internal consistency using Cronbach's alpha coefficient was reported as 0.70, 0.73, 0.55, and 0.84, respectively (WHOQOL Group, 1998).

The Contents of the spiritual therapy sessions and mindfulness-based therapy cognition sessions is shown in tables 1 and 2.

Spiritual therapy protocol: Regular group-based spiritual therapy was trained in 8 sessions of 90 minutes, 1 session per week, using the 2 methods of discussion about the presuppositions of spiritual life and strategic spiritual training.

In the descriptive statistics section, central indicators and dispersion, such as mean and standard deviation, were used. In inferential statistics, multivariate analysis of covariance (MANCOVA) was used. To test the defaults of the inferential test, Levene's test (to check the homogeneity of variances), Kolmogorov-Smirnov (K-S) test (to normalize the distribution of data), and Box's M test were used. The above statistical analyses were performed in SPSS software (version 22; IBM Corp., Armonk, NY, USA). The significance level of the tests was considered to be 0.05.

Results

The mean (standard deviation) age in the experimental group was 38.94 (5.49) years, and in the control group was 37.13 (6.55) years.

As shown in table 3, because the significance level is greater than 0.05, the two groups are the same in terms of gender distribution. The mean and standard deviation of variables are presented in table 4.

Table 1. Contents of the spiritual therapy sessions

Sessions	Content
1	The group members were introduced to each other, and the rules and principles governing group counseling were explained to them. An empathetic relationship was established with the participants, and then, the participants' concept was formulated in the form of a spiritual therapy model. A summary of the brochures and sessions was made available to them.
2	After reviewing the previous session and giving feedback to the clients, they were taught the first (saving reality) and second presumptions (pleasant and unpleasant feelings are not related to phenomena, but depend on inner attitudes and feelings). Moreover, in this session, promoting the intention and purposefulness of behaviors, and positive mental imaging towards God were taught.
3	The third presumption (this principle is based on God's mercy and generosity, that is, God always provides the opportunity for human growth) and the fourth presumption (divisibility, which means that worldly affairs can be divided into changeable and unchangeable affairs) were taught to the spiritual man.
4	The fifth presumption (the moral world is created and always moves in the direction of happiness) was taught to the spiritual man. In addition, the strategy of prayer, and its status in human life, transcendence, and coping with anxiety were discussed in this session.
5	The sixth presumption (the future is not entirely in our hands) was taught to the spiritual man. Moreover, strategies of praying, hope, and trust in God for problems that occur in the future were discussed in this session.
6	The seventh presumption (man is in constant communication with God) was taught to the spiritual man. Furthermore, in this session, the spiritual and unifying description and interpretation of the life events of the participants were explained, and patience was presented as a strategy to cope with anxiety.
7	The eighth presumption (the spiritual man lives with his traits, not with his/her possessions and assets) and the ninth presumption (achieving a spiritual life requires charity, forgiveness, and affection) was taught to the spiritual man. Furthermore, in this session, polite presence in the presence of God was taught.
8	The tenth presumption (understanding the meaning of hardships and difficulties and responsibility towards God, self, others, and existence) was taught to the spiritual man. In addition, in this session, the 10 presuppositions of the spiritual man were reviewed once again.

The results presented in table 4 show differences between the control and experimental groups in terms of the mean scores of the variables of the number of CD4 cells and QOL. Statistical methods were used to examine these differences. The results of the K-S test showed that all research variables have a normal distribution. Levene's test results showed that the value of none of the variables was significant, and thus, the assumption of the equality of variances was confirmed. According to the assumption of homogeneity of variances, the correlation between the dependent variables, and the assumption of homogeneity of regression slopes, MANCOVA was used.

The results presented in table 5 show a significant difference between the 3 groups of control, mindfulness-based stress reduction, and spiritual therapy in terms of mean posttest CD4 ($F(2) = 11.3$; $P < 0.05$; $\eta^2 = 0.361$). However, the QOL of AIDS patients ($F(2) = 2.06$; $P > 0.05$; $\eta^2 = 0.0.93$) did not differ significantly among the 3 groups, and this difference was higher in CD4 compared to QOL. Based on the Eta coefficient, the effects of mindfulness-based stress reduction and spiritual therapy on increasing QOL (0.093) were less than on CD4 (0.361).

The results presented in table 6 show that mindfulness-based stress reduction had a significant effect on increasing CD4 cells and QOL in AIDS patients. The mindfulness-based stress reduction technique significantly improved the QOL of AIDS patients. Moreover, spiritual therapy had a significant effect on increasing CD4 cells and QOL in AIDS patients. There was no significant difference between the effects of mindfulness-based stress reduction and spiritual therapy techniques on CD4 cells. The mindfulness-based stress reduction technique was more effective than spirituality therapy on QOL.

Table 2. Contents of the mindfulness-based therapy cognition sessions

Sessions	Content
1	Introducing participants, providing explanations on AIDS and its effects on family members, discussing marital relationships, and practicing the raisin meditation, explaining that many people live in an unconscious mind and often do not pay attention to what they are doing, practicing mindful breathing, and practicing body scan meditation
2	practicing body scan meditation, inviting participants to talk about their experiences of mindfulness exercises, examining barriers, discussing some features of mindfulness such as non-judgment or surrender, practicing thoughts and feelings, and practicing mindful breathing meditation
3	practicing short seeing and short hearing, sitting meditation focused on breathing and body sensations, 3-minute breathing space practice, practicing conscious body movement
4	Practicing sitting meditation focused on breathing, body, sounds, and thoughts, discussing stress and the usual reactions of people to difficult situations and alternative attitudes and reactions, practicing conscious walking
5	Practicing sitting meditation with a focus on breathing, body, sounds, and thoughts, discussing the acceptance of the reality of the present situation as it is, practicing the second series of conscious body movements
6	Practicing the 3-minute breathing space practice, discussing the frequent lack of reality of the content of our thoughts
7	Practicing sitting meditation and open consciousness (to anything that comes to consciousness from moment to moment), discussing what is the best way to take care of yourself, practicing the reviewing of pleasant versus unpleasant daily activities, and learning to plan for pleasant activities, love, and kindness
8	Practicing body scan meditation, discussing the use of the taught content, evaluating the training, providing more resources

Discussion

The present study was conducted to compare mindfulness-based stress reduction and spiritual therapy techniques in terms of increasing CD4 cell and QOL in AIDS patients. The results of the present study revealed that spiritual therapy was effective in increasing CD4 cells, but was not effective on the QOL of AIDS patients. These results are consistent with those of the research conducted by Speca, Carlson, Goodey, and Angen (2000), and inconsistent with the results of other researchers who showed that spiritual therapy does not affect the QOL of AIDS people. In contrast, the results of this study, in line with previous studies, revealed that spiritual therapy increased CD4 cells. Since CD4 T lymphocytes are the first group of cells affected by the virus and their number decreases rapidly, measuring them is an important indicator of the onset and progression of the disease to the final stage of AIDS. The main goal of treating HIV patients is to slow down and reduce CD4 cells, and keep them stable in order to prevent various diseases and infections in these patients.

Given the psychological problems of AIDS patients, the need for psychotherapy, in addition to the medication, has been proven. Many of these treatments, in addition to treating psychological problems, have played a significant role in physiological changes in the body. One of the best physiological therapies in AIDS patients is spiritual therapy. Several studies have revealed that people with chronic diseases use spirituality to cope with the disease, create a sense of meaning and purpose in life, and reduce the feeling of suffering caused by their disease.

Table 3. Frequency distribution and demographic characteristics of participants

Demographic variables		Spiritual therapy	Mindfulness-Based Stress Reduction	Control	P-value
		n (%)	n (%)	n (%)	
Gender	Female	8 (53.3)	9 (60)	7 (46.7)	27.0
	Male	7 (38.9)	46.7 (40)	8 (53.3)	

Table 4. Descriptive indices related to the variables of the number of CD4 cells and quality of life

Demographic variables	Group	Pre-test	Pre-test
		Mean ± SD	Mean ± SD
Number of CD4 cells	Spiritual therapy	858.00 ± 168.8	993.20 ± 177.62
	Mindfulness-Based Stress Reduction	822.11 ± 155.17	987.10 ± 181.45
	Control	834.93 ± 160.47	849.93 ± 181.56
Quality of life	Spiritual therapy	73.90 ± 10.12	81.93 ± 12.44
	Mindfulness-Based Stress Reduction	75.88 ± 11.19	89.51 ± 15.46
	Control	76.21 ± 10.02	78.59 ± 10.15

SD: Standard deviation

Reduced feeling of suffering is characterized by lowering cortisol in the body. Thus, the measurement of physiological parameters has importance in psychological therapies. Spirituality is the personal search and study to understand the answers to questions about life, meaning, and relation to a sacred or transcendent force, resulting in the growth of religious rites and the development of society. Given the importance of CD4 cell count in patients with AIDS, it is possible to increase lymphocytes by teaching the techniques of this therapeutic approach, which play an important role in controlling and directing the immune system, especially its adaption to the environment. With the reduction of CD4 cells, they cause AIDS, weaken the immune system to infections, or kill cancer cells. With the increasing of CD4 cells, play a major role in the treatment process of the disease (Izudi, Alioni, Kerukadho, & Ndungutse, 2016).

The major problem of AIDS patients is their isolation from society and discrimination. This issue overshadows the patient's development that directly relates to his/her mental health and has a significant impact on his/her QOL. QOL has different dimensions, including physical, psychological, and social dimensions, and covers a wide range of a person's life. QOL is an individual's unique understanding of whether his/her life is acceptable or not considering his/ her relationship with family, friends, and community, and whether his/ her physical, psychological, social, and economic needs are met or not. Mohamadi and Rahimzada Tehrani (2018) showed that logotherapy increases QOL and its components (mental, physical, social, and environmental health). Moreover, logotherapy increases spiritual health in the dimensions of existential and religious health. Mohamad Karimi and Shariatnia (2018) and Pirasteh Motlagh and Nikmanesh (2012) showed a positive relationship between spirituality and QOL. Given what was stated above, spirituality therapy does not affect the QOL of AIDS patients. The present study had some limitations such as small sample size, being limited to Shahriar city, and the impossibility of comparing the effectiveness of treatment between the two sexes. Hence, it is recommended that a larger sample of patients be used and the two sexes be compared with each other in future researches. It is necessary to consider cultural differences, the way the therapist communicates with the participants, and the level of cooperation of the center officials with the researcher (Ghiasvand et al., 2019).

Table 5. Multivariate analysis of covariance results regarding the evaluation of the effect of mindfulness-based stress reduction and spiritual therapy techniques on a new combination of CD4 and quality of life of AIDS patients

Effect	Test	Value	F-value	df	df error	P-value	η^2
Pretest CD4	Pillai's trace	0.765	63.58	2	39	0.001	0.765
	Wilks' Lambda	0.237	63.58	2	39	0.001	0.765
Pretest quality of life	Pillai's trace	0.982	1091.66	2	39	0.001	0.982
	Wilks' Lambda	0.018	1091.66	2	39	0.001	0.982
Group	trace Pillai's	0.434	5.54	4	80	0.001	0.217
	Wilks' Lambda	0.592	5.85	4	78	0.001	0.231

Table 6. Tukey's post hoc test for pairwise comparison of posttest CD4 and quality of life of AIDS patients among control, mindfulness-based stress reduction, and spiritual therapy groups

Variable	Group	Comparison of groups	Mean difference ± SD	P-value
Pretest CD4	Control	Spiritual therapy	143.24 ± 64.52	0.079
		Mindfulness	169.27 ± 64.52	0.032
	Spiritual therapy	Mindfulness	26 ± 64.52	0.91
Pretest quality of life	Control	Spiritual therapy	-3.34 ± 0.87	0.011
		Mindfulness	-10.92 ± 1.19	0.001
	Spiritual therapy	Mindfulness	-7.58 ± 2.17	0.001

SD: Standard deviation

Betancur et al. (2017) evaluated the effectiveness of mindfulness-based stress reduction on CD4 and QOL of AIDS patients and found that the use of mindfulness-based stress reduction therapy increased CD4 cells, but was not effective on QOL. However, many studies have shown that this treatment improves QOL (Zhang, Zhao, & Zheng, 2019).

In this study, the effect of mindfulness-based stress-reduction therapy on CD4 count was investigated for the first time. Mindfulness-based stress reduction is an effective psychological technique that positively affects various chronic patients, and even their caregivers. Mindfulness means paying attention to the present moment with qualities such as empathy, curiosity, acceptance, and non-judgment. It is defined as a state of arousal and awareness of what is happening at the moment. Mindfulness-based intervention is a systematic and intensive approach used to acquire new types of control and wisdom based on the inner capabilities of relaxation, attention, awareness, and insight (Armani et al., 2018). The results of a review study that included 10 randomized control trials (RCTs) (including experimental and control groups) showed that the mindfulness-based stress reduction intervention program improves psychological problems in patients with a variety of chronic pains and instills these skills in them. The skills of mindfulness, pain acceptance, well-being, and life satisfaction in them, which is followed by a reduction in pain severity, disability, and the sense of helplessness caused by pain. Psychological studies have shown that people who meditate regularly are more satisfied with their lives than other groups of the community (Armani et al., 2018).

Many studies have referred to the low QOL in AIDS patients. Rasoolinajad et al. (2018) showed that AIDS patients had lower QOL, social support, and general health compared to healthy individuals. These studies also investigated the importance of psychological interventions, especially mindfulness, in enhancing the QOL of chronic patients. Mindfulness can be viewed as the ability to see and accept feelings, emotions, and physical phenomena as they occur. Speca et al. (2000) indicated that increasing mindfulness is associated with increased psychological well-being, agreement, openness, conscience, and reduced pain symptoms. People with a high level of mindfulness can recognize, manage, and solve everyday problems.

The study conducted by Zhang et al. (2019) on using this method showed that many patients with problems such as heart disease, cancer, AIDS, chronic pain, stomach problems, stress-related pain, headache, hypertension, sleep disorders, depression, anxiety, and panic used this method. This method has been effective in a wide range of people with various problems, including sadness, depression, insomnia, sexual problems, chronic pain, addiction to alcohol and drugs, eating disorders, and gambling. Shakeri, Hatami, Hasani, and Shakeri (2018) showed that mindfulness-based stress reduction intervention had improved the QOL and mental

health of diabetic patients. Momeni, Omidi, Raygan, and Akbari (2016) showed that reducing mindfulness-based stress reduction effectively improved cardiovascular patients' QOL. Khazaeili, Zargham Hajebi, Mohamadkhani, Mirzahoseini (2019) also showed that a mindfulness-based intervention program effectively increases the QOL of MS patients. Given what was stated and the results of previous studies, mindfulness-based intervention effectively increases the QOL of chronic patients. However, the results of this study indicate that its effect in increasing the QOL of AIDS patients was only 7.3%.

There was no difference between mindfulness-based stress reduction and spiritual therapy in terms of their effect on increasing CD4 cells and the QOL of AIDS patients.

The results of the present study are in line with those of the studies conducted by Nikoo Seresht et al. (2014) and Speca et al. (2000). However, the findings are inconsistent with that of Shakeri et al. (2018), Mohamadi and Rahimzada Tehrani (2018), Momeni et al. (2016), Afsharnia, Pakgohar, Khosravi, and Haghani (2016), and Mohamad Karimi and Shariatnia (2018). Mindfulness-based stress reduction is a program used to reduce stress in order to promote mental health and reduce pain. This treatment acts as both an acute and preventive treatment and a strategy for patients to cope with challenges and stressful events in their lives. As a result, it can be used as acute treatment in AIDS patients (Scott-Sheldon et al., 2019).

Based on a study conducted by Speca et al. (2000), there is an association between QOL and psychological variables such as anxiety and depression, and the biological parameters of CD4s such as lymphocytes and viral load, which should be considered in health decisions and interventions. The results of the present study indicated that mindfulness-based stress reduction and spiritual therapy were effective in increasing CD4 cells. However, they did not have a significant effect on increasing the QOL of AIDS patients. Lack of effect on increasing the QOL of AIDS patients can be attributed to the fact that QOL is a complex issue and training that increases QOL requires a longer time to be institutionalized gradually in the psychosocial life of these patients.

Conclusion

It can be concluded that mindfulness-based stress reduction had a significant effect on increasing CD4 cells and QOL in AIDS patients. Moreover, mindfulness-based stress reduction was more effective than spirituality therapy on QOL.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This article was derived from a Ph.D. dissertation of the principal author of this research. We thereby appreciate the cooperation and assistance of all professors of the Islamic Azad University, Karaj Branch, officials of the Welfare Organization, Health Centers of Shahriar, and all the study participants.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.230 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

Eating Disorders Literacy: Youth's Beliefs Related to Mental Health First Aid

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Quantitative Study

Abstract

Background: One of the community-based interventions for increasing mental health literacy is mental health first aid (MHFA) training. The current study measured literacy regarding MHFA for eating disorders (EDs) among the youth and adolescents.
Methods: This cross-sectional study was performed on those aged 16-29 years in Tehran, Iran. The sample size was 252 individuals. For data gathering, the Mental Health Literacy Questionnaire (MHLQ) was used that was modified for EDs. The validity and reliability of the Persian version of the MHLQ was confirmed. Data were analyzed using SPSS software. To determine the demographic variables that can predict participants' literacy concerning EDs, logistic regression analysis was used.
Results: Among the participants, 11.5 could successfully diagnose EDs, 34.5 were not at all confident in their ability to help, and 36.95 said they would not seek help if faced with a similar problem. Most of the participants selected "obtaining more information about the problems described in the vignette and available services" and "listening to the problems of the vignette character in an understanding way" as the correct first aid interventions.

Family and friends were mentioned as the main influential people. Higher education could significantly predict the ability to correctly diagnose the disorder (P = 0.03) and help-seeking behavior (P = 0.002). Only relatives' history of exposure to the problems described in the vignette could significantly predict higher scores in diagnosing suitable first aid (P = 0.02).

Conclusion: In general, mental health literacy regarding EDs was not suitable among the participants of this study. Thus, it seems necessary to consider targeted MHFA training, particularly in the field of EDs, to provide training in an understandable language to the community and with emphasis on seeking professional services.

Keywords: Disorders; Eating; Literacy; Mental Health; First Aid; Youth

Citation: Sayarifard A, Nazari M, Mohseni M, Afshar-Zanjani H, Goli F, et al. **Eating Disorders Literacy: Youth's Beliefs Related to Mental Health First Aid.** Int J Body Mind Culture 2020; 7(4): 214-27.

Received: 30 Aug. 2020

Accepted: 05 Oct. 2020

Introduction

Various studies have emphasized the increasing growth of obesity in developing countries, including Iran. It affects the patterns of both physical diseases and mental disorders. Moreover, widespread warnings about the associated risks of obesity as well as advertisements and media patterns on fitness may also affect youngsters, which, either intentionally or unintentionally, increase body dissatisfaction, unhealthy nutrition, weight control, and eating disorders (EDs) in vulnerable groups, which in turn increase family's concerns (Rahmani, Sayehmiri, Asadollahi, Sarokhani, Islami, & Sarokhani, 2015).

Globalization and familiarization with other cultures, particularly the western culture, fuel concerns related to attitudes and behaviors. Studies conducted in other countries have reported that EDs are not limited to one country or particular ethnic groups. Generally, it is believed that EDs are limited to the western culture, which emphasizes fitness, but it is an important issue in developing societies, and hence, problems related to EDs and individual's beliefs about their fitness should also be considered in developing societies (Mancilla- Diaz, Franco-Paredes, Vazquez-Arevalo, Lopez-Aguilar, Alvarez-Rayon, & Tellez-Giron, 2007; Baş, Karabudak, & Kiziltan, 2005; Hoek, 2016; Nishizawa, Kida, Nishizawa, Hashiba, Saito, & Mita, 2003; Szabo & Allwood, 2004; Vilela, Lamounier, Dellaretti Filho, Barros Neto, & Horta, 2004).

ED is one of the most common psychosomatic disorders and causes many problems for physical health and mental functions. In addition, it reduces quality of life (QOL) and increases the rate of mortality. By altering nutritional patterns and eating unhealthy food, ED can cause nutritional disorders and threaten our health. These disorders, in turn, can cause malnutrition, osteoporosis, amenorrhea, cardiovascular diseases (CVDs), and depression (Chamay-Weber, Narring, & Michaud, 2005; Emans, 2000).

Adolescents and youngsters are at a higher risk of developing mental illness. Studies have shown that during adolescence, due to the formation of attitudes toward the body as well as the sense of competition with their peers in sports activities, the risk of developing ED is higher (Rosendahl, Bormann, Aschenbrenner, Aschenbrenner, & Strauss, 2009; World Health Orgaznization, 2020). Various studies have reported a prevalence of 0.8 to 14 for EDs among adolescents (Chamay-Weber et al., 2005). Iranian studies have reported a prevalence of 0.9 to 11.5 for EDs (Garrusi & Baneshi, 2012; Nobakht & Dezhkam, 2000).

Less than one quarter of people with EDs seek appropriate care despite the available treatments (Hart, Jorm, and Paxton, 2012). People with EDs are also more likely to seek help from informal sources such as their social network or search for information on the internet rather than seek specific and evidence-based treatment (Hart et al., 2012; Mond, Hay, Rodgers, Owen, & Mitchell, 2006; Mond et al., 2009). Mental health literacy was first defined by Jorm (2012) in Australia as "knowledge and beliefs about mental disorders which aid their recognition, management or prevention".

Mental health literacy among the people of any society indicates their knowledge about mental disorders and their understanding of the necessity to consult a specialist and to receive the necessary interventions. Accordingly, an important step in promoting the mental health of societies is to determine the state of mental health literacy through need assessments and, if necessary, improve the situation. Various studies have shown the need for interventions to promote mental health literacy, increase help-seeking behaviors, and reduce the stigma of EDs (Ali, Farrer, Fassnacht, Gulliver, Bauer, & Griffiths, 2017; McAndrew &, Menna 2018; Griffiths et al., 2015;

Mohler-Kuo, Schnyder, Dermota, Wei, & Milos, 2016; Tillman & Sell, 2013).

Promoting mental health literacy in the social network of people with EDs can increase help-seeking. Because family and friends can play an important role in reducing stigma and barriers to receiving treatment, and can facilitate care by providing support and motivation (Hart et al., 2012; Treasure, Sepulveda, Whitaker, Todd, Lopez, & Whitney, 2007; Vogel, Wade, Wester, Larson, & Hackler, 2007). A community-based intervention for increasing mental health literacy is mental health first aid (MHFA) training which is defined as "helping someone who is engaged with a mental health problem or is in a mental health crisis." First aid is continued until receiving specialized treatment or addressing the crisis (Kitchener, Jorm, & Kelly, 2017).

MHFA contains the following interventions: supporting the person without annoying or intervening, listening without judgment, and helping him/her access the required information, services, and social support to protect him/her against further harms. MHFA is not professional consultation and is a substitute to gaining psychological information that is considered ineffective (*World Health Organization,* 2011). The MHFA training program was first implemented in Australia, its effectiveness has been reported in various studies, and it is now used in many developing countries (Hadlaczky, Hokby, Mkrtchian, Carli, & Wasserman, 2014; Jorm, Kitchener, Fischer, & Cvetkovski, 2010; Jorm, Kitchener, & Mugford, 2005; Kitchener & Jorm, 2002; Kitchener & Jorm, 2006; Lynch, Gennat, Celenza, Jacobs, O'Brien, & Jelinek, 2006; Hart, Jorm, Paxton, Kelly, & Kitchener, 2009).

If the burden of EDs is to be reduced, research focused on improving mental health literacy with the aim of increasing help-seeking and providing MHFA is essential (Hart et al., 2012). Given the importance of mental health literacy, the authors of the present study intended to adapt a MHFA guideline for EDs to the requirements of the general public (Hart, 2010). Therefore, conducting primary studies to assess the mental health literacy of the community can determine the required points of emphasis.

In Iran, few studies have been conducted on mental health literacy and MHFA. Previous studies have assessed depression literacy in students and adults in Tehran, Iran (Ghadirian and Sayarifard 2019; Sayarifard and Ghadirian 2018; Sayarifard, Ghadirian, Mohit, Eftekhar, Badpa, & Rajabi, 2015). Bahrami, Bahrami, and Chaman-Ara (2019) have studied the level of mental health literacy among high school girls in Chabahar, Iran. Noroozi, Khademolhosseini, Lari, and Tahmasebi (2018) have investigated the relationship between mental health literacy and health-promoting behaviors in adults in Bushehr, Iran.

Since no study has been conducted in this field in Iran so far, the current study aimed to investigate the awareness and beliefs of young people regarding MHFA literacy for EDs. The results of the current study can be used to identify and highlight community-based training aimed at the promotion of MHFA literacy for EDs in Iran.

Methods

This cross-sectional study was conducted on 250 adolescents. Sample size was calculated using the sample size formula for estimating prevalence and considering $\alpha = 0.05$, $P = 0.64$ (Sayarifard et al., 2015), and $d = 0.06$.

$$n = \frac{(Z_{1-\frac{\alpha}{2}})^2 \times p(1-p)}{d^2}$$

The statistical population consisted of all individuals aged 16 to 29 years in

Tehran in 2020; this age range was considered based on the definition of adolescence in Iran (Abbasi-Shavazi, Sadeghi, Hosseini-Chavoshi, Torabi, Mahmoudiani, & Torkashvand Moradabadi, 2013).

In this study, random digit dialing (RDD) was used for sampling (Ghadirian & Sayarifard, 2019). Due to the importance of following random sampling principles to avoid bias, telephone numbers were randomly selected using Excel software from among all telephone numbers (landline) of the city of Tehran and calls were made to the selected numbers. Different methods were used to reduce the non-response rates, such as calling the participants several times and messaging them on their answering machine. The participants were selected using the in-house selection method; in each household, those within the defined age range who did not have physical-mental or linguistic problems were interviewed. After obtaining verbal consent, the participants' mobile number was received to send them the link of the online questionnaire via WhatsApp or Telegram.

For data gathering, the Mental Health Literacy Questionnaire (MHLQ) was used. The MHLQ was based on Jorm's protocol (Jorm, 2012), was modified by Mond et al. for EDs, and has been widely used in mental health literacy studies (Hart et al., 2012; Mond et al., 2006b; Mond et al., 2006a; Mond, 2014; Mond et al., 2009). In this questionnaire, after providing a vignette describing a character with a psychiatric disorder, the interviewee's mental health literacy is evaluated in various fields including recognition of disorders, intended actions to seek help, beliefs and intentions about first aid, beliefs about interventions, and beliefs about people who could possibly help the vignette character. The questionnaire was translated into Persian, and then, the relevancy and clarity of its items were confirmed by 10 experts. To determine face validity, 10 adolescents and young people were interviewed and asked to express any ambiguity in the words and phrases, and if necessary, corrections were made. The reliability was checked using a pretest-posttest method on a sample of 40 individuals and Cronbach's alpha ($\alpha = 0.71$).

In the current study, after providing a vignette of a character with ED, respondents' literacy regarding recognition, help-seeking, confidence in the ability to help the person, first aid, and people that could be helpful was assessed.

The vignette in question was as follows (Chen, Mond, and Kumar, 2010):

"Maryam/Ali is a 20-year-old girl/boy who thinks he/she is overweight, but her/his current weight is below the average for her/his age and height. Therefore, S/he started to 'diet' and stopped eating all fatty foods and snacks. S/he tried to eat healthy foods (mostly fruits, vegetables, bread, and rice) and also started exercising and running, which has resulted in a few kilograms of weight loss. However, maintaining the lost weight is difficult for s/he, and her/his weight has been fluctuating (about 5 kg per week) for the past 18 months. S/he has difficulty in controlling her/his eating habits. In addition, it is difficult for s/he to control her/his diet at nights, although s/he is able to limit her/his diet throughout the day. To compensate for this overeating at nights, s/he forces herself/himself to vomit or uses laxative pills. "Due to this difficult diet and exercising, s/he has become socially isolated."

The questionnaire link was sent to about 450 potential participants, and the response rate was 57. Questionnaires in which less than 80 of the questions were answered were omitted. Eventually, 252 questionnaires were analyzed.

Data were analyzed using SPSS software (version 18; SPSS Inc., Chicago, IL, USA). Quantitative data were reported as mean and standard deviation, and qualitative data were reported as frequency.

To determine the demographic variables that predict participants' literacy

concerning EDs, logistic regression analysis was used. To correctly diagnose the disorder, help-seeking, first aid, and confidence in the ability to help were considered as dependent variables and demographic and exposure variables were considered as independent variables. Age was divided into 2 subgroups of younger than 22 years and older than 22 years, education was also divided into 2 subgroups of pre-diploma education and diploma and higher, diagnosis was divided into 2 subgroups of EDs and other diagnoses, confidence in the ability to help was divided into 2 subgroups of completely or relatively confident and refusing to help. In questions related to first aid (9 items), the correct belief was given a score of +1, and the false belief was given a score of 0 (total scores of participants ranged from 3 to 9). The mean score for first aid items was 5.87, and the scores equal to and above the mean were considered as high literacy, and the scores below the mean were considered as low literacy. A P-value of less than 0.05 was considered as statistically significant.

Results

The mean age of the participants was 22.21 ± 4.56 years. Among the participants, 123 (48.8) were younger than 22 years of age, and 129 (51.2) were 22 years and older, 108 (42.95) had a diploma or lower and 144 (57.1) had higher education, and 201 (79.8) were women and 51 (20.2) were men.

In response to the question "In your opinion, what is the main problem in this vignette?", 137 (54.4), 56 (22.2), 29 (11.5), 26 (10.3), and 4 (1.6) replied depression, poor diet, EDs, no particular problem, and sport-related problems, respectively.

In response to the question "If you had a similar problem to that described in this vignette, would you ask for help?", 159 (63.1) said yes, and 93 (36.95) said no.

In response to the question "How confident would you be in your ability to help the vignett character?", 138 (54.85) responded relatively confident, 87 (34.5) not confident at all, and 27 (10.7) completely confident.

In response to the question "Has anyone in your family or close friends ever had a problem similar to the vignette character?", 93 (36.9) said yes.

Participants' responses regarding their beliefs about initial actions or people who can be helpful are presented in table 1.

The results of the logistic regression analysis indicated that higher education significantly predicts the ability to correctly diagnose the disorder (P = 0.03) and help-seeking (P = 0.002) (Table 2). Only the history of exposure to similar behavior as that described in the vignette among relatives significantly predicted a high score in identifying useful first aid (P = 0.02). However, confidence in the ability to help was not significantly related to any of the variables.

Discussion

Today, the high prevalence of psychological problems such as EDs in the community can increase the chance of contact with those who have such disorders. The society's reactions to this issue affect the help-seeking behaviors of individuals with such disorders as well as the effectiveness of therapeutic interventions. The best reaction of society is achieved as a result of having sufficient knowledge and appropriate skills. Therefore, the present study was conducted to assess youth's knowledge and beliefs regarding MHFA literacy for EDs.

In the current study, nearly 55% of the participants interpreted the vignette as depression, and only 11.5% as ED. O'Connor, McNamara, O'Hara, and McNicholas (2016), in a study on adolescent's literacy and attitudes toward ED, found that this group recognizes depressive symptoms more significantly than ED.

Table 1. Participants' beliefs about each option or individual that could be helpful

		n (%)	95 CI of Percentage
Participants' beliefs about each option that could be helpful	Obtaining more information about the problems described in the vignette problems and available services	219 (86.9)	83-91
	Listening to the problems of the vignette character in an understanding way	183 (72.6)	67-78
	Keeping the vignette character busy to keep (his/her) mind off problems	175 (69.4)	64-75
	Talking about the vignette character's problem with a family member or close friend	165 (65.5)	60-71
	Working with a mental health professional to change the vignette character's thoughts and behaviors	162 (64.3)	58-70
	Getting advice about diet or nutrition to the vignette character	146 (57.9)	52-64
	Getting advice about weight-loss program to the vignette character	140 (55.6)	49-62
	Ignoring the vignette character until (he/she) gets over it	36 (14.3)	10-19
	Suggesting that the vignette character smoke cigarettes to relax	12(4.8)	2-7
Participants' beliefs about people who could possibly help the vignette character	Close friend	200 (79.8)	75-85
	Close family member	159 (63.1)	57-69
	Psychologist	158 (62.7)	57-69
	Psychiatrist	150 (59.5)	53-66
	Nutritionist	142 (56.3)	50-63
	Sports coach	137 (54.4)	48-61
	GP or family doctor	126 (50)	44-56
	Consultant	133 (44.8)	39-51
	Teacher or professor	117 (46.4)	40-53

Chen et al. (2010), in a study on Singaporean young women's health literacy regarding bulimia nervosa, reported that 39.6% of the participants believed that the problem was related to ED, and 13% attributed it to mental health problems and depression. The main explanation for this discrepancy is the difference in the health literacy levels of the two communities regarding EDs. However, studies have shown that although different EDs have various definitions in psychiatry, most individuals in a society are still not aware of them, so they do not recognize these disorders correctly and do not agree on therapeutic interventions with mental health professionals.

Table 2. Logistic regression for recognition, help-seeking, confidence in ability to help, and first aid score

	Recognition		Help-seeking		Confidence in ability to help		First aid score	
	Odd ratio (95CI)	P-value	Odd ratio (95CI)	P-value	Odd ratio (95CI)	P-value	Odd ratio (95CI)	P-value
Age (**< 22**)	0.68 (0.2-2.2)	0.52	0.69 (0.33-2)	0.5	1.58 (0.59-4.22)	0.36	1.31 (0.49-3.47)	0.58
Gender (**male**)	1.3 (0.5-3.54)	0.58	0.93 (0.46-1.86)	0.84	0.69 (0.36-1.33)	0.27	0.46 (0.32-1.27)	0.2
Education (<**diploma**)	4.6 (1.2-17.3)	0.03	5.37 (-1.81-15.89)	0.002	0.81 (0.3-2.17)	0.67	1.21 (0.46-3.19)	0.69
Exposure (**no**)	0.79 (0.36-1.7)	0.56	1.74 (0.96-3.14)	0.07	0.56 (0.32-1)	0.05	1.95 (1.1-3.46)	0.02
Constant	0.06	< 0.001	0.73	0.37	0.76	0.42	1.61	0.17

Bold texts indicate predictor variables in the demographic subgroups that are considered as reference groups for the dummy-coded variables.

They even have optimistic attitudes toward the interventions and often take strict views. Much of the mental health-related information available to the public is misleading. Eventually, low mental health literacy can lead to stigma towards the person with such disorders and the society overlooking them (Jorm, Kanowski, Kelly, & Kitchener, 2007; Reas, 2017; Mond, 2014).

In the current study, nearly 35% of the respondents were not confident about their ability to help the vignette character. Consistent with this finding, Sayarifard and Ghadirian (2018), who investigated adult's beliefs about MHFA, reported that nearly 20% of participants were unsure of their ability to help. Self-confidence has been defined by Fahimnia and Momtazan (2018) as "the belief that one is able to organize phenomena and events to achieve her/his desired situation by taking appropriate behaviors and actions." Self-confidence is one of the effective factors in help-seeking among people with disorders, and higher health literacy results in more help-seeking (Hart, 2010). Therefore, this finding is further evidence to support the claim that participants of the current study did not have the necessary health literacy concerning EDs. Moreover, more than one-third of the participants of the current study stated that if they were faced with the same problems, they would not seek help. Two studies conducted in Iran reported a help-seeking behavior rate of 64% and 54% for students and in the city of Tehran, respectively, (Sayarifard et al., 2015; Ghadirian & Sayarifard, 2019) which is similar to the current study results. In the systematic review conducted by Hart, Granillo, Jorm, and Paxton (2011) on 14 studies on EDs, only 23% of individuals with mental disorders sought treatment; thus, the results of the current study are more promising. However, the results of these studies are not a realistic representation of reality. Help-seeking can be defined as "any relationship to a problem or painful event to receive support, advice, or assistance," which can be categorized into formal help-seeking (from trained individuals including psychiatrists, psychologists, and counselors) and informal help-seeking (from social networks including family members and friends) (Hart, 2010). Given that help-seeking requires interactions, reasons for refusing to seek help include fear of stigma, concerns about confidentiality, lack of awareness of available services, the perception that psychological distress is only a temporary crisis at a certain age, and not receiving appropriate responses from others (Hart, 2010; Rickwood, Deane, & Wilson, 2007; Gulliver, Griffiths, & Christensen, 2010).

Most of the participants selected "obtaining more information about the problems described in the vignette and available services" and "listening to the problems of the vignette character in an understanding way" as the main appropriate first aid interventions. The results of a study conducted by Mond et al. (2006b) on the treatment and treatment-seeking for EDs among girls show that the most important action to help the vignette character was consulting with a mental health professional and receiving advice on diet or nutrition, and finding a new hobby. In the study by Chen et al. (2010), participants reported receiving dietary advice and counseling, and talking to a friend or a family member about the problem, respectively. The results of these two studies are somewhat different. According to the first aid guidelines of the Mental Health First Aid Australia (2008), as early measures increase the chance of recovery, others' actions should be in the direction of encouraging the patient to seek the help of trained and specialized people. Moreover, in response to the decisions made by an individual affected by mental disorders, one should not force or threaten her/him to end the relationship, but should always be supportive, encouraging, and positive (Mental Health First Aid Australia, 2008).

Considering what was mentioned about the need to expedite treatment and the importance of the supportive role of relatives and friends, strategies such as "keeping the vignette character busy to keep (his/her) mind off problems", which was mentioned by a significant number of the respondents (69%), and "ignoring the vignette character until (he/she) gets over it" cannot be useful measures. Thus, correct and targeted training is required. Given the effects of the suggestions of relatives and friends on the patient's choices, their inadequate and inefficient health literacy is a threat to the health of individuals with mental disorders and hinders the effectiveness of treatment (Fahimnia & Momtazan, 2018).

The participants' believed that friends and/or relatives are the key people who can help the vignette character. Similar findings are reported in other studies conducted in the Iranian society (Sayarifard et al., 2015; Ghadirian & Sayarifard, 2019). Furthermore, Ross, Hart, Jorm, Kelly, and Kitchener (2012) argued that young people avoid receiving professional therapies for mental disorders, yet they prioritize sharing problems with their peers. However, there have been reports of the higher prioritization of the recommendations of professionals such as general practitioners, specialists, psychologists, psychiatrists, counselors, and diet therapists (Chen et al., 2010; Reavley, McCann, & Jorm, 2012); since the populations surveyed in these studies have higher mental health literacy, the difference between the results of these studies and our study is not unusual. To justify this finding, it can be said that in Eastern societies, issues and problems are often raised in the family, and the family tries not to recount the problem to the community. Moreover, compared to talking to friends, referring to health professionals is more likely to result in stigma (Sayarifard et al., 2015; Chen et al., 2010), which prevents patients from referring to trained therapists. In any case, relatives and friends are the most important sources of help-seeking for individuals with mental disorders, and thus, even after seeking professional treatment, they can influence the patient's attitude and adherence to the treatment (Jorm et al., 2007). This adds to the importance of the familiarity of this group with EDs first aid.

The findings of the present study showed that higher education significantly increases the ability to correctly recognize a disorder and the help-seeking behaviors. Tavousi et al. (2016) also reported similar conclusions about the effect of education on mental health literacy (i.e., health literacy improves with increasing education). Hart (2010) also mentioned education as an effective factor in help-seeking in persons with ED. Moreover, in another study, lower level of education was associated with lower level of mental health literacy (Van Der Heide, Wang, Droomers, Spreeuwenberg, Rademakers, & Uiters, 2013). Mental health education should be provided in a way that is appropriate for those with computational and reading difficulties so that such education can be understandable and accessible (Van Der Heide et al., 2013). Furnham, Cook, Martin, and Batey (2011) also emphasized that in people with a health-related college degree, the relationship between education and mental health literacy is expected to be true. Although the systematic teaching of mental health issues in the education system of the country has thus far been overlooked, due to the willingness of the Iranian society to learn, this training can be provided in schools and universities. To enhance the knowledge of families and individuals who are not studying in schools or universities, or have lower levels of education, training persons on MHFA through valid courses by the Ministry of Health and Medical Education and Iranian Red Crescent Society (IRCS), which can provide participants with a certificate, would be a useful step. The training should be in a simple language

and with an emphasis on seeking professional services rather than giving advice on nutrition, diet therapy, and exercise, and distracting the affected person.

According to the results of the current study, a history of exposure to situations similar to that of the vignette is significantly associated with the ability to provide appropriate assistance (P = 0.02). Johnston, Smethurst, and Gowers (2005), in a study on the employment of people with a history of EDs as therapist, reported that employing these people can have a therapeutic benefit for their patients with EDs. In their study, de Vos, Netten, and Noordenbos (2016) argued that from the perspective of patients with EDs, the presence of a therapist with a history of EDs has a positive effect on the recovery process. Therapists who have a history of a mental disorder have gained empirical knowledge about the disorder and its treatment process. Other reasons for using those with a history of mental disorders as the therapist are their appropriate empathy, expertise in the subject, being a model for the patient, and establishing a proper relationship with the patient (de Vos et al., 2016).

Using an online questionnaire reduced costs, saved time, and facilitated the implementation of the research. Nevertheless, it caused problems for those who did not have a smartphone or computer; we attempted to address this limitation through increasing the sample size.

Conclusion

According to the results, health literacy regarding EDs and respondents' confidence in their ability to help was low. Given the prevalence of EDs among the youth and the direct association between education and mental health literacy, MHFA education programs, particularly in the field of EDs, should be included in education systems in such a way that non-targeted mental health literacy takes a formal and systematic form in schools and universities.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This research was supported by the health services grant 99-1-126-46210 of Tehran University of Medical Sciences. The authors gratefully acknowledge the advise and support of the Psychosomatic Research Center of Isfahan University of Medical Sciences, Isfahan, Iran. This study was approved by the ethics committee of the National Institute of Health Research affiliated to Tehran University of Medical Sciences (IR.TUMS.NIHR.REC.1399.012).

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.232 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

The Mediating Role of Conscientiousness and Openness to Experience in the Relationship of Pain Self-Efficacy, Pain Management Strategies, and Resilience with Pain Perception in Chronic Pain Patients

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Quantitative Study

Abstract

Background: Personality variables play an important and pivotal role in the multifaceted biopsychosocial model of chronic pain. The present study was performed with the aim to examine the mediating role of conscientiousness and openness to experience in the relationship of pain self-efficacy, pain management strategies, and resilience with pain perception in chronic pain patients.
Methods: The research method used was correlational and the statistical population included all 2141 patients suffering from chronic pain referred to medical centers in Tehran, Iran, in 2018-2019. Using Cochran's formula and convenience sampling method 410 patients were selected as the study participants. Data were obtained using the Revised NEO Personality Inventory (Costa & McCrae, 1992), Pain Self-Efficacy Questionnaire (Nicholas, 1989), Coping Strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983), Connor-Davidson Resilience Scale (Connor & Davidson, 2003), and the West Haven-Yale Multidimensional Pain Inventory (Kerns, Turk, & Rudy, 1985). The collected data were analyzed using structural equations with partial least squares method in SPSS and Amos software.
Results: The findings of the present study showed that conscientiousness had no mediating role in the relationship between predictor variables of self-efficacy, pain management, and resilience and the criterion variable of pain perception, but openness to experience had a mediating role in the relationship between the above predictor and criterion variables ($P < 0.001$).
Conclusion: It can be concluded that conscientiousness loses its mediating role in the presence of the variable of openness to experience, and clinically, the variable of openness to experience is effective on pain management.
Keywords: Chronic pain; Pain management; Self-efficacy; Pain perception; Personality

Citation: Latifian R, Tajeri B, Shah Nazari M, Meschi F, Baseri A. **The Mediating Role of Conscientiousness and Openness to Experience in the Relationship of Pain Self-Efficacy, Pain Management Strategies, and Resilience with Pain Perception in Chronic Pain Patients.** Int J Body Mind Culture 2020; 7(4): 228-37.

Received: 25 Aug. 2020
Accepted: 01 Oct. 2020

Introduction

Chronic pain is very common and very difficult to treat (Gewandter et al., 2015). In addition, it is a costly public health problem with high health care costs and loss of efficiency in occupations (Knight, Schaefer, Chandran, Zlateva, Winkelmann, & Perrot, 2013). Pain is the most common health issue in society and is a major cause of long-term disability in the world (Seminowicz & Moayedi, 2017). A survey in 10 developed and 7 developing countries showed that the prevalence of chronic pain among adults is 41% and 37%, respectively (Edward, Dworkin, Sullivan, Turk, & Wasan, 2016). In fact, almost all of us can easily remember painful experiences of the past, even if they happened years or decades ago (Elsenbruch & Wolf, 2015).

Chronic pain is a major problem and can be difficult to manage. When a person suffers from chronic pain for a period of time and sometimes for years, at best many different methods are used to eliminate it (Abdel, Shaheed, Maher, Williams, Day, & McLachlan, 2016). Chronic pain mostly has an emotional cause such as distress, depression, different types of fear and avoidance, and altered personalities, all of which have strange effects on interactions and changes, and may result in the loss of social relationships (Michaelis, Kristiansen, & Norredam, 2015). Furthermore, it is likely that multiple factors (biological, psychological, and social) are involved in the development of the pain process, thus necessitating an interdisciplinary management approach (Chan & Peng, 2011). Until the 1960s, researchers considered most of the individuals with chronic diseases as medical cases with specific pathophysiological bases that required physical therapies such as surgery or medication (Jensen & Turk, 2014). One of the social cognitive factors that can affect the amount of pain a person experiences is self-efficacy. Pain self-efficacy has an important role in pain intensity and accurate pain recall. People who have higher pain self-efficacy are more likely to report less pain (Ruben, Jodoin, Hall, & Blanch-Hartigan, 2018).

One of the behavioral and cognitive strategies for people with chronic pain is to try to manage pain. Studies of patients with pain have shown that the use of active coping strategies (such as trying to perform tasks despite pain, not paying attention to pain, and using muscle relaxation) has adaptive results, but the use of passive coping strategies (catastrophizing, dependence, and restricting activity) is associated with more pain, more severe physical disability, high fear, anxiety, worry, and possibility of depression (Sharma, Sandhu, & Shenoy, 2011). Another coping strategy used as an active tool and as a temporary distraction from pain is access to health care; however, this strategy increases the risk of conflict and frustration. The results of a previous study showed that severe chronic pain had negative impact on quality of life (QOL), necessary changes in daily life, and active health strategies (Cabak, Dabrowska-Zimakowska, Truszczynska, Rogala, Laprus, & Tomaszewski, 2015). Another effective factor in perceiving chronic pain is resilience. Not all people who experience stressful events are necessarily harmed (Mealer, Jones, Newman, McFann, Rothbaum, & Moss, 2012). Resilience enhances the human capacity to cope effectively with stress and the pressures of everyday challenges (Donnon, 2009). Given the potential benefits of resilience for those living with mental illness, further research on ways in which these individuals can increase their resilience is necessary (Perlman, Taylor, Molloy, Brighton, Patterson, & Moxham, 2018). Another very important factor in chronic pain disorder is the role of personality variables in chronic pain patterns, which has been neglected due to the complexity of the issue. Conscientiousness, neuroticism, extroversion, openness to experience, and agreeableness are the 5 major

domains of personality (Costa & McCrae, 1992). The impact of being conscientious on various areas of life and related issues is very important (Mike, Jackson, & Oltmanns, 2014). People with high conscientiousness are more likely to be socially law-abiding and have more control over delaying unnecessary motivations (Green, O'Connor, Gartland, & Roberts, 2015). Conscientious people have a plan and are organized (Jackson, Wood, Bogg, Walton, Harms, & Roberts, 2010). Conscientiousness depends on one's hard work as well as a one's ability to persevere and strive for success. People who work conscientiously work longer hours to get a job done (Mike et al., 2014). People with low conscientiousness easily avoid or postpone work when they encounter a problem (Littlefield, Sher, & Wood, 2010). Conscientiousness is naturally associated with success in areas such as academia and occupation (Bleidorn, 2012).

Another important personality factor is openness to experience. Openness to experience is a multifunctional personality trait that significantly demonstrates a wide range of behavioral tendencies, attitudes, and benefits associated with penetration and its diversity, openness, subtle traits (such as intellect and culture), and intelligence (Woo, Chernyshenko, Longley, Zhang, Chiu, & Stark, 2014). Openness to experience (in short, openness) is most commonly recognized as one of the Big Five personality dimensions and is associated with adjectives such as 'intelligent,' 'original,' 'curious,' 'broad-minded,' 'artistically sensitive,' and 'introspective' (DeYoung, Quilty, Peterson, & Gray, 2014). Openness is a broad, multifaceted construct derived from a factor analysis of 36 existing measures of openness-related scales, which yielded 6 facets: intellectual efficiency (i.e., processing novel stimuli quickly, remembering information, being agile, knowledgeable, and intellectual), ingenuity (i.e., mental agility in manipulating ideas or concepts refining existing information, and creating something entirely new), curiosity (i.e., being inquisitive, perceptive, and desiring to learn about scientific principals and related topics), aesthetics of art and being open to aesthetic experiences, tolerance (i.e., enjoying learning about different cultures, attending cultural events, befriending people from other cultures, and immersing oneself in a foreign culture when traveling), and depth (i.e., desiring to gain insight into self/world and to self-improve, and discussing philosophy and self-improvement) (Woo et al., 2014). Openness to experience is positively related to and can be a predictor of academic success (DeYoung, Quilty, Peterson, & Gray, 2014). One feature of openness to experience is exploratory tendency in abstract, motivational, and cognitivefactors, and the dopaminergic system that regulates positive reward stimuli and positive reinforcement that have openly motivational and cognitive aspects (Passamonti et al., 2015). As explained, given the importance and necessity of chronic pain disease, which, in addition to biological factors, has important psychological and social factors and is one of the most pervasive diseases of the last century, the researcher in the field of health psychology faced the question of what variables to use for this research. In the many studies in the field of chronic pain and identification of various variables, in the author's searches, personality factors, especially conscientiousness and openness to experience, have not been investigated in the past in the model of chronic pain perception. Given that thus far no research in the world and in Iran has focused on this subject, and considering the importance of a structural model that can predict pain perception in patients with chronic pain, this is an important research topic. Thus, the present study was conducted with the aim to examine the mediating role of conscientiousness and openness to experience in the relationship of pain self-efficacy, pain management strategies, and resilience with pain perception in chronic pain patients.

Methods

The present correlation and structural equation modeling study was performed in Tehran, Iran, in autumn and winter of 2018. The statistical population consisted of all people with chronic pain in medical centers under the supervision of Shahid Beheshti University of Medical Sciences, including Shohada Tajrish, Loghman Hakim, Modares, 11 Azar Clinic, and Royan Pain and Stress Clinic, Iran. The study participants included 2141 people. The sample size was determined to be 326 people using Cochran's formula with a probability of 410 people. The participants were selected from the mentioned centers using convenience sampling method. The study inclusion criteria were chronic musculoskeletal pain, migraine and non-migraine headaches, pain from injuries, fractures, etc. for at least 3 to 6 months, the ability to answer questions, willingness to participate in the research, and provision of an informed consent. The exclusion criteria were severe mental illnesses such as schizophrenia, bipolar disorder, acute depression, developmental disorders, and drug abuse.

Pain Self-Efficacy Questionnaire: The Pain Self-Efficacy Questionnaire (PSEQ) was developed by Nicholas in 1989 to assess pain self-efficacy of patients with chronic pain. The PSEQ has been standardized in Iran and its Cronbach's alpha coefficient has been reported to be 0.81. Its split-half reliability coefficient was obtained to be 0.87, and its test-retest reliability coefficient during a 9-day interval was obtained to be 0.77 (Asghari & Nicholas, 2001). In the present study, the Cronbach's alpha coefficient was calculated to be 0.93.

Coping Strategies In Chronic Pain Questionnaire: This 42-item scale was developed by Rosenstein and Kiev in 1983. The 6 coping strategies include return attention, reinterpreting pain, talking to oneself, ignoring pain, catastrophizing, and praying and hoping. Using the Cronbach's alpha method, the reliability of this test and its internal consistency coefficients were reported to be 0.82, 0.77, 0.82, 0.83, 0.80, and 0.74 for the main factors, respectively, and 0.926 for the whole questionnaire (Asghari & Golk, 2005). In the present study, the Cronbach's alpha of the factors was 0.83, 0.61, 0.85, 0.70, 0.62, and 0.77, and for the whole questionnaire was 0.95, respectively.

Connor-Davidson Resilience Scale: The Connor-Davidson Resilience Scale (CD-RISC) is a 25-item scale developed by Connor and Davidson (2003) to measure stress and threat resistance. The Cronbach's alpha coefficient of this scale was reported to be 0.87. Moreover, the construct validity of the scale through factor analysis indicated a general factor, the sampling adequacy value was 0.89, and the eigenvalue for this general factor was 6.64. This factor also explains 26% of the variance of the whole scale (Samani, Jokar, & Sahragard, 2007). In the present study, the Cronbach's alpha of the CD-RISC was 0.93.

Revised NEO Personality Inventory: The Revised NEO Personality Inventory (NEO PI-R) was developed by Costa and McCrae in 1992. The original version was designed to measure the 5-factor pattern of personality (neuroticism, extraversion, openness to experience, flexibility, and conscientiousness). The Cronbach's alpha coefficient reported by them for neuroticism, extraversion, openness to experience, flexibility, and conscientiousness, was, respectively, 0.85, 0.72, 0.68, 0.69, and 0.79. The long-term validity of the NEO PI-R has also been assessed. In Iran, in 1999, Haghshenas approved the 5-factor structure of this questionnaire in general. The internal consistency coefficients of the main factors using Cronbach's alpha method were, respectively, reported as 0.86, 0.73, 0.56, 0.68, and 0,87 (Garousi Farshi, Mehryar, & Ghazi Tabatabaei, 2001). In the present study, Cronbach's alpha for each factor was 0.72, 0.50, 0.73, 0.62, 0.74, and 0.78, and for the whole scale was 0.92.

The West Haven-Yale Multidimensional Pain Inventory: The West Haven-Yale

Multidimensional Pain Inventory (WHYMPI) was developed by Kerns, Turk, and Rudy in 1985 and in Iran, it was translated into Persian and validated by Mirzamani, Safari, Holisaz, and Sadidi (2007). The 3 parts of the inventory, comprised of 12 scales, examine the impact of pain on the patients' lives, the responses of others to the patients' communications of pain, and the extent to which patients participate in common daily activities. The first part of the scale includes intervention, support, pain intensity, life control, emotional distress, the second part includes punitive reactions, concern for others, distress, and confusion of others. This tool is useful for measuring the range of reactions of the patient's spouse and other important people in the patient's life, such as their perception of the patient's disability. The reliability coefficient of this questionnaire was obtained through test-retest method to be equal to 0.95. The reliability of the first part was reported as 0.86 , the second part as 0.78, and the third part as 0.75 using Cronbach's alpha (Mirzamani et al., 2007). Using Cronbach's alpha, the reliability of the first, second, and third part was reported to be 0.86, 0.78, and 0.75 (Mirzamani et al., 2007). In the present study, Cronbach's alpha of each of the three sections was equal to 0.85, 0.83, and 0.79, respectively, the Cronbach's alpha of each of the subscales was 0.88, 0.71, 0.77, 0.45, 0.83, 0.72, 0.86, 0.79, 0.67, 0.70, and 0.65, respectively, and the Cronbach's alpha of the whole scale was 0.88.

The conceptual model of the research is presented in figure 1. In this study, descriptive statistics were used to categorize the demographic characteristics of the subjects in order to calculate the frequency, percentage, and mean and standard deviation. In addition, Amos (version 22; Amos Development Corporation, Meadville, PA, USA) was used for inferential statistics in this study. Kolmogorov-Smirnov test was used to determine the normality of the data, and Pearson correlation coefficient and structural equation model were used. The collected data were analyzed in SPSS (version 22; IBM Corp., Armonk, NY, USA) and Amos.

Results

Of the respondents who specified their gender, 202 (59.4%) were men and 137 (40.3%) were women; 1 person (0.3%) did not specify his/her gender. Among these, 207 (60.9%) were married, 115 (33.8%) were single, 5 (1.5%) were divorced, and 4 (1.2%) were widowed; 9 people (2.6%) did not specify their marital status. In the studied sample, 243 people (71.5%) were currently employed and 86 people (25.3%) were unemployed (retired, unemployed, etc.); 11 people (3.2%) did not specify their employment status. Among the respondents who specified the most important person in their life, the highest number (167 persons, 49.1%) and lowest number (6 people, 1.8%) considered the most important person in their life to be their spouse, and their neighbor, respectively; 22 people (6.5%) did not specify the most important person in their life. Descriptive statistics and results of Kolmogorov-Smirnov test are presented in table 1.

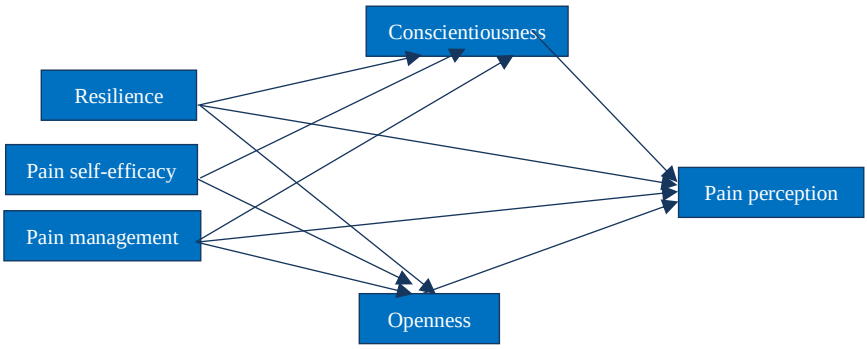

Figure 1. Conceptual model of research

Table 1. Descriptive statistics and results of Kolmogorov-Smirnov test

Variables	Mean ± SD	Z-value	P-value
Openness to experience	106.34 ± 22.75	2.93	0.001
Conscientiousness	114.55 ± 25.93	2.38	0.001
Pain self-efficacy	33.75 ± 13.47	0.83	0.496
Resilience	63.27 ± 17.06	0.90	0.390
Pain management	3.15 ± 0.80	1.22	0.103
Perception of pain	3.11 ± 0.61	0.96	0.312

SD: Standard deviation

The results of presented in table 2 show that the variable of conscientiousness does not have a mediating role in the relationship between the predictor variables of self-efficacy, pain management, and resilience, and the criterion variable of pain perception; but the variable of openness to experience has a mediating role in the relationship between the above predictor and criterion variables and can affect the relationship between these variables and pain perception. Moreover, according to VIF results, the strongest mediating role is the mediating role of openness to experience in the relationship between self-efficacy and pain perception.

Table 3 results show that the goodness-of-fit indices supported the optimal fit of the model with the collected data. Fitted conceptual model of the studied variables is presented in figure 2.

Discussion

The results of the present study showed that conscientiousness and openness to experience are both mediators between self-efficacy, pain management, and resilience and chronic pain perception. However conscientiousness has no mediating role when combined with openness to experience in this model. In explaining the findings, it can be said that people with more openness to experience seek knowledge and the experience of new events at any time, wider vision, morecreativity, more intelligence, and higher exploratory, cognitive, and emotional processing, and havemore motivation and less physical changes (Heart rate, blood pressure, arousal, etc.), which act against stress (Shi, Dai, & Lu, 2016; Christensen, Cotter, & Silvia, 2019; Woo et al., 2014; Connelly, Ones, Davies, & Birkland, 2014; Chan & Consedine, 2014; DeYoung et al., 2014; Mike et al., 2014). This research is in line with the researches by O'Suilleabhain, Howard, and Hughes, (2018), Magyar et al. (2017), Niess and Zacher (2015), Sibille et al. (2012), DeYoung et al (2014), Williams (2011), and Saroglou and Muñoz-García (2008).

Table 2. Results of examining the mediating role of the variables of conscientiousness and openness to experience

Paths	Direct effect		Indirect effect		Total effect		VIF
	Beta	P	Beta	P	Beta	P	
Self-efficacy→ Conscientiousness	0.263	0.001	-	-	0.263	0.001	-
Self-efficacy→ Pain perception	0.058	0.300	0.096	0.001	0.154	0.005	
Conscientiousness→ Pain perception	0.125	0.104	-	-	0.125	0.104	
Self-efficacy→ Openness to experience	0.319	0.001	-	-	0.319	0.001	0.523
Openness to experience→ Pain perception	0.199	0.008	-	-	0.199	0.008	-
Pain management→ Conscientiousness	0.134	0.034	-	-	0.134	0.034	
Pain management→ Pain perception	0.265	0.001	0.052	0.016	0.317	0.001	
Pain management→ openness to experience	0.179	0.008	-	-	0.179	0.008	0.118
Resilience→ Conscientiousness	0.396	0.001	-	-	0.396	0.001	-
Resilience→ Pain perception	0.220	0.001	0.095	0.001	0.315	0.001	
Resilience→ Openness to experience	0.227	0.001	-	-	0.227	0.001	0.170

Table 3. Goodness of fit indices for a fitted conceptual model

Fitness Indices	χ^2/df	Root mean square error of approximation (RMSEA)	Adjusted goodness of fit index (AGFI)	Goodness of fit index (GFI)	Comparative fit index (CFI)
Structural model	2.46	0.057	0.91	0.95	0.93

What was obtained from this study is that, when the variable of conscientiousness is placed next to the variable of openness to experience, it loses its mediating role. Openness to experience in this model has a greater mediating role than conscientiousness. Therefore, openness to experience mediates pain self-efficacy, pain management strategies, and resilience as predictors of chronic pain perception in people with chronic pain. Clinically, openness to experience is effective in controlling pain. Thus, training programs that include openness can be implemented among individuals with chronic pain.

The Biopsychosocial model has achieved the practical scientific-professional characteristics of chronic pain (Gatchel, McGeary, McGeary, & Lippe, 2014). Briefly speaking, the biopsychosocial approach considers pain and disability as a multidimensional interaction between physiological, psychological, and social factors, the affect they have on each other results in chronic and complex pain syndromes (Jensen & Turk, 2014). Studies on people with chronic pain have provided evidences that psychological variables play an important role in determining the risk of pain, shaping long-term pain modification, and modulating pain outcomes of treatment (Edward et al., 2016). The experience of pain is not a merely biological experience, but the perceptual experience of pain is a complex multifaceted phenomenon (Linton & Shaw, 2011). In the perceptual experience of pain, from the moment of sensory transfer of the painful stimulus from the peripheral nervous system to the central nervous system, the psychological processes of attention, interpretation, coping strategies, and pain behavior are involved. Each of these psychological processes, influenced by previous learning, cognitions, emotions, environmental factors, positive and negative outcomes, culture, and family, lead to different pain processing and behaviors (Boersma, Carstens-Söderstrand, & Linton, 2014).

Conclusion

It can be concluded that conscientiousness loses its mediating role in the presence of the variable of openness to experience, and clinically, the variable of openness to experience is effective on controlling pain.

Conflict of Interests

Authors have no conflict of interests.

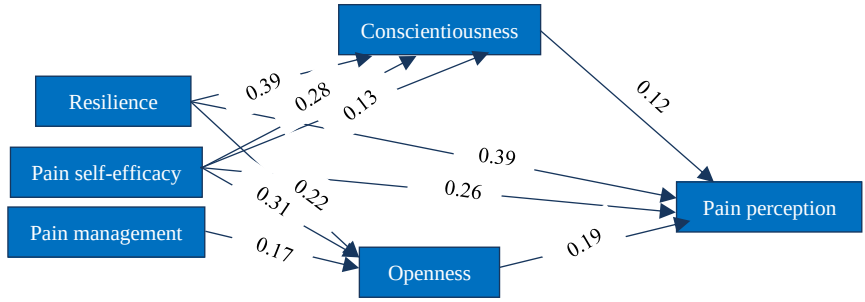

Figure 2. Fitted conceptual model of the studied variables in standard mode

Acknowledgments

The authors would like to express their appreciation and gratitude to the Deputy Director of Shahid Beheshti Medical Education and the Clinical Research Development Unit of the hospitals of Shohadaye Tajrish, Loghman Hakim, and University of Tehran Clinic for their support and cooperation during the study period.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.238 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

The Effectiveness of Solution-Focused Therapy on Life Orientation, Mental Health, and Meaningfulness of Life in Patients with Cardiovascular Diseases

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Quantitative Study

Abstract

Background: Taking into account the possible role of psychological factors in cardiovascular diseases (CVDs) and the fact that they interfere with the biological factors that cause CVDs, this research was designed to evaluate the efficacy of solution-focused therapy on mental health, life orientation, mental health, and meaningfulness of life in patients with CVDs.
Methods: This was a quasi-experimental analysis with a pretest-posttest design, follow-up, and a control group. All cardiovascular patients who had referred to the Isfahan Cardiovascular Research Center, Isfahan, Iran, between January and March 2019 and had a history of heart attack or open-heart surgery in the previous month were included in the statistical population of this study. In this study, 30 patients with CVDs wishing to participate in the study were selected using convenience sampling from among patients who had the inclusion criteria and were randomly assigned to experimental and control groups (each group included 15 patients). Data were collected using Life Orientation Test (LOT), Meaning in Life Questionnaire (MLQ), and General Health Questionnaire (GHQ). The collected data were analyzed using repeated measures analysis of variance (ANOVA) and analysis of covariance (ANCOVA) in SPSS software.
Results: The results indicate that there was a significant difference between the solution-focused therapy and control groups in terms of the mean scores of physical symptoms ($F = 95.46$; $P < 0.0001$), anxiety ($F = 70.36$; $P < 0.0001$), social functional dysfunction ($F = 54.11$; $P < 0.0001$), depression ($F = 26.70$; $P < 0.0001$), life orientation ($F = 22.36$; $P < 0.0001$), and meaningfulness of life ($F = 68.21$; $P < 0.0001$).
Conclusion: The findings of this study have shown that solution-focused therapy is beneficial for mental health, life orientation, and meaningfulness of life in patients with CVDs and can be used in treatment centers to enhance the status of these patients.
Keywords: Solution-focused therapy; Mental health; Cardiovascular disease; Life orientation

Citation: Abdellahi SM, Sadeghi M, Roohafza H, Tavakoli M, Dadras H, Kouchakzadeh P. **The Effectiveness of Solution-Focused Therapy on Life Orientation, Mental Health, and Meaningfulness of Life in Patients with Cardiovascular Diseases.** Int J Body Mind Culture 2020; 7(4): 238-47.

Received: 25 Aug. 2020
Accepted: 15 Sep. 2020

Introduction

A healthy heart is necessary for human life, and cardiovascular disease (CVD) is not unique to any age or sex. However, appropriate interventions can reduce the risk of CVD or its complications (Burrows, Li, Geiss, & Gregg, 2018). Psychological factors can play a major role in the process of CVD and it is almost certain that these factors interact with biological factors to implement their effects on CVD (Rasquinha, 2013). CVDs include diseases of the vascular system that affect the heart, brain, and peripheral areas of the body's blood supply (de Souza et al., 2015). The most common cause of death in Iran with 39.3% of total deaths is CVD, of which 19.5% are related to heart attack, 9.3% to stroke, 3.1% to high blood pressure, and the remaining to other CVDs (Ettehad et al., 2016). By causing numerous crippling physical and psychological triggers such as pain, lack of health, loss of job, sensory deprivation, and imminent death, and varying degrees of mental reactions such as fatigue and anxiety, these diseases cause the patient to feel powerless and lose self-confidence (Gellis & Bruce, 2010). Owing to the duration and severity of the condition, the physical, social, cultural, and mental health of these patients vary significantly over time (Giedd, Raznahan, Alexander-Bloch, Schmitt, Gogtay, & Rapoport, 2015). Therefore, psychological factors can be said to play a central role in CVDs (Kruse, Bolton, & Freriks, 2015). The World Health Organization (WHO) has defined mental health as a state of complete physical, mental, and social well-being (Lawrence et al., 2015) that enables a person, despite adverse circumstances and negative consequences, to continue his/her adaptive growth and to sustain his/her mental health (Lonn et al., 2016). Mental health is recognized by Corrsini as a mental condition in which a person is relatively free of symptoms of anxiety, able to communicate constructively, and able to cope with stressful life-stimulus (Maljanen, Knekt, Lindfors, Virtala, Tillman, & Harkanen, 2016). Therefore, decreased mental health not only decreases personal and social adaptability in an individual, but also affects the protection of mental health of the family and other social groups (Melton et al., 2018).

Life orientation is one of the variables that play a key role in the lives of patients with CVD in resolving problems and their subsequent stress. Life orientation is a potentially influential factor in patient enhancement and compatibility (Moss, Howlin, Savage, Bolton, & Rutter, 2015). Physical and psychological wellbeing is positively associated with life orientation, which is assessed by different scales such as positive response to medical intervention, mental health, positive creation, traumatic life events avoidance, satisfaction and happiness in life affairs, problem-solving, and predicting problems. The orientation of life can be described as a healing, multi-dimensional and influential factor, in which incompatibility with life deprivations plays a vital role. Physiologists have also acknowledged that the orientation of life may have a psychological effect on disease (Nichols, Townsend, Scarborough, & Rayner, 2014). "Life orientation is very similar to life structure; life orientation is the willingness, amid present obstacles, to plan passages towards desired goals and the agent with the requisite stimulating factors to use these passages" (Rabinovich, 2016). According to this definition, life orientation is a powerful factor because it gives individuals valuable goals, and it may influence people through making their lives purposeful, despite daunting and non-resolvable barriers (Reddy, Thirumoorthy, Vijayalakshmi, & Hamza, 2015).

Smout (2012) found that people with CVD experience higher levels of stress and depression than others, and often lose their meaning of life. Meaning-seeking is the most important motivation of the human that distinguishes him from other beings (Hayes, 2016). In critical situations and incurable illnesses, meaning-seeking plays a very important role. Meaning-seeking makes life meaningful to the person, and thus, helps the

individual to cope with stressful situations. Meaningfulness of life can increase the ability to deal with problems in life by creating meaning and responsibility in the individual (Twohig & Crosby, 2010).

Different therapeutic approaches have been introduced to improve mental wellbeing in individuals with CVDs (Sabatine et al., 2017). Short-term solution-focused therapy is a non-pathological approach to treatment that emphasizes on finding solutions rather than focusing on issues and conditions (the problem-oriented view) (Salome et al., 2017; Frels, Leggett, & Larocca, 2009). In their research, Maljanen et al. (2016) concluded that short-term solution-focused counseling in annual follow-ups was successful in improving depression and anxiety disorders. The influence of short-term solution-focused therapy on improving mild symptoms of depression was studied by Reddy et al. (2015) They found that depression symptoms had been improved after short-term solution-focused therapy sessions. Given the growing number of patients with CVDs and their major problems in the mental health field and life orientation of patients with CVDs, it seems that many of these patients do not have adequate expertise and ability to handle such problems correctly. Using solution-focused therapy can reduce these issues for patients with CVDs. The present research was aimed at the examination of the efficacy of solution-focused therapy on mental health, life orientation, and meaningfulness of life in patients with CVDs.

Methods

This quasi-experimental study was conducted with a pretest-posttest design, follow-up, and a control group. The study's statistical population included all cardiovascular patients referred to the Isfahan Cardiovascular Research Center, Isfahan, Iran, between January and March 2019 with a history of heart attack or open-heart surgery in the previous month. In this study, 30 patients with CVDs who were willing to participate in the study were chosen using convenience sampling method. The participants of the study met the study inclusion criteria and were randomly allocated to experimental (n = 15) and control (n = 15) groups. In the pretest and posttest phases, the participants were asked to complete the Life Orientation Test (LOT), Meaning in Life Questionnaire (MLQ), and General Health Questionnaire (GHQ). The criterion for the diagnosis of CVDs was the diagnosis reported by a cardiologist in the patient's medical record. Patients referred to the rehabilitation unit of the Isfahan Cardiovascular Research Center were selected as the study participants. In addition, the strategy and aims of the research and care methods were explained to the participants. Finally, as a representative group, those who met the inclusion criteria participated in the analysis. The patients in the experimental group, in addition to receiving regular medical care, attended weekly solution-focused therapy sessions (n = 8) for 90 minutes. However, the subjects in the control group only received regular medical care. The study participants in both groups filled out the LOT, MLQ, and GHQ at baseline and immediately after the intervention.

All ethical principles were considered in the present study. The participants were informed of the intent of the research and its phases of execution and were asked to sign informed consent forms. They were also assured of the confidentiality of their information. In addition, they were permitted to leave the study whenever they wished, and if desired, they would have access to the results of the research. This research was reviewed at Isfahan University of Medical Sciences and approved with the ethics code IR.MUI.MED.REC.1399.093.

Life Orientation Test: In order to quantify individual differences in generalized optimism versus pessimism, the LOT was developed (Carver, Scheier, & Weintraub, 1989). The LOT is an 8-item test; 4 items are positively worded and 4 are negatively

worded. The items are scored based on a 4-point Likert scale ranging from 1 to 4. Adequate psychometric properties of the LOT have been reported in Iranian samples (Souri & Hasanirad, 2011). In the present study, the internal consistency coefficient of the scale was 0.84.

Meaning in Life Questionnaire: The MLQ was first developed by Steger, Frazier, Oishi, and Kaler (2006). The questionnaire consists of 10 questions scored on a 7-point Likert scale ranging from completely false to completely true. The questionnaire had 44 items, and then, based exploratory factor analysis, items were eliminated and the two factors of meaning in life and meaning-seeking in life reached a total of 17 items. Then, based on confirmatory factor analysis, 7 items were eliminated, and thus, the final questionnaire consisted of 10 items. The sum of the scores of questions 2, 3, 7, 8, and 10 indicates the extent of the individual's effort to find meaning, and the sum of the scores of questions 1, 4, 5, 6, and 9 determines the meaningfulness level of one's life. There was a slight negative correlation between the two factors of existence and the search for meaning in life (r = -0.19) (Kim & Franklin, 2015). The validity and reliability of this scale were 0.73 and 0.81, respectively.

General Health Questionnaire: The GHQ consists of 28 items scored based on a 4-point Likert scale (Never, Typically, Sometimes, Most often), and the lower the score, the lower the mental health. The GHQ was created in 1972 by Goldberg et al., and was translated into Persian and normalized in Iran. The overall test reliability coefficient was reported as 0.88 and the reliability coefficients of its subscales were reported as 0.77, 0.81, 0.50, and 0.58, respectively. The questionnaire has 0.84-88 and 0.77-93 sensitivity and specificity, respectively, and its error in classification is 8.2% (Baldwin, King, Evans, McDougall, Tucker, & Servais, 2013).

Descriptive statistics, including frequency tables and graphs, core indices, and scale dispersion indices (e.g., mean and standard deviations), and inferential statistics, including analysis of variance (ANOVA), multivariate analysis of covariance (MANCOVA), and the Kruskal-Wallis test, were used to analyze the data in SPSS software (version 22; IBM Corp., Armonk, NY, USA). Inferential statistics were used to compare age and gender between the 2 groups and to ensure that the baseline characteristics of the groups for these 2 variables were identical.

Results

In the solution-focused therapy (n = 15) and control (n = 15) groups, a total of 30 patients were studied. The mean age of the participants in the solution-focused therapy and control groups was 57.73 ± 9.39 and 53 ± 9.81 years respectively. The demographic features of the present study participants are tabulated in table 1.

The mean scores of mental wellbeing, life orientation, and meaningfulness of life in the experimental and control groups are presented in table 2.

Table 1. Frequency distribution and comparison of demographic characteristics

Variable		Solution-focused group		Control group		P-value
		Frequency	Percentage	Frequency	Percentage	
Gender	Woman	7	46.7	8	53.3	0.37
	Man	8	53.3	7	46.7	
Education	Pre-diploma	10	66.7	8	53.3	0.12
	Diploma and Associate degree	3	20	4	26.7	
	Bachelor's degree	1	6.7	2	13.3	
	Master's degree	1	6.7	1	6.7	
Marital status	Single	1	6.7	2	13.3	0.26
	Married	14	93.3	13	86.7	

Table 2. The mean and standard deviation of the study variables in the experimental and control groups

Variable	Group	Pretest	Posttest	Follow-up
		Mean± SD	Mean ± SD	Mean ± SD
Physical symptoms	Experimental	15.00 ± 3.07	12.60 ± 2.97	12.40 ± 3.08
	Control	13.73 ± 2.08	13.27 ± 2.08	13.27 ± 2.08
Anxiety	Experimental	15.40 ± 3.35	12.73 ± 3.34	12.60 ± 3.52
	Control	15.47 ± 1.55	15.00 ± 1.51	15.13 ± 1.76
Social Dysfunction	Experimental	15.27 ± 3.28	13.00 ± 3.44	12.87 ± 3.62
	Control	15.33± 1.75	14.67 ± 1.63	14.67 ± 1.63
Depression	Experimental	15.53 ± 3.46	13.13 ± 3.48	13.00 ± 3.66
	Control	15.93 ± 1.79	14.87 ± 1.80	14.73 ± 2.08
Mental health	Experimental	15.93 ± 1.79	14.87 ± 1.80	14.73 ± 2.08
	Control	74.40 ± 4.17	70.73 ± 3.53	70.53 ± 3.83
Life orientation	Experimental	20.33 ± 1.79	23.40 ± 1.72	23.40 ± 1.54
	Control	19.60 ± 1.76	20.00 ± 2.03	19.73 ± 20.12
Meaning-seeking	Experimental	2.16 ± 19.47	2.16 ± 18.67	2.29 ± 14.53
	Control	1.88 ± 15.47	1.92 ± 14.87	1.87 ± 14.67

SD: Standard deviation

The results of Box's M test, Mauchly's, and Levene's tests were tested. Since the Box's M test was not relevant for any of the study variables, the homogeneity of the variance-covariance matrices was correctly observed. Moreover, the non-significance of each of the variables in Levene's test confirmed inter-group variance equality and that the dependent variables' error variance was equal in all classes. The hypothesis of the equality of variances within subjects was therefore approved.

The scores of both tests were at the level of 0.0001, suggesting that the mean test scores differed significantly between the experimental and control groups, thus illustrating the efficacy of solution-focused therapy on life orientation and mental wellbeing (Table 3). It should be noted that a significant difference between the scores of life orientation in the experimental and control groups at a significant level of 0.0001 was shown by the Wilks' Lambda test with the same sum of 0.52 and test F of 12.2.

The results presented in table 4 indicate that there is a significant difference between the solution-focused therapy and control groups in terms of the mean scores physical symptoms ($F = 95.46$; $P < 0.0001$), anxiety ($F = 70.36$; $P < 0.0001$), social functional dysfunction ($F = 54.11$; $P < 0.0001$), depression ($F = 26.70$; $P < 0.0001$), life orientation ($F = 22.36$; $P < 0.0001$), and meaningfulness of life ($F = 68.21$; $P < 0.0001$).

Discussion

The purpose of this study was to determine the efficacy of solution-oriented therapy on mental health, life-orientation, and meaningfulness of life among CVD patients.

Table 3. Multivariate analysis of variance

Effect	Test	Value	F	Hypothesis df	Error df	P-value	Eta
Time	Pillai's Trace	0.70	32.53	2	27	0.0001	0.70
	Wilks' Lambda	0.29	32.53	2	27	0.0001	0.70
	Hotelling's Trace	2.41	32.53	2	27	0.0001	0.70
	Roy's largest Root	2.41	32.53	2	27	0.0001	0.70
Time*group	Pillai's Trace	0.47	12.20	2	27	0.0001	0.47
	Wilks' Lambda	0.52	12.20	2	27	0.0001	0.47
	Hotelling's Trace	0.90	12.20	2	27	0.0001	0.47
	Roy's largest Root	0.90	12.20	2	27	0.0001	0.47

Table 4. Comparison of pretest and follow-up scores of life orientation in experimental and control groups using repeated measures analysis of variance

Variables	Source of effect	SS	df	MS	F	P-value.	Eta square
Life orientation	Time	30.82	2	15.41	44.84	0.0001	0.61
	Time*Group	0.60	2	4.30	22.36	0.0001	0.30
	Error	19.24	56	0.34			
	Group	6.40	1	6.40	1.31	0.26	0.04
	Error	136.22	28	4.86			
Physical Symptoms	Time	184.02	1.44	126.98	276.69	0.0001	0.90
	Time*Group	160.68	1.44	110.88	95.46	0.0001	0.89
	Error	18.62	40.57	0.45			
	Group	613.61	1	613.61	7.88	0.009	0.22
	Error	2178.44	28	77.80			
Anxiety	Time	28.15	1.19	23.47	15.37	0.0001	0.35
	Time*Group	7.22	1.19	6.02	70.36	0.001	0.59
	Error	51.28	33.58	1.52			
	Group	401.11	1	401.11	2.84	0.10	0.009
	Error	3951.51	28	141.12			
Social Dysfunction	Time	11.75	1.49	7.88	23.14	0.0001	0.25
	Time*Group	8.02	1.49	5.37	54.11	0.0001	0.47
	Error	14.22	41.76	0.34			
	Group	236.84	1	236.84	2.04	0.16	0.06
	Error	3239.64	28	115.70			
Depression	Time	34.86	1.65	21.09	47.13	0.0001	0.62
	Time*Group	19.75	1.65	11.95	26.70	0.0001	0.48
	Error	20.71	46.28	0.44			
	Group	266.94	1	266.94	3.10	0.08	0.10
	Error	2409.82	28	86.06			
Meaning-seeking	Time	176.15	1.24	141.06	107.95	0.0001	0.79
	Time*Group	220.15	1.24	176.29	68.21	0.0001	0.82
	Error	45.68	34.96	1.30	-	-	-
	Group	100.27	1	100.27	0.91	0.34	0.03
	Error	3082.71	28	110.09	-	-	-

SS: Sum of square; df: Degree of freedom; MS: Mean of Square

The findings showed that solution-oriented care was effective on mental health, life orientation, and meaningfulness of life among patients with CVDs. The findings of Baldwin et al. (2013), Ime (2019), Koorankot, Rajan, and Ashraf (2019), and Zatloukal, Zakovsky, Bezdickova (2019) were consistent with these findings.

It can be said that solution-oriented therapy can help a person in the face of these crises and stressful situations with the right decision-making and communication skills to be less in need of support and to be successful in resolving interpersonal problems as this treatment has been proven to solve many psychological problems (Plosker & Chang, 2014). By drawing their attention to discovering different solutions rather than problems and changing their view of the disease, solution-oriented therapy changes patients' attitudes toward difficult situations, and in turn, gradually enhances their ability to deal with problems. Moreover, by creating miraculous situations and questions, it encourages them to act differently, and consequently, gives them satisfaction and hope, which in turn changes their sense of direction in life. With the belief that cardiovascular patients are able to identify goals and form effective solutions to problematic situations, short-term solution-oriented therapy is necessary to empower clients by discovering their previous solutions to problems and encouraging them to repeat useful and effective behaviors that form the basis of these solutions to achieve goals (Perel et al., 2015). Therefore, solution-oriented

treatment improved the mental health of cardiovascular patients.

In explaining the effectiveness of solution-oriented therapy on improving life orientation in people with CVDs, it can also be said that the solution-oriented treatment model refers to clients as competent specialists with the ability to solve their own problems. In this method, treatment is seen as a process by which clients and therapists reconstruct the desired facts. Furthermore, the focus of solution-oriented treatment sessions is on times when there are no problems (Switek, 2014). Therefore, patients become more conscious of their talents, capabilities, and feelings following solution-oriented therapy. In solution-oriented counseling, patients are helped to articulate their expectations in a constructive, definite, achievable, and observable manner, and a target is set and grievance strategies are evaluated for clients to learn about various behaviors that contribute to greater satisfaction. (Wichowicz, Puchalska, Rybak-Korneluk, Gasecki, & Wisniewska, 2017). By showing the client their strengths and successes, solution-oriented therapy directs the patient's focus from the problems and weaknesses caused by the disease to the existing solutions, and thus, helps the patient to become a healthy individual. Empowered to assess their strengths and successes, patients in turn are in a better mental condition and this improves their life orientation, because when they are in a better mental condition, hope to recover and strive for performing alternative activities strengthens them, and their life orientation increases as a result. Therefore, group-based solution therapy improved the meaningfulness of life in cardiovascular patients.

In explaining the effectiveness of solution-oriented therapy on improving semantics in people with CVD, it can be said that short-term treatment, due to the use of a predetermined time frame, clear treatment goals, purposeful sessions, and complete focus on client problems, has been favored by many therapists and clients and is used in a wide range of disorders (Gundogdu, 2019). In solution-oriented therapy, different solutions are considered for how to cope with problems and emphasize the strengths and abilities of patients, and patients learn that not only should they not give into problems and disabilities. They learn other skills to solve their problems and learn to take a new approach to dealing with their problems. This is very helpful in improving their self-esteem and satisfaction (Jabouin-Monnay, 2016). Another goal of solution-oriented therapy is to use the technique " insdead of" forcing people to look for the abilities they have not used recently and to use those unused skills to deal with their problems. In addition, exercise makes patients feel better and more satisfied, and consequently, improves and enhances patients' mental health.

This study was conducted in a population made up of only cardiovascular patient in Isfahan; thus, caution should be exercised when generalizing the findings to other populations and cities. It is suggested that this research be performed in other cities and that their findings be compared. In addition, it is proposed that the study be performed on a larger population of patients with CVDs in order to obtain more detailed results in the data analysis. It is also suggested that the effectiveness of this intervention program be evaluated on cardiovascular patients with physical illnesses and their important aspects of life, and health-related quality of life (QOL). It is also recommended that this research be followed up with individual counseling after group training. By implementing solution-focused therapy workshops the ministry of health, the State Welfare Organization, hospitals, and psychological and counseling organizations can provide opportunities for psychologists, physicians, and nurses to become more familiar with the concepts of education and solution-focused therapy.

Conclusion

The findings of this study have shown that solution-focused therapy is beneficial for mental health, life orientation, and meaningfulness of life in patients with CVD and can be used in treatment centers to enhance the status of these patients.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.242 *Published by Vesnu Publications*

International Journal of Body, Mind and Culture

The Effectiveness of Cognitive-Behavioral Group Therapy and Existential Group Therapy on Anxiety in Addicted Patients Undergoing Methadone Maintenance Treatment

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Quantitative Study

Abstract

Background: The aim of this study was to compare the effects of cognitive-behavioral group therapy (CBGT) and existential group therapy on anxiety in addicts undergoing methadone maintenance treatment (MMT).

Methods: The present semi-experimental research was conducted with a pretest-posttest design, follow-up, and a control group. The statistical population of the study consisted of all addicted men undergoing MMT and referring to addiction treatment and harm reduction clinics in Qazvin, Iran, in 2019 (n = 1139). A total of 36 addicted patients referring to addiction treatment and harm reduction clinics were randomly assigned to 2 experimental groups (12 in each group) and 1 control group (n = 12). After random assignment, 1 experimental group participated in 10 sessions (120 minutes for each session) of existential therapy and the other experimental group participated in 10 sessions (120 minutes for each session) of CBGT. The Beck Anxiety Inventory (BAI) was used to collect the data. Data were analyzed using mixed analysis of variance (ANOVA).

Results: The results showed that CBT (F = 16.84, P = 0.0001) and existential group therapy (F = 4.81, P = 0.0001) decreased anxiety levels at the level of 99% confidence interval (CI). This effect remained stable until the follow-up stage. In addition, among the two methods, CBGT was more effective on anxiety than existential group therapy (P = 0.017).

Conclusion: Therapists should prioritize CBGT over other treatment modalities to reduce psychological problems such as anxiety in addicts.

Keywords: Existential group therapy; Cognitive-behavioral group therapy; Anxiety; Methadone maintenance treatment addicts

Citation: Alami S, Bakhtiarpour S, Asgari P, Seraj-Khorrami N. **The Effectiveness of Cognitive-Behavioral Group Therapy and Existential Group Therapy on Anxiety in Addicted Patients Undergoing Methadone Maintenance Treatment.** Int J Body Mind Culture 2020; 7(4): 248-55.

Received: 14 Jun. 2020
Accepted: 20 Aug. 2020

Introduction

Drug addiction, as one of the 4 crises of the 21st century, has influenced all societies (Shamsi Meymandi, Zia Aldini, & Sharifi Yazdi, 2008). Drug addiction is a psychiatric disorder, with biological, psychological, and social dimensions each of which is involved in the development and progression of the disease, during which the person loses control over substance use and continues to use drugs despite their harmful consequences (Murthy, Mahadevan, & Chand, 2019). To reduce the harm of substance abuse, methadone maintenance treatment (MMT) was developed in 1964, and its developers stated that taking high doses of methadone would reduce the tendency to use substances and prevent the euphoria caused by its use (Crapanzano, Hammarlund, Ahmad, Hunsinger, & Kullar, 2019).

In this method, the addicted person is treated with methadone for several years and sometimes for the rest of his or her life. As a result of reducing temptation, the patient can use it for constructive activities instead of wasting his or her energy, time, and effort in providing substances. Although this method might not result in a complete cessation of substance use, it will improve the social functioning of addicted people (Peles, Sason, Malik, Schreiber, and Adelson, 2016). Hence, it seems that rehabilitation and harm reduction centers need more psychological therapies to change the attitude of substance abusers, and the need to pay attention to psychological and non-pharmacological therapies is being felt more than ever (Kamarzarin, Zaree, & Brouki, 2012).

One of the psychological interventions used as a group activity to treat mental disorders is cognitive-behavioral group therapy (CBGT). The goal of cognitive approaches is mainly to change addictive behavior through changing cognitive distortions such as dysfunctional behavior maintenance beliefs, or through improving positive cognitions such as self-efficacy and motivation to change behavior (Kamarzarin, et al., 2012). The goal of this treatment is to help people to be able to identify their dysfunctional cognitions and replace them with efficient cognitions, and cope with unpleasant events that may occur in their lives (Ahmadvand, Saie, Sepehrmanesh, & Ghanbari, 2011). In fact, the goal of CBGT is not merely a change of mind, but an attempt to change the way people think. While working on the thoughts, therapists try to speed up the treatment by prescribing a set of behaviors as assignment at home and within the personal environment of the individual. These assignments, in addition to gradually creating new experiences, gradually prepare the patient for greater changes (van Emmerik-van et al., 2019). Cognitive-existential group therapy is another group of psychological interventions used to treat mental disorders. Considering the transient nature of human existence, instead of pessimism and isolation, existential group therapy calls man to effort and activity. At its foundation is the view that the cause of destruction in human beings is not their sufferings and undesirable destiny, but the meaninglessness of life (Farkas & Andritsch, 2018). The main goal of existential group therapy is to help individuals have a real presence in the universe. In other words, it helps people to establish a real and honest connection with life and its phenomena, and in fact, instead of focusing on external problems, it emphasizes the current relationships of members with each other (Thir & Batthyany, 2016).

Previous studies have reported the effects of CBGT on addicts. These include the effects of CBGT on improving anxiety and reducing alcohol dependence among alcoholics (Kiluk, Nich, Babuscio, & Carroll, 2010). Bador and Kerekes (2020) found that CBGT reduced depression and anxiety, increased self-esteem, and decreased

hopelessness in substance abusers, leading to greater self-esteem before treatment and somehow evaluates their ability to deal with more positive issues and problems, resulting in improved self-esteem and reduced depression in their lives. Can and Okanli (2019) investigated the impact of CBT on depression, anxiety, and self-efficacy among individuals with alcohol abuse in Turkey. They found that the intervention based on CBT was effective in reducing depression and anxiety and increasing self-efficacy in these individuals.

Due to the lack of effectiveness of drug treatments in opioid addicts, which is usually due to medical and psychological disorders in these patients and the high cost of health and medical cares, paying attention to non-pharmacological and group therapies based on psychological approaches such as existential group therapy and CBGT for addicts is necessary. The results of such studies can provide health professionals with valuable information that can be used to increase the effectiveness of psychological therapies. Given what was stated above, the present study was conducted to compare the effects of CBGT and existential group therapy on anxiety in addicted patients undergoing MMT in Qazvin Province, Iran.

Methods

The present semi-experimental research was performed with a pretest-posttest design, follow-up, and a control group. The statistical population of the present study included all 1139 addicted men who underwent MMT and referred to addiction and harm reduction clinics in Qazvin in 2019. Given the effect size of 0.25, alpha value of 0.05, and test power of 0.80 in 3 groups, the minimum number of samples to achieve the desired power was determined to be 12 people in each group (a total of 36 people) (Quinn, & Keough, 2002). The study inclusion criteria included at least 1 year of methadone use, age range of 20-50 years, being male, a minimum level of education of diploma, and lack of any psychiatric disorders (using clinical interview). The study exclusion criteria included the use of psychiatric drugs, receiving other psychological treatments during the present study, and absence from more than 2 treatment sessions.

The Beck Anxiety Inventory: The Beck Anxiety Inventory (BAI) was developed by Beck et al. (1988) and has 21 items. Each of the items describes 1 of the most common symptoms of anxiety (mental symptoms and panic). The items are scored on a scale of 0 to 3 and the maximum total score obtained in this test is 63, which indicates severe anxiety. Beck et al. (1988) reported the internal consistency of this test at 0.92. They also estimated the reliability of the BAI using test-retest method at 0.75. Khesht-Masjedi, Omar, and Masoleh (2015) confirmed the face and content validities of this inventory, and reported the reliability coefficient of the BAI to be 0.82 using Cronbach's alpha. The content of the existential group therapy sessions and CBGT sessions are presented in tables 1 and 2.

The collected data were analyzed using repeated measures analysis of variance (ANOVA) in SPSS software (version 23; IBM Corp., Armonk, NY, USA).

Results

All participants in the study were men and their mean age was 25.58, 26.58, and 27.5 years in the existential therapy, CBGT, and control groups, respectively. The minimum age of the participants was 20 years and the maximum was 35 years. Mean and standard deviation were used to present pretest and posttest anxiety in the 3 groups. The results are presented in table 3.

Table 1. Existential group therapy sessions

Session	Content of sessions in brief
1	Noting the patients' current complaints, obtaining brief information about the disorder, pharmacotherapy, and psychotherapy (if any), introducing basic route and assessing the suitability of the patient
2	Allowing the patient to give more details of their complaints, trying to explain which aspects of patient's life are already close to authenticity
3	Structuring the therapeutic dialogue on a phenomenological basis, exploring intangible statements, and directing the patient to embody his/her speech, demonstrating how apart the patient is from or how close to authenticity in certain fields
4	Improving the phenomenological dialogue, improving the embodiment of patient's statements, assessment of patient's stance toward self-relatedness, directing the patient to express him/herself in the physical, relational, and spiritual fields of living
5	Improving the phenomenological dialogue, exploring restrictions resulting from avoiding embodiment, exploring the patient's stance toward responsibility and life choices
6	Improving the phenomenological dialogue, receiving feedback concerning patient's certain patterns interfering with functionality, exploring issues resulting from avoiding responsibility
7	Improving the phenomenological dialogue, inviting the patient to give feedback about his/her patterns which interfere with functionality, exploring issues resulting from avoiding responsibility and freedom, directing the patient to negotiate about taking responsibility for the predictable and unpredictable outcomes of his/her choices
8	Improving the phenomenological dialogue, inviting the patient to give feedback about his/her feelings regarding the sessions and the therapist, exploring the strengths that the patients might have gained through an enhanced sense of responsibility, inviting the patient to negotiate about his/her fears concerning freedom

The data presented in table 3 show a reduction in the posttest and follow-up anxiety scores of the 2 experimental groups compared to the control group. Results showed that the assumptions of natural distribution of scores, homogeneity of variances in groups, homogeneity of variance-covariance matrices, and equality of within-subjects variances are valid.

Table 2. Cognitive-behavioral group therapy sessions

Session	Content
1	Noting the patients' current complaints, obtaining brief information about the disorder, pharmacotherapy, and psychotherapy (if any), explaining some cognitive contradictions, and setting appropriate and achievable targets
2	Discussing cognitive contradictions and presenting others, explaining the term "automatic thoughts" and deriving them from existing contradictions, demonstrating possible initiating, triggering, and maintaining factors, assigning homework(s)
3	Evaluating homework(s), exploring more automatic thoughts and evaluating alternative thoughts, explaining triggering and maintaining factors, assigning new homework(s)
4	Evaluating homework(s), testing certain automatic thoughts and explaining them, evaluating alternative thoughts, retracing triggering and maintaining factors, assigning new homework(s)
5	Evaluating homework(s), testing and evaluating other (new, if explored any) automatic thoughts, elaborating on and retracing initiating factors, explaining the term "intermediary beliefs", and assigning new homework(s)
6	Evaluating homework(s), elaborating on and testing intermediary beliefs evaluating original and current targets, assigning new homework(s)
7	Evaluating homework(s), testing other intermediary beliefs, retracing initiating factors, assigning new homework(s)
8	Evaluating homework(s), performing an overall assessment of alternative automatic thoughts and intermediary beliefs, and overall assessment of original and current targets, assigning new (monthly) homework(s)

Table 3. Mean and standard deviation of anxiety in pretest, posttest, and follow-up tests in the three groups

Group	Pretest	Posttest	Follow-up
	Mean ± SD	Mean ± SD	Mean ± SD
1	48.83 ± 3.68	48.50 ± 4.66	51.33 ± 2.46
2	47.33 ± 4.96	28.66 ± 3.89	29.41 ± 3.36
3	48.66 ± 4.92	37.08 ± 3.08	38.08 ± 3.20

SD: Standard deviation

The results presented in table 4 illustrate a significant difference among the existential therapy, CBT, and control groups in terms of anxiety at least at the level of 1% (P = 0.001).

The results presented in table 5 show that the difference between experimental groups and the control group in the 3 stages of anxiety measurement is significant in at least 2 stages.

In table 6, the difference in the anxiety score (P = 0.001) in the posttest and follow-up stages compared to the pretest in both experimental groups was significant and this effect remained stable until the follow-up stage, but in the control group, these differences were not significant (P = 0.64).

The results of Tukey's post hoc test (Table 7) showed a significant difference in anxiety levels between the CBGT and existential therapy groups, indicating that CBT is more effective than existential therapy (P = 0.017).

Discussion

The present study results revealed that CBGT is effective in reducing anxiety in addicts undergoing MMT. The results of this study were in line with that of the studies by Bahadorzade, Jajarmi, Jalalabadi, and Eydi-Baygi (2015), Morrison et al. (2019), and Bador and Kerekes (2020). The results revealed a difference between CBGT and existential group therapy in terms of their effect on reducing anxiety in addiction patients undergoing MMT, and that the effect of CBGT was greater than that of existential therapy in reducing anxiety in these patients. In explaining the greater effect of CBGT on the addicts studied, it can be stated that CBGT, through the cognitive reconstruction of defective thoughts and beliefs, helps addicts to regain their lost self-esteem and dispense with their sense of guilt, or anger and resentment towards themselves and those around them. By directly teaching skills such as problem solving, negotiation, and conflict resolution skills, this approach helps patients to show the best reactions to family and social problems, and accordingly, enjoy peaceful relationships and the support of family, friends, and others in the society. This support and effective communication will fill the emotional and psychological gap caused by addiction to a large extent and give them the ability to cope with life stresses more effectively, thus resulting in reduced anxiety. By replacing behavioral and cognitive adaptation patterns in individuals, CBT enables them to have an extensive and more appropriate behavioral treasury and to act with planning and foresight in the face of problems (Kiamini, Nikbakht, Amirabadi, Ramezani, & Nikyar, 2014).

Table 4. Results of mixed analysis of variance with repeated measures in four groups in three stages

Components	Source of changes		SS	df	MS	F	effect size
Anxiety	Intra-group	Stages	3768.57	2	1884.28	63.68	0.79
	Inter-group	Interventions	2176.46	2	1088.23	136.63	0.88
	Interaction	Intervention×stages	1549.87	4	387.46	48.64	0.68

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares

* P< 0.05, **P< 0.01

Table 5. Comparison of the simple intra-group effect separately for four groups on state anxiety and trait anxiety

Group	Variable	Source of effect	SS	df	MS	F	Squared Eta
Existential Therapy	Anxiety	Stage	63.28	1	63.28	4.81	0.24
		Error	177.09	14	15.49		
Cognitive-Behavioral	Anxiety	Stage	397.55	1	397.55	16.84	0.53
		Error	344.22	14	26.80		
Control	Anxiety	Stage	0.74	1	0.74	1.11	0.09
		Error	22.51	14	1.34		

SS: Sum of squares; df: Degree of freedom; MS: Mean of squares
* P< 0.05, **P< 0.01

The results showed that existential group therapy is effective in reducing anxiety in addicts undergoing MMT. The results of the studies conducted by Can and Okanli (2019) on addicts, and Breitbart, Rosenfeld, Pessin, Applebaum, Kulikowski, and Lichtenthal (2015) on cancer patients were in line with that of the present study. In explaining this result, it can be stated that in existential therapies, a person gains a better understanding of his/her inner world and better recognizes the root of behavioral psychological problems, including his/her anxieties. This treatment allows the person to find constructive ways to control anxiety, to feel more peace of mind, and even to improve his/her problem-solving skills. In general, since existential therapy increases people's self-awareness, implementation of this treatment method on addicts also increases their self-awareness, and as a result, increases their adaptation to high-pressure situations and ability to control their anxiety in situations that trigger anxiety. The mechanism of effectiveness of existential group therapy is based on the fact that it increases people's awareness, and accordingly, allows them to review their values and compare them with the values of others in the group. Thus, by recognizing that he/she is not the only person facing problems, the individual regains self-esteem and feels empowered by recognizing his/her ability, and consequently, acquires learning anxiety reduction skills (Kang, Kim, Song, & Kim, 2013; Thir and Batthyany, 2016).

One of the limitations of the present study was that the control group did not receive regular counseling sessions to eliminate the expected effect of the treatment group, which was not possible due to limitations in time and facilities. It is recommended that a study be conducted to examine the therapeutic effects of these two therapies on those addicted to amphetamine and stimulants. It is also recommended that the effects of these two therapies be examined on reducing the recurrence of substance use among addicts after drug use withdrawal. Based on the results, training the use of muscle relaxation techniques in cases of severe anxiety is recommended instead of substance use. The provision of modern and appropriate reinforcements to addiction patients undergoing MMT is also recommended. Moreover, paying attention to motivational interviewing in CBT is crucial, as it is an important process through which therapists try to change patients' motivation in order to prepare them for change.

Conclusion

Therapists should prioritize CBGT over other treatment modalities to reduce psychological problems such as anxiety in addicts.

Table 6. Bonferroni test results for anxiety in the study groups in three stages

Variables		Stage I	Cognitive-behavioral	Existential therapy	Control
			Mean ± SD	Mean ± SD	Mean± SD
Anxiety	Post-test	Pretest	-18.67** ± 2.18	-11.58* ± 1.89	-0.33 ± 0.21
	Follow-up	Pretest	-17.92** ± 2.02	-10.58* ± 1.97	2.50 ± 0.77
	Follow-up	Pretest	0.75 ± 0.52	1.00 ± 1.184	2.83 ± 0.82

SD: Standard deviation;* P < 0.05, **P < 0.01

Table 7. Results of Tukey's post hoc test for pairwise comparison of experimental and control groups

Variable	Group	Group	Mean difference ± SD
Anxiety	Cognitive-Behavioral	Existential Control	-6.13* ± 2.86
			-14.41** ± 2.86
	Existential	Control	-8.27* ± 2.86

* P < 0.05, **P < 0.01

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

We thereby appreciate the cooperation of all officials of Qazvin Addiction Treatment Centers and participation of methadone addicts in this study.

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DOI: http://dx.doi.org/10.22122/ijbmc.v7i4.237 Published by Vesnu Publications

International Journal of Body, Mind and Culture

Prevalence of Psychiatric Disorders in Patients with Chest Pain Complaints Referred to the Heart Emergency Department of Taleghani Hospital in Tehran, Iran

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Quantitative Study

Abstract

Background: Chest pain is one of the most common reasons for people to go to cardiac emergency clinics. This study was conducted with the aim to evaluate the prevalence of psychiatric disorders in patients with chest pain referred to the heart emergency clinic of Taleghani Hospital, Tehran, Iran.

Methods: This descriptive-analytic study was performed on 103 patients with chest pain who were referred to the emergency department. Furthermore, a follow-up was carried out. Data were collected using a demographic information form and mental health survey (28-item General Health Questionnaire; Goldberg & Hillier, 1979) in the two groups of cardiac and non-cardiac chest pain.

Results: Among all the referred patients, 74 patients (71.8%) did not have a definitive diagnosis of cardiovascular disorders (CVDs). The results revealed that among the patients with non-cardiac chest pain, 56 (75.7%), 55 (74.3%), 54 (73%), and 22 (29.7%) individuals had phyisical disorder, anxiety, social dysfunction, and depressive disorder. Among the patients, who were definitively diagnosed with CVDs, 14 (48.3%), 10 (34.5%), 7 (24.1%), and 6 (20.7%) individuals had anxiety, physical disoreder, social dysfunction, and depressive disorder. Among all patients, physical disorder had a significant relationship with gender ($P = 0.047$), and physical and anxiety disorders had a significant relationship with history of recurrent chest pain in the last 6 months ($P < 0.05$).

Conclusion: Due to the high number of non-cardiac patients who refer to the emergency department with chest pain complaints, it is recommended that all patients with chest pain complaints be screened for psychiatric diseases.

Keywords: Psychosomatic disorders; Mental disorder; Prevalence; Chest pain

Citation: Amiri P, Ganji S, Goli F, Afshar-Zanjani H, Ghaffari-Jolfayi A, Sayarifard A, et al, Maryam Mohseny. **Prevalence of Psychiatric Disorders in Patients with Chest Pain Complaints Referred to the Heart Emergency Department of Taleghani Hospital in Tehran, Iran.** Int J Body Mind Culture 2020; 7(4): 256-66.

Received: 25 Aug. 2020

Accepted: 02 Oct. 2020

Introduction

Human health is always affected by both physical and mental factors. In recent decades, a new type of illness has been recognized, called psychosomatic disorders in which emotional and psychological factors are involved. According to the definition provided in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5), psychosomatic disorders are a broad group of diseases of which physical signs and symptoms are a major component. Physical signs such as cardiovascular, respiratory, gastrointestinal, musculoskeletal, genitourinary, and skin-related symptoms, and dizziness, fatigue, memory impairment, difficulty concentrating, shortness of breath, nausea, vomiting, and insomnia are associated with these disorders (American Psychiatric Association, 2013).

One of the most common causes of referrals to cardiovascular clinics is chest pain (Kasper, Fauci, Hauser, Longo, Jameson, & Loscalzo, 2015). Chest pain is quite common and 25% of the general population experience it at least once in their lifetime (Taylor, 2002). Chest pain can have a cardiac (coronary and non-coronary) or non-cardiac source (Mayou, Bass, & Sharpe, 1995). Studies have shown that in 50 to 80% of patients introduced to cardiologists, chest pain had a non-cardiac cause (Knockaert, Buntinx, Stoens, Bruyninckx, & Delooz, 2002; Zipes, Libby, Braunwald, Bonow, Mann, & Tomaselli, 2019). Different non-cardiac causes can mimic chest pain. Katon et al. (1988) reported anxiety and depression as the most common mental disorders in patients with chronic medical illness. In addition, depression and anxiety can be a risk factor in heart disease (Stewart, Davidson, Meade, Hirth, & Makrides, 2000). Up to 20% of patients with myocardial infarction (MI) had depression at least 6 months before the stroke that had not been take into consideration (Frasure-Smith & Lesperance, 2005). Moreover, anxiety can increase the risk of a heart attack by 5 to 10% (Kuijpers, Honig, Griez, Braat, & Wellens, 2000) the mechanism of which is related to the sympathetic stimulation of the heart and cardiac arrhythmia (Mayou et al., 2000)

About 75% of cardiac specialists do not examine mental disorders such as anxiety, depression, obsession, and physical complaints in patients before and after a heart attack (Castillo-Richmond et al., 2000). The prevalence of psychiatric disorders in patients with chest pain can help increase their quality of life (QOL). Moreover, it can reduce unnecessary diagnostic tests and screening as well as overtreatment, with potentially dangerous side effects.

The present study was conducted with the aim to determine the prevalence of cardiac and non-cardiac causes of chest pain among patients who referred to the cardiac emergency department of Taleghani Hospital in Tehran, Iran, with chest pain.

Methods

This descriptive study was conducted on 103 patients with chest pain without a history of heart disease who referred to the emergency department and heart clinic of Taleghani Hospital. Considering an α of 0.05, accuracy of 0.10, and probability of impact size of 0.50, the sample size was estimated at 100 people. We defined chest pain as a pressure, burning, or numbness in the chest which can be categorized into the cardiac and non-cardiac subgroups. Informed consent was obtained from all patients.

The study inclusion criteria were age of over 18 years and referring to the emergency department of the hospital with chest pain. The exclusion criteria included previous history of cardiovascular disease (CVD) and unwillingness to participate in the study.

This study had 3 main goals:

1- To determine the frequency of CVDs in patients referring to the emergency department with chest pain
2- To determine the frequency of psychiatric disorders in patients with cardiac and non-cardiac chest pain based on the 4 subscales of the 28-item General Health Questionnaire (GHQ-28) (Physical disorder, Social dysfunction, Depression, and Anxiety disorder)
3- To determine the relationship of gender and recurrent chest pain (in the past 6 months) with psychiatric disorders

All patients were followed up from the time of admission to the emergency room until the final diagnosis by heart specialists.

Demographic information, such as age, sex, and history of CVD, and recurrent chest pain in the past 6 months were assessed using a checklist.

Patients' mental health status was assessed using the GHQ-28.

The GHQ was designed by Goldberg and is one of the most well-known screening tools for mental disorders. It is available in the 12-item, 28-item, 30-item, and 60-item forms (Goldberg & Hillier, 1979). In this study, the 28-item form was used. The questionnaire includes 4 subscales each of which contains 7 questions. Questions 1-7 are related to the scale of physical symptoms and general health status, questions 8-14 are related to the anxiety scale, questions 15-21 are related to the social function disorder scale, and questions 22-28 are related to the depression scale. The validity and reliability of the Persian version of this questionnaire have been confirmed in a study in Iran (Nourbala, Bagheri Yazdi, & Mohammad, 2009).

Frequency and percentage indicators were used to describe the data. The collected data were analyzed using Fisher's exact and chi-square tests with a significance level of 0.05 in SPSS software (version 15; SPSS Inc., Chicago, IL, USA).

Results

The mean ± SD of the participants' age was 50 ± 12.93 years with a minimum of 18 and a maximum of 81 years. Moreover, 63 (60.2%) of the participants in the study were men. In addition, 97.09% of the patients did not have a history of hospitalization in a psychiatric ward, and only 3 patients (2.91%) had a history of hospitalization in a psychiatric ward.

Among the patients with chest pain complaints, 71.8% did not have a definitive diagnosis of CVDs (Table 1).

The results of investigating the frequency distribution of psychiatric disorders in patients with chest pain complaint and the 4 main subscales of the GHQ-28 were as follows:

In total, 72 patients (69.9%) had general health disorders. In addition, 66 patients (64.1%) with chest pain had somatization, 69 patients (67%) had anxiety disorders, 61 patients (59.2%) had social disorders, and 28 patients (27.2%) had depressive disorders.

Among those with mental disorders, the majority had disorders with mild severity; for example, the disorders with the highest prevalence included mild somatization (31.1%), mild anxiety disorders (34%), mild impaired social disorder (41.7%), and mild depression (17.5%) (Table 2).

In the next step, the frequency distribution of psychiatric disorders and the 4 main subscales of the GHQ-28 were investigated in patients with non-cardiac chest pain.

Table 1. Frequency distribution of cardiovascular disorders in patients referred to the emergency department with chest pain complaints

	Status	n (%)
Definite cardiovascular disease diagnosis	Yes	29 (28.2)
	No	74 (71.8)
	Total	103 (100)

Table 2. Frequency distribution of psychiatric disorders in patients with a chest pain complaint

Type of disorder	Presence of disorder	n (%)	The severity of the disorder	n (%)
Physical disorder	No	37 (35.5)	No disturbance	37(35.9)
	Yes	66 (64.1)	Mild	32(31.1)
			Moderate	28(27.2)
			Severe	6(5.8)
Total		103 (100)		103(100)
Anxiety Disorder	No	34 (33)	No disturbance	34(33)
	Yes	69 (67)	Mild	35(34)
			Moderate	31(30.1)
			Severe	3(2.9)
Total		103 (100)		103(100)
Social disorder	No	42 (40.8)	No disturbance	42(40.8)
	Yes	61 (59.2)	Mild	43(41.7)
			Moderate	15(14.6)
			Severe	3(2.9)
Total		103 (100)		103(100)
Depressive	No	75 (72.8)	No disturbance	75(72.8)
Disorder	Yes	28 (27.2)	Mild	18(17.5)
			Moderate	9(8.7)
			Severe	1(1)
Total		103 (100)		103(100)
Total score	No	31 (30.1)	No disturbance	31(30.1)
	Yes	72 (69.9)	Mild	56(54.4)
			Moderate	15(14.6)
			Severe	1(1)
Total		103 (100)		103(100)

The results showed that 62 patients (83.8%) had some degree of general health disorder, they were classified into 4 subgroups of somatization with 56 patients (75.7%), anxiety with 55 patients (74.3%), social dysfunction with 54 patients (73%), and depressive disorder with 22 patients (29.7%). Furthermore, 12 patients (16.2%) had no psychological disorders (Table 3).

Table 3. Frequency distribution of psychiatric disorders in patients with non-cardiac chest pain and the main subscales of the General Health Questionnaire

Type of disorder		n (%)	The severity of the disorder	n (%)
Physical disorder	No	18(24.3)	No disturbance	18(24.3)
	Yes	56(75.7)	Mild	26(35.1)
			Moderate	24(32.4)
			Severe	6(8.1)
Total		74 (100)		74 (100)
Anxiety Disorder	No	19 (25.7)	No disturbance	19 (25.7)
	Yes	55 (74.3)	Mild	25 (33.8)
			Moderate	27 (36.5)
			Severe	3 (4.1)
Total		74 (100)		74 (100)
Social disorder	No		No disturbance	20 (27.0)
	Yes		Mild	38 (51.4)
			Moderate	13 (17.6)
			Severe	3 (4.1)
Total		74 (100)		74 (100)
Depressive	No		No disturbance	52 (70. 3
Disorder	Yes		Mild	13 (17.6)
			Moderate	8 (10.8)
			Severe	1 (1.4)
Total		74 (100)		74 (100)
Total score	No		No disturbance	12 (16.2)
	Yes		Mild	48 (64.9)
			Moderate	13 (17.6)
			Severe	1 (1.4)
Total	No	18(24.3)	No disturbance	18(24.3)

Table 4. Frequency distribution of psychiatric disorders in patients with cardiovascular disorders

Type of disorder		n (%)	The severity of the disorder	n (%)
Physical disorder	No	19 (65.5)	No disturbance	١٩(65.5)
	Yes	10 (34.5)	Mild	6 (20.7)
			Moderate	4 (13.8)
			Severe	0 (0)
Total		29 (100)		29 (100)
Anxiety Disorder	No	15(51.7)	No disturbance	15 (51.7)
	Yes	14(48.3)	Mild	10 (34.5)
			Moderate	4 (13.8)
			Severe	0 (0)
Total		29 (100)		29 (100)
Social disorder	No	22(75.9)	No disturbance	22 (75.9)
	Yes	7(24.1)	Mild	5 (17.2)
			Moderate	2 (6.9)
			Severe	0 (0)
Total		29 (100)		29 (100)
Depressive	No	23 (79.3)	No disturbance	23 (79.3)
Disorder	Yes	6 (20.7)	Mild	5 (17.2)
			Moderate	1 (3.4)
			Severe	0 (0)
Total		29 (100)		29 (100)
Total score	No	19 (65.5)	No disturbance	19 (65.5)
	Yes	10 (34.5)	Mild	8 (27.6)
			Moderate	2 (6.9)
			Severe	0 (0)
Total	No			29 (100)

Among the patients with chest pain complaints who were definitively diagnosed with CVDs, 14 (48.3%), 10 (34.5%), 7 (24.1%), and 6 patient (20.7%) were, respectively, classified as anxiety disorders, somatizations, social dysfunction, and depressive disorder (Table 4).

According to the results presented in table 5, there was a significant relationship between somatization and gender (P = 0.047), but the presence of anxiety disorder (P = 0.052), social disorders (P = 0.91), and depression (P = 0.67) did not have a significant relationship with gender. In general, there was no significant relationship between the total score of general health and gender (P = 0.14).

Furthermore, there was a significant relationship between complaints of recurrent chest pain in the past 6 months and the prevalence of psychiatric disorders(Table 6).

Table 5. The relationship between gender and prevalence of psychiatric disorders in patients with chest pain

Type of disorder		No	Unknown	Total	Test statistics	P-value
		n (%)	n (%)	n (%)	Chi-square	
Physical	No	27 (73)	10 (27)	37 (100)	94.3	0.047
	Yes	35 (53)	31 (47)	66 (100)		
Anxiety	No	25 (73.5)	9 (36.5)	34 (100)	77.3	0.052
	Yes	37 (53.6)	32 (46.4)	69 (100)		
Social	No	25 (59.5)	17 (40.5)	42 (100)	13.0	0.91
	Yes	37 (60.7)	24 (39.3)	61 (100)		
Depression	No	46 (61.3)	29 (38.7)	75 (100)	15.0	0.67
	Yes	16 (57.1)	12 (42.9)	28 (100)		
Total score	No	22 (71)	9 (29)	31 (100)	15.2	0.14
	Yes	40 (55.6)	32 (44.4)	72 (100)		

Table 6. The relationship between history of recurrent chest pain in the past 6 months and the type of psychiatric disorders in all patients

Type of disorder	Chest pain in the last 6 months	No n(%)	Unknown n(%)	Total n(%)	Test statistics Chi-square	P-value
Physical	No	7(18.9)	30(81.1)	37(100)	9.64	0.002
	Yes	33(50)	33(50)	66(100)		
Anxiety	No	5(14.7)	29(85.3)	34(100)	12.44	< 0.001
	Yes	35(50.7)	34(49.3)	69(100)		
Social	No	12(28.6)	30(71.4)	42(100)	3.14	0.076
	Yes	28(45.9)	33(54.1)	61(100)		
Depression	No	27(36)	48(64)	75(100)	0.93	0.33
	Yes	13(46.4)	15(53.6)	28(100)		
Total score	No	7(22.6)	24(77.4)	31(100)	4.93	0.026
	Yes	33(45.8)	39(54.2)	72(100)		

Discussion

One of the most important objectives of this study was to differentiate between cardiac and non-cardiac patients with chest pain complaints. Subsequently, the rate of mental disorders was examined in these two groups. The most important findings of this study were as follows:

In the specialized follow-up of hospitalized patients, more than half of the patients had non-cardiac chest pain. The majority of patients had general health disorders, and mild disorders had the highest prevalence. The disorders with the highest prevalence, respectively, were mild social dysfunction, anxiety disorder, physical disorder, and depression.

The main assumption that can be drawn from the comparison of the prevalence of mental disorders between the present study and national studies is that although the prevalence of mental disorders in patients referred to clinics may be higher, the prevalence of psychosomatic disorders with the manifestation of chest pain in non-cardiac patients is also very high. In addition, the difference observed in the results of these studies can be attributed to difference in the statistical populations, scoring methods, and diagnostic tools, and changes in the socio-economic status and environment of Iran. Among the patients with chest pain complaints, 28.2% had a definite diagnosis of CVDs, which is lower than previous studies with a prevalence of about 40% (Knockaert et al., 2002, Salehi omran and Asna ashari, 2017). These differences could be due to the selection of patients with stable vital signs, and no history of heart disease and hospitalization in our study.

Nevertheless, the rate of mental disorder in patients with non-cardiac chest pain was higher than the general population in Iran. The first national study of mental disorders in Iran showed that 21% of the population in Iran, aged 15 years and higher, had a mental disorder and the second national study, which used the Schedule for Affective Disorders and Schizophrenia (SADS) as a diagnostic instrument, found the prevalence of mental disorders to be 17.10 (Noorbala et al., 2017b)..

Phyisical disorder One of the subscales of the questionnaire was the somatization that, as seen in the present study, was highly prevalent particularly in individuals with non-cardiac chest pain.

The comparison of the results of the national study by Noorbala et al. (2011) with that of our study showed that the prevalence of suspected somatization in adult Iranians in the national study was 29.8%, almost close to our result in the cardiac group (34.5%), but in the non-cardiac group in our study, the prevalence was considerably

higher (75.5%).

Many studies have shown that psychosomatic disorders are the most common problem in the primary healthcare setting (Alkhadhari, Alsabrrie, Ohaeri, Varghese, Zahid, & Mulsant, 2018). These disorders include interactions between the mind and body, as the brain sends different messages, which influence the individual's consciousness and report a serious problem. There are unknown mental and cerebral mechanisms leading to psychosomatic disorders. The most common psychosomatic disorders are pain in the elbow and knee joints, headache, back pain, constipation, stomach ulcers, menstrual disorders, and arthritis, and many other manifestations that cannot be attributed to a recognized disease.

Social dysfunction

In general, mental health and the ability to perform social roles are characteristics of a healthy person. Social dysfunction is usually caused by a lack of supportive resources and conflict and may extend to family settings and social circles. The results of the current study showed that social dysfunction was one of the most common mental disorders in patients with cardiac and non-cardiac chest pain. These results are consistent with the findings of Maghsoodi, Hesabi, Emami sigaroudi, Kazemnejad leili, and Monfared (2015), Motaghipour et al. (2006), and Noorbala, Bagheri Yazdi, Asadi Lari, and Vaez Mahdavi (2011).

Due to the high prevalence of this disorder both in the general population and patients referred to specialized clinics and considering its potential role in increasing the economic burden on the country, this disorder should be considered seriously by policymakers.

Depression

In the present study, the prevalence of depression was high in both cardiac and non-cardiac patients; however, it was significantly higher in the non-cardiac group. In general, its prevalence was consistent with the findings of other studies.

Depression is the most common mental health problem all over the world and it is expected to become the second leading cause of burden of disease by 2030 (World Health Organization, 2008). Data from the World Research Bank shows that among the women and men in developing countries, depressive disorders account for 30% and 12.6% of mental disorders, respectively (Olfson, Marcus, Druss, Elinson, Tanielian, & Pincus, 2002).

Depression in Iran accounts for a third of the disease burden. Some studies, using the GHQ, showed the prevalence of depression to be 12.02% in students and 19.46% in the general population. The Geriatric Depression Scale (GDS) revealed the prevalence of depression to be 57.58% and 81.85% in older adults living at home and in nursing homes, respectively (Mohamadi et al., 2017)

Anxiety

Anxiety is another common mental disorder which is seen alone or concurrent with depression. According to the World Health Organization, more than half a million people in the world suffer from anxiety disorders and, with a prevalence of about 15.6%, anxiety disorder in women is almost twice as common as men (Noorbala et al., 2017a). The high prevalence of anxiety in our study is consistent with the findings of Safa, Saki, and Matin-rohani (2008), who reported the most common disorders to be psychotic and anxiety disorders. However, it is not consistent with the study by Beheshti et al. (2006), who declared depression to be the most common psychiatric disorder in patients with non-cardiac chest pain. It is also inconsistent with a study in Norway on patients with non-cardiac chest pain that reported a prevalence of 19% and

13% for anxiety disorders and depression, respectively (Haug, Mykletun, & Dahl, 2004). The reason for this difference may be the use of different questionnaires with different cut off points as well as cultural, social, and economic differences of the study environments.

Relationship between Gender and Psychiatric Disorders

One of the important objectives of this study was to differentiate the rate of mental disorders between women and men; information on the mean ± SD scores of the participants on the GHQ-28 and its subscales are presented in table 5. The average physical dysfunction, anxiety, social dysfunction, and depression scores of women and their total GHQ-28 score were higher than that of men and there was a significant relationship between somatization and gender, but anxiety disorder, social disorder, and depression did not have a significant relationship with gender.

The comparison of the results of this study with other studies presented the following results. An important point in the review of other studies was the gender disparities, with a significantly higher prevalence of mental disorders in women. Somatization was more common among women, which is consistent with the findings of Wool and Barsky (1994). According to the Global Burden of Disease study, the prevalence of mental disorder in Iranian women aged 15 to 49 years was estimated at 23% (GHDx, 2017). In a 2015 survey by Hajebi et al. (2018), the prevalence of mental disorders in women was 27.55%, with a 1.38 ratio of women to men. In the 2011 National Survey, the prevalence of mental disorders in Iranian women was 26.5% and the ratio of women to men was estimated at 1.47 times (Sharifi et al., 2015). These studies were performed in the general population, but the current study was performed in a specific group with symptoms of heart pain, which is a possible predisposing factor of mental disorder in this particular population. This may be the cause of the lack of significant difference in terms of gender in the present study.

Conclusion

Due to the higher prevalence of psychiatric disorders in patients with a cardiac diagnosis who require hospitalization, measures such as scheduled appointments and emotional training can significantly help the recovery process of these patients.

Suggestions: It is recommended that all patients with chest pain complaints, regardless of their cardiac and non-cardiac causes, be screened for psychiatric illnesses using accurate and diagnostic tests.

Limitation: In this study, a general health questionnaire was used. The utilization of a screening tool and a secondary diagnostic tool is necessary for the correct diagnosis of disease.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

We would like to thank all the staff of Taleghani Hospital and the patients who helped us in this project.

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