Chronic Diseases
Volume: 8/ No: 4/ 2020

Original Article(s)

Short Communication(s)

Indexes:
NLM Catalog
Islamic World Science Citation Database (ISC)
Index Copernicus
Google Scholar
Jour Informatics
Magiran
Directory of Research Journals Indexing
Barakatkns
Research Bible

Volume: 8 No: 4 2020/ eISSN: 2345-2226/ pISSN: 2588-7297

Chronic Diseases Journal

Publisher: Vesnu Publications
(Farzanegan Radandish)
Kurdistan Univercity of Medical Sciences

Kurdistan University of Medical Sciences

Chronic Diseases Journal

Editorial Team

Publisher: Vesnu Publications
Tel/fax: +98 31 32 22 43 35, +98 31 32 22 43 82
http://vesnupub.com Email: farapublications@gmail.com

Address: Chronic Diseases Journal Office, Deputy of Research, Kurdistan University of Medical Sciences, Pasdaran Ave., Sanandaj, Iran
Postal Code: 6617713446
Email: cdjournal@muk.ac.ir/cdjourn@gmail.com **Tel:** +98 87 33 66 00 89
Interval: Quarterly
eISSN: 2345-2226, **pISSN:** 2588-7297

Chronic Diseases Journal

Information for Authors

AIM AND SCOPE

The *Chronic Diseases Journal* is a biannual peer-reviewed scientific journal published by Kurdistan University of Medical Sciences. The manuscripts on the topic of chronic and subacute medical and health conditions and diseases will be published in this journal. This contains all aspects of the chronic and subacute diseases such as control, planning, treatment, patient education, managing guides, policymaking, and biopsychosocial-spiritual factors.

Instruction to Authors

MANUSCRIPTS

Manuscripts containing original material are accepted for consideration if neither the article nor any part of its essential substance, tables, or figures has been or will be published or submitted elsewhere before appearing in the *Chronic Diseases Journal*. This restriction does not apply to abstracts or press reports published in connection with scientific meetings. Copies of any closely related manuscripts must be submitted along with the manuscript that is to be considered by the *Chronic Diseases Journal*. Authors of all types of articles should follow the general instructions given below.

STUDY DESIGN

We strongly advise authors to design their clinical trial studies based on the appropriate guidelines. In randomized controlled trials, CONSORT guideline (link), in systematic reviews and meta-analyses, PRISMA (formally QUOROM) guideline (link), in meta-analyses of observational studies in epidemiology, MOOSE guideline (link), in studies of diagnostic accuracy, STARD guideline (link), and in observational studies in epidemiology, STROBE guideline (link) should be used.

HUMAN AND ANIMAL RIGHTS

The research involves human beings or animals must adhere to the principles of the Declaration of Helsinki (link , link).

Types of Articles

- *Original article* which reports the results of an original scientific research should be less than 3000 words.
- *Review article* which represents the researches and works on a particular topic.
- *Brief communication* is a short research article and should be limited to 1500 words. This article contains all sections of an original article.
- *Case report* is a detailed report of an individual patient that may represent a previously non-described condition and contains new information about different aspects of a disease. It should be less than 2000 words.
- *Letter to the Editor* must be less than 400 words in all cases.
- *Other types* of articles only could be submitted by *Chronic Diseases Journal* Editorial Board.

SUBMISSION

- Only online submission is acceptable. Please submit online at: http://cdjournal.muk.ac.ir
- This manuscripts should be divided into the following sections: (1) Title page, (2) Abstract and Keywords, (3) Introduction, (4) Methods, (5) Results, (6) Discussion, (7) Acknowledgements, (8) References, (9) Figure legends, (10) Appendices, (11) Tables and (12) Figures (figures should be submitted in separate files).
- Please supply a word count in title page.
- Use normal page margins (2.5 cm), and double-space throughout.
- Prepare your manuscript text using a Word processing package using times new roman 12 font, (save in .doc or .rtf format). Submissions of text in the form of PDF files are not permitted.

COVER LETTER

A covering letter signed by all authors should identify the corresponding author (include the address, telephone number, fax number, and e-mail address). Please make clear that the final manuscript has been seen and approved by all authors, and that the authors accept full responsibility for the design and conduct of the study, had access to the data, and controlled the decision to publish.

AUTHORSHIP

As stated in the Uniform Requirements for Manuscripts Submitted to Biomedical Journals (link), credit for authorship requires substantial contributions to: 1. Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work; AND 2. Drafting the work or revising it critically for important intellectual content; AND 3.

Final approval of the version to be published; AND 4. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Each author must sign authorship form attesting that he or she fulfills the authorship criteria. There should be a statement in manuscript explaining contribution of each author to the work. Acknowledgments will be limited to one page of *Chronic Diseases Journal* space, and those acknowledged will be listed only once.

Any change in authorship after submission must be approved in writing by all authors.

ASSURANCES

In appropriate places in the manuscript please provide the following items:

- If applicable, a statement that the research protocol was approved by the relevant institutional review boards or ethics committees and that all human participants gave written informed consent
- The source of funding for the study
- The identity of those who analyzed the data
- Financial disclosure, or a statement that none is necessary

TITLE PAGE

With the manuscript, provide a page giving the title of the paper; titles should be concise and descriptive (not declarative). Title page should include an abbreviated running title of 40 characters, the names of the authors, including the complete first names and no more than two graduate degrees, the name of the department and institution in which the work was done, the institutional affiliation of each author. The name, post address, telephone number, fax number, and e-mail address of the corresponding author should be separately addressed. Any grant support that requires acknowledgment should be mentioned on this page. Word count of abstract and main text as well as number of tables and figures and references should be mentioned on title page. If the work was derived from a project or dissertation, its code should also be stated.

Affiliation model: Academic Degree, Department, Institute, City, Country.

Example: Associate Professor, Department of Radiology, School of Medicine, Kerman University of Medical Sciences, Kerman, Iran.

ABSTRACT

Provide on a separate page an abstract of not more than 250 words. This abstract should consist of four paragraphs, labeled Background, Methods, Results, and Conclusions. They should briefly describe the problem being addressed in the study, how the study was performed, the salient results, and what the authors conclude from the results, respectively. Three to 10 keywords may be included. Keywords are preferred to be in accordance with MeSH (link) terms.

CONFLICT OF INTEREST

Authors of research articles should disclose at the time of submission any financial arrangement they may have with a company whose product is pertinent to the submitted manuscript or with a company making a competing product. Such information will be held in confidence while the paper is under review and will not influence the editorial decision, but if the article is accepted for publication, a disclosure will appear with the article.

Because the essence of reviews and editorials is selection and interpretation of the literature, the *Chronic Diseases Journal* expects that authors of such articles will not have any significant financial interest in a company (or its competitor) that makes a product discussed in the article.

REVIEW AND ACTION

Submitted papers will be examined for the evidence of plagiarism using some automated plagiarism detection service. Manuscripts are examined by members of the editorial staff, and two thirds are sent to external reviewers. We encourage authors to suggest the names of possible reviewers, but we reserve the right of final selection. Communications about manuscripts will be sent after the review and editorial decision-making process is complete. After acceptance, editorial system makes a final language and scientific edition. No substantial change is permitted by authors after acceptance. It is the responsibility of corresponding author to answer probable questions and approve final version.

COPYRIGHT

JOURNAL STYLE

Tables

Double-space tables and provide a title for each.

Figures

Figures should be no larger than 125 (height) x 180 (width) mm (5 x 7 inches) and should be submitted in a separate file from that of the manuscript. The name of images or figures files should be the same as the order that was used in manuscript (fig1, fig2, etc.). Only JPEG, tif, gif and eps image formats are acceptable with CMYK model for colored image at a resolution of at least 300 dpi. Graphs must have the minimum quality: clear text, proportionate, not 3 dimensional and without disharmonic language. Electron photomicrographs should have internal scale markers.

If photographs of patients are used, either the subjects should not be identifiable or the photographs should be accompanied by written permission to use them. Permission forms are available from the Editorial Office.

Medical and scientific illustrations will be created or recreated in-house. If an outside illustrator creates the figure, the *Chronic Diseases Journal* reserves the right to modify or redraw it to meet our specifications for publication. The author must explicitly acquire all rights to the illustration from the artist in order for us to publish the illustration. Legends for figures should be an editable text as caption and should not appear on the figures.

References

The Vancouver style of referencing should be used. References must be double-spaced and numbered as superscripts consecutively as they are cited. References first cited in a table or figure legend should be numbered so that they will be in sequence with references cited in the text at the point where the table or figure is first mentioned. List all authors when there are six or fewer; when there are seven or more, list the first six, then "et al." The following are sample references:

1. Perlman AI, Sabina A, Williams AL, Njike VY, Katz DL. Massage therapy for osteoarthritis of the knee: a randomized controlled trial. Arch Intern Med 2006; 166(22): 2533-8.

2. Buckwalter JA, Marsh JL, Brown T, Amendola A, Martin JA. Articular cartilage injury. In: Robert L, Robert L, Joseph V, editors. Principles of Tissue Engineering. 3rd ed. Burlington, MA: Academic Press; 2007. p. 897-907.

3. Kuczmarski RJ, Ogden CL, Grammer-Strawn LM, Flegal KM, Guo SS, Wei R, et al. CDC growth charts: United States. Advance data from vital and health statistics. No. 314. Hyattsville, Md: National Center for Health Statistics, 2000. (DHHS publication no. (PHS) 2000-1250 0-0431)

4. World Health organization. Strategic directions for strengthening nursing and midwifery services [online]. Available from: URL:http://www.wpro.who.int/themesfocuses/theme3/focus2/nursingmidwifery.pdf2002

Units of Measurement

Authors should express all measurements in conventional units, with Système International (SI) units given in parentheses throughout the text. Figures and tables should use conventional units, with conversion factors given in legends or footnotes. In accordance with the Uniform Requirements, however, manuscripts containing only SI units will not be returned for that reason.

Abbreviations

Except for units of measurement, abbreviations are discouraged. Consult Scientific Style and Format: The CBE Manual for Authors, Editors, and Publishers (Sixth edition. New York: Cambridge University Press, 1994) for lists of standard abbreviations. Except for units of measurement, the first time an abbreviation appears, it should be preceded by the words for which it stands.

Drug Names

Generic names should generally be used except for studies on comparative effects of different brands. When proprietary brands are used in research, include the brand name and the name of the manufacturer in parentheses in the Methods section.

For any more detail about the writing style for your manuscripts refer to:

http://cdjournal.muk.ac.ir

Authorship Form

Title of the manuscript:

.....

.....

We, the undersigned, certify that we take responsibility for the conduct of this study and for the analysis and interpretation of the data. We wrote this manuscript and are responsible for the decisions about it. Each of us meets the definition of an author as stated by the International Committee of Medical Journal Editors (see http://www.icmje.org/icmje-recommendations.pdf). We have seen and approved the final manuscript. Neither the article nor any essential part of it, including tables and figures, will be published or submitted elsewhere before appearing in the *Chronic Diseases Journal*. [All authors must sign this form or an equivalent letter.]

Name of Author	**Signature**

Please scan this form and upload it as a supplementary file in "Step 4" of submitting articles.

Table of Contents

Original Article(s)

Short Communication(s)

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.551 Published by Vesnu Publications

The effectiveness of mindfulness-based cognitive therapy on mental well-being of opioid-users

Roonak Mobaraki[1], Hamzeh Ahmadian[1], Emad El-din Ezatpour[1]

1 Department of Psychology, Faculty of Psychology, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran

Original Article

Abstract

BACKGROUND: Mindfulness-based cognitive therapy (MBCT) is one of the techniques for shaping behavior and procedure for changing non-adaptive beliefs by using cognitive-behavioral theory to treat addiction disorders. This study was conducted to determine the effectiveness of cognitive therapy based on mindfulness on mental well-being of opioid users.

METHODS: This pretest-posttest experimental study was conducted among drug users in Sanandaj city, Northwest of Iran, during 2016. To conduct the research, 20 participants were selected using available sampling method, and randomly divided into two equal groups of experimental and control. The experimental group received knowledge about cognitive therapy for 8 sessions of 90 minutes. We gathered the data of two study groups using Mental Well-being Questionnaire before and after intervention. Data analyses conducted using independent sample t test.

RESULTS: Mindfulness therapy had a significant effect on subjective well-being of opium users. So that, the mean scores of the variable of the overall index of mental well-being in the experimental group (177.90 ± 20.14) was significantly larger than the control group (141.30 ± 19.16) in the posttest with the control of the effect of the pretest ($P < 0.001$).

CONCLUSION: Findings of the present study suggest that cognitive therapy based on mind-awareness strategies helps people to replace reasonable beliefs with irrational beliefs in order to achieve new insights that seek to communicate with others and improve subjective well-being.

KEYWORDS: Cognitive Therapy; Mindfulness; Mental Competency; Opioid-Related Disorders

Date of submission: 12 July 2019, *Date of acceptance:* 22 Sep. 2019

Citation: Mobaraki R, Ahmadian H, Ezatpour EE. **The effectiveness of mindfulness-based cognitive therapy on mental well-being of opioid-users.** Chron Dis J 2020; 8(4): 156-61.

Introduction

In terms of psychology, addiction or substance dependence, is considered a mental disorder. This word is defined as "substance abuse disorder" and is the second most common psychiatric disorder.[1]

So far, several therapies of psychoanalysis, behavioral therapy, group therapy, and drug therapy have been conducted on patients with addiction disorders, but each of these methods is somewhat effective and r sometimes they cause the addiction to return. It seems that the problem is deeper and something in a person's psyche places him in a state of re-use. Johnson et al.[2] found in the research that there was evidence of the relationship between beliefs of people with alcohol abuse disorder and medications. Meanwhile, cognitive behavioral therapies (CBTs) have received very high empirical support among psychosocial approaches evaluated in the field of substance abuse treatment. Mental awareness-based cognitive therapy is a term used for therapeutic approaches based on behavioral shaping techniques as well as procedures for changing inappropriate beliefs. This approach uses cognitive and behavioral theories to treat

Corresponding Author:
Hamzeh Ahmadian; Department of Psychology, Faculty of Psychology, Sanandaj Branch, Islamic Azad University, Sanandaj, Iran
Email: ahmadian2010@gmail.com

anomalies of addiction.[3]

In Kabat-Zinn and Nhat Hanh's view,[4] the purpose of conscious mindedness is not a changed state of consciousness, but a state of self-observation without evaluation and attention to the present reality.

The main goal of mindfulness-based cognitive therapy (MBCT) is to enable the patient to be aware of the effects of re-functioning of the mind through self-monitoring, the creation and utilization of the mind-state, and repeated exercises with directional intent. It is imperative to observe your thoughts and feelings or body feelings.[5]

In recent years, a group of mental health researchers has chosen a different theoretical and research approach to explain this concept. It considers mental health as a positive psychological function and conceptualize it in the context of the term "mental well-being". This group does not consider the disease to be sufficient for a sense of health, but it believes that having a sense of life satisfaction, satisfactory progress, effective interaction with the world, energy and positive mood of the graft, favorable relationship with the community, and the positive development are the characteristics of a healthy person. Today, there are new perspectives on the mental health and psychology. In this perspective, there are focus on people's mental health and psychological nature of well-being.[6]

The importance of the effectiveness of MBCT in the treatment of addiction is that the therapist helps the authorities to identify thoughts that provoke a positive attitude towards narcotic drugs and alter irrational thoughts and false beliefs. Treatment and prevention of recurrence of drug use, due to its mechanisms, such as acceptance, awareness increasing, desensitization, and fighting with drug reuse can reduce the consequences of quitting drug use and prevention of recurrence of drug use.[7-9]

Since the mindfulness approach has recently been introduced in psychological research and in Iran, there are few psychiatric therapists trained in this field, the use of this approach is needed for preventing the recurrence of substance use and high rates of abusers in Iran.

Therefore, the main question of the present research is that what is the effect of MBCT on the subjective well-being of opium-dependent consumers?

Materials and Methods

The present research was applied in a practical and semi-experimental, pretest and posttest type with control group. The statistical population of the study was the clients of the addiction treatment center of Sanandaj City, Iran, in the second half of 2016.

The inclusion criteria included minimum primary and upper secondary education, age range of 20 to 50 years, referral of a psychiatrist or doctor based on primary diagnosis of drug dependence according to Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-V) diagnostic criteria, negative urine test for opioids, lack of physical and psychological problems, lack of cooperation in other therapeutic programs during the study, lack of long-term dependence on several substances at the same time apart from opiate, and having satisfaction for attending therapeutic sessions. The criterion for leaving the research was the absence of more than two sessions in the treatment sessions.

Twenty people were selected using available sampling method and randomly assigned to two experimental and control groups (each group of 10).

Before training, cognitive therapy based on mindfulness of both groups was tested by Emotion Regulation Questionnaire (ERQ). Subsequently, they were trained by a master in clinical psychology in this field, and the experimental group was subjected to

awareness-raising sessions for 8 sessions of 90 minutes each week. During this period, no intervention was performed on the control group (Table 1).

After completing the training sessions, the subjective well-being questionnaire was again applied to both groups. For data analysis, in addition to descriptive statistics including mean and standard deviation (SD), inferential statistics including independent t-test was used.

Mental Well-being Questionnaire: This scale has been developed and utilized by Keyes and Magyar-Moe.[10] The questionnaire has 45 questions and 3 subscales that are used to measure emotional, psychological, and social well-being.

A. The subscale of emotional well-being with 12 questions evaluates the positive and negative emotions of individuals during the past month. The first six questions are about positive emotions and the second six questions evaluate negative emotions during the past month.

B. The subscale of psychological well-being has 18 questions and is based on the individuals' assessment of their personal life.

C. The subscale of social welfare has 15 questions and is based on the individuals' assessment of their social life and relationships with the community.

The validity of the questionnaire isobtained by:

Content-based validation: This type of validity,[11] is used to determine whether a test is basically a question of this kind of content, properly identified and evaluated by its content. In order to do narrative content, at first, a subjective well-being scale was given to 5 professors from the School of Psychology at Al-Zahra University, Tehran, Iran, for evaluation. They responded to the question of the extent to which this test is appropriate by a 5-point scale ranging from not appropriate at all (1) to very appropriate (5), the results of which indicate that mental judgments of Well-Being Questionnaire is high appropriate.

Table 1. Summary of the contents of the sessions of mindfulness education

Sessions	Subject	Description
First	Automatic guidance	Presence is the best way to get out of automated guidance, which gives us the knowledge of every moment.
Second	Dream with obstacles	Feelings of being unable to make progress or move forward in a situation until a problem has been dealt with.
Third	Conscious breathing	Is an umbrella term for medical and therapeutic methods that improve the breathing function. These methods involve directing awareness to breathing and developing habits that improve respiration.
Fourth	Being in the present	In the presence of the mind the aware and mindful of what is happening at this moment, one must look at the events from a different angle and have a wide and different view of them.
Fifth	Authorization/approval	A different connection means the permission to attend experiment, just as it is without judging it, or trying to make a change in what we are about to do.
Sixth	Thoughts are not truths	They are mental events that pop up in the mind and are dependent on our mood. Understanding that thoughts are just thought is even reasonable for anyone who does not believe it.
Seventh	Take care of yourself as best as possible	There is a possibility of treatment that can be practiced. As a first step, you can use breath-taking practice.
Eighth	Use what you have learned in life.	Regular school attendance helps maintain balance in life. Positive intentions are strengthened. Because these exercises are linked to positive reasons for self-care.

Table 2. Statistical characteristics of subjects in subjective mental well-being in experimental and control groups

Groups		Pretest	Posttest
		Mean ± SD	Mean ± SD
Mental well-being	Experimental	144.50 ± 23.04	177.90 ± 20.14
	Control	141.40 ± 23.88	141.30 ± 19.16

SD: Standard deviation

Differential validity (diagnostic): This validity was evaluated by implementing the short version of Beck Depression Inventory (BDI-21) and Subjective Mental Well-being Questionnaire on 57 subjects. The correlation coefficients of BDI with Subjective Well-being Questionnaire (-0.52) and its subscales included emotional well-being (-0.46), psychological well-being (-0.47), and social well-being (-0.43). The Mental Well-being Questionnaire had an acceptable reliability.

Results

According to the results of the study, 20 opium-users participated in this research. Mean age of them was 31.2 years. In terms of education, most participants had middle school education. In table 2, the mean and SD of the pretest and posttest scores of subjects were separately presented for the experimental and control groups.

As the results of table 2 show, there was not a significant difference between the two groups in the pretest phase, but at the posttest stage, there was a big difference. Also, the mean in the control group was less variable than the experimental group by comparing the pretest and posttest means of mental well-being. It can be concluded that subjective well-being changed after mind-awareness training in posttest and the performance of individuals in the experimental group improved. Given the fact that the assumptions of the covariance test were not met in this hypothesis, the t-test was used to analyze the data. First, the difference between the posttest scores and the pretest scores was calculated and then the remainders were compared using the t-test for independent groups.

T-test results to compare mental well-being in the two groups (testing and control) showed that there was a positive effect of cognitive therapy on mental well-being ($P < 0.001$).

Considering that the mean of the experimental group was larger than the mean of the control group, it can be concluded that MBCT was effective in the increase of mental well-being.

Discussion

The results of this study showed that MBCT was effective in preventing the return of opioid-dependent people. In other words, the rate of return in the case of those who received this training had a significant decrease compared to the control group. This finding indicates the effectiveness of this type of intervention in reducing the return and reduction of consumption in opiate-dependent people.

The results of this study are consistent with the findings of Tickell et al.[12], Shareh et al.[13], Jalali et al.[14], Farnam et al.[15], and Kazemian,[16] showing that learning a retrospective prophylactic model is effective in preventing rebounding addiction and increasing coping skills. Kazemian also emphasized on the effectiveness of focus on the mental health of addicts, which based on the results of this study, the use of MBCT method has significantly increased the mental health of drug addicts.

According to this hypothesis, in a research conducted by Kafi et al.,[17] the efficacy of knowledge-based cognitive therapy education in subjective well-being of women with irritable bowel syndrome (IBS) was investigated. The

findings showed that the mean scores of mental well-being in the experimental group decreased in posttest and follow-up. Also, in a study by Gallefoss et al.[18] in the United States (US), the results showed that mental health awareness of patients had a significant effect on the improvement of mental well-being of patients with asthma, which is consistent with the results of the present study.

Formation of specialized groups at the centers of drug addiction in the city for education and effective management in the treatment of addicts, including mental and emotional therapy, as well as the use of tests to measure the mental health of addicts treated with methadone in centers of addiction treatment can be very effective in the function of this type of treatment. The limitations of this study include the difficulty of understanding some of the questions, even for high-educated subjects, as well as the low level of education of some subjects, especially methadone users who responded to the questionnaire.

Conclusion

Mental mindfulness-based strategies for cognitive therapy are one of the ways for regulating the excitement of individuals and today, they are one of the educational approaches in this area. The results of this study also showed that effectiveness of mindfulness-based cognitive therapy had a significant effect on the regulation of emotions in individuals and helps trained people to adjust their emotions and excitement. This approach can be used to train addicts as one of the most vulnerable groups in the community, especially in preventing the return of opioid-dependents. It is recommended that using the cognitive-based education method be considered as a strategy for policymakers in the field of drug prevention and treatment.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors would like to thank the managers of Sanandaj addiction treatment centers and other esteemed individuals who helped us throughout the project.

References

1. Sadock V, Sadock B. Kaplan Sadock's synopsis of psychiatry behavioral sciences. Trans. Rezaee F. Tehran, Iran: Arjmand Publications; 2013. [In Persian].
2. Johnson C, Drgon T, Walther D, Uhl GR. Genomic regions identified by overlapping clusters of nominally-positive SNPs from genome-wide studies of alcohol and illegal substance dependence. PLoS One 2011; 6(7): e19210.
3. Ryan RM, Brown KW. Why We Don't need self-esteem: On fundamental needs, contingent love, and mindfulness: Comment. Psychol Inq 2003; 14(1): 71-6.
4. Kabat-Zinn J, Nhat Hanh T. Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness. New York, NY: Random House Publishing Group; 2009.
5. Mehri Nejad S, Ramezan Saatchi L. Impact of Mindfulness-Based Cognitive Therapy on Depression, Anger and Emotion Regulation of Veterans' Spouses. Iran J War Public Health 2016; 8(3): 141-8. [In Persian].
6. Ryff CD, Singer B. Psychological well-being: Meaning, measurement, and implications for psychotherapy research. Psychother Psychosom 1996; 65(1): 14-23.
7. Witkiewitz K, Marlatt GA, Walker D. Mindfulness-Based Relapse Prevention for Alcohol and Substance Use Disorders. J Cogn Psychother 2005; 19(3): 211-28.
8. Marlatt GA, Bowen S, Chawla N, Witkiewitz K. Mindfulness-based relapse prevention for substance abusers: Therapist training and therapeutic relationships. Mindfulness and the therapeutic relationship 2008; 107-21.
9. Breslin FC, Zack M, McMain S. An information-processing analysis of mindfulness: Implications for relapse prevention in the treatment of substance abuse. Clinical psychology: Science and practice 2002; 9(3): 275-99.
10. Keyes CL, Magyar-Moe JL. 'The measurement and utility of adult subjective well-being. In: Lopez SJ, Snyder CR, Editors. Positive psychological assessment: A handbook of models and measures. Washington, DC: American Psychological Association; 2003. p. 411-25.
11. Naderi E, Seif Naraghi M. Children with behavioral disorders and it's remediation approaches. Tehran,

Iran: Badr Publications; 1994. [In Persian].
12. Tickell A, Ball S, Bernard P, Kuyken W, Marx R, Pack S, et al. The effectiveness of mindfulness-based cognitive therapy (MBCT) in real-world healthcare services. Mindfulness 2019; 11(2): 279-90.
13. Shareh H, Gholami Z, Jafari M. Effectiveness of mindfulness-based group therapy in relapse prevention for methamphetamine dependent males. J Fundam Ment Health 2018; 20(3): 208-18. [In Persian].
14. Jalali F, Hashemi SF, Hasani A, Fakoor Sharghi N. The effectiveness of cognitive group therapy based on schema-focused approach on self-esteem and emotion regulation in drug addicted prisoners under the methadone maintenance treatment (MMT). J Groups Addict Recover 2017; 12(4): 284-95. [In Persian].
15. Farnam A, Borjali A, Sohrabi F, Falsafinejad MR. The effectiveness of the mindfulness based relapse prevention (MBRP) model on relapse prevention and coping skills enhancement in people with substance dependency. Clinical Psychology Studies 2014; 4(16): 79-100.
16. Kazemian S. The Effect of Mindfulness Based Cognitive Therapy on General Health of Volunteer Addicts. Research in Cognitive and Behavioral Sciences 2014; 4(1): 181-92. [In Persian].
17. Kafi M, Afshar H, Moghtadaei K, Ariapooran S, Daghaghzadeh H, Salamat M. Effectiveness of mindfulness-based cognitive-therapy on psychological signs women with irritable bowel syndrome. Koomesh 2014; 15(2): 255-64. [In Persian].
18. Gallefoss F, Bakke PS, Rsgaard PK. Quality of life assessment after patient education in a randomized controlled study on asthma and chronic obstructive pulmonary disease. Am J Respir Crit Care Med 1999; 159(3): 812-7.

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.556 Published by Vesnu Publications

A survey on the effect of oral vitamin C supplementation in patients undergoing coronary artery bypass graft surgery

Golaleh Karbasi[1], Foad Rahimi[1], Mousa Shirmohammadi[2], Saadi Yarahmadi[3]

1 Department Nursing, Faculty of Nursing, Kurdistan University of Medical Sciences, Sanandaj, Iran
2 Department of Intensive Care, Faculty of Medicine, Kurdistan University of Medical Sciences, Sanandaj, Iran
3 Department of Intensive Care, Faculty of Paramedicine, Kurdistan University of Medical Sciences, Sanandaj, Iran

Original Article

Abstract

BACKGROUND: The positive effects of antioxidants in preventing atrial fibrillation (AF) after cardiac surgery and their low side effects have been proven. The aim of this study was to evaluate the effect of oral vitamin C supplementation on preventing post-operative AF in patients undergoing coronary artery bypass graft (CABG) surgery. Vitamin C was given orally to the patients three days before surgery for up to 5 days after surgery. This time difference was based on previous studies and cardiologist's order.

METHODS: In this study, patients who underwent CABG surgery, were divided into two groups. The first group (30 patients), as the intervention group, received oral vitamin C supplementation, and the second group (30 patients), as the control group, did not receive vitamin C supplementation. All patients, during the post-operative period, underwent cardiac monitoring in cardiac intensive care unit (CICU). The inclusion criteria were: being over 50 years old, undergoing cardiac surgery only and no other kinds of surgery, undergoing coronary artery bypass surgery for the first time, and no cardio-respiratory arrest during or after surgery. Data were collected by convenience sampling method and were analyzed using SPSS software.

RESULTS: The results of this study showed that 7 patients in the control group experienced post-operative AF, while 3 patients in intervention group had the same experience. According to the results, the risk of AF in the intervention and control group was, respectively, 10.0% and 23.3%. Vitamin C significantly decreased the risk of AF after CABG surgery by 2 times.

CONCLUSION: According to the results, oral vitamin C supplementation affected the incidence of AF after CABG surgery. Therefore, oral intake of vitamin C supplementation before and after surgery reduces the incidence of AF.

KEYWORDS: Atrial Fibrillation; Coronary Artery Bypass Graft; Vitamin C

Date of submission: 15 July 2019, ***Date of acceptance:*** 19 Sep. 2019

Citation: Karbasi G, Rahimi F, Shirmohammadi M, Yarahmadi S. A survey on the effect of oral vitamin C supplementation in patients **undergoing coronary artery bypass graft surgery.** Chron Dis J 2020; 8(4): 162-7.

Introduction

Atrial fibrillation (AF) is the most common post cardiac operation dysrhythmia after sinus tachycardia.[1] It is estimated that around 800000 open heart surgery will be performed annually in the United States (US).[2] The incidence of AF after cardiac surgery is higher in the elderly patients than others, and at the ages above 40, for every ten years of age, the risk of arrhythmias increases by 50%.[3] This arrhythmia is an independent risk factor for increasing the mortality rate with a risk ratio of 1.5 for men and 1.9 for women.[4]

Generally, AF is the most important cause of increasing complications and mortality after cardiac surgery.[5] In addition, AF after cardiac surgery increases the average length of stay of patients in post-surgical intensive care units (ICUs), as well as the overall length of stay in hospitals, by an average of 1-4 days.[6]

Corresponding Author:
Foad Rahimi; Department Nursing, Faculty of Nursing, Kurdistan University of Medical Sciences, Sanandaj, Iran
Email: foadrahimi63@yahoo.com

Many studies have shown the association between AF and the oxidative process of the heart muscle,[7] which ultimately results in remodeling of the heart atrium (which is the basis of the pathophysiology of AF).[8] Autopsy studies have shown inflammatory evidence such as myocyte necrosis and fibrosis in samples taken from the atrium tissue of patients with AF, while there was no inflammatory evidence in biopsy sample of patients without this dysrhythmia.[9]

This evidence suggests a relationship between inflammatory process and AF.[10] Oxidative stress is inevitably present in patients undergoing cardiac surgery, and the presence of this inflammatory evidence in these patients is a great sign for predicting AF.[11] The strengthening of the antioxidant defense system of the heart muscle seems to be a good way to protect the damage caused by oxidative stress.[12] Ascorbic acid (vitamin C), as a potent antioxidant, probably prevents oxidative stress in these patients.[13]

Studies have shown that the level of vitamin C decreases rapidly after fast peacemaking process in atrium.[14] Vitamin C supplementation results in blockage of electrical impedance due to short-term and fast peacemaking process in atrium. The beneficial effect of vitamin C supplementation is on preventing the reduction of the level of ascorbic acid in the cell, which also reduces the proxynitrite, which is a mediator associated with AF.[4]

Vitamin C, as an antioxidant, also reduces C-reactive protein (CRP) levels that shows the important role of vitamin C in reducing inflammation and its high anti-inflammatory effect.[15] Therefore, there is an urgent need to achieve a way for preventing AF to reduce this huge burden of health system. Prophylactic strategies for AF are predictable in many cases, but these methods are currently inadequate and there is an urgent need for more effective and alternative methods to prevent AF rhythm in susceptible patients.[16]

According to positive effects of antioxidants in preventing AF after cardiac surgery and their low side effects, it seems that the use of vitamin C supplementation, as a prophylactic strategy, in patients who undergo heart surgery is useful and effective, but more studies are still needed to ensure the effectiveness and impact of the drug and its possible side effects.

Materials and Methods

This interventional study was conducted in 2016 for one year. The population included were patients undergoing coronary artery bypass graft (CABG) surgery in cardiovascular specialty and subspecialty center of Tohid Hospital in Sanandaj, Iran. The inclusion criteria were: being over 50 years old, undergoing cardiac surgery only and no other kinds of surgery, undergoing coronary artery bypass surgery for the first time, and no cardio-respiratory arrest during or after surgery. Exclusion criteria were: history of dysrhythmia, AF, having antiarrhythmic medication such as digoxin, history of pacemaker insertion, and chronic diseases.

Data were collected by convenience sampling method, randomly, in such a way that all patients who were admitted to Tohid Hospital for elective CABG surgery were enrolled in the study if they had inclusion criteria and did not have exclusion criteria, and they were divided into intervention and control groups. Considering the intervention and the possibility of operating time for each group, 30 samples were taken as a total of 60 samples.

It was an interventional study in which oral vitamin C supplementation was prescribed to patients undergoing cardiac surgery and its effect on the incidence of AF was measured. Those who did not have inclusion criteria were excluded from the study. Patients were randomly divided into two groups. 12-lead electrocardiogram (ECG) was taken from all the patients who were admitted and their heart rhythm and ECG profile were recorded. Oral vitamin C supplementation (500 mg boiling

tablet, Iran Darou Pharmaceutical Co., Iran) was given to the patients three days prior to surgery, up to 5 days after the operation, at a dose of 500 mg twice a day. All of the patients went under CABG surgery by one team with one surgical procedure, standardly, with cardiopulmonary bypass (CPB) system. Also, all patients' standard drug requirements continued during hospitalization. The overall patient's attachment time to the CPB system from the insertion of the aortic clamp until the stabilizing heart re-perfusion was recorded. After the operation and transferring the patient to the ICU, the patient's vital signs and hemodynamic status were recorded. Patients were under continuous cardiac monitoring during the entire period of hospitalization in the ICU and were monitored directly by the researcher throughout all this time. After transferring to the unit, they were monitored for three days by Holter monitoring and were analyzed by the relevant specialist. Data were analyzed using SPSS software (version 24, IBM Corporation, Armonk, NY, USA) by t-test and chi-square test.

Results

This clinical trial research was conducted on 60 patients who underwent surgical treatment in Tohid Hospital of Sanadaj in order to investigate the effect of vitamin C supplementation on AF after CABG surgery.

The results showed a significant statistical difference between variables mentioned in the control and intervention groups and indicated that there was no significant statistical difference in the quantitative indexes of patients in the two groups. Moreover, the results showed that the probability of the effect of the quantitative indexes in post-operative AF was similar in the two groups and in the cases where there was a possibility of interference with other effective factors and the underlying and confounding factors on AF after the cardiac operation, the effect of the two groups was similar (Table 1).

The results showed that both control and intervention groups were completely similar in terms of clinical features and demographic characteristics. The last column of table 2 reflects the results of the chi-square test on the probability of a significant statistical difference between the variables mentioned in the control and intervention groups. The results indicated that there was no statistically significant difference between the qualitative variables studied in patients and the possibility of their effect on AF after cardiac surgery. The results also showed that both control and intervention groups in terms of clinical and paraclinical characteristics, during the operation of the heart surgery, were completely similar and the effect of these variables on the incidence of post-operative AF was similar in both of the groups.

Table 1. Comparison of quantitative statistical indices relative to demographic and paraclinical characteristics of patients in two groups of control and intervention

Variable	Control group	Intervention group	t	P
	Mean ± SD	Mean ± SD		
Age (year)	61.70 ± 7.30	60.07 ± 6.01	0.811	0.421
LVEF (%)	43.30 ± 8.54	44.50 ± 7.80	0.632	0.243
LVESD (cm)	2.88 ± 0.57	2.94 ± 0.59	-0.368	0.715
LVEDD (cm)	4.61 ± 0.83	4.26 ± 0.61	1.810	0.075
LAD (cm)	18.40 ± 2.48	19.30 ± 2.39	-1.320	0.191
ESR (mm/h) (before surgery)	7.34 ± 6.05	7.34 ± 6.02	1.220	0.213
WBC ($\times 10^3$) (before surgery)	0.27 ± 0.44	0.27 ± 0.44	0.630	0.314
Hb (g/dl) (before surgery)	0.51 ± 0.41	0.51 ± 0.41	1.250	0.950
HCT (before surgery)	0.07 ± 1.24	0.07 ± 1.25	0.620	0.517

LVEF: Left ventricular ejection fraction; LVESD: Left ventricular end-systolic diameter; LVEDD: Left ventricular end-diastolic diameter; LAD: Left atrial diameter; ESR: Erythrocyte sedimentation rate; WBC: White blood cell; Hb: Hemoglobin; HCT: Hematocrit; SD: Standard deviation

Table 2. Distribution of absolute and relative frequency of demographic and clinical characteristics of patients in control and intervention groups

Variable		Control group [n (%)]	Intervention group [n (%)]	Total [n (%)]	P*
Gender	Female	8 (26.7)	6 (20.0)	14 (23.3)	0.542
	Male	22 (73.3)	24 (80.0)	46 (76.7)	
HTN	Yes	8 (26.7)	8 (26.7)	16 (26.7)	> 0.999
	No	22 (73.3)	22 (73.3)	44 (73.3)	
History of smoking	Yes	5 (16.7)	5 (16.7)	10 (16.7)	> 0.999
	No	25 (83.3)	25 (83.3)	50 (83.3)	
History of MI	Yes	5 (16.7)	5 (16.7)	10 (16.7)	> 0.999
	No	25 (83.3)	25 (83.3)	50 (83.3)	
DM	Yes	6 (20.0)	5 (17.2)	11 (18.6)	0.786**
	No	24 (82.8)	24 (80.0)	48 (81.3)	
Hypercholesterolemia	Yes	2 (6.7)	2 (6.7)	4 (6.7)	> 0.999
	No	28 (93.3)	28 (93.3)	56 (93.3)	
Taking beta blocker before surgery	Yes	3 (10.0)	5 (16.7)	8 (13.3)	0.448
	No	27 (90.0)	25 (83.3)	52 (86.7)	
Taking statin before surgery	Yes	2 (6.7)	2 (6.7)	4 (6.7)	> 0.999
	No	28 (93.3)	28 (93.3)	56 (93.3)	
Taking nitrates before surgery	Yes	12 (40.0)	8 (26.7)	20 (33.3)	0.410
	No	18 (60.0)	22 (73.3)	40 (66.7)	

* Chi-square test, ** Degree of freedom (df) = 1
HTN: Hypertension; MI: Myocardial infarction; DM: Diabetes mellitus

The last column of the table represents the results of independent chi-square test on the probability of a significant statistical difference between the variables mentioned in the control and intervention groups. The results indicated that there was no statistically significant difference between these indices in both of the groups and they were completely similar (Table 2).

After demonstrating the similarity of quantitative and qualitative indices of clinical and paraclinical factors and demographic characteristics, at base and during the operation in both control and intervention groups, the role of oral vitamin C supplementation in the incidence of AF after CABG surgery will be explained.

The results showed that the average length of stay in ICU in the control group was 5.70 ± 0.41 days, and the average length of stay in ICU in the intervention group and after oral administration of vitamin C supplement was 4.60 ± 0.34 days that means duration of hospitalization in ICU in intervention group was less. Also, the average length of stay in the hospital after operation (including the total length of stay in the ICU and the surgery ward) in the control group was 0.55 ± 0.46 days, and in the intervention group was 0.67 ± 5.40 days, which showed that the two groups did not have much difference.

Discussion

This study showed that oral intake of vitamin C supplement before and after open heart surgery reduced the incidence of AF after surgery. The results of this study indicated that oral intake of vitamin C supplement before and after this operation reduced 2 times the incidence of AF. In this clinical trial study that was performed on 60 patients in control and study groups (30 in each group), the incidence of AF in the control and intervention groups was 23.3% and 10.0%, respectively.

In a similar clinical trial which was done by Borzak et al. on a total of 100 patients undergoing cardiovascular transplantation, the role of post-operative vitamin C in reducing the

incidence of AF has been studied.[17] The results of this study are in line with their results. However, the incidence of AF in their study was lower than the present study, and in the intervention group, the incidence of AF decreased.

Another study showed that the incidence of AF after open heart surgery following intravenous (IV) ascorbic acid was 61.2% in the control group and 54.47% in the intervention group. In this study, the incidence of AF after open heart surgery has been reported very high in control group (61.2%); this study has been done on a larger number of samples.[18]

In the present study, it has been shown that the intake of oral vitamin C supplement, in addition to the effect on AF, reduces the length of stay of patients in the ICU. The results indicated that the average duration of stay in ICU in control group was 5.7 days, while in the intervention group and after oral administration of oral vitamin C supplement, it was 4.6 days. This means that taking vitamin C supplement in the intervention group reduces the duration of hospitalization in ICU. In a similar study, the duration of stay of patients with AF after surgery in the ICU was 3.2 days and in patients with sinus rhythm, it was 3.2 days. This period of hospitalization in ICU in patients with AF is more than the results of the present study.[12] Other study showed that duration of hospitalization in ICU was 2.7 days in patients with AF and 2 days in patients with sinus rhythm, which is consistent with the results obtained in this study.[19]

In this study, although there was a significant difference in duration of stay of patients after surgery in both intervention and control groups, the difference, compared to other studies, was not much. The reason for this is that there was no difference between the length of stay of patients with AF who underwent CABG and those with other reasons because these patients did not undergo continuous cardiac monitoring after transferring to general ward. They were checked daily by ECG. In many cases, AF occurs in a very short time that doctors or nurses do not notice it; therefore, patients are not under certain treatment to control it. However, most of the cases of AF are self-limiting and patients need no treatment.

Conclusion

The results of this study, which are in line with extensive studies in order to achieve an effective drug or surgical method, and more importantly, an effective prophylactic method for the prevention of post-cardiac surgery arrhythmias, specifically AF, have been promising a new solution to prevent and treat this arrhythmia. These results require more trials to fully understand its effect and long-term adverse effects. The study's limitations included the need for patients' follow-up and timely intervention in administration of vitamin C in patients with postoperative AF.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

This study was approved by Research Committee of Kurdistan University of Medical Sciences, Sanandaj. We appreciate Deputy of Research and Technology of Kurdistan University of Medical Sciences for supporting this research financially and spiritually. Also, the authors would like to acknowledge all of the patients that participated in this study. This article is derived from a research project approved and financially supported by Kurdistan University of Medical Sciences (project number: 1394/364).

References

1. Saxena R, Lewis S, Berge E, Sandercock PA, Koudstaal PJ. Risk of early death and recurrent stroke and effect of heparin in 3169 patients with acute ischemic stroke and atrial fibrillation in the International Stroke Trial. Stroke 2001; 32(10):

2333-7.
2. Singer DE, Albers GW, Dalen JE, Go AS, Halperin JL, Manning WJ. Antithrombotic therapy in atrial fibrillation: The Seventh ACCP Conference on antithrombotic and thrombolytic therapy. Chest 2004; 126(3 Suppl): 429S-56S.
3. Go AS, Hylek EM, Phillips KA, Chang Y, Henault LE, Selby JV, et al. Prevalence of diagnosed atrial fibrillation in adults: National implications for rhythm management and stroke prevention: The AnTicoagulation and Risk Factors in Atrial Fibrillation (ATRIA) Study. JAMA 2001; 285(18): 2370-5.
4. Kannel WB, Wolf PA, Benjamin EJ, Levy D. Prevalence, incidence, prognosis, and predisposing conditions for atrial fibrillation: Population-based estimates. Am J Cardiol 1998; 82(8A): 2N-9N.
5. Morris DC, Clements SD, Bailey JM. Management of the, patient after cardiac surgery. In: Fuster V, Alexander RW, O'Rourke RA, Roberts R, King SB, Nash IS, et al., Editors. Hurst's the heart. New York, NY: McGraw-Hill; 2004.
6. Chung MK. Cardiac surgery: Postoperative arrhythmias. Crit Care Med 2000; 28(10 Suppl): N136-N144.
7. Hakala T, Hedman A. Predicting the risk of atrial fibrillation after coronary artery bypass surgery. Scand Cardiovasc J 2003; 37(6): 309-15.
8. Oral H. Mechanisms of atrial fibrillation: Lessons from studies in patients. Prog Cardiovasc Dis 2005; 48(1): 29-40.
9. Maisel WH, Rawn JD, Stevenson WG. Atrial fibrillation after cardiac surgery. Ann Intern Med 2001; 135(12): 1061-73.
10. Creswell LL, Schuessler RB, Rosenbloom M, Cox JL. Hazards of postoperative atrial arrhythmias. Ann Thorac Surg 1993; 56(3): 539-49.
11. Ommen SR, Odell JA, Stanton MS. Atrial arrhythmias after cardiothoracic surgery. N Engl J Med 1997; 336(20): 1429-34.
12. Eslami M, Badkoubeh RS, Mousavi M, Radmehr H, Salehi M, Tavakoli N, et al. Oral ascorbic acid in combination with beta-blockers is more effective than beta-blockers alone in the prevention of atrial fibrillation after coronary artery bypass grafting. Tex Heart Inst J 2007; 34(3): 268-74.
13. Lloyd-Jones DM, Wang TJ, Leip EP, Larson MG, Levy D, Vasan RS, et al. Lifetime risk for development of atrial fibrillation: The Framingham Heart Study. Circulation 2004; 110(9): 1042-6.
14. Van Wagoner DR. Recent insights into the pathophysiology of atrial fibrillation. Semin Thorac Cardiovasc Surg 2007; 19(1): 9-15.
15. Wolf PA, Abbott RD, Kannel WB. Atrial fibrillation as an independent risk factor for stroke: The Framingham Study. Stroke 1991; 22(8): 983-8.
16. Andrews M, Nelson BP. Atrial fibrillation. Mt Sinai J Med 2006; 73(1): 482-92.
17. Borzak S, Tisdale JE, Amin NB, Goldberg AD, Padhi D, Higgins RS. Atrial fibrillation after bypass surgery: Does the arrhythmia or the characteristics of the patients prolong hospital stay? Chest 1998; 113(6): 1489-91.
18. Hurst JW. Hurst's the Heart. New York, NY: McGraw-Hill; 2004.
19. Almassi GH, Schowalter T, Nicolosi AC, Aggarwal A, Moritz TE, Henderson WG, et al. Atrial fibrillation after cardiac surgery: A major morbid event? Ann Surg 1997; 226(4): 501-11.

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.552 Published by Vesnu Publications

The role of affective temperament and emotional expression in predicting chronic fatigue in patients with cancer hospitalized in Ardabil City, Iran, during the autumn of 2016

Sajjad Basharpoor[1], Fazeleh Heidari[1], Behnam Nasri-Nasrabadi[1]

1 Department of Psychology, School of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran

Original Article

Abstract

BACKGROUND: Affective temperament and emotional expression can be important in the mental and physical consequences of patients with cancer. This study aimed to determine the role of affective temperament and emotional expression in predicting chronic fatigue in patients with cancer.

METHODS: 110 patients with cancer, hospitalized in the surgery and hematology wards of Fatemi and Imam Khomeini Hospitals in Ardabil City, Iran, in autumn of 2016, were selected by purposive sampling and participated in this cross-sectional study. The Affective and Emotional Composite Temperament Scale (AFECTS), Berkeley Expressivity Questionnaire (BEQ), and Chalder Fatigue Scale (CFQ) were used to collect data. The collected data were analyzed by correlation coefficient and multiple regression analysis using SPSS software.

RESULTS: Chronic fatigue positively correlated with depressive ($r = 0.69$, $P < 0.01$), anxious ($r = 0.59$, $P < 0.01$), apathetic ($r = 0.64$, $P < 0.01$), dysphoric ($r = 0.37$, $P < 0.01$), volatile ($r = 0.61$, $P < 0.01$), irritable ($r = 0.36$, $P < 0.01$), disinhibited ($r = 0.33$, $P < 0.01$), and obsessive ($r = 0.52$, $P < 0.01$) affective temperaments, but it negatively correlated with cyclothymic ($r = -0.35$, $P < 0.01$), hyperthymic ($r = -0.62$, $P < 0.01$), euphoric ($r = -0.69$, $P < 0.01$), and euthymic ($r = -0.21$, $P < 0.01$) affective temperaments. Also, it was found that there was a negative relationship between chronic fatigue and emotional expression ($r = -0.27$, $P < 0.01$). Results of regression analysis showed that 79% of the total variance of chronic fatigue was explained by affective temperaments. In addition, 27% of the total variance of the chronic fatigue was explained by emotional expressiveness.

CONCLUSION: These findings suggest that we can consider the affective temperament and emotional expression as psychological factors underlying the chronic fatigue in patients with cancer.

KEYWORDS: Cancer; Affective Temperament; Expressed Emotion; Fatigue Syndrome Chronic

Date of submission: 02 July 2019, ***Date of acceptance:*** 10 Sep. 2019

Citation: Basharpoor S, Heidari F, Nasri-Nasrabadi B. **The role of affective temperament and emotional expression in predicting chronic fatigue in patients with cancer hospitalized in Ardabil City, Iran, during the autumn of 2016.** Chron Dis J 2020; 8(4): 168-75.

Introduction

Despite remarkable advances in medical sciences, cancer continues to be one of the most important diseases in Iran and it is the second leading cause of death after cardiovascular diseases.[1] This disease is characterized by an abnormal change in cells and a loss of cell differentiation. Currently, more than 7 million people in the world die because of cancer and it is predicted that the number of new infections will reach 15 million annually until 2020.[2] One of the most comprehensive and suffering problems in patients with cancer is chronic fatigue syndrome (CFS). CFS significantly adds to the cancer symptoms and it is observed in all types and stages of the

Corresponding Author:
Sajjad Basharpoor; Department of Psychology, School of Educational Sciences and Psychology, University of Mohaghegh Ardabili, Ardabil, Iran
Email: basharpoor_sajjad@uma.ac.ir

disease.[3] According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), this syndrome refers to the general fatigue of the body that continues a long time. This fatigue spreads throughout the body and reduces physical activity and individual power. Muscle pain and constant fatigue, memory deficits, severe headaches, tender lymph nodes in the neck and armpits, and cough are some common symptoms of this disorder.[4] In fact, 61% to 99% of patients who receive treatment for cancer experience prolonged fatigue. This problem can disrupt the patient's daily functioning and lead to a negative impact on the quality of life (QOL), self-care ability, and willingness to continue the healing process.[5]

Research has shown that the prevalence and severity of cancer-related fatigue are associated with personality and psychological factors in these patients. For example, the relationship between an anxious and depressed character with this syndrome has been shown in the literature.[6] On the other hand, experiences of fear, anger, guilt, and lack of response to positive emotions are a common phenomenon in patients with cancer.[7] One of the most important basic personality characteristics, underlying our emotions and affects, is affective temperament. Temperament is represented by a series of signs and features usually manifested via certain stability of mood, attitudes to the environment, sensitivity to external stimuli, and characteristic modes of reaction.[8] Lara et al. have proposed a model in which the affective temperament is categorized into twelve features: a) depressive, b) anxious, c) apathetic, d) cyclothymic, e) dysphoric, f) volatile, g) obsessive, h) euthymic, i) hyperthymic, j) irritable, k) disinhibited, and l) euphoric.[9] One of the features of this model is that it provides a more general approach toward suggestibility to physical and mental disorders. For example, depressive temperament has high comorbidity with trauma developed by the diagnosis of human immunodeficiency virus (HIV) disease and it predicts lower QOL in patients with acquired immunodeficiency syndrome (AIDS) and also, cyclothymic and irritable temperaments are significantly higher in substance-dependent individuals.[10] Individual's temperamental features are one of the most important factors in predicting the risk of cancer and treatment progress.[11] Awada et al. showed that affective temperament was one of the factors of mental functions for depression in patients with cancer.[12]

On the other hand, the emotional expression that is the opposite of emotional inhibition has been studied as one of the other dimensions of emotion regulation concerning chronic diseases. Individuals with a higher level of emotional expression show more emotional responses (e.g., sadness by crying) and have more inner desire to participate in emotional interactions.[13] Emotional expression is one of the important factors in patients with cancer prone to treatment-related fatigue. For example, a low level of emotional expressiveness increases the risk of early death due to cancer.[14] Porter et al. evaluated emotional expressiveness about the amount of pain and life quality among patients with gastric cancer; they found that patients with low emotional expressiveness reported higher levels of chronic pain and showed a poorer QOL.[15] Also, emotional expressiveness has been emphasized as a catalyst for better compatibility[16] and higher healthy behaviors in patients with cancer.[17]

Based on this evidence, it can be assumed that affective temperament can be regarded as one of the important factors related to cancer. Research shows that individual differences in affective temperament of patients with cancer can predict the consequences of their health and QOL. On the other hand, the emotional expression can be an important factor in psychological outcomes of cancer such as chronic fatigue. Given that the previous studies

have focused on the role of these variables in depression and anxiety in patients with cancer and the other outcomes such as chronic fatigue have not been studied, the present study aimed to determine the role of affective temperament and emotional expression in predicting chronic fatigue in patients with cancer.

Materials and Methods

The method of this cross-sectional study was correlational. All patients with cancer, hospitalized in the surgery and hematology wards of Fatemi and Imam Khomeini Hospitals in Ardabil City, Iran, in autumn of 2016, comprised the statistical population of this study (n = 134). 110 patients were selected by purposive sampling method from this population and participated in this study. All patients who had inclusion criteria (110 patients) were selected to participate in this study due to a low population size. The following tools were used to collect data:

Affective and Emotional Composite Temperament Scale (AFECTS): This scale was developed by Lara et al. in 2012 aiming to integrate affective and emotional temperament in the form of one comprehensive model. 52 items of these scale measure six emotional temperaments including volition, anger, inhibition, sensitivity, coping, and control in a 7-point Likert scale and 12 questions of this scale measure 12 affective temperaments including depressive, anxious, apathetic, cyclothymic, dysphoric, volatile, obsessive, euthymic, hyperthymic, irritable, disinhibited, and euphoric in a 5-point Likert scale. Cronbach's alpha coefficient range has been reported for this scale to be 0.86 (total) and for subscales between 0.75 to 0.91.[9] Cronbach's alpha coefficients for this scale in Iranian university students were reported totally 0.82 and for its subscales between 0.49 to 0.89.[18]

Berkeley Expressivity Questionnaire (BEQ): This questionnaire was developed by Gross and John and consists of 16 items that measure emotional expressiveness in a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). This questionnaire has been composed of 3 subscales including impulse severity, negative expression, and positive expression. The impulse severity subscale evaluates the severity of emotional expressiveness; the negative expression subscale consists of 6 items and positive expression contains 4 items. The internal consistency and test-retest reliability of this questionnaire have been reported well. Convergent and divergent validity of each of the subscales of this questionnaire was evaluated as good.[19] The Cronbach's alpha coefficients for impulse control, negative expressivity, positive expressivity, and the total score have been reported 0.76, 0.68, 0.74, and 0.75, respectively, in an Iranian sample.[20]

The Chalder Fatigue Scale (CFQ): This scale has been developed by Chalder et al.[21] and includes 14 questions that measure mental and physical signs of fatigue that are related to characteristic symptoms of chronic fatigue. This scale has four components: cognitive problems, drowsiness, resistance and power, and lack of motivation and interest. Chalder et al.[21] reported that the internal consistency coefficient of this scale was 0.89. The test-retest reliability coefficient for the whole scale, physical fatigue, and mental fatigue subscales was obtained, respectively, 0.85, 0.81, and 0.74.[21] The Cronbach's alpha coefficients for physical fatigue, mental fatigue, and the total score have been reported 0.71, 0.88, and 0.79, respectively, in the samples of this study.

To collect data, after obtaining the necessary permits, we referred to the surgery and hematology wards of Fatemi and Imam Khomeini Hospitals in Ardabil, and the list of all patients hospitalized in these wards was provided. Then, from the list of these patients, 110 people were selected according to inclusion criteria. Participants provided informed consent before participation; then, they were asked to

answer AFECTS, BEQ, and CFQ, respectively, in the ward and individually. Diagnosing cancer, having a reading and writing ability, and the willingness to participate in the study were the inclusion criteria and the high severity of disease was the exclusion criterion. This study was approved by the research and technology committee of the University of Mohaghegh Ardabili, Ardabil (contact number, 1015; 96.05.21).

The gathered data were analyzed using descriptive tools of mean and standard deviation (SD), Pearson correlation, and multiple regression analysis.

Results

110 patients with the mean age of 48.41 ± 7.65 years participated in this study. The demographic characteristics of the subjects are shown in table 1.

Table 1. Descriptive characteristics of participants

Variables	Category	n (%)
Gender	Male	64 (58.2)
	Female	46 (41.8)
Marriage status	Single	15 (13.6)
	Married	95 (86.4)
Educational status	Primary school	67 (60.9)
	Middle school	28 (25.5)
	High school	9 (8.2)
	Undergraduate	6 (5.5)
Employment status	Government employee	8 (7.3)
	Self-employed	48 (43.6)
	Unemployed	52 (47.3)
	Other (retired)	2 (1.8)
Cancer type	Colon	19 (17.3)
	Rectal	8 (7.3)
	Laryngeal	5 (4.5)
	Pancreatic	2 (1.8)
	Prostate	2 (1.8)
	Ovarian	4 (3.6)
	Anal	6 (6.4)
	Blood	19 (17.3)
	Breast	7 (6.4)
	Esophageal	7 (6.4)
	Cardia	19 (17.3)
	Gastric	12 (10.9)

Table 1 shows the frequency and percentage of subjects participating in this research in terms of gender, marriage, education, employment, and type of cancer.

The results of table 2 showed that chronic fatigue of patients with cancer positively correlated with depressive ($r = 0.69$, $P < 0.01$), anxious ($r = 0.59$, $P < 0.01$), apathetic ($r = 0.64$, $P < 0.01$), dysphoric ($r = 0.37$, $P < 0.01$), volatile ($r = 0.61$, $P < 0.01$), irritable ($r = 0.36$, $P < 0.01$), disinhibited ($r = 0.33$, $P < 0.01$), and obsessive ($r = 0.52$, $P < 0.01$) affective temperaments, but it negatively correlated with cyclothymic ($r = -0.35$, $P < 0.01$), hyperthymic ($r = -0.62$, $P < 0.01$), euphoric ($r = -0.69$, $P < 0.01$), and euthymic ($r = -0.21$, $P < 0.01$) affective temperaments.

The results of table 3 showed that chronic fatigue had a significant positive relationship with positive expression ($r = 0.46$, $P < 0.01$), impulse severity ($r = 0.18$, $P < 0.01$), and emotional expressiveness ($r = 0.27$, $P < 0.01$), but it had a significant negative relationship with component of negative expressiveness ($r = -0.27$, $P < 0.01$).

The results of table 4 showed that 79% of the total variance of chronic fatigue was explained by affective temperaments. Analysis of variance (ANOVA) test results showed that the regression model was significant ($F = 31.15$, $P < 0.01$). The results of the regression coefficients indicated that among predictive variables, depressive ($t = 2.79$), cyclothymic ($t = -2.42$), volatile ($t = 4.12$), obsessive ($t = 3.45$), and hyperthymic ($t = 2.61$) temperaments could predict the chronic fatigue in patients with cancer.

The results of table 5 showed that 27% of the total variance of chronic fatigue was explained by emotional expression. ANOVA test results showed that the regression model was significant ($F = 13.12$, $P < 0.01$). The results of the regression coefficients indicated that among predictive variables, t-values of positive expression ($t = 4.36$) and negative expression ($t = -2.86$) in the level of $P < 0.01$ were significant. In the other words, these variables could significantly predict chronic fatigue in patients with cancer.

Table 2. Mean, standard deviation (SD), and correlation coefficients between chronic fatigue and affective temperaments

Variables	Mean ± SD	Depressive	Anxious	Apathetic	Cyclothymic	Dysphoric	Volatile	Obsessive	Euphoric	Hyperthymic	Irritable	Disinhibited	Euthymic	Physical fatigue	Mental fatigue
Depressive	3.44 ± 1.23	1													
Anxious	3.07 ± 1.09	0.59*													
Apathetic	2.51 ± 1.12	0.54*	0.58*												
Cyclothymic	2.73 ± 0.73	0.33*	-0.18	-0.13											
Dysphoric	2.16 ± 0.82	0.26*	0.39*	0.52*	-0.04										
Volatile	2.40 ± 0.97	0.37*	0.56*	0.40*	-0.20*	0.39*									
Obsessive	2.60 ± 0.96	0.45*	0.34*	0.42*	-0.12	0.15	0.22								
Euphoric	2.97 ± 1.12	-0.52*	-0.45*	-0.68*	0.11	-0.32*	-0.39	-0.32							
Hyperthymic	2.17 ± 0.90	-0.53*	-0.39*	-0.60*	0.14	-0.41*	-0.27	-0.30*	0.77*						
Irritable	2.04 ± 0.97	0.18*	0.43*	0.29*	-0.15	0.29*	0.54	0.22*	-0.04	0.11					
Disinhibited	2.56 ± 0.84	0.29*	0.41*	0.28*	-0.05	0.22*	0.57	0.21*	-0.18	-0.01	0.65*				
Euthymic	2.97 ± 1.13	-0.02	-0.17	-0.01	0.16	0.02	-0.53	-0.39*	0.01	-0.19*	-0.42*	-0.51*			
Physical fatigue	20.96 ± 5.37	0.71*	0.64*	0.67*	-0.37*	0.40*	0.62	0.42*	-0.66*	0.62*	0.40*	0.35*	-0.14		
Mental fatigue	12.25 ± 2.61	0.40*	0.30*	0.38*	-0.17	0.19*	0.39	0.55*	-0.51*	-0.42*	0.15	0.17	-0.28*	0.53*	
Chalder's fatigue	31.21 ± 7.12	0.69*	0.59*	0.64*	-0.35*	0.37*	0.61	0.52*	-0.69*	-0.62*	0.36*	0.33*	-0.21*	0.95*	0.76*

SD: Standard deviation

* P < 0.05

Table 3. Mean, standard deviation (SD), and correlation coefficients scores in subjects with chronic fatigue and emotional expressiveness

Variables	Mean ± SD	Positive expression	Impulse severity	Negative expression	Emotional expressiveness	Physical fatigue	Mental fatigue
Positive expression	13.10 ± 3.62	1					
Impulse severity	23.70 ± 3.97	0.30*					
Negative expression	16.24 ± 2.54	-0.13	0.23*				
Emotional expressiveness	56.07 ± 7.47	0.69*	0.81*	0.32*			
Emotional expressiveness	20.96 ± 5.37	0.49*	0.15	-0.28*	0.27*		
Physical fatigue	12.25 ± 2.61	0.23*	0.19*	-0.16	0.18	0.53*	
Mental fatigue	33.21 ± 7.12	0.46*	0.18	-0.27*	0.27*	0.95*	0.76*

SD: Standard deviation
* P < 0.05

Discussion

This study was conducted to determine the role of affective temperament and emotional expression in predicting chronic fatigue in patients with cancer disease. Correlation results showed that chronic fatigue of patients with cancer positively correlated with depressive, anxious, apathetic, dysphoric, volatile, irritable, disinhibited, and obsessive affective temperaments, but it negatively correlated with cyclothymic, hyperthymic, euphoric, and euthymic affective temperaments. Also, the results of regression analysis showed that the depressive, cyclothymic, volatile, obsessive, and hyperthymic temperaments could predict chronic fatigue in patients with cancer. These results are consistent with the results of Awada et al.[12] and Kukulj et al.[22] about the association between negative affective temperaments such as depressive and anxious temperaments and cancer and mental health problems related to this disease. In terms of the positive relationship between depressive, anxious, apathetic, dysphoric, volatile, irritable, disinhibited, and obsessive temperaments and chronic fatigue, according to Lara et al.,[9] it can be said that the negative emotions, as a common feature of these temperaments, can mediate the relations between these variables. On the other hand, the negative correlation between cyclothymic, hyperthymic, euphoric, and euthymic affective temperaments, characterized by positive emotions, with chronic fatigue reveals that experiencing positive emotions can operate as a protective factor against chronic fatigue in patients with cancer.

Table 4. Linear regression model for chronic fatigue based on affective temperaments

The criterion variable	Predictor variables	B	Standard error of β (SEB)	β	t	P
Chronic fatigue	Constant	28.88	3.15	-	9.17	0.01
	Depressive	1.18	0.42	0.20	2.79	0.01
	Anxious	-0.19	-0.02	-0.02	-0.42	0.67
	Apathetic	0.17	0.50	0.02	0.34	0.72
	Cyclothymic	0.50	-1.22	-0.12	-2.42	0.01
	Dysphoric	-0.22	0.44	-0.03	-0.64	0.52
	Volatile	2.46	0.59	0.33	4.12	0.01
	Obsessive	2.00	0.57	0.23	3.45	0.01
	Euthymic	-1.07	0.66	-0.14	-1.60	0.11
	Hyperthymic	1.61	0.62	0.19	2.61	0.01
	Irritable	-0.68	0.63	-0.08	-1.08	0.28
	Disinhibited	-0.76	-0.56	-0.09	-1.35	0.17
	Euphoric	-0.68	0.63	-0.08	-1.08	0.28
R^2	0.79					
F (P)	31.15					0.01

Table 5. Linear regression model for chronic fatigue based on emotional expressiveness variable

The criterion variable	Predictor variables	B	Standard error of β (SEB)	β	t	P
	Constant	29.16	5.03		5.79	0.01
	Positive expression	0.76	0.17	0.38	4.36	0.01
Chronic fatigue	Impulse severity	0.22	0.16	0.12	1.40	0.16
	Negative expression	-0.70	0.24	-0.25	-2.86	0.01
R^2	0.27					
F (P)	13.12					0.01

Reversely, experiencing negative emotions can be considered as a risk factor for chronic fatigue. It seems that people who receive the diagnosis of cancer encounter suddenly with the end of their lives and this issue increases negative emotions and puts them in the downward trend of stress and fatigue.

The results of this study showed that chronic fatigue had a negative relationship with emotional expressiveness. Furthermore, the regression analysis showed that positive and negative expressiveness could significantly predict chronic fatigue. These results are consistent with the results of Chapman et al.,[14] Porter et al.,[15] Brandao et al.,[16] and Lepore et al.[17] These results reveal that patients with cancer who express emotions have better mental health and have low suggestibility to chronic fatigue and other psychological consequences of diagnosing cancer disease. Emotional expression plays an important role in adaptive human functioning and it has been shown to benefit physical and mental health in the general population as well as specific populations, such as women diagnosed with breast cancer.[23] Emotional expressivity is an important strategy to regulate emotion. According to the literature, the greater habitual use of suppression results in higher negative emotions for people, and negative emotions lead to high chronic fatigue. More specifically, Gross and John[19] articulated that emotional expressivity could lead to reducing negative emotions, but emotion suppression resulted in increasing negative emotions such as fatigue. Because diagnosing the cancer increases the negative emotions such as sadness, fear, and anger, using the expressivity strategy may be a way to externalize these negative emotions.

This study had some limitations. Firstly, the sample size was small. Secondly, the study data were collected using self-report questionnaires. Thirdly, the inability to control some confounding variables, especially the severity of disease and presence of the underlying disease, can limit the results. Lastly, correlational research design, in which the ability to casual evaluation is not referred, was another limitation of this study. Therefore, it is recommended that instruments such as structured clinical interview and observation methods be used to collect data along with self-report questionnaires. Furthermore, future research should be done with larger sample sizes to increase generalization of results. Also, similar studies can take control of different variables and psychological intervention of patients with cancer. The results of this study suggest the use of emotion regulation and emotional expressiveness skills in designing psychological interventions in patients with cancer.

Conclusion

The results of this study indicate that affective temperament and emotional expression have an important role in predicting chronic fatigue in patients with cancer. These findings support the assumption that we can consider the affective temperament and emotional expression as psychological factors underlying chronic fatigue.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors of this article would like to thank all participants and the staff and management of Fatemi and Emam Khomeini Hospitals located in Ardabil City for generous cooperation during the administration of this study. This study was provided by the research and technology committee of University of Mohaghegh Ardabili (contact number, 1015; 96.05.21).

References

1. Russo MM, Sundaramurthi T. An overview of cancer pain: Epidemiology and pathophysiology. Semin Oncol Nurs 2019; 35(3): 223-8.
2. Hassanpour A, Azari E. Quality of life and related factors in cancer patients. Proceedings of the National Congress of Care in Special Diseases; 2006 Nov. 9; Ahvaz, Iran. 2006. p. 42. [In Persian].
3. Ma Y, He B, Jiang M, Yang Y, Wang C, Huang C, et al. Prevalence and risk factors of cancer-related fatigue: A systematic review and meta-analysis. Int J Nurs Stud 2020; 111: 103707.
4. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (DSM-5®). Washington, DC: American Psychiatric Pub; 2013.
5. Winningham ML, Nail LM, Burke MB, Brophy L, Cimprich B, Jones LS, et al. Fatigue and the cancer experience: The state of the knowledge. Oncol Nurs Forum 1994; 21(1): 23-36.
6. So WK, Marsh G, Ling WM, Leung FY, Lo JC, Yeung M, et al. The symptom cluster of fatigue, pain, anxiety, and depression and the effect on the quality of life of women receiving treatment for breast cancer: A multicenter study. Oncol Nurs Forum 2009; 36(4): E205-E214.
7. Asvadi Kermani I, Ashraphian P, Zeinali S, Imani M, Shabanloei R. A study of cancer patients' personality profile and it's comparison with that of normal persons. Avicenna J Clin Med 2010; 16(4): 26-30. [In Persian].
8. Fuscaldo LV, Bisol LW, Lara DR. How emotional traits and affective temperaments relate to cocaine experimentation, abuse and dependence in a large sample. Addict Behav 2013; 38(3): 1859-64.
9. Lara DR, Bisol LW, Brunstein MG, Reppold CT, de Carvalho HW, Ottoni GL. The Affective and Emotional Composite Temperament (AFECT) model and scale: A system-based integrative approach. J Affect Disord 2012; 140(1): 14-37.
10. Ozturk FO, Ekinci M, Ozturk O, Canan F. The relationship of affective temperament and emotional-behavioral difficulties to internet addiction in Turkish teenagers. ISRN Psychiatry 2013; 2013: 961734.
11. Oniszczenko W, Laskowska A. Emotional reactivity, coping style and cancer trauma symptoms. Arch Med Sci 2014; 10(1): 110-6.
12. Awada N, Bergeron S, Steben M, Hainault VA, McDuff P. To say or not to say: Dyadic ambivalence over emotional expression and its associations with pain, sexuality, and distress in couples coping with provoked vestibulodynia. J Sex Med 2014; 11(5): 1271-82.
13. Kring AM, Smith DA, Neale JM. Individual differences in dispositional expressiveness: development and validation of the Emotional Expressivity Scale. J Pers Soc Psychol 1994; 66(5): 934-49.
14. Chapman BP, Fiscella K, Kawachi I, Duberstein P, Muennig P. Emotion suppression and mortality risk over a 12-year follow-up. J Psychosom Res 2013; 75(4): 381-5.
15. Porter LS, Keefe FJ, Lipkus I, Hurwitz H. Ambivalence over emotional expression in patients with gastrointestinal cancer and their caregivers: associations with patient pain and quality of life. Pain 2005; 117(3): 340-8.
16. Brandao T, Tavares R, Schulz MS, Matos PM. Measuring emotion regulation and emotional expression in breast cancer patients: A systematic review. Clin Psychol Rev 2016; 43: 114-27.
17. Lepore SJ, Revenson TA, Roberts KJ, Pranikoff JR, Davey A. Randomised controlled trial of expressive writing and quality of life in men and women treated for colon or rectal cancer. Psychol Health 2015; 30(3): 284-300.
18. Chalabianloo GH, Abdi R, Rasoulzadeh M, Sheikh S. Psychometric properties of affective & emotional composite temperament scale (AFECT) in students. Journal of Psychology 2016; 11(42): 51-71. [In Persian].
19. Gross JJ, John OP. Facets of emotional Expressivity: Three self-report factors and their correlates. Pers Individ Dif 1995; 19(4): 555-68.
20. Basharpoor S, Molavi P, Sheykhi S, Khanjani S, Rajabi M, Mosavi SA. The relationship between emotion regulation and emotion expression styles with bullying behaviors in adolescent students. J Ardabil Univ Med Sci 2013; 13(3): 264-75. [In Persian].
21. Chalder T, Berelowitz G, Pawlikowska T, Watts L, Wessely S, Wright D, et al. Development of a fatigue scale. J Psychosom Res 1993; 37(2): 147-53.
22. Kukulj S, Aukst MB, Jakovljevic M, Samarzija M. Temperament and character and quality of life in lung cancer patients. Tumori 2013; 99(6): 708-14.
23. Del Piccolo L., Mazzi MA, Mascanzoni A, Lonardi M, De Felice M., Danzi OP, et al. Factors related to the expression of emotions by early-stage breast cancer patients. Patient Educ Couns 2019; 102(10): 1767-73.

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.553 Published by Vesnu Publications

The comparison of eating attitude and general health among native and non-native girl students of Tehran City universities, Iran

Mansoureh Shahriari-Ahmadi[1], Tiraje Javini[2], Razieh Kazemi[2]

1 Department of Psychology, School of Psychology, Central Tehran Branch, Islamic Azad University, Tehran, Iran
2 Department of Psychology, School of Psychology and Educational Sciences, Alzahra University, Tehran, Iran

Original Article

Abstract

BACKGROUND: The purpose of this study was to compare the attitude toward nutrition and general health in native and non-native students.

METHODS: The statistical population of this study included all female students with emphasis on the students who were studying at Islamic Azad University of Tehran, Iran, in the year 2017-2018. According to the Morgan's table, a sample of 320 people was selected using the convenience sampling method and was divided into two groups of 160 people. Regarding the purposefulness of the emphasis on the indigenous and non-homogeneous nature of the students by matching the groups (in order to control the variables of gender, economic status, marital status, age, and educational level), the non-native group was first identified and then the native group was matched. In this research, Eating Attitudes Test (EAT) (Garner and Garfinkel, 1979) and General Health Questionnaire (GHQ) (McDowell et al., 1996) were used. To analyze the data obtained from independent t-test, multivariate analysis of variance (MANOVA), and multivariate regression, SPSS software was used.

RESULTS: There was no significant difference between attitude toward nutrition and general health in native and non-native students.

CONCLUSION: Higher attention should be paid to non-native students' nutrition.

KEYWORDS: Nutritional Status; Health; Students

Date of submission: 02 July 2019, *Date of acceptance:* 19 Sep. 2019

Citation: Shahriari-Ahmadi M, Javini T, Kazemi R. **The comparison of eating attitude and general health among native and non-native girl students of Tehran City universities, Iran.** Chron Dis J 2020; 8(4): 176-82.

Introduction

Students are considered to be at a high risk due to changing of their place of residence and sudden separation from family and thus, social planning for them is of high importance because any disruption in their lives prevents the growth and prosperity of their talent. Attending classes, participating in exams, doing homework and projects, roving, heavy expenses and living costs, family and university expectations, being away from the family, and ambiguous future are of the public health threats among the students.[1] In this regard, students' type and style of nutrition and nutritional attitude may also change. Given the wide variety of food promotions and the willingness of women and girls to stay slim, nutritional attribute can affect the general health of students. The nutritional attitude has a psychological-cognitive structure that addresses the habits people have in their eating and this can affect the person's health (mental and physical).[2] Since the age group of 18-24 years is moving from adolescence to adulthood and it affects the health status of the next generation, so dieting is not attractive in this age group.[3] Eating disorders first begin with mild conditions such as disturbed

Corresponding Author:
Tiraje Javini; Department of Psychology, School of Psychology and Educational Sciences, Alzahra University, Tehran, Iran
Email: tiraje.javini73@gmail.com

nutritional attitudes and an abnormal attitude toward eating which includes abnormal attitudes toward the current and ideal weight, mental image of the body and eating behaviors, mental attitudes towards food and their metabolism in the body, and methods of nutrient excretion from the body, which ultimately result in severe and almost non-returnable moods, such as anorexia and nervous overeating.[4] Most students feel the need for a change in diet; they think about nutritional aspects of foodstuff and agree with the option to get information about healthy nutrition.[5] In a study, nursing and midwifery students showed positive thoughts in terms of steps to change the desired nutritional behavior and attitudes toward nutrition among them.[6] In another investigation, it was shown that a large percentage of adolescents were at risk of eating disorders and were more likely to develop nutritional disturbances, while this problem was more common among girls.[7]

Besides, non-native students are typically away from their family for a long time. Change in the order of life in addition to emotional problems due to economic burden can affect other issues such as general health.[8] General health is the feeling of goodness and assurance of self-efficacy, self-reliance, competition capacity, intergenerational attachment, and self-actualization of potential intellectual and emotional capabilities.[9] General health is a knowledge helping people to adapt to their environment and choose the right solutions for problems by developing accurate psychological and emotional ways.[10] General health is a function of various social and cultural factors. After entering the university, the student faces a new environment that is different from his/her previous life and past social environment, and during his/her education, he/she will encounter many problems, each of which can impose down the general health of this stratum. Entering a new environment, staying away from the family, and the difference between mental models of life and existing facts are examples of stressors and anxieties that need to be balanced by providing the appropriate environment and conditions for achievement of students' general health.[11] Otherwise, it will result in academic failure, individual, social, and communicative problems, and lack of prosperity in talents.[12] University students compose the young generation of society and are considered to be active members of the community. Having a good level of general health (mental-physical) is effective on various aspects of life, including personal, social, educational, and occupational dimensions.[13] In a statistical study, it was reported that 39% of students were suspected of physical or mental disorder, and the rate of depression and social function disorders in non-native students was higher.[14] However, another work reveals that no difference exists between dormitory and non-dormitory students in terms of mental health.[15] In addition, students, today, face more psychological problems compared to the past, and these issues cause such problems as class absenteeism, disorientation in logical thinking, and academic failure.[16]

As it can be seen in the society, women are exposed to various physical illnesses. However, having a nutritional attitude and a suitable level of general health at a young age can prevent the occurrence of many diseases in older ages. Addressing this issue and finding differences in terms of nutritional attitude and general health among native and non-native students can be different ways of helping to achieve better ways to raise the level of health. Besides, investigations on health, its dimensions, and its predictive, preserving, and promoting factors have constantly been considered in personal and social life, and now, with respect to changing of effective patterns on health, recognition of factors which affect physical, psychological, and social health is highly important. Accordingly, we tried to examine following hypotheses in this study:

- There is a difference between native and

non-native female students in terms of nutritional attitudes.
- There is a difference between native and non-native female students in terms of general health.

Materials and Methods

Present study is a practical and causal-comparative work in terms of objective and research method, respectively. The statistical population included all female students studying in Islamic Azad University of Central Tehran Branch, Tehran, Iran, in 2017-2018. The total number of these students is 1500 people. Given the Krejcie and Morgan's table on sample size determination, the acceptable sample size was 306. However, in order to enhance validity of study, a sample of 320 was selected using convenience sampling. Given the objective on being native or non-native, the samples were divided into two groups of 160. In other words, primarily, 320 students including 160 native and 160 non-native ones were selected based on convenience sampling. Here, Garner and Garfinkel's Eating Attitudes Test-26 Item (EAT-26)[17] and McDowell et al.'s General Health Questionnaire (GHQ)[18] were used for measurement and data collection, which are described as follows:

EAT-26: EAT has 26 items and three subscales including dieting, bulimia and preoccupation, and oral control which measure affairs associated with attitude, habits, and behaviors of eating.[17]

The questions are scored based on Likert's method as "never and rarely", "often", "usually", "always" (0-3). The maximum score is 78 and the score of 20 or higher is defined as a disturbed eating attitude. Question 26 is scored in reverse order. In a study conducted on 161 Brazilian women, the Cronbach's alpha coefficient for each item was reported to be 0.75.[19]

The validity of the test was obtained with a Cronbach's alpha coefficient of 0.82. Moreover, to examine the reliability of this test, the split-half method was used whose coefficient was reported in the range of 0.69-0.73.[19] Mollazadeh et al. implemented this inventory on 110 students to calculate its validity and reliability; the corresponding validity and reliability were found to be 0.76 and 0.86, respectively, through Cronbach's alpha and correlation test, indicating a reasonable reliability and validity.[20]

GHQ: This instrument is a single-factor test with 28 items. The questionnaire has a 4-point Likert scale (from far less than usual to more than usual), and each item has a value in the range of 1-4 given by respondents. Validity of the questionnaire was confirmed by the scholars and professors and its reliability was proven through a Cronbach's alpha of above 0.70.[21]

Results

In order to analyze the data obtained by questionnaires, descriptive and inferential statistics and indicators were used to derive the frequency, percentage, mean, and standard deviation (SD). After ensuring establishment of parametric test assumptions, according to the purpose of the research to compare the variables between native and non-native groups of students, independent t-test and multivariate analysis of variance (MANOVA) were used based on the single-factor or multi-factor mode of the questionnaires using the SPSS software (version 22, IBM Corporation, Armonk, NY, USA).

In this section, by computing the core indicators and dispersion, characteristics of the sample group and the distribution way and information contained in the variables of this research were compared between female native and non-native students of Islamic Azad University of Tehran. The results are reported as follows:

As reported in table 1, 320 students participated in this study, 160 of whom were native and 160 were non-native students. The average age of the native group was 22.86 years with a SD of 7.33, while that of non-native students was 23.53 years with a SD

of 6.77. Also, the highest percentage of participants belonged to the grade of Bachelor of Science (BSc) in both groups and a low number studied in doctorate grade.

Table 1. The participants' educational status/grade and their main age

Grade	Native students	Non-native students
BSc [n (%)]	120 (75.00)	132 (82.50)
MSc [n (%)]	32 (20.00)	26 (16.25)
Doctorate [n (%)]	8 (5.00)	2 (1.25)
Total [n (%)]	160 (100)	160 (100)
Age (mean ± SD)	22.87 ± 7.33	24.53 ± 6.77

SD: Standard deviation

As it can be seen, table 2 presents the mean and SD for the variable of eating attitude and its subscales, as well as general health among native and non-native students.

Hypothesis 1: There is a difference between native and non-native female students in terms of eating attitudes.

To analyze this hypothesis, MANOVA was used (due to the inclusion of eating attitude subscales in the analysis). Table 2 reports the P-values as well (P > 0.050).

Furthermore, variances equality assessment showed that variance analysis could be used to examine this hypothesis. Consequently, table 3 reports the results of MANOVA.

The results of MANOVA showed that there was no significant difference between native and non-native students in terms of eating attitude and its subscales (P > 0.050).

Hypothesis 2: There is a difference between native and non-native female students in terms of general health.

Regarding the establishment of parametric test assumptions, as well as the questionnaire's single-factor status, independent t-test was used to examine this hypothesis. The results of variances equality test showed that variances were not equal in the two groups (P < 0.050, F = 278.10). Therefore, the t-value was used for the groups with heterogeneous variance.

Table 3. Results of multivariate analysis of variance (MANOVA)

Test	Statistics	F	P	Eta
Wilk's Lambda	0.925	0.699	0.561	0.075

Independent t-test results for assessing general health among native and non-native students (P = 0.520) indicated no significant difference between native and non-native students in terms of general health (P > 0.050).

Discussion

University students are considered to be at high risk because of the change in their place of residence and sudden separation from the family. Therefore, social planning is important to them. In this regard, the type and style of nutrition and the eating attitude and general health of students may change. For this purpose, the present study was developed to compare native and non-native students in terms of eating attitude and general health. In so doing, since nutrition and general health are of high importance and correlated among academic students, the present study tried to investigate these issues simultaneously.

Table 2. Comparison of eating habits and general health between native and non-native groups

Variable	Group	Mean ± SD	Minimum	Maximum	P
Eating attitude	Native	16.40 ± 9.66	3	38	0.754
	Non-native	16.26 ± 11.51	3	41	
Dieting habits	Native	7.93 ± 6.38	0	20	0.941
	Non-native	9.06 ± 7.11	1	25	
Bulimia and preoccupation	Native	2.93 ± 3.28	0	9	0.179
	Non-native	2.00 ± 2.85	0	9	
Oral control	Native	5.53 ± 3.39	0	11	0.077
	Non-native	5.20 ± 4.61	0	12	
General health	Native	81.06 ± 7.70	71	93	0.520
	Non-native	78.20 ± 15.10	52	97	

SD: Standard deviation

Here, each presented hypothesis and the relevant results will be discussed.

Hypothesis 1: Given the above results, the hypothesis was not approved. Accordingly, it can be noted that the non-native students' eating attitude is consistent with the nutritional standards and culture of the residents of Tehran. In general, living environment of native and non-native students was the same. Native and non-native students often spend their eating time together at the university, and the close friends' nutritional habits and attitudes coincide.

Barati et al. indicated a significant relationship between attitude and the variables of being on a diet, weight loss, and place of residence. They also suggested that eating fast foods was more common among boys as well as students living in dormitories.[22]

Hypothesis 2: Independent t-test results showed no significant difference between native and non-native students in terms of general health ($P > 0.050$). Therefore, this hypothesis was not supported. Accordingly, flexibility and compatibility of non-native students with the new conditions and the new city can be pointed out. Studying in a metropolitan area like Tehran is one of the educational priorities of those living in other cities. These students are willing to tolerate such issues as distance from home and family due to educational facilities, higher quality of universities, and attractions in Tehran, and maybe these conditions will boost the sense of personal autonomy and self-sufficiency and therefore, their general health will not be affected by these conditions. This finding is in line with Afshari and Rakhshani's study, where the factors associated with new university students' mental health were evaluated. The results indicated no significant difference between native and non-native students in terms of their mental health.[23] This finding is also in parallel with Dehghan's study in which no significant difference was found between native and non-native university students of Shiraz University of Medical Sciences, Shiraz, Iran, in terms of psychological well-being.[24] In contrast, finding of the present study is not in line with the study of Nuri and Shokri, in which female native and non-native university students were compared in terms of cultural intelligence, loneliness, academic burnout, and mental health and it was shown that mental health of native students was better than that of non-native ones.[25]

The collective and group life, especially in university student dormitories, is an environment in which the student encounters problems by entering the meta-family space and getting ready to form an independent life and the future community.[25]

It is suggested to conduct this topic in a broader way (other gender and universities) and compare the results. In other words, it is proposed to be conducted in multiple academic centers with no gender limitations.

Same as all studies, the present work faced following limitations: The sample group in the present study consists of native and non-native female students of Islamic Azad University, Central Tehran Branch, and the results cannot be generalized to all female academic students since the sampling was not done from multiple centers and it was conducted based on convenience approach. Thus, it may not be generalized to native and non-native women of entire society.

Conclusion

Given the results, it is necessary to address the students' issues in this period. Despite the problems and issues of non-native students, the results of present study showed that eating attitudes and general health were not significantly different among native and non-native students. In explaining these findings, the desirability of recreational facilities for non-native students in Tehran Metropolis, the

same education level to native students, and the desirable quality of education can be pointed out.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

Hereby, the authors would like to show their gratitude to the both native and non-native academic students for sharing their pearls of wisdom with them during the course of this research.

References

1. Jalilian F, Emdadi Sh, Karimi M, Barati M, Gharibnavaz H. Depression among college students, the role of general self-efficacy and perceived social support. Avicenna Journal of Clinical Medicine 2012; 18(4): 60-6. [In Persian].
2. Nouransenjar S. The effect of educational package on increasing participation of female students in iron supplementation in Zahedan [MSc Thesis]. Zahedan, Iran: Zahedan University of Medical Sciences; 2013. [In Persian].
3. Wright JA, Velicer WF, Prochaska JO. Testing the predictive power of the transtheoretical model of behavior change applied to dietary fat intake. Health Educ Res 2009; 24(2): 224-36.
4. Hrabosky JI, Grilo CM. Body image and eating disordered behavior in a community sample of Black and Hispanic women. Eat Behav 2007; 8(1): 106-14.
5. Shafakhah M, Moatari M. Assessing stages of dietary change and nutrition attitudes in nursing and midwifery students in Fatemeh faculty of nursing and midwifery in 2006. Iran J Nurs Res 2009; 4(12-13): 71-80. [In Persian].
6. MaddiNeshat M, TabatabaeichehrM, LashkardoostH H, Foladi A. Evaluation of change in stages of diet and attitude toward nutrition in students of nursing and midwifery school of North Khorasan University of Medical Sciences in 2012. J North Khorasan Univ Med Sci 2020; 5(5): 1049-55. [In Persian].
7. Fan Y, Li Y, Liu A, Hu X, Ma G, Xu G. Associations between body mass index, weight control concerns and behaviors, and eating disorder symptoms among non-clinical Chinese adolescents. BMC Public Health 2010; 10: 314.
8. Noghan N, Ghasemian S. An investigation on Nutrition Patterns and Snack Foods among Medical Students. Proceedings of 1st National Congress on Snack Foods; 2014 Apr. 30; Mashhad, Iran. [In Persian].
9. World Health Organization. World health statistics 2011 [Online]. [cited 2011]; Available from: URL: https://www.who.int/whosis/whostat/2011/en/
10. Milanifar B. Mental health. Tehran, Iran: Ghomes Publications; 2009. [In Persian].
11. Sani M, Mahfouz MS, Bani I, Alsomily AH, Alagi D, Alsomily NY, et al. Prevalence of stress among medical students in Jizan University, Kingdom of Saudi Arabia. Gulf Med J 2012; 1(1): 19-25.
12. Nur N, Cetinkaya S, Sabanciogullari V, Ozsahin SL, Kavakci O. Emotional disorders among Turkish undergraduate medical students. Pak J Med Sci 2008; 24(6): 792-7.
13. Jahani M. Investigating the relationship between self-efficacy and irrational beliefs with general health in students [MSc Thesis]. Qazvin, Iran: Imam Khomeini International University; 2010. [In Persian].
14. Mehri A, Sedighy Some Koochak Z. Assessment of mental health status and some related factors among students of Sabzevar universities in 2010. Med Sci J Islamic Azad Univ Tehran Med Branch 2012; 21(4): 298-304. [In Persian].
15. Ferdosi T, Zeinivand Y, Rezazadeh SM. A comparison of the mental health of dormitory versus non-dormitory students of Shahid Madani University in Azerbaijan. Woman & Study of Family 2012; 4(16): 127-42. [In Persian].
16. Cleary M, Horsfall J, Baines J, Happell B. Mental health behaviours among undergraduate nursing students: issues for consideration. Nurse Educ Today 2012; 32(8): 951-5.
17. Garner DM, Garfinkel PE. The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. Psychol Med 1979; 9(2): 273-9.
18. McDowell I, McDowell N, Newell C. Measuring Health: A guide to rating scales and questionnaires. Oxford, UK: Oxford University Press; 1996.
19. Nunes MA, Camey S, Olinto MT, Mari JJ. The validity and 4-year test-retest reliability of the Brazilian version of the Eating Attitudes Test-26. Braz J Med Biol Res 2005; 38(11): 1655-62.
20. Mollazadeh Esfanjani R, Arazi H, Rohi S, Mohammadi SM. Effects of aerobic training on eating disorders in non-athlete female students. J Shaheed Sadoughi Univ Med Sci 2012; 20(3): 322-31. [In Persian].
21. Ramazani N, Nazari A. Dental environmental stress among clinical dentistry students in Zahedan school of dentistry. Iranian Journal of Medical Education 2013; 13(9): 753-65. [In Persian].
22. Barati M, Yarmohammadi A, Mostafaei S, Gholi Z, Razani S, Miry Hazave SS. Evaluating the relationship between attitudes and beliefs,

influencing fast-food eating among students of Hamadan University of medical sciences. J Health Syst Res 2014; 10(3): 500-8. [In Persian].
23. Afshari Z, Rakhshani M. Factors related to mental health of students in Zabol University of Medical Sciences. J Neyshabur Univ Med Sci 2014; 2(3): 28-36. [In Persian].
24. Dehghan A. Anxiety and psychological well-being comparisons among native and non-native students of Shiraz University of Medical Sciences [MSc Thesis]. Marvdasht, Iran: Islamic Azad University, Marvdasht Branch; 2012. [In Persian].
25. Nuri S, Shokri F. Identification and classification of the problems and harms of the non-local Female College Students (Quality Research). Cultural Engineering 2013; 8(77): 145-68. [In Persian].

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.554 Published by Vesnu Publications

A study on the pattern of drug abuse and demographic characteristics of addicts referred to addiction treatment centers of Kermanshah City, Iran, in 2016

Aliakbar Parvizifard[1], Seyed Mojtaba Ahmadi[1], Kheirollah Sadeghi[1], Aliakbar Foroghi[1], Hooman Darushi[2], Nader Abazari[3], Maryam Hossein[4]

1 Department of Psychology, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran
2 Department of Pediatrics, School of Medicine, Kermanshah University of Medical Sciences, Kermanshah, Iran
3 Department of Clinical Psychology, School of Humanity Sciences, Shahed University of Tehran, Tehran, Iran
4 Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran

Original Article

Abstract

BACKGROUND: The problems of drugs and addiction and the consequences of drug into *abuse* are considered as a phenomenon that affects different aspects of human life and is one of the main problems of modern age. The main goal of performing this investigation was identifying general demographic factors which affect the process of addiction in order to make available the facility of diagnosis and practice of therapeutic programs.

METHODS: In this cross-sectional and descriptive study, a number of 500 addicts in Kermanshah, Iran, were selected using sampling method. Data were analyzed using SPSS software and descriptive statistics (frequency, percentage frequency, cumulative frequency, and average).

RESULTS: The mean age of the subjects in this study was 36.6 ± 8.80 years. Most addicts were in the age category of 31 to 40 years old. 62.8% of them began drug use for the first time in the age range of 10 to 20 years. 47% had primary education and 68.4% were unemployed and had no specific source of income. The top cause of drug use was reported as entertainment and enjoyment (47.6%) and the other cause was curiosity (26.4%). The most common cause of drug cessation was being tired of drug use.

CONCLUSION: With regard to the fact that most addicts are unemployed with no source of income, thus it seems that the authorities have to assess effective treatments and find ways to create youth employment and also healthy entertainment activities and source of income on which one can rely.

KEYWORDS: Addictive; Drug Abuse; Demography

Date of submission: 01 July 2019, ***Date of acceptance:*** 13 Sep. 2019

Citation: Parvizifard A, Ahmadi SM, Sadeghi K, Foroghi A, Darushi H, Abazari N, et al. **A study on the pattern of drug abuse and demographic characteristics of addicts referred to addiction treatment centers of Kermanshah City, Iran, in 2016.** Chron Dis J 2020; 8(4): 183-9.

Introduction

Drug use among adolescents and young people is growing around the world, so that it is considered as one of the most common mental disorders of adolescents and young people.[1] Moreover, today, chronic addiction and dependency on it predisposes multiple harms in communities, including economic, political, cultural, social, and health problems.[2] Therefore, today, chronic addiction should be considered beyond the bounds of health care issues as a social crisis and a phenomenon that has different dimensions.[3] The term "chronic addiction" is not recognized by the World Health Organization (WHO) as an acceptable term and instead it recommends "drug dependency". Clinical psychologists and researchers discussed and disagreed about the

Corresponding Author:
Maryam Hossein; Student Research Committee, Kermanshah University of Medical Sciences, Kermanshah, Iran
Email: maryam.h.psychology@gmail.com

definition of chronic addiction for years. In recent decades, the world has faced a shocking growth in the prevalence of drug abuse, generally at the community level and especially in young people and adolescents. Unfortunately, the statistics published by international organizations such as the United Nations International Drug Control Program (UNDCP), the WHO, and the United Nations Educational, Scientific, and Cultural Organization (UNESCO) show increasing use of these substances in the world, and the only difference between countries is in their consumption patterns.[4] According to the United Nations Office on Drugs and Offence (UNODO), the number of drug consumers is estimated about 200 million which constitutes 3% of the world's population.[5] Due to the large number of Iran's young population, it has numerous problems regarding chronic addiction. Today, chronic addiction is more common in young people and chronic addiction age is significantly reduced. It seems that the number of addicts in Iran is much more than the statistics published by the Center for Combating Drugs (about 2000000 people), and some unofficial sources estimate the population of addicts in Iran as 3.3 million people.[6] Drug risk factors include individual factors, interpersonal factors, and environmental and social factors.[7] The phenomenon of chronic addiction has many secondary effects and each of these effects justifies the need for attention to the problem of chronic addiction. Devastating effects of chronic addition not only influence the addict himself, but also his family, friends, community, and generally everything that is associated with the addict.[8] For example, economically speaking, damage caused by drug abuse and drug trafficking in Iran is annually about 700 billion Tomans.[6] Problems such as increasing drug-related crimes such as robbery, murder, self-immolation, unemployment, domestic violence, child abuse, rising in divorce rate, and decline in academic performance of children whose parents are addicted justify the necessity of paying attention to chronic addiction.[9] Etiology of chronic addiction has a significant breadth and diversity. Chronic addiction is considered as a disorder with clinical, behavioral, and cognitive symptoms and in its development, both social and psychological factors, on the one hand, and biological and pharmacological factors, on the other hand, are involved.[10] Some focus more on biological and genetic factors, while some other stress on sociological and psychological aspects.[5] What is certain is that without identifying what groups use the most drugs, how old they are, and what their common cause of drug use is, it is not possible to take effective measures in the field of prevention of drug use. Some studies were carried out in other parts of the country; for example, a study done by Abbasi et al. showed that most consumers were men, educated, and unemployed and opium was used more than other drugs.[11] Given that this pattern can vary in different cities due to geographical location and regarding the fact that there is not a new paper in this field and especially in the city of Kermanshah, Iran, it is decided that a study can be done about drug consumption patterns and demographic characteristics of drug addicts in Kermanshah.

Materials and Methods

This was a cross-sectional descriptive study. The population of this study consisted of ambulatory addicts referred to addiction centers in Kermanshah. In this study, 384 samples were examined, but in order to accurately sample and prevent the loss of potential subjects, using sampling, 600 drug users in the form of outpatient treatment for substance abuse rehabilitation centers in Kermanshah were selected as a sample; because of lack of cooperation and incomplete filling out of the questionnaire, 100 people were excluded and a total of 500 patients were studied. In this study, subjects had the

Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) diagnostic criteria for substance abuse or dependence, and the subjects took part in the study voluntarily and with their consent.

In this study, samples were evaluated with the use of non-structured clinical interview and demographic questionnaire as below:

1. Unstructured clinical interviews: In order to ensure the presence or absence of diagnostic criteria for abuse or dependence, as well as cooperation and trust of the subjects, unstructured clinical interview was used by the researcher.

2. The demographic characteristics questionnaire: This questionnaire consisted of 13 items which was developed by the researcher to record demographic characteristics and objectives related to the research subject.

To conduct research, first, with the coordination and approval of the Treatment Department of Kermanshah University of Medical Sciences, a list of all the rehabilitation centers in Kermanshah were collected and among all available centers in Kermanshah, 20 centers were selected randomly and the sample size of the study was chosen from them. Before collecting data, a non-structured interview was done by the researcher with the addicts in the addiction center. All participants in the project were informed about the confidentiality of information and the purpose of the study and all of them were recruited by personal desire. In addition, all questionnaires were anonymous, so that participants could not be identified. At the end, the incomplete questionnaires were excluded from the study and data were analyzed using SPSS software (version 21, IBM Corporation, Armonk, NY, USA) and descriptive statistics (frequency, percentage frequency, cumulative frequency, and average).

Results

As mentioned before, the sample consisted of 500 male addicts who self-introduced to medical centers of Kermanshah. In terms of age, the results showed that 10 patients (2.0%) were in the age category of 10 to 20 years, 123 patients (24.6%) were in the age category of 21 to 30 years, 240 patients (48.0%) were in the age category of 31 to 40 years, 96 patients (19.2%) were in the age category of 41 to 50 years, 22 patients (4.4%) were in the age category of 51 to 60 years, and 9 patients (1.8%) were in the age category of 61 to 70 years. In general, most patients who referred for treatment were in the age category of 31 to 40 years old.

With regard to the age of first drug use, 314 patients (62.8%) were in the age category of 10 to 20 years old, 133 patients (26.6%) were in the age category of 21 to 30 years, 47 patients (9.4%) were in the age category of 31 to 40 years, 4 patients (0.8%) were in the age category of 41 to 50 years, and 2 patients (0.4%) were in the age category of 51 to 60 years old.

The results of the study showed that 235 people (47.0%) of the total sample had primary education, 205 people (41.0%) had only finished middle school, 11 people (2.2%) had high school diploma, 47 people (4.9%) had college education, and 2 people (0.4%) had other forms of education.

Results indicating marital status showed that 117 people (23.4%) of the total sample were single, 194 people (38.8%) were married, 41 people (8.2%) were divorced, and 12 people (2.4%) had other forms of marital status.

With regard to employment, the findings indicated that 158 (31.6%) of the total sample were employed and 342 people (68.4%) were unemployed (Table 1).

In addition, the findings in relation to the source of income represented that 143 people (28.6%) of the total sample were under financial support of parents, 158 people (31.6%) were employed, and 199 people (39.8%) had other forms of income.

Table 1. Demographic characteristics

Demographic characteristics	Demographic levels	n (%)
Age (year)	10-20	10 (2.00)
	21-30	123 (24.60)
	31-40	240 (48.00)
	41-50	96 (19.20)
	51-60	22 (4.40)
	61-70	9 (1.80)
The first age of consumption (year)	10-20	314 (62.80)
	21-30	133 (26.60)
	31-40	47 (9.40)
	41-50	4 (0.80)
	51-60	2 (0.40)
Educational status	Primary school	235 (47.00)
	Secondary school	205 (41.00)
	High school	11 (2.20)
	College education	47 (9.40)
	Other drugs	2 (0.04)
Marital status	Single	117 (23.40)
	Married	194 (38.80)
	Separated	136 (27.20)
	Divorced	41 (8.20)
	Other status	12 (2.40)
Occupational status	Employed	158 (31.60)
	Unemployed	342 (68.40)

Moreover, the findings indicated that 132 people (26.4%) began drug use for curiosity, 238 people (47.6%) for enjoyment and entertainment, 45 people (9.0%) due to stress management, and 85 people (17.0%) for physical pain relief.

267 people (53.4%) attempted to treat because of being tired of drug use, 109 people (21.8%) because of determination to quit, 50 people (10.0%) due to family pressure, and 74 people (14.8%) because of other causes.

The results regarding the kind of drugs showed that from the entire samples, 184 people (36.0%) used opium, 165 people (33.0%) used heroin, 18 people (3.6%) used narcotics, 35 people (7.0%) used heroin and opium, 9 people (1.8%) used narcotics and opium, 4 people (0.8%) used narcotics and heroin, 16 people (3.2%) used narcotics, heroin, and opium, and 69 people (13.8%) used other drugs.

The results regarding the way of drug use showed that 298 people (59.6%) smoked drugs, 61 people (12.2%) injected drugs, 33 people (6.6%) ate drugs, 22 patients (4.4%) used injection and smoking, 39 people (7.8%) ate and smoked drugs, 1 person (0.2%) injected and ate drugs, 14 people (2.8%) ate, injected, and smoked drugs, and 32 people (6.4%) used other methods for drug use.

207 people (41.4%) had no history of drug treatment and it was the first time they decided to quit and 293 people (58.6%) had a history of drug treatment (Table 2).

Table 2. The research variable data

		n (%)
Source of income	Parents	143 (28.60)
	Employment	148 (29.60)
	Others, Specify	209 (41.80)
Cause of addiction	Curiosity	132 (26.40)
	Pleasure and fun	238 (47.60)
	Stress management	45 (9.00)
	Relief of physical pain	85 (17.00)
Reason for drug treatment	Being tired of using drug	267 (53.40)
	Wanting to quit	109 (21.80)
	Family pressure	50 (10.00)
	Others, specify	74 (14.80)
Types of drug used	Opium	184 (36.8)
	Heroin	165 (33.00)
	Narcotics	18 (3.60)
	Heroin and opium	35 (7.00)
	Narcotics and opium	9 (1.80)
	Narcotics and heroin	4 (0.08)
	Narcotics, heroin, and opium	16 (3.20)
	Others, specify	69 (13.80)
Administration of drug used	Smoking	298 (59.60)
	Injection	61 (12.20)
	Oral	33 (6.60)
	Injection and smoking	22 (4.40)
	Oral and smoking	39 (7.80)
	Injection and oral	1 (0.02)
	Oral, injection, and smoking	14 (2.80)
	Others, Specify	32 (6.40)
Drug treatment history	No	207 (41.40)
	Yes	293 (58.60)

Discussion

In this study, which was done to evaluate

consumption patterns and demographic characteristics of addicts referred to drug addiction treatment centers in Kermanshah in 2016, it was found that most addicts were in the age category of 31 to 40 years.

Our results were consistent with the results of Danesh et al. study in which most drug consumers were in the age group of 31 to 40 years old,[12] Brooki's study in which 63.6% of drug consumers were in the age group of 21 to 40 years old,[13] and the study of Moshki et al., in which most drug users were in the age group of 30 to 39 years.[14]

In Hajian et al.'s investigation, most drug consumers were in the age group of 20 to 29 years.[15] With regard to the first time of drug use, 314 people (62.8%) of samples were in the age group of 10 to 20 years. It is proposed that due to a decrease in the chronic addiction age to adolescence, guidelines should be focused more on the prevention of chronic addiction. Day et al.[16] reported this age as 20 to 22 years, that is consistent with the present study. Amani et al. considered the average age of first drug use as 28.8 years,[4] which is not consistent with our results.

In our study, most of the addicts had primary level education (47.0%) and then middle school education (41.0%). One factor that could help to reduce chronic addiction in the community is using educational programs for the prevention of chronic addiction and since using educational programs requires a person to be educated to understand the educational programs, the necessity of education and training in this field is greatly felt as a deterrent to emphasize prevention of chronic addiction. Our results are consistent with other studies conducted in this field which report that most addicts have a low education including the following studies: Mousavi et al.'s study in which low education and reduction in educational opportunities were introduced as the causes of chronic addiction prevalence[17] and Navidian et al.'s study in which most addicts had education lower than high school diplomas.[18]

In the present investigation, the number of married people (38.8%) is more than the number of single people (23.4%). One of reasons for high number of married addicts is that many people who were addicted when they were single remained addicted after they got married. According to the myths in some cultures, marriage and forming a family can be a treatment for chronic addiction, so there are a lot of people who were addicted before marriage and got married as a solution to this problem. As a result, the number of married people suffering from chronic addiction is higher than the number of single addicted people. The results of this study are consistent with the results of other studies in Iran, such as Moshki et al. study,[14] an in other countries, such as Heinz's study,[19] which report that the number of married people is more than single people among addicts.

Another finding of the study is 68.4% prevalence of unemployed people in Kermanshah. In addition, 28.6% of the addicts received revenue from their parents and a high rate of 39.8% had other sources of income. Due to the high rate of unemployment among addicts in Kermanshah in comparison to other cities in Iran, it is necessary that authorities pay attention to the unemployment in Kermanshah and it is hoped that by creating jobs, chronic addiction decreases in Kermanshah and in general, in the whole country. Unfortunately, a lot of people take refuge to drugs because of the current economic and financial situation and the pressures of life as a way to escape from this situation.

The results of our study are not consistent with Naseri's study in Ilam, Iran, in which 62.0% were employed,[2] the study of Danesh et al., which states that in terms of employment, a shift from unemployed to employed people is happening,[12] Moshki et al.'s study in which most addicts were self-employed,[14] and Seyed

Javadi et al.'s study in Ardabil, Iran, in which only 33.0% of addicts were unemployed.[20]

According to the results, the most common cause of drug use is enjoyment and entertainment (47.6%) and the second common cause is curiosity (26.4%) which emphasizes the fact that authorities should pay more attention to welfare, including providing joy and entertainment for people as a solution to reduce the tendency to the drug use due to lack of facilities in Kermanshah. Pleasure was ranked as the third reason in Moosavi and Ahmadi[21] study in Shiraz, and the second reason in Ghoreishizadeh and Torabi study in Tabriz, Iran,[22] which is somewhat consistent with our findings.

Moreover, the results show that the most important reason for withdrawal and treatment is being tired of drug use (53.4%). In Day et al.'s study, the main reason for withdrawal is tiredness of the current chronic addiction,[16] which is consistent with our study. Based on our research findings and the results of other studies conducted in Iran concerning the most common type of drugs, the literature of the study shows that opium has the highest usage. Some of these studies are: Bolhari study in which opium was the highest used drug,[23] and the research by Ghorbani et al., in which opium was in the first rank (72.5%).[24] These studies show that new drugs could not take the place of traditional use of opium and that the access to opium is more than other drugs.

In relation to the method of consumption, the most frequent way of drug use is smoking in our study (59.6%) which is consistent with the results of other studies in Iran, including Naseri's study with 51.2% of smoking,[2] Moshki et al.'s study with 66.5% of smoking,[14] and Mousavi et al.'s study with 40.2% of smoking.[18] In all of these studies, smoking is the most common method in drug consumption. Regarding the fact that the most common drug in Kermanshah and in Iran is opium, so it seems reasonable that the most common method of drug use is smoking.

According to the results, 58.6% had a history of drug treatment and in fact they attempted to quit drug use several times. This is consistent with parallel studies in this field, including Amani et al.'s study in which 37.9% of addicts had one or two unsuccessful attempts to quit drugs[4] and Hajian et al.'s study in which 72.0% of addicts had a history of opioid withdrawal.[15]

The subject of this study could be performed among samples from other different cultures. In order to generalize the results of the main goal of this study, it could be performed on a large number of samples.

Conclusion

Recent results show that even though people refer to the centers for medical addiction treatment, relapse rates are high and this can have several factors including lack of adequate support and educational programs which make them avoid relapse, not following the treatment, lack of stable living conditions, and also availability of facilities. Results of this study show that some general demographic factors can affect the process of addiction. With regard to identifying these factors, it could be available to prevent addiction or its data can be used during therapeutic process and rehabilitation.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

We appreciate all who contributed to this investigation especially people who underwent the assessment procedure. Therefore, we acknowledge the assistance of the staff of Kermanshah University of Medical Sciences. In the end, it should be mentioned that this article is extracted from an MA dissertation in Department of Clinical Psychology, Kermanshah University of Medical Sciences with serial number of 95267.

References

1. Delawar A, Rezayi AM, Alizadeh A. The relationship between family factors and secondary school students' attitude towards drug abuse (In Tehran). Daneshvar Raftar 2009; 16(37): 21-34. [In Persian].
2. Naseri L. The study pattern of drug use based on demographic factors in referring addicts to addiction centers in the city Elam during years of 2009-2013. Quarterly of Danesh Entezami Ilam 2016; (17): 68-78. [In Persian].
3. Noel X, Brevers D, Bechara A. A neurocognitive approach to understanding the neurobiology of addiction. Curr Opin Neurobiol 2013; 23(4): 632-8.
4. Amani F, Sadeghieh Ahari S, Mohammadi S, Azami A. The trend in substance abuse among addicts referred to withdrawal centers, 1998-2003. J Ardabil Univ Med Sci 2020; 5(3): 220-4. [In Persian].
5. United Nations Office on Drug and Crime. World Drug Report 2008 [Online]. [Online]. [cited 2008]; Available from: URL: https://www.unodc.org/unodc/en/data-and-analysis/WDR-2008.html#:~:text=The%20World%20Drug%20Report%20presents,and%20amphetamine%2Dtype%20stimulants%20markets
6. Eftekhar-Ardebili M, Majlesi F, Parizadid SM, Hatami H, Seyednouzadi M, Razavie SM. Text book of public health. Tehran, Iran: Arjomand Publications; 2008. [In Persian].
7. Rhodes T, Lilly R, Fernandez C, Giorgino E, Kemmesis UE, Ossebaard HC, et al. Risk factors associated with drug use: The importance of 'risk environment'. Drugs Educ Prev Pol 2003; 10(4): 303-29.
8. Parvizy S, Nikbahkt A, Pournaghash TS, Shahrokhi S. Adolescents' perspectives on addiction: qualitative study. Nurs Health Sci 2005; 7(3): 192-8.
9. West R, Hardy A. Theory of Addiction. Hoboken, NJ: Wiley; 2006.
10. American Psychiatric Association. Diagnostic and statistical manual of mental disorders, (Dsm-IV). Washington, DC: American Psychiatric Publishing; 1994.
11. Abbasi A, Taziki SA, Moradi A. The prototype of drug mis.abused of opioids in the self-introduced addicts in Gorgan (North-East of Iran). J Gorgan Univ Med Sci 2006; 8(1): 22-7. [In Persian].
12. Danesh P, Faizolahi A, Haidari S. The status of drug abuser's consumption and distribution in Ilam township (the epidemiologic visage of addiction in Ilam township). Ilam Culture 2015; 15(42): 166-81. [In Persian].
13. Brooki MH. Study the consumption pattern of substances in Urmia. Journal of Research on Addiction 2010; 4(14): 43-52. [In Persian].
14. Moshki M, Khajavi A, Hashemizadeh H, Zarei M, Bidel S. Pattern of Drug Abuse Based on Demographic Factors in Self-Report Addicts of Quchan. J Neyshabur Univ Med Sci 2016; 3(4): 19-26. [In Persian].
15. Hajian K, Khirkhah F, Falatoni M. Epidemiology of addiction among volunteered addicts attending in detoxification centers. J Guilan Univ Med Sci 2013; 22(87): 22-30. [In Persian].
16. Day C, Nassirimanesh B, Shakeshaft A, Dolan K. Patterns of drug use among a sample of drug users and injecting drug users attending a General Practice in Iran. Harm Reduct J 2006; 3: 2.
17. Mousavi GH, Ebrahimi A, Mohammadi M, Salar Shahrbabaki C. Social and economic characteristics of drug addicts. Pajouhesh Dar Pezeshki 1998; 3(4): 305-8. [In Persian].
18. Navidian A, Davachi A, Bashardoost N. Study of personality traits among opiate addicts in rehabilitation center in Zahedan. Hakim Res J 2002; 5(1): 17-22. [In Persian].
19. Heinz AJ, Wu J, Witkiewitz K, Epstein DH, Preston KL. Marriage and relationship closeness as predictors of cocaine and heroin use. Addict Behav 2009; 34(3): 258-63.
20. Seyed Javadi M, Seyed Mousavi E, Mohammadi R, Ebrahimi Balili F, Seyed Javadi M. Epidemiology of Drug abuse in self-introduced addicts to addiction treatment clinic in Ardabil in 2012. Proceedings National Congress on Addiction Sciences; 2013 Sep. 11-13; Tehran, Iran. [In Persian].
21. Moosavi A, Ahmadi J. A survey of demographic characteristic of addicted referred to Shiraz detoxification centers [Thesis]. Shiraz, Iran: Shiraz University of Medical Sciences; 2002. [In Persian].
22. Ghoreishizadeh SM, Torabi K. Factors Contributing to Illicit Substance Dependence among Treatment Seeking Addicts in Tabriz. Iran J Psychiatry Clin Psychol 2002; 8(1): 21-8. [In Persian].
23. Bolhari J. Assessment of drug abuse in Iran's prisons. Research on Addiction 2003; 1(3): 13-50. [In Persian].
24. Ghorbani M, Asayesh H, Jahangir F, Badeleh M T, Rezapour A, Soleimani M A, et al . Substance abuse and correlation between of route of administration and age factors in substance abuser. J Res Dev Nurs Midw 2013; 9 (2): 82-9. [In Persian].

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.555 Published by Vesnu Publications

Evaluation of iodine salt intake, salt storage, and urinary iodine among the households in Markazi Province, Iran

Javad Javaheri[1], Mehdi Khodayari[2], Heidar Farahani[3], Mina Asgari[4], Pegah Mohaghegh[1]

1 Department of Community Medicine, School of Medicine, Arak University of Medical Sciences, Arak, Iran
2 Department of Environmental Health, Heath Vice Chancellor, Arak University of Medical Sciences, Arak, Iran
3 Department of Biochemistry and Genetics, School of Medicine, Arak University of Medical Sciences, Arak, Iran
4 Department of Internal and Surgery, School of Nursing, Arak University of Medical Sciences, Arak, Iran

Original Article

Abstract

BACKGROUND: Iodine deficiency is known as a major nutritional health problem in Iran. The aim of this study was to evaluate iodine salt intake, salt storage, and urinary iodine in households of Markazi Province, Iran, in 2014.

METHODS: In this cross-sectional analytical study, 440 households of 11 cities in Markazi Province in 2014 were selected through a multistage random sampling. A structured questionnaire was used to collect information about the type of salt used and awareness about salt storage. Parameters of salts were measured by taking the samples from household salt. Simultaneously, urinary iodine was measured via samples from the elementary students in the household. Data were analyzed using SPSS software.

RESULTS: Of 440 households, 225 households (58.0%) used iodized refined salt. Approximately, 60.0% of households were aware of the correct way of salt storage. The mean urinary iodine concentration (UIC) of children was 19.2 ± 18.3 µg/l. The average iodine concentration in household salts was 29.3 ± 3.8 ppm and only half of the salt-producing companies had iodine levels above 30 ppm. The average of salt heavy metals at the level of production and consumption was at a standard level.

CONCLUSION: The average iodine concentration of salts was less than the standard level. Therefore, in the absence of proper monitoring of the cycle of production and supply of iodized salt, there is a possibility of recurrent iodine deficiency complications in Markazi Province. Enhancing public awareness about salt storage for maintaining the quantity and quality of iodine is recommended.

KEYWORDS: Iodine; Iodized Salt; Urinary Iodine; Excretion Urinary Iodine; Households

Date of submission: 02 July 2019, *Date of acceptance:* 15 Sep. 2019

Citation: Javaheri J, Khodayari M, Farahani H, Asgari M, Mohaghegh P. **Evaluation of iodine salt intake, salt storage, and urinary iodine among the households in Markazi Province, Iran.** Chron Dis J 2020; 8(4): 190-6.

Introduction

Salt is the most important and most consumable food additive for human.[1] In Iran, because of the availability of saltwater resources and having the largest salt domes in the world, there is no concern regarding lack of this valuable material. However, the production of high-quality salt and the amount of required iodine needs a vigorous process to deliver high quality and non-contaminated products. The presence of harmful impurities, such as the combination of heavy metals in the salt product, can be hazardous to the consumer. Salt is usually refined via two methods, i.e., the traditional method of salt washing and re-crystallization method, which the latter provides a higher purity.[2] In Iran, many industries work based on the traditional method because it is simple and inexpensive. Therefore, the industrial units do not try to change their industrial process. In this regard, it is very important to use pure salt in the food industry. According to the associated

Corresponding Author:
Pegah Mohaghegh; Department of Community Medicine, School of Medicine, Arak University of Medical Sciences, Arak, Iran
Email: pmohaghegh@arakmu.ac.ir

standards, the purity of table salt must be 99.2%.at least [2]

The amount of iodine needed by an adult is an average of 150 µg per day. Iodine deficiency disorders (IDDs) are known among the most important preventable factors for mental disorder in the world.[3-6] In order to prevent and control IDDs, a small amount of this element should be added to the daily diet.[6-10] This procedure needs the lowest costs and provides the highest yield for iodizing the salt for human consumption. Iodizing the salts has been used as the best method for delivering iodine in many countries of the world.[9-14] Measuring the iodine and its impurities in consumed salts of households produced, receiving information about the type of salt and its storage methods, and measuring the urinary iodine and its deficiencies have been proposed among interventions needed to defeat IDDs.[9,12,14-16] Moreover, the status of the Markazi Province in terms of the considered indicators have not been well known, as this information is very valuable for solving existing problems.[2,9,17-19] The aim of this study was to evaluate salt iodine concentration, salt iodine intake, urinary iodine concentration (UIC), and awareness about salt storage in households of Markazi Province, Iran, in 2014.

Materials and Methods

In this cross-sectional study, 440 households in Markazi Province in 2014 were selected through a multistage random sampling. Of 11 cities in this province, 20 urban households and 20 rural households were selected. In each city, according to the residential area of the households (north, south, west, and east), the city was divided into four regions. From each region, 5 clusters were randomly selected based on the present clusters and then a household was randomly selected. To select rural households, all villages around of each city were divided into 4 categories in 4 directions of the city and 5 villages were randomly selected from each category. Within each village, a cluster was randomly selected. To estimate median urinary iodine, according to the World Health Organization (WHO) recommendation, to reach a 95% confidence interval (CI), required samples were between 80 and 120 and an average of 100 persons. Therefore, 100 (25%) of 400 households in the province were examined for urinary iodine.

The researchers of the project, who were referring to the selected households, completed the national structured questionnaire on monitoring the storage and consumption of the iodine. Before starting the research, researchers introduced themselves, presented the research permits, and received the informed consent of the household. The data collection tool was a national valid and reliable questionnaire for monitoring the storage and usage of iodized salts based on the national monitoring plan for combating IDDs. To calculate the sample size, given that the amount of iodine in salt in Iran should be 40 ± 10 ppm/g, using the average estimation formula in the society, about 400 households were required to determine salt iodine concentration. Simultaneously with completing the questionnaires, if the household had an elementary school child (8 to 12-year-old children), UIC was measured by taking 10 cc of urine. Otherwise, based on the right-hand rule, the next household on the right of the previous household with an elementary school student was sampled. All of the samples were sent to the laboratory of School of Medicine, Arak University of Medical Sciences, Arak, Iran. The urine samples were frozen and transferred to the laboratory.

To measure the amount of iodine and the soluble and insoluble impurities in salts at the level of consumption, 20 salt samples from 20 head households were selected. The samples were taken from households' salts and the cost of the salt package was paid to the households. The collected salt samples were sent to a specialized laboratory located at the

Deputy of Iran Food and Drug Administration (IFDA) of Arak University of Medical Sciences to determine the iodine content and the amount of impurity and solubility in water. Ultimately, the data were analyzed by SPSS software (version 19, SPSS Inc., Chicago, IL, USA). To analyze the obtained data, descriptive statistics including mean and standard deviation (SD), frequency, and percentage were used. The research plan for this study was approved by the Ethics Committee of Arak University of Medical Sciences with an ethics code of 22-159-92. Also, it is noteworthy that this paper is the result of a research plan with registration number of 1049 in vice-chancellor for research of Arak University of Medical Sciences in 2014 which was implemented during 2014-2016.

Results

This cross-sectional study was conducted on 440 households in Markazi Province. All the interviewees were women. The education level of the participants was as follows: 8 (1.8%) were illiterate, 5 (1.1%) had literacy to read and write, 42 (9.5%) had primary school grade, 118 (26.8%) had secondary school grade, 162 (36.8%) had high school grade, and 105 (23.9%) had university education.

Based on the data collected using this questionnaire, which was taken from Questionnaire of the National Monitoring Plan for Combating Iodine Deficiency Disorders, of 440 interviewees, 225 (58.0%) consumed refined iodized salt, 17 (3.9%) iodized salt, 14 (3.2%) both types of salt, and 154 (35%) did not know what salt was being used by their households. Of 440 interviewees, 44.1% stated the color of salt pockets as white and 55.9% did not know its color.

Of 440 interviewed women, 342 (77.7%) stated the refined iodized salts as the best salt for health, 42 (9.5%) the iodized salt, 10 (2.3%) the use of both salts, and 46 (10.5%) had no idea.

The most important reason for the use of refined iodized salt from households' perspective based on the results of the questionnaire (where participants were allowed to select more than one option) included the lack of sand, gypsum, lead, selenium, and arsenic in the refined salt. From the perspective of 133 (30.2%) households, the best way to maintain iodine quality is to keep the salt away from light and moisture, and adding salt at the end of cooking to food. From the viewpoint of 124 (28.2%) households, the storage of salt in plastic, wooden, pottery, and glass containers and the addition of salt at the end of cooking to food are considered as the most appropriate methods for maintaining the iodine quality. Table 1 summarizes the results of obtained information in this section. It is of note that the participants were allowed to choose more than one option.

Table 1. The ways to maintain iodine in salt from the perspective of households

Row	Ways to keep iodine in salt	n (%)
1	Storing the salt in the plastic, wooden, pottery, and glass containers	5 (1.1)
2	Storing the salt containers away from light and moisture	43 (9.8)
3	Adding the salt at the end of cooking	33 (7.5)
4	Not keeping the salt for a long time (more than 1 year)	3 (0.7)
5	Storing the salt in a plastic, wooden, pottery, and glass containers with a lid and keeping away from light and moisture	66 (15.0)
6	Storing the salt in the plastic, wooden, pottery, and glass containers, and adding it at the end of cooking	124 (28.2)
7	Keeping the container lid closed and keeping the salt away from light and moisture	8 (1.8)
8	Keeping the lid of the salt container always closed and not keeping it for a long time (over 1 year)	18 (4.1)
9	Keeping the lid of the salt container always closed and adding salt at the end of cooking to the food	3 (0.7)
10	Keeping the salt containers away from light and moisture and not keeping the salt for a long time (more than 1 year)	4 (0.9)
11	Adding the salt at the end of the cooking and keeping the salt container away from light and moisture	133 (30.2)

Table 2 presents the mean and SD of salt purity, heavy metals, and insoluble materials. During the sampling and analysis of the salts of households, a total of 19 salt suppliers were identified, and the obtained values (Table 2) were also examined in these suppliers.

Table 2. The mean and standard deviation (SD) of heavy metals, iodine content, purity, and insoluble materials in the total samples

Variable	Min	Max	Mean ± SD
Percentage of Purity	99.100	99.400	99.270 ± 0.115
Percentage of insoluble materials	12.000	19.000	14.990 ± 1.470
Iodine (γ/g)	23.000	36.000	29.300 ± 3.820
Lead amount (ppb)	0.045	0.083	0.060 ± 0.011
Cadmium content (ppb)	0.005	0.070	0.040 ± 0.013

Min: Minimum; Max: Maximum; SD: Standard deviation

The mean and SD of urinary iodine of 118 urine samples taken in this study was 18.38 ± 19.90 µg/l, with the lowest and highest values being 1.1 and 100.2 µg/l, respectively. These items are listed in table 3.

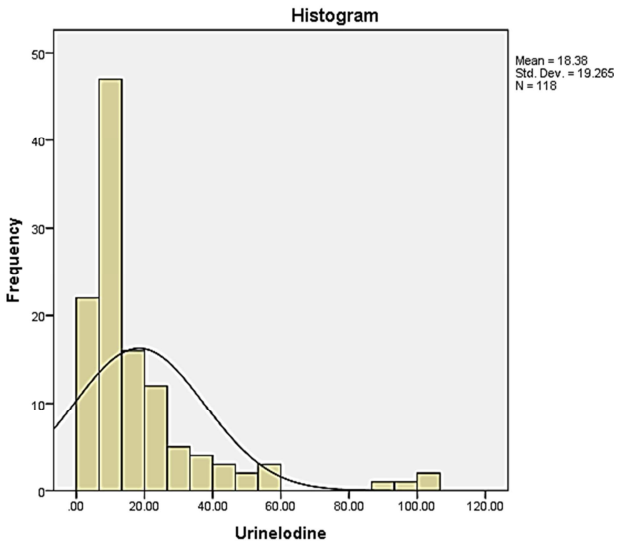

Figure 1. Skewed distribution curve of urinary iodine concentration (UIC) (µg/l)

The histogram of urine iodine amount is plotted in figure 1. The frequency of UIC was a positive skewness distribution.

Discussion

Investigating the storage and consumption of the iodized salt in the households in Markazi Province revealed that 65.0% of households consumed the iodized salt and about 35.0% of them were not aware of the salt type they were consuming. Based on the results of the study, about 60.0% of the households in the province were aware of the correct way of keeping the salt in order to maintain iodine quality. According to the results of Azizi et al., who studied the adequacy of iodization in Yazd Province, Iran, 86.0% of Yazd households used the refined salt and the way of keeping the salt was correct in 48.0% of them.[20]

The results of this study indicate that despite the informative programs on iodized salt in the last decades in Markazi Province, awareness of families about the refined iodized salt is not optimal such that it is necessary to inform and educate them in this regard. Furthermore, improving the behavior of salt storage to maintain the quantity and quality of iodine requires extensive education and information.

Based on the results of this study, the average lead concentration in various brands of salt was 0.064 ppm. The lead content of the manufacturing companies was at least 0.04 ppm and the maximum was 0.08 ppm. The average cadmium concentration in various salt brands was 0.044 ppm, with the minimum and maximum concentrations being 0.030 and 0.062 ppm, respectively. Therefore, it can be concluded that salt production companies met the standard limits of heavy metals.

Table 3. The mean, median, and standard deviation (SD) of urine iodine

Variable	N	Minimum	Maximum	Median	Mean ± SD
The amount of urine iodine (µg/l)	118	1.10	100.20	11.15	19.92 ± 18.38

SD: Standard deviation

Hedayatifar measured the concentration of lead, cadmium, mercury, and arsenic in the salt using the graphite furnace atomic absorption in Lorestan Province, Iran, and reported that the amount of the heavy metals was below the maximum level reported by the Codex.[18]

The mean amount of iodine in consumed salts was 29.3 ± 3.8 γ. The minimum and maximum iodine in producing companies was 25 γ and 36 γ, respectively. Only half of the salt producers (out of 19 identified brands) had iodine levels above 30 γ. The recommended amount of salt iodine in Iran, based on existing standards, should be 40 ± 10 γ of salt. If this amount is less than 30 γ or more than 50 γ, the iodine level in salt is not considered as optimum. According to the results of Azizi et al.,[20] who studied the adequacy of iodization in Yazd Province, 5.0% of the household salts had the iodine less than 15 γ, 45.0% between 15-30 γ, 45.0% between 30-50 γ, and 5.0% had more than 50 γ, which is optimum compared to the iodine level in salts of the Markazi Province. Moreover, in the study of Mehdinia et al., who investigated the iodine levels in iodized salts distributed in Semnan Province, Iran, in 2004,[21] of 16 types of distributed iodized salt in Semnan Province, the mean iodine in 31.0% of iodized salts was outside the acceptable range of 30 to 50 γ. About 12.5% of salts had less than 30 γ of iodine and 18.7% had the iodine over 50 γ. Based on the results of this study, more accurate monitoring and control of iodized salt production process is necessary at the provincial level,[21] which is consistent with our study.

In our study, the average purity was 99.2% in all brands of consumed salts. There was no statistically significant difference in purity between the companies. The mean percentage of insoluble materials was 14.9%, and the percentage of insoluble materials by producing companies was at least 12.0% and at most 16.0%. According to available standards for salt, the total amount of the substances in insoluble water in household's salt was at a maximum of 0.16 g. Therefore, only one company with an average of 0.19 g had the amount more than standard, and the rest of them and salt producers were optimum in this regard. According to the results of Amiri Raftani and Solaimani who studied the purity and iodine content of salts in Kermanshah Province, Iran, in 2017, 25.0% of the tested salts had a purity less than the permissible minimum of 99.2%.[22]

In our study, the mean urinary iodine in the samples was 19.2 ± 18.3 µg/l. The normal distribution curve for urinary iodine is skewed to the right and the median urinary iodine level is below 20 µg/l (i.e., 11.15 µg/l). Since the urinary iodine levels less than 100 µg/l are considered as low, the households of the study area may have an inadequate iodine level. Measuring the urinary iodine is the most important monitoring indicator for iodine programs since the low iodine excretion indicates the inadequate intake of iodine.[23] In the study of Azizi et al., in Yazd Province in 2007, the mean urinary iodine in 120 students was 248 µg/l and 5.8% of them had urinary iodine less than 50 µg/l, suggesting the appropriate iodization in the area.[20] This result is inconsistent with the results of the present study. Similarly, in the study of Nazeri et al., who investigated the urinary iodine and iodine intake in households in southern Tehran, Iran, in 2009,[24] the mean urinary iodine in the population under study was 48 µg/l. Also, in 64.8% of households, the average iodine salt intake was less than 10 γ, indicating the inadequate iodine in the area; this result is consistent with the results of the present study. In the study of Azizi et al., monitoring the prevalence of goiter and urinary iodine in 8-10-year-old students in Fars Province, Iran, in 1998,[8] the mean iodine excretion in the studied population was 30 µg/dl, which was more than 10 µg/dl in 89.0% of the cases, suggesting that iodine in this region reached the WHO optimal level.

Conclusion

According to the findings of the present study, due to lack of proper and continuous monitoring of the cycle of salt production in the market, there is a risk of the recurrent iodine deficiency complications in Markazi Province. Furthermore, it is necessary to implement educational and informational interventions for promoting the use of iodized refined salt, the storage of refined iodized salts, and awareness level about the side effects of iodine deficiency. Overall, performing periodic evaluations to assess the change in the behavior of storing the refined iodized salts, UIC, purity of salts, and iodine content in salts consumed in this area is of great necessity.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

Here, we thank the Social and Cultural Affairs of Markazi Province Governor's Office for financially supporting us. We also thank the personnel of the IFDA and the Health Deputy of Arak University of Medical Sciences who actively participated in the implementation of this project (No: 1049). In the end, we would like to acknowledge all the respectable families who collaborated with us in this project.

References

1. Delshad H, Mehran L, Azizi F. Appropriate iodine nutrition in Iran: 20 years of success. Acta Med Iran 2010; 48(6): 361-6.
2. Javaheri J, Delavar M, Khodayari M. Examination of iodine and purity of salts in different level with surveying of storage and consumption habits and urine iodine measurement in Markazi Province's households in 2015 year [Project]. Arak, Iran: Arak University of Medical Sciences; 2015. [In Persian].
3. Wang Z, Zhu W, Mo Z, Wang Y, Mao G, Wang X, et al. An Increase in Consuming Adequately Iodized Salt May Not Be Enough to Rectify Iodine Deficiency in Pregnancy in an Iodine-Sufficient Area of China. Int J Environ Res Public Health 2017; 14(2): 206.
4. Pasdar Y, Mohammadi G, Mansouri A, Alghasi S, Darbandi M, Mahmoodi M, et al. Iodine content in salt used in Kermanshah, 2013-2014. J Mazandaran Univ Med Sci 2016; 26(135): 144-8. [In Persian].
5. Mohammadi M, Azizi F, Hedayati M. Iodine deficiency status in the WHO Eastern Mediterranean Region: A systematic review. Environ Geochem Health 2018; 40(1): 87-97.
6. Mekonnen TC, Eshete S, Wasihun Y, Arefaynie M, Cherie N. Availability of adequately iodized salt at household level in Dessie and Combolcha Towns, South Wollo, Ethiopia. BMC Public Health 2018; 18(1): 1152.
7. Emami A, Shahbazi H, Sabzevari M, Gawam Z, Sarkissian N, Hamedi P, et al. Goiter in Iran. Am J Clin Nutr 1969; 22(12): 1584-8.
8. Azizi F, Sheikholeslam R, Hedayati M, Mirmiran P, Mahdavi A, Delshad H. Goiter survey and urinary iodine concentration in 8 to 10-year-old schoolchildren from Fars Province in 1996. Iran J Endocrinol Metab 2001; 3(1): 37-42.
9. Knowles JM, Garrett GS, Gorstein J, Kupka R, Situma R, Yadav K, et al. Household coverage with adequately iodized salt varies greatly between countries and by residence type and socioeconomic status within countries: Results from 10 national coverage surveys. J Nutr 2017; 147(5): 1004S-14S.
10. Azizi F, Mehran L. Experiences in the prevention, control and elimination of iodine deficiency disorders: A regional perspective. East Mediterr Health J 2004; 10(6): 761-70.
11. De Benoist B., Delange F. Iodine deficiency: Current situation and future prospects. Sante 2002; 12(1): 9-17.
12. Mo Z, Wang XF, Mao GM, Zhu WM, Xu PW, Zou Y, et al. Goitre and urinary iodine in coastal and inland areas with low and high iodized salt coverage in Zhejiang province, China. Asia Pac J Clin Nutr 2017; 26(4): 671-9.
13. Manousou S, Dahl L, Heinsbaek TB, Hulthen L, Nystrom Filipsson H. Iodine deficiency and nutrition in Scandinavia. Minerva Med 2017; 108(2): 147-58.
14. Khattak RM, Khattak MNK, Ittermann T, Volzke H. Factors affecting sustainable iodine deficiency elimination in Pakistan: A global perspective. J Epidemiol 2017; 27(6): 249-57.
15. Zahidi A, Zahidi M, Taoufik J. Assessment of iodine concentration in dietary salt at household level in Morocco. BMC Public Health 2016; 16: 418.
16. Nepal AK, Raj Shakya P, Gelal B, Lamsal M, Brodie DA, Baral N. Household salt iodine content estimation with the use of rapid test kits and iodometric titration methods. J Clin Diagn Res 2013; 7(5): 892-5.

17. Das DK, Chakraborty I, Biswas AB, Sarkar GN, Shrivastava P, Sen S. Iodine deficiency disorders among school children of Dakshin Dinajpur District, West Bengal. Indian J Public Health 2005; 49(2): 68-72.
18. Hedayatifar R. Determination of lead, cadmium, mercury and arsenic in salt by the graphite furnace atomic absorption spectrometry. Feyz 2013; 16(7): 617-8. [In Persian].
19. Kapil U. Successful efforts toward elimination iodine deficiency disorders in India. Indian J Community Med 2010; 35(4): 455-68.
20. Azizi F, Delshad H, Amouzegar A, Hedayati M, Hosseini M, Mehraein M. Assessment of iodine intake in Yazd province 17 years after universal salt iodization (The Fourth National Survey: 2007). J Shaheed Sadoughi Univ Med Sci 2010; 18(3): 263-70. [In Persian].
21. Mehdinia S, Nasehinia H, Gharib-Bolok R, Azizi R, Rezai M. A Survey of iodine concentration in the iodine salts distributed in the province of Semnan in autumn 2004. Koomesh 2005; 6(4): 285-90. [In Persian].
22. Amiri Raftani Z, Solaimani S. Evaluation of the purity and iodine content of edible salts in the supply level of Kermanshah province. Iran J Nutr Sci Food Technol 2018; 15(9): 17-23. [In Persian].
23. Heidari Z, Arefhosseini SR, Hedayati M, Vaghef-Mehrabany E, Ebrahimi-Mameghani M. Iodine status, and knowledge about iodine deficiency disorders in adolescent school girls aged 14-19 years, 2016. Health Promot Perspect 2019; 9(1): 77-84.
24. Nazeri P, Mirmiran P, Delshad H, Hedayati M, Azizi F. Evaluation of Urinary Iodine Concentration and Iodine Content of Households Salt in South of Tehran. Iran J Endocrinol Metab 2010; 12(3): 294-9. [In Persian].

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.548 Published by Vesnu Publications

The comparison of the effectiveness of contingency management and trans-theoretical model on the risk of sexual behaviors in cocaine users: A short report study

Mehdi Panahi[1], Tayebeh Honarvar[2], Negar Sadegh-Esfahani[3], Leila Salari-Moghadam[4], Sara Salari-Moghadam[5], Roghaiyeh Jamali[6], Fatemeh Aslani[3], Paria-Sadeghi[7]

1 Department of Rehabilitation, University of Social Welfare and Rehabilitation Sciences, Tehran, Iran
2 Department of Clinical Psychology, Kashmar Branch, Islamic Azad University, Kashmar, Iran
3 Department of Clinical Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran
4 Department of Psychology, Arak Branch, Islamic Azad University, Arak, Iran
5 Department of Psychology, Roudehen Branch, Islamic Azad University, Tehran, Iran
6 Department of Psychology, Ardebil Science and Research Branch, Islamic Azad University, Ardebil, Iran
7 Department of Psychology, Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran

Short Communication

Abstract

BACKGROUND: A transtheoretical model (TTM) can be considered as a cognitive and motivational view, a component which plays a significant role in addiction. Further, the theoretical basis of contingency management (CM) treatment is the origin of behaviorism and relies on operant conditioning. The present study is performed aiming to determine the effectiveness of TTM and CM on cocaine use and sexual risk behaviors in cocaine users.

METHODS: In this randomized clinical trial with 6-month follow-up, which was performed from 15 December 2014 to 20 November 2015, 75 male cocaine users were selected based on a respondent-driven sampling (RDS) method and were randomly divided into three groups by block randomization. The experimental group received a 12-week CM protocol and TTM and the control group was placed on the waiting list. Pre-test, post-test (after 12 weeks of training), and follow-up (six months) were administered. Data analysis was carried out using repeated measures analysis of variance (ANOVA), Scheffe's post hoc test, and chi-square test through SPSS software.

RESULTS: The mean age of the CM group, TTM group, and control group was estimated 26.12, 25.31, and 23.91, respectively. The primary outcome showed that CM and TTM had a significant effect on decreasing the sexual thoughts, sexual hyperactivity, and high risk behaviors. This effectiveness was stable until six months (P = 0.008), however there was not a significant difference between the two treatments (P = 0.200). The secondary outcome showed that in the changing stages, TTM (F-72%) and CM (F-60%) had a significant effectiveness which maintained until the follow-up stage.

CONCLUSION: The findings more enhance the hope to integrate the theoretical approaches into the clinical interventions.

KEYWORDS: Cocaine; Dangerous Behavior; Behavior Therapy

Date of submission: 02 July 2019, ***Date of acceptance:*** 12 Sep. 2019

Citation: Panahi M, Honarvar T, Sadegh-Esfahani N, Salari-Moghadam L, Salari-Moghadam S, Jamali R, et al. **The comparison of the effectiveness of contingency management and trans-theoretical model on the risk of sexual behaviors in cocaine users: A short report study.** Chron Dis J 2020; 8(4): 197-200.

Introduction

Cocaine is a highly addictive drug that increases the level of alertness, attention, and energy.[1] It is made of the coca plant, which is native to South America. Cocaine consumption can cause structural and hormonal changes in the brain that can lead to high risk behaviors.[2,3] Individuals who have an experience of cocaine use report increased feelings of alertness, energy, sociability, and emotional expressiveness. The use of cocaine has been associated with risky sexual behaviors,

Corresponding Author:
Paria Sadeghi; Department of Psychology, Tehran Science and Research Branch, Islamic Azad University, Tehran, Iran
Email: pysadeghi@gmail.com

indicating its clinical importance.

One of the emerging therapies with clinical trials that are tested in the field of drug abuse is contingency management (CM). CM in the form of using secondary positive reinforcers, such as coupons, goods and services. CM has reported promising results in the treatment of methamphetamine and cocaine abuse.[4] CM has also been effective in reducing the high risk sexual behavior associated with human immunodeficiency virus (HIV). Shoptaw et al.[5] showed that CM was able to produce similar effectiveness to cognitive-behavioral therapy in reducing the high risk sexual behavior in methamphetamine users.

On the other hand, transtheoretical model (TTM) was developed by Prochaska et al. with the goal of designing smoking cessation therapy.[6]

Regarding the increasing prevalence of cocaine use among young people and the high risk of transmission of HIV to cocaine users, and according to the effectiveness of CM and TTM in the addiction area, the present study was performed with the aim to evaluate the effectiveness of TTM and CM on cocaine use and sexual risk behaviors in cocaine users.

Materials and Methods

The present study was a randomized clinical trial with 6-month follow-up. The population of the study included all male cocaine users who lived in Tehran, Iran. The study data were collected from 15 December 2014 to 20 November 2015, using a respondent-driven sampling (RDS) method.[7,8] 75 participants were randomly assigned into three groups by block randomization method.[9] The experimental group received a 12-week CM protocol and TTM and the control group was placed on the waiting list. The Data Matching Software was employed for data cleansing, standardization, matching, and record merging.

Coupon was allocated for negative urine samples (urine without cocaine). The rewards for the negative urine testing were $1, $3, and 5$ for the first, second, and third samples, respectively, and at subsequent stage, a further $1.25 was added to the coupon values.

After 12 treatment sessions based on the CM and TTM, all participants in the study were evaluated by the Sexual Behavioral Inventory and the Stages of Change Readiness Scale. The data were analyzed using analysis of variance (ANOVA), Scheffe's post hoc test, and chi-square test in SPSS software (version 20, IBM Corporation, Armonk, NY, USA).

All stages of the study were carried out after obtaining informed consent and based on the latest version of the Declaration of Helsinki (DoH) [with the Iranian Registry of Clinical Trials (IRCT) code: TRCT20180329002).

Results

The demographic status of the participants in the study is presented in table 1. Additionally, the mean age of the CM group, TTM group, and control group was estimated 26.12, 25.31, and 23.91, respectively (P > 0.080).

The results of the repeated measures ANOVA showed that both treatment approaches were effectiveness on all three subscales of sexual thoughts, sexual hyperactivity, and high risk behaviors (P < 0.010 for all).

Table 1. Demographic information of the study participants

Variables	Level	CM (n = 25)	TTM (n = 25)	Control (n = 25)	P
Education [n (%)]	Lower than diploma	9 (36)	11 (44)	8 (32)	0.037
	Higher than diploma	16 (64)	14 (56)	17 (65)	
Age (years) [n (%)]	18-25	17 (68)	16 (64)	15 (60)	0.043
	Above 25	8 (32)	9 (36)	10 (40)	
Occupation status [n (%)]	Employed	19 (76)	15 (60)	14 (56)	0.046
	Unemployed	6 (24)	10 (40)	11 (44)	
Monthly income [n (%)]	Less than one million Tomans	15 (60)	14 (56)	13 (52)	0.049
	More than one million Tomans	10 (40)	11 (44)	12 (48)	

For assessment of the difference among the sexual thoughts, sexual hyperactivity, and high risk behaviors, the Scheffe's post hoc test was used. The results revealed that there were significant differences between the mean values of precontemplation, ccontemplation, preparation, action, maintenance, termination in sexual thoughts, sexual hyperactivity, and high risk behaviors ($P < 0.010$). But there was no significant differences between the two treatment groups ($P > 0.200$).

The results of the chi-square test to compare the difference of groups in the key component of the change stages (precontemplation, ccontemplation, preparation, action, maintenance, termination) showed that TTM (F-72%) and CM (F-60%) had a significant effectiveness, which was stable until the follow-up stage.

Discussion

The findings showed that both treatment approaches were effective on sexual thoughts, sexual hyperactivity, and high risk behaviors. TTM also produced significant efficacy on the change stages in the above therapy group. On the other hand, CM had a significant effect on reducing cocaine use.

Consistent with our findings, the results of the study by Higgins et al.[10] showed that CM could lead to an increased avoidance period for cocaine users, and the duration of avoidance to follow-up lasted to 6 months. Our findings are in contradiction with the results of the study by Heil et al.[11] They found that the effectiveness of CM on simultaneous consumers of cocaine-alcohol was similar to that of control. Compared with the current study, nonalcoholic cocaine-dependent subjects and codependent patients exhibit a wider array of problems, many of which merit professional attention. Alcoholic cocaine-dependent subjects may require extra treatment efforts for successful outcomes.

In contrast, the study by Rash et al.[12] showed that CM treatment has been effective in drinking cocaine users. The methodological and demographic differences as contradictory in the findings can be regarded important. Our findings contradict the results of Killeen et al.[13] who examined the efficacy of CM with community-based standard therapies in marijuana consumers. In this regard, new studies have shown that marijuana consumption affects psychological indicators such as delay discounting and reinforcement sensitivity.[14,15] Moreover, the results of the study by Pirnia et al.[16] indicated that CM has been effective in cocaine craving, but did not have a significant effect on increasing negative urine test of the stimulant.

One of the findings of this study is the effect of CM on the reduction of high risk sexual behaviors. In line with our findings, the study by Higgins et al.[17] suggested that participation in cocaine abuse treatment programs leads to a reduction in risky sexual behaviors. These results systematically replicate and extend the prior findings that the availability of alternative, nondrug reinforcers can significantly decrease cocaine use.

This study was an attempt to indirectly compare two main paradigms in the field of clinical psychology and behavioral approach in the form of CM and cognitive approach in the form of a TTM. It is suggested that consideration be given to savings on potential costs in CM in future studies.

This study had some limitations. The most important limitation was that because of security and legal issues, paying in cash was not performed immediately, but late at night through paying on-line.

Conclusion

Based on the results of the present study, CM and TTM had a significant effect on the increase in using condoms. This effectiveness lasted for six months in the follow-up period. These findings can be applied to the acceptance and implementation of CM and

TTM as an evidence-based approach.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors would like to appreciate all people who participated in this study and helped to facilitate the research process. This article resulted from an independent research without any financial support.

References

1. Pirnia B, Soleimani AA, Tavallaii A, Roshan R, Pirnia K. Two New Therapies in the Cocaine-dependents: Comparison of Topiramate and Contingency Management. Iran J Public Health 2018; 47(10): 1607-8.
2. Pirnia B, Givi F, Roshan R, Pirnia K, Soleimani AA. The cortisol level and its relationship with depression, stress and anxiety indices in chronic methamphetamine-dependent patients and normal individuals undergoing inguinal hernia surgery. Med J Islam Repub Iran 2016; 30: 395.
3. Pirnia B, Moradi AR, Pirnia K, Kolahi P, Roshan R. A Novel Therapy for cocaine dependence during abstinence: A randomized clinical trial. Electron Physician 2017; 9(7): 4862-71.
4. Peirce JM, Petry NM, Stitzer ML, Blaine J, Kellogg S, Satterfield F, et al. Effects of lower-cost incentives on stimulant abstinence in methadone maintenance treatment: A National Drug Abuse Treatment Clinical Trials Network study. Arch Gen Psychiatry 2006; 63(2): 201-8.
5. Shoptaw S, Klausner JD, Reback CJ, Tierney S, Stansell J, Hare CB, et al. A public health response to the methamphetamine epidemic: The implementation of contingency management to treat methamphetamine dependence. BMC Public Health 2006; 6: 214.
6. Prochaska JO, DiClemente CC, Norcross JC. In search of how people change. Applications to addictive behaviors. Am Psychol 1992; 47(9): 1102-14.
7. Pirnia B, Pirnia K, Aghajanpoor M, Mardan F, Zahiroddin A. Relationship between function of hypothalamic-pituitary-adrenal axis and executive functions in chronic methamphetamine users: A cross-sectional study. Asian J Psychiatr 2018; 35: 113-4.
8. Pirnia B, Pirnia K, Mohammadpour S, Malekanmehr P, Soleimani A, Mahmoodi Z, et al. The effectiveness of acupuncture on HPA functional in depressed patients under methadone maintenance treatment, a randomized double-blind sham-controlled trial. Asian J Psychiatr 2018; 36: 62-3.
9. Pirnia B, Soleimani AA, Malekanmehr P, Pirnia K, Zahiroddin A. Topiramate for the treatment of dually dependent on opiates and cocaine: A single-center placebo-controlled trial. Iran J Public Health 2018; 47(9): 1345-53.
10. Higgins ST, Budney AJ, Bickel WK, Foerg FE, Donham R, Badger GJ. Incentives improve outcome in outpatient behavioral treatment of cocaine dependence. Arch Gen Psychiatry 1994; 51(7): 568-76.
11. Heil SH, Badger GJ, Higgins ST. Alcohol dependence among cocaine-dependent outpatients: Demographics, drug use, treatment outcome and other characteristics. J Stud Alcohol 2001; 62(1): 14-22.
12. Rash CJ, Alessi SM, Petry NM. Cocaine abusers with and without alcohol dependence respond equally well to contingency management treatments. Exp Clin Psychopharmacol 2008; 16(4): 275-81.
13. Killeen TK, McRae-Clark AL, Waldrop AE, Upadhyaya H, Brady KT. Contingency management in community programs treating adolescent substance abuse: A feasibility study. J Child Adolesc Psychiatr Nurs 2012; 25(1): 33-41.
14. Koffarnus MN, Kaplan BA. Clinical models of decision making in addiction. Pharmacol Biochem Behav 2018; 164: 71-83.
15. Amlung M, Vedelago L, Acker J, Balodis I, MacKillop J. Steep delay discounting and addictive behavior: A meta-analysis of continuous associations. Addiction 2017; 112(1): 51-62.
16. Pirnia B, Soleimani A, Taherinakhost HR, Pirnia K, Malekanmehr P, Zahiroddin A. A randomized pilot trial of contingency-management intervention for patients in during methadone maintenance treatment, cash vs. vouchers. Iran J Public Health 2018; 47(4): 618-9.
17. Higgins ST, Bickel WK, Hughes JR. Influence of an alternative reinforcer on human cocaine self-administration. Life Sci 1994; 55(3): 179-87.

Chronic Diseases Journal

DOI: 10.22122/cdj.v8i4.549 Published by Vesnu Publications

The efficiency of life skill training on emotional intelligence in chronic addicted women with a history of spousal abuse

Shahrbanoo Ghahari[1], Siamak Ghasemnezhad[2], Ali Saleh Ebrahimi[3], Nikzad Ghanbari[4], Reza Davoodi[3], Sina Maddadi[3], Mohammad Mazloumirad[3]

1 Department of Mental Health, School of Behavioral Sciences and Mental Health, Tehran Institute of Psychiatry, Iran University of Medical Sciences, Tehran, Iran
2 Department of Psychology, School of Psychology, Science and Research Branch, Islamic Azad University, Sari, Iran
3 Department of Psychology, School of Psychology, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran
4 Department of Clinical Psychology, School of Psychology, Shahid Beheshti University, Tehran, Iran

Short Communication

Abstract

BACKGROUND: Low emotional intelligence (EI) could affect individuals' coping strategies and make them vulnerable to violence and addiction. This study aims to study the effect of life skill training to improve EI in chronic addicted women with a history of spousal abuse.

METHODS: The study was semi-experimental with a pre-test, post-test design. Conducted between October 2016 and January 2017, this study included women addicted to cannabis with a history of spousal abuse referring to some addiction intervention clinics in Tehran, Iran. 30 individuals were selected based on the inclusion and exclusion criteria and also cut-off point for EI using the convenience sampling method. They were then assigned to two groups randomly (each group n = 15). In six sessions, the experimental group received life skill training and the control group were in the waiting list. Both groups were evaluated in baseline and after the intervention by Ghahari's domestic violence questionnaire and Bar-on Emotional Quotient Inventory (EQ-i). Data were analyzed using multivariate analysis of covariance (MANCOVA) in SPSS software.

RESULTS: The experimental group had improvements in total score and components of EI including interpersonal EQ ($F = 312.30$, $P < 0.050$) and intrapersonal EQ ($F = 295.04$, $P < 0.050$).

CONCLUSION: Life skill training could improve EI in addicted women with a history of spousal abuse.

KEYWORDS: Addiction; Life skills; Emotion intelligence; Spouse Abuse

Date of submission: 04 July 2019, *Date of acceptance:* 19 Sep. 2019

Citation: Ghahari S, Ghasemnezhad S, Saleh Ebrahimi A, Ghanbari N, Davoodi R, Maddadi S, et al. **The efficiency of life skill training on emotional intelligence in chronic addicted women with a history of spousal abuse.** Chron Dis J 2020; 8(4): 201-4.

Introduction

Spousal abuse includes any violent behaviors including physical, emotional, and sexual aggression against spouse.[1] Cannabis dependence is prevalent in the world and Iran.[2] The ability to detect emotions of yourself and others and regulate them in social relationships is called emotional intelligence (EI or EQ). EI includes understanding and expression of emotions of self and others. Additionally, emotion regulation is related to empathy.[3]

Several studies have shown that low EI is associated with addiction behaviors and low EQ may make individuals vulnerable to violence.[4,5] A study showed that women with a history of spouse abuse have lower emotional and social intelligence compared to other women.[5]

Life skill training could promote EQ in population and improve their coping strategies and positive emotions,[6-8] in addition to

Corresponding Author:
Mohammad Mazloumirad; Department of Psychology, School of Psychology, Tonekabon Branch, Islamic Azad University, Tonekabon, Iran
Email: mazloumirad@gmail.com

reducing drug and alcohol use.[9]

The objective of the current study was to evaluate life skill training to improve EI in chronic addicted women with a history of spousal abuse.

Materials and Methods

The current study was semi-experimental with a pre-test post-test design. Between October 2016 and January 2017, this study was carried out on women addicted to cannabis for at least 5 years and with a history of spousal abuse who had referred to some addiction clinics in Tehran, Iran. 30 individuals were selected based on the inclusion and exclusion criteria and also cut-off point for EI (participants under 50 have less) using the convenience sampling method. Then, they were assigned to two groups randomly (each group n = 15).

The study inclusion criteria were being married, spousal abuse background, cannabis use for at least 5 years, and tendency to participate in the study. The exclusion criteria consisted of suffering from psychological problems such as psychotic and bipolar disorder, use of another substance, being single, and lack of spousal abuse history. The contents of the intervention package were based on the World Health Organization (WHO) psychological literature and participants trained in 6 sessions with 1.5 hours per session. [6]

Data were analyzed using descriptive statistics multivariate analysis of covariance (MANCOVA). It should be mentioned that statistical analysis was performed in SPSS software (version 24, IBM Corporation, Armonk, NY, USA).

Ghahari's Spousal Abuse Questionnaire (SAQ): This questionnaire includes 44 items, with 20, 10, and 14 items assessing emotional, physical, and sexual abuse items, respectively. Formal validity of this instrument was confirmed by some psychiatrists and clinical psychologists in Tehran Institute of Psychiatry; Cronbach's alpha coefficient for the reliability of this questionnaire was 0.98 in Iran.[1]

BAR-ON Emotional Quotient Inventory (EQ-i): This questionnaire is used to measure the emotional intelligence. Bar-on developed this scale in 1997.[10] The questionnaire contains a total score (Emotional Quotient), five main scales, and 15 subscales with two scales for inconsistency. The primary reliability and validity coefficients of this questionnaire in South Africa were reported as 0.85 and 0.75, respectively. Moreover, the internal validity for this questionnaire was 0.753 in Iran.[11]

Results

MANCOVA was conducted to investigate the homogeneity of the groups in the components of EI in baseline without significant difference between the two groups of women (Table 1).

However, table 2 shows that there is a statistically significant difference between the components of EI in the two groups after the intervention and the components of EI; i.e. intrapersonal [$F(28,1) = 312.3$, $P < 0.001$, $\eta^2 = 0.94$], interpersonal [$F(28,1) = 295.04$, $P < 0.001$, $\eta^2 = 0.91$], coping [$F(28,1) = 217.24$, $P < 0.001$, $\eta^2 = 0.84$], general mood [$F(28,1) = 104.84$, $P < 0.001$, $\eta^2 = 0.79$], and stress tolerance [$F(28,1) = 110.29$, $P < 0.001$, $\eta^2 = 0.81$] after controlling the pretest scores.

Table 1. Demographic ccharacteristics of the two groups

Variable		Intervention group	Waiting-list group
Age (mean ± SD)		24.67 ± 6.33	25.23 ± 5.46
Marital status [n (%)]	Married	7 (47.00)	8 (53.00)
	Divorced	8 (53.00)	7 (47.00)
Educational status [n (%)]	Master's	2 (13.33)	3 (20.00)
	Bachelor's	5 (33.33)	4 (26.67)
	Diploma	6 (40.00)	7 (46.67)
	Below diploma	2 (13.33)	1 (6.67)

SD: Standard deviation

Table 2. Multivariate analysis of covariance (MANCOVA) for comparing groups

Variable	Subscale	df	F	P	Effect size
Life skill training	Intrapersonal scale	28-1	312.30	0.001	0.94
	Interpersonal scale	28-1	295.04	0.001	0.91
	Coping	28-1	217.24	0.001	0.84
	General mood	28-1	104.84	0.001	0.79
	Stress tolerance	28-1	110.29	0.001	0.81

Df: Degree of freedom

Therefore, it can be concluded that life skill training could be effective in increasing the components of EI.

Discussion

The current study showed that the life skill training could improve EI components in chronic addicted women with a history of spousal abuse. These results are consistent with several studies performed on different groups regarding the efficacy of life skill training on reduction of negative emotions and addiction.[7-9] Furthermore, several studies have noted that life skill training could be effective in enhancing the ability of individuals to cope with life stressors, relationship conflicts, emotion regulation problems, and relapse prevention.[3,10-12]

In general, life skill training could enable people for coping with stressors and reduce the risk of use of substances in short and long term.[3,12]

Another study indicated that the aggression and substance use could relate with low EQ, so that life skill training could play an effective role in reducing the aggression and improvement of emotion regulation. Providing life skill training program for addicted women could provide new opportunities for them to improve their ability for coping with addiction.[3,12]

Conclusion

This study revealed that life skill training could improve EI in addicted women with a history of spouse abuse. Considering this finding, we suggest life skill training for improvement of EQ in addicted women.

Conflict of Interests

Authors have no conflict of interests.

Acknowledgments

The authors would like to appreciate all the participants for their cooperation. It should be noted that this study received no grant from any funding agency. This project received no grant from any agencies.

References

1. Ghahari Sh, Bolhari J, Atef Vahid MK, Ahmadkhaniha Hr, Panaghi L, Yousefi H. Prevalence of spouse abuse, and evaluation of mental health status in female victims of spousal violence in Tehran. Iran J Psychiatry Behav Sci 2009; 3(1): 50-6. [In Persian].
2. Nikfarjam A, Shokoohi M, Shahesmaeili A, Haghdoost AA, Baneshi MR, Haji-Maghsoudi S, et al. National population size estimation of illicit drug users through the network scale-up method in 2013 in Iran. Int J Drug Policy 2016; 31: 147-52.
3. Tsirigotis K, Luczak J. Emotional intelligence of women who experience domestic violence. Psychiatr Q 2016; 87(1): 165-76.
4. Khanmohammadi A, Homayouni A, Amiri SM, Nikpour GA. Low emotional intelligence as a predictor of tendency to addiction. European Psychiatry 2009; 24(S1): 1.
5. Khaleghkhah A, Zare R, Ghamari Givi H, Valizadeh B. Comparison of emotional and social intelligence of normal women and women victims of domestic violence. Sci J Forensic Med 2015; 21(2): 83-9.
6. Lolaty HA, Ghahari S, Tirgari A, Fard JH. The effect of life skills training on emotional intelligence of the medical sciences students in Iran. Indian J Psychol Med 2012; 34(4): 350-4.
7. Shirani Bidabadi N, Nili M, Manani R, Khalili R. The effectiveness of life skills training on improving emotional intelligence in undergraduate students of Isfahan. Interdiscip J Virtual Learn Med Sci 2016; 7(1): e12147.
8. Jahanbin I, Bazrafshan M, Akbari K, Rahmati M,

Ghadakpour S. The effect of life skills training on social communication of clients referring to drug abuse clinics. Jundishapur J Chronic Dis Care 2017; 6(4): e13798.
9. Gheitarani B, Imani S, Sadeghi N, Ghahari S. Effectiveness of life skills training on self-efficacy and emotional intelligence among high school students in Urmia. Soc Determ Health 2017; 3(3): 160-6.
10. Bar-On R. BarOn emotional quotient inventory. Toronto, Ontario: Multi-health systems; 1997.
11. Tirgari A, Asgharnezhad Farid A, Bayanzadeh S, Abedin A. A comparison between emotional intelligence and marital satisfaction, and their structural relation among discordant and well-adjusted couples in Sari, Iran. J Mazandaran Univ Med Sci ed. 2006. [In Persian].
12. Mohamamdi M, Mazloumi Rad M, Rahmani A, Ghahari S, Fallah R, Mohammadi N, et al. Efficacy of anger management skills on reducing aggression and improving adjustment in addicts treating with methadone in Sari-Iran. Journal of Global Pharma Technology 2016; 12(8): 164-70.