

## Original Article



# Comparison of Quality of Life, Meaning of Life, Body Image and Mental Health in Two Groups of Postmenopausal and Non-menopausal Women with Emphasis on Education

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**Citation** H. Karimi, R. Namazi Yousefi, M. Zanganeh Gheshlaghi, E. Bana, F. Moslemnezhad, Comparison of Quality of Life, Meaning of Life, Body Image and Mental Health in Two Groups of Postmenopausal and Non-menopausal Women with Emphasis on Education. *Eurasian J. Sci. Technol.*, 2022, 2(1), 76- 96.

<https://doi.org/10.22034/EJST.2022.1.7>

**Article info:**

**Received:** 05 April 2021

**Accepted:** 25 June 2021

**Available Online:** 25 June 2021

**ID:** JSTR-2106-1049

**Checked for Plagiarism:** Yes

**Checked Language:** Yes

**Keywords:**

Menopause, Quality of Life, Meaning of Life, Body Image, Mental Health.

**ABSTRACT**

The aim of this study was to compare the quality of life, meaning of life, body image and mental health in two groups of postmenopausal and non-menopausal women with emphasis on their education. In the present study, the statistical population included all postmenopausal and non-menopausal women. The statistical sample included 50 people, of whom 25 were postmenopausal and 25 were non-menopausal, who were selected through women's gatherings from among women who wanted to participate in the study. The General Health Questionnaire (GHQ-28), the Women's Quality of Life Questionnaire, the 12-item Stieger and fraser meaning of life questionnaire, the Physical Self-Description Questionnaire, and demographic characteristics were used. Data were analyzed using independent t-test and two-factor analysis of variance. There was a significant difference between quality of life in postmenopausal and non-postmenopausal women with a diploma level, which means that the quality of life in non-postmenopausal women with a diploma was better than the quality of life in postmenopausal women with the same level of education. But the quality of life in women was not different from the level of primary and university education in these two groups (postmenopausal and non-menopausal women), so the higher the level of education of women, the better their quality of life.

**Introduction**

**M**enopause is a global phenomenon for women. It is a biological process, known as the fall of estradiol and progesterone and the increase of follicle-stimulating hormone, as

well as a stage of life with a changed role, including the end of fertility potential and the abandonment of children. Although menopause is considered a natural stage in a woman's life, a significant number of women experience a variety of problems before and after. Menopause is a physiological event similar to

menarche (first menstruation) that occurs in menopause. It usually occurs in women over the age of 50 and is associated with symptoms of low estrogen levels. Menopause can affect women's quality of life and even endanger their health. Menopause is an important stage in life and a part of old age that can be inspiring and beneficial if viewed with a positive outlook.

However, menopause is a phenomenon that no one is willing to discuss and even in the face of it, it becomes frustrating and negative. Traits such as youth, beauty, and attractiveness are valued by women in society, and postmenopausal women are misrepresented, irrational, nervous, violent, and lacking in sexual power, and because they receive less attention, they gradually become forgotten. Menopause is the end of the reproductive period; when this time comes, postmenopausal women experience some degree of shock, disbelief, and sadness. This period is accompanied by physical symptoms such as hot flashes, night sweats, genitourinary symptoms and psychological symptoms such as irritability, mood disorders, anxiety, stress, low self-esteem, emotional instability, memory loss that can affect the physical, mental and sexual health of postmenopausal women and affect work, social activities, leisure, sleep, mood, concentration, communication with others, enjoyment of life and quality of life [1-5].

Having meaning and meaning in life or in other words, meaning in life is one of the concerns of human beings today that not only affects his personal life but also plays an important role in his relations with other human fields.

Finding a way to achieve such a goal is one of the most important human issues that requires more and more effort to achieve it. Quality of life is a broad concept that has different meanings for different individuals and groups. It is considered as a viability of an area, some as public welfare, social welfare, happiness, satisfaction, well-being, having a purposeful (meaningful) life, fulfilment of needs or objective factors such as income and health status. Quality of life is a multifaceted concept, but at the same time it can be defined and

measured with an interdisciplinary approach. Studies show that the quality of life has been approached from different perspectives.

Quality of life is a relative thing for which there is no absolute, comprehensive and universal criterion. It is a concept that is strongly influenced by time and place and the factors affecting it change depending on the time, place, geography and cultural conditions. The components of quality of life are defined on the basis of individual and national values, and there is no doubt that the objective facts and conditions of society and the material condition of one's life also play a decisive role in it. But on the other hand, it should be noted that man is a creature who lives based on his mental image of reality, not reality itself, and his behavior is a mental perception and perception of reality that does not necessarily correspond to reality, can be changed [6-9].

Quality of life as defined by the World Health Organization (WHO) is the perception of individuals about the state of life in the field of culture and value system in which they live, which is related to their goals, expectations and criteria [10-12].

It is pervasive, affecting physical health, personal development, psychological states, level of independence, social relationships, and relationships, and is based on individual perceptions [13-15].

Acceptance and promotion of mental health is based on the prevention and treatment of emotional stress. Therefore, when the level of mental health decreases, performance in other areas of quality of life is jeopardized. It threatens your body and promotes a sense of social separation in them. So far, no comprehensive theory has been able to adequately and properly explain the cause of menopause. On the other hand, whether menopause is a beneficial evolutionary trait or simply a side effect of aging is disputed by scientists.

In this study, we have dealt with the effects of menopause on quality of life, meaning of life, body image and also mental health in women, which can be a transient period in life and has

little effect on the variables under study. In fact, each person in social beliefs, cultural structure, social and family acquires the meaning of their life and the quality of life of each person does not depend on different transient periods. Furthermore, the role of women's education should not be overlooked and the effect of education on the dependent variables of this study should be observed [16-18].

### *Significance of the Study*

Regarding the necessity of the importance of the present research, it can be said that the Iranian society is a society in transition. Transition from traditional to modern and from undeveloped to developed. Obviously, this situation confronts the Iranian society with a variety of changes and transformations in various fields. One of these developments is the increasing effective presence of women in the economic, social, political and cultural spheres. Today, the need for women to participate in the process of growth and development has been felt more than ever. Improving living standards in today's society is linked to increasing women's participation in economic and political life along with equal opportunities in education, social services, legal rights and property, while women as one of the most important pillars of the family have a fundamental role to play.

It is continuity and since the family is the smallest social institution, it is a healthy society that has healthy families and this will not be achieved unless the structure of the family and the basic needs of its members are important to women, most of which are to be given more attention. It may not be an exaggeration to say that women today are present in society alongside men and carry many responsibilities and duties, and this distinguishes her from the women of traditional societies. The needs, desires and concerns and in general the living standards of women in today's society are different from the situation of women in traditional society and the multiplicity of duties and roles that require this distinction. In this regard, it can be said that menopause is an important turning point for women, which

includes the end of menstruation and pregnancy.

Although menopause is a biological process and a universal event for women, it is not defined and experienced in the same way for everyone, and the mental state, emotional, cultural and social health of the individual is involved in this experience. Menopause crisis affects mental, physical, emotional, social functioning and family relationships due to its symptoms and set of complications [16-18]. A field study in Iranian society has examined the relationship between all four variables of quality of life, meaning of life, body image, and mental health in both menopausal and non-menopausal groups. On the other hand, all these variables cover the lives of postmenopausal and non-menopausal women, and the onset of menopause is associated with changes in these areas. Many studies have examined the significant effects of living alone or with hope on mental health, emotional well-being, cognitive abilities, and positive emotions. For example, previous research has shown that hope and, consequently, meaningful living are strongly associated with problem-solving ability [19], mental health [20] and improvement in depressive symptoms. Snyder and Feldman (2005) in a study that examined the mediation of hope between meaning in life and anxiety and depression concluded that hope can act as a mediating variable. However, they believe that these findings should be tested in other studies with different subjects and with other tools. It is also important to note that Snyder and Feldman (2005) examine the negative consequences of meaningful life and hope and leave the impact of these indicators on positive aspects of life such as feeling happy and life satisfaction to future research [21-23].

In quality-of-life studies, what is important is the extent to which basic human needs and priorities are met. Today, there is a very important development in the supervision of health care services, and that is the increase in the importance of the views of Essen patients.

The multidimensionality of quality of life in terms of being an individual encompasses different dimensions of health and psychological and social well-being of

individuals and is influenced by personal experiences and perceptions of life that change over time. Although the objective aspect is important in describing the level of health, it is the expectations and mental perceptions of the individual that reflect the quality of real life expressed by him. Some experts describe the

quality of life in relation to the level of happiness and satisfaction with life and the individual feeling of living better, and some have considered it in terms of functional dimensions and control of diseases and its symptoms [20].

**Table 1** Previous studies conducted

Quality of life is defined as a specific factor or behavior of a person in response to specific areas of life that determine various aspects of life satisfaction and dissatisfaction.	Evans (1989)
Quality of life is defined as the attitude to the physical, psychological and social aspects of health as separate dimensions that are influenced by the expectations, beliefs, experiences and perceptions of the individual.	Testa and Simmonson (1996)
The Quality of Life Group, which forms the World Health Organization, defines quality of life as the individual's desired ideas, goals, criteria and priorities.	Joseph <i>et al</i> (1996)
Quality of life is a combination of physical, mental and social well-being perceived by an individual or a group of people, such as happiness, satisfaction with expectations, health and economic status.	Rakhshandehrava (2002)
Quality of life is defined by the level of well-being of individuals and groups under general social and economic conditions (Rezvani <i>et al.</i> , 2009).	Mouler (1983)
The term quality of life in general refers to the environmental conditions in which people live, such as pollution and the quality of housing, as well as some of the traits and characteristics of the people themselves, such as health and access to it and education.	Peyson (1995)
Defines quality of life as the extent to which human needs are met in relation to the perceptions of individuals and groups of mental well-being.	Costanza <i>et al</i> (2007)
Defines quality of life as the well-being or non-well-being of people and their living environment	Dass (2008)
Quality of life is a personal interpretation of each person's life situation in the context of culture and value system in which she lives (Javaheri <i>et al.</i> , 2010)	(WHO)
Quality of life is a multidimensional structure and includes material, emotional, psychological, social, and behavioral domains.	Jens (2004)
Quality of life is a term that refers to the overall quality of life of individuals and not just some areas of life, and if the quality of life is divided into different components, its components must represent a general structure called quality of life.	Hagerty <i>et al</i> (2001)

Khaledian (2001) performed descriptive-analytical studies with the aim of determining and comparing the quality of life according to different stages of menopause and its relationship with some demographic and medical factors in women living in Tehran, on 210 women aged 40-60 years. The results showed that there is a relationship between quality of life and different stages of menopause. Thus, the highest quality of life belonged to pre-menopausal women and the lowest quality of life belonged to women around menopause and postmenopausal

women with a duration of more than five years ( $p < 0.0001$ ).

This relationship was affected by the severity of menopausal symptoms, marital status and age of research units and did not show a significant relationship with other factors including menopause duration, occupation, education, economic status, menarche age and number of children with family. Thus, the samples of the experimental and control groups in this study were matched in terms of age and menopausal stages [24-26].

Oberg and Thornstam (1999) in a study of body image in men and women of different ages, showed that with age women get a more positive body image. Body image is more important in women than men in all age groups and does not diminish with age. Despite previous research, women's body image satisfaction increases with age.

### *Research Method*

The research in this study is a descriptive causal-comparative description. In descriptive research, what is or is the current state of phenomena is examined and its purpose is to determine the nature of the prevailing conditions, activities and attitudes.

### *Sampling*

The statistical population of the present study consisted of all postmenopausal and non-menopausal women. A sample of 50 people was selected from this population, of which 25 were postmenopausal women and 25 were non-menopausal women. The age range of the study participants was 20 to 82 years with a mean of 51.28 and a standard deviation of 24.12.

The participants were selected from women's gatherings in different environments such as parks, training classes, etc. Descriptive and inferential statistical methods were used to analyze the research data. Descriptive statistics methods such as mean and standard deviation, etc. were used and in inferential level, two-factor ANOVA test was used.

### *Quality of life questionnaire for women*

This questionnaire includes 26 questions about the signs and symptoms of menopause in 4 areas of vasomotor (vascular nervous system) (3 questions), psychosocial (7 questions), physical (16 questions) and sexual (3 questions) and is based on the Likert scale. (1 point for minimum intensity and 3 points for maximum intensity). The total score is calculated according to each question [27-29].

On the other hand, those who have not had these symptoms at all during the past month

get a score of zero. A higher score in each area indicates a worse quality of life and a lower score indicates a better quality of life. The reliability of this questionnaire in Iranian society has been reported between 0.83 to 0.87. In the present study, the Cronbach's alpha coefficient was 0.97.

### *Meaning of Life Questionnaire*

The Life Meaning Scale is a 10-item tool used by Stieger and Fraser (2006). Subjects answer each item of this questionnaire on this 7-point Likert scale (from 1 for completely incorrect to 7 for completely correct). It seems necessary to mention that in question 9, the scoring is reversed. Finally, the sum of the scores obtained from answering these questions is an indicator of the meaning of life. The developers of the scale have reported its reliability and validity as favorable. Krumbach and Maholik (1964) state that this questionnaire is based on Frankel's view on the meaning of life and the search for the meaning of life. Krumbach and Maholik (1964) and Krumbach (1968) considered it valid considering that the mentioned questionnaire is able to distinguish two groups of non-sick patients. They reported a high coefficient ( $r=0.83$ ) with a significance level of  $p < 0.01$ .

In Iran, a study was conducted by Ghobari, Lavasani and Rahimi to evaluate its validity and reported Cronbach's alpha coefficient of 0.92. Also, in Iran, Chari, Khajeh Venouri (2009) have standardized it on students and in order to evaluate the reliability of the scale Cronbach's alpha has been used that the alpha value for this scale has been 0.88.

In the present study, the validity of the questionnaire was determined by alpha method. Cronbach was calculated. The obtained coefficient was 0.80. Physical self-description questionnaire the body self-description questionnaire was developed by Marsh (1996) to measure body self-concept, which measures body self-concept by 9 specific subscales and 2 general subscales [28-30].

The short and new form of this questionnaire consists of 47 items and has good reliability and good reproducibility. Physical self-description



includes 9 specific factors for physical self-concept, including activity, appearance, body fat, fitness, endurance, flexibility, health, exercise and strength, and two general subscales including general body self-concept and self-description of self-esteem including physical ability. Physicality is self-respect and the concepts of physical fitness are known. Each subscale consists of 6 or 8 phrases and each phrase is presented in such a way that the subject answers on a 6-point scale right to wrong [31].

Therefore, the minimum score is 47 and the maximum is 282. Marsh (1996) evaluated the validity and reliability of the physical self-descriptive questionnaire with two samples of 315 and 395 Australian high school students and observed that this test has the necessary validity to identify self-concept factors and with Cronbach's alpha method, the reliability is 0.80. In Iran, this questionnaire was evaluated by Bahram and Shafizadeh (2004) with a sample of 351 high school students. The reliability of the questionnaire was calculated 0.78 through the retest method and in this study the Cronbach's alpha coefficient was 0.92. The reliability of Cronbach's alpha method was equal to 0.88 [32].

Also, the reliability range of each of its subscales was between 0.50 and 0.88. In this questionnaire, attributes are expressed in each question, and the numbers 1 to 6 are used to answer them, each of which indicates the degree of agreement with each option. However, due to the negative number of questions, in order to analyze the data, a number of questions have been scored in reverse. After inverting the score of these questions, the body of self-description score is obtained from the total score of 47 questions.

### General Health Questionnaire

**Table 2** Statistics related to the age of respondents by menopausal status

Deviation from the standard	Average age	The oldest age	The youngest age	Number of replies	Menopausal status
5/52	38/96	57	20	25	Old People
6/68	52/11	82	44	45	Young People

The Mental Health Questionnaire is a 28-item questionnaire that uses adjectives that take the numbers 1 to 4 to answer these questions. Each of these scores indicates the degree of agreement with each option. To get a mental health score, we get the sum of the scores for these 28 questions, which will eventually be a number from 28 to 112 for each person. If the score is close to 28, it is a sign of ill health and if this score is close to 112, it is a sign of health.

The upper limit of the score is related to those whose health has not been threatened according to any of the criteria in the questionnaire during the month before the research, and vice versa, the lower limit of the questionnaire is related to people who meet all the criteria in the questionnaire the threat is located [33].

The reliability of the 28-item general health questionnaire has been confirmed in different cultures. For example, Shimji, Mino, and Tishuda (2000) reported this on Cronbach's alpha coefficient of 0.90 by performing this questionnaire on Japanese employees. Hooman (1997) in the standardization of 28-item general health questionnaire in Iran, reported the internal consistency of this questionnaire using Cronbach's alpha coefficient for subscales, respectively 0.85, 0.87, 0.79 and 0.91 and for the total scale, which indicates general health, is estimated to be 0.85. In the present study, the Cronbach's alpha coefficient was 0.92.

### Demographic Analysis of the Data

In order to become more familiar with the population of the study population in this section, some of the individual characteristics that have been collected by the first part of the questionnaire are presented and described using tables and graphs.

The average age of postmenopausal respondents is 57.20 years and the standard deviation is 7.782. Given that the age of 49 to 69 is old age, most menopausal respondents are

old age. Also, the minimum age among this group of respondents is 44 years and the maximum age is 82 years.

**Table 3** Table of frequency of age groups

Frequency	frequency	Age of respondents
14/0	25	Less than 35
22/9	41	35<Age<45
25/2	63	45<Age<55
19/0	34	55<Age<65
7/8	14	More than 65
98/9	177	Total
1/1	2	No answer
100/0	50	Total

Out of 50 respondents, 52.5% of postmenopausal women and 47.5% of non-menopausal women make up the sample.

Therefore, the number of postmenopausal women in this study is slightly higher than non-menopausal women.

**Table 4** Frequency table of demographic characteristics of the sample group

Valid percentage	Frequency	Abundance	Property
			Menopausal condition
47/5	47/5	25	Old People
52/5	52/5	25	Menopause
			Employment status
17/3	17/3	31	Employed in the public sector
6/7	6/7	12	Employed in the non-governmental sector
74/3	74/3	133	housewife
1/7	1/7	3	Retired
			Level of Education
40/9	40/2	72	Elementary
32/4	31/8	57	Cycle - Diploma
26/7	26/3	47	University
	1/7	3	unanswered

40.2% of the respondents have primary education, 31.8% have cycles and diplomas and 26.3% have university education. Unfortunately, 1.7% of the respondents did not answer the question, so it is better to use the valid percentage column to express the percentage of tables [34].

The average age of menopause among postmenopausal respondents is 48.14 years and the standard deviation is 4.16. Also, the minimum the age of menopause among respondents is 34 years and a maximum of 57 years. This means that no person has menopause before the age of 34 and after the age of 57.

In order to obtain better results in this case, we divide the menopausal age of the respondents into different categories and then obtain the frequency of each category of menopausal age. As shown in Table 5, 19

(20.2%) of the respondents had menopause under the age of 45, 58 (61.7%) between the ages of 45 and 50, and 16 (17%) between 50 to 55 years old and only 1 person (1.1%) over menopause over 55 years old [35].

**Table 5** Menopause age statistics among postmenopausal respondents

Deviation from the standard	Average age	The oldest age	The youngest age	Number of replies
4/16	48/14	57	34	25

In order to obtain better results in this case, we divide the menopausal age of the respondents into different categories and then obtain the frequency of each category of menopausal age. As shown in Table 5, 19

(20.2%) of the respondents had menopause under the age of 45, 58 (61.7%) between the ages of 45 and 50, and 16 (17%) between 50 to 55 years old and only 1 person (1.1%) over menopause over 55 years old [35].

**Table 6** Table of frequency of menopausal age groups

The cumulative percentage	Frequency	Abundance	
20/2	20/2	19	Less than 45 years
81/9	61/7	58	45 to 50 years
98/9	17/0	16	50 to 55 years
100/0	1/1	1	Over 55 years
	100/0	25	Total

### *Inferential Statistics Two-factor Analysis of Variance Test*

Hypothesis 1: There is a difference between women's quality of life according to menopause and education. The table below shows the results of the Leven test to measure the equality of variances of quality-of-life score scores between different groups in terms of menopause and education.

In this table, since the significance level of F statistic is less than 0.05, so it should be said that the variance of error between the two groups is not equal and there is a difference between them. Although homogeneity is one of the prerequisites for two-way analysis of variance and that this homogeneity is due to the selection of a suitable questionnaire to measure the quality of life between the two groups, according to the request of guides, analysis of variance this hypothesis was examined [36].

**Table 7** Results of two-factor analysis of variance for equalization of error variances

Amara Leon	Amara Leon	Amara Leon	Amara Leon
0/000	155	5	5/81

As we see:

- Among non-menopausal women, the average quality of life score of women with primary education is 19.40, women with cycle and diploma education are 5.24 and women

with university education is 12.81, which shows a significant difference between the values of these means.

- Among postmenopausal women, the average quality of life score of women with



primary education is 21.53, women with cycle and diploma education is 22.91 and women with university education is 13.00 which

shows the large difference between the means of the first and second groups with the third group.

**Table 8** Descriptive statistics for each of the variables

Number of respondents	Quality of life during menopause *			Education Average	Menopausal status
	The standard deviation	Average			
10	15.25	19.40		Primary	Young People
29	8.97	5.24		Cycle-diploma	
32	18/75	12/81		University	
71	15/68	10/65		Total	Old People
58	19/10	21.53		Primary	
22	23/48	22.91		Cycle-diploma	
10	13/39	13.00		University	Total
90	19/75	20.92		Total	
68	18/57	21.22		Primary	
51	18/84	12.86		Cycle-diploma	Total
42	17/47	12.86		University	
161	18/73	16.39		Total	

The results of the following table show the significance or non-significance of the whole model as well as the separate effect of each independent variable on the dependent variable.

In the interpretation of the following table, it can be stated that: The separate effect of menopause ( $F = 8.23$ ;  $Sig = 0.053$ ) on women's quality of life score was not significant. That is, statistically, the mean score of quality of life is not the same for postmenopausal and non-menopausal women. Regarding the effect of variable education on quality of life, based on

the amount of F test ( $F = 1/80$ ;  $Sig = 0/169$ ), we see no difference in quality-of-life score between women with different levels of education.

The interaction between menopausal status and education and the simultaneous effect of these two independent variables on the dependent variable of quality of life is not statistically significant ( $F = 02/02$ ;  $Sig = 0.052$ ). In other words, the average quality of life score of postmenopausal and non-menopausal women is the same at all three levels of primary, secondary and university education.

**Table 9** Table of effect tests between subjects (model test)

Significance level	Statistics F	Average squares	degrees of freedom	Total squares of	Variable sources
0/053	23/8	1216/67	1	1216/67	Menopausal condition
0/169	1.80	572.61	2	1145.216	Level of Education
0/052	3.02	961.89	2	1923.18	Menopause * Education
		318/84	155	42520/84	error

The level of significance of women with cycle and diploma education is less than 0.05. In

other words, the difference between the quality of life in graduate postmenopausal women and

non-graduate postmenopausal women is significant and there is a difference between them.

Considering that the difference in quality of life between postmenopausal and non-postmenopausal women has been negative and equal to 17.67, the quality of life of non-postmenopausal women has been much higher than postmenopausal women. This is also clear from the chart below.

**Two-factor analysis of variance test Hypothesis 2:** There is a difference between the meaning of women's lives according to menopause and education. The two basic presuppositions of the two-factor analysis of variance test are the normality of the data and the homogeneity of variance between the

variables. In this research, first the normality of the data is checked and if the data is not normal, the Perth data is deleted and the normality test is applied on it again to prove the desired default. Using the Kolmogorov-Smirnov test, the normality of the data is first checked. The results of this test are shown in Table 10 below.

The significance level of Kolmogorov-Smirnov test was less than 0.05 and therefore it shows that the residues have a normal distribution.

In this table, since the significance level of F statistic is more than 0.05, so it should be said that the error variance of the two groups is equal to each other and no difference is observed between them.

**Table 10** Results of Kolmogorov-Smirnov test

Significance level	Degrees of freedom	Kolmogorov-Smirnov statistics
0/000	174	0.135

**Table 11** Results of Kolmogorov-Smirnov test

Significance level	Degrees of freedom	Kolmogorov-Smirnov statistics
0/074	119	0/078

**Table 12** Results of two-factor analysis of variance test for equality of error variances

Significance level	Second degree of freedom	The first degree of freedom	Amara Leon
0/17	113	5	1/56

**Table 13** Descriptive statistics for each of the variables

Statistics F	Quality of life during menopause *			Menopausal status
	Average squares	degrees of freedom	Total squares of	
5	4/08	54/20	Primary	Young People
22	5/47	57/32	Cycle-diploma	
30	3/99	57/93	University	
57	4/66	57/37	Total	Old People
37	4/86	56/57	Primary	
18	5/10	57/17	Cycle-diploma	
7	5/77	58/00	University	
62	4/97	56/90	Total	
42	4/80	56/29	Primary	
40	5/24	57/25	Cycle-diploma	Total
37	4/29	57/95	University	
119	4/81	57/13	Total	

The table below shows descriptive statistics for each of the factor combinations in the model. Based on the results of the same table, The results of the following table show the significance or non-significance of the whole model as well as the separate effect of each

we can visually compare the difference in the mean score of the meaning of life between respondents with different levels of education. independent variable on the dependent variable.

**Table 14** Table of effects tests between subjects (model test)

Significance level	Statistics F	Average squares	degrees of freedom	Total squares of	Variable sources
0/51	0/44	10/33	1	10/33	Menopausal condition
0/23	1/48	34/72	2	69/45	Level of Education
0/65	0/44	10/30	2	20/61	Menopause * Education error
		23/50	113	2655/02	
a. R Squared = .119 (Adjusted R Squared = .091)					

As it is known, the level of significance of women of all levels of education is more than 0.05. In other words, the difference between the meaning of life in postmenopausal women and

non-menopausal women at all levels of education is not significant and there is no difference between them.

**Table 15** Table of differences between the means in the Bonferroni test

Significance level	Standard deviation error	Mean difference (I-J)	(J) Menopausal status	(I) Menopausal status	Level of education
0/196	2/17	25-2/	Menopausal women	Non-menopausal women	Primary
0/872	1/70	0/28	Menopausal women	Non-menopausal women	Cycle-diploma
0/751	1/96	0/63	Menopausal women	Non-menopausal women	University

**Hypothesis 3:** There is a difference between women's body image according to menopause and education. Using the Kolmogorov-Smirnov test, the normality of the data is first checked. The results of this test are shown in Table 16

below. Since in this test, the hypothesis of normality of the data is in the null hypothesis, considering the significance level, the null hypothesis will not be rejected. In other words, the data has a normal distribution.

**Table 16** Results of Kolmogorov-Smirnov test

Significance level	Degrees of freedom	Kolmogorov-Smirnov statistics
0/200	174	0/043

In this table, since the significance level of F statistic is more than 0.05, so it should be said that the error variance of the two groups is

equal to each other and no difference is observed between them. The results of two-

factor analysis of variance can be established and can be trusted.

**Table 17** Results of two-factor analysis of variance test for equality of error variances

Significance level	Second degree of freedom	The first degree of freedom	Amara Leon
0/09	165	5	1/25

**Table 18** Table of descriptive statistics for each of the variables

Number of respondents	Menopause body image *			Menopausal status
	The standard deviation	Average	Education Average	
11	23/47	158/64	Primary	Non-menopausal women
33	52/53	147/52	Cycle-diploma	
37	48/73	191/49	University	
81	48/56	125/41	Total	
57	36/37	158/42	Primary	Menopausal women
23	48/28	165/04	Cycle-diploma	
10	40/45	209/50	University	
90	42/70	165/79	Total	
68	34/47	158/46	Primary	Total
56	51/59	178/29	Cycle-diploma	
47	47/26	195/32	University	
171	46/49	175/08	Total	

- Among non-menopausal women, the average body image score of women with primary education is 158.64, women with cycle and diploma education are 187.52 and women with university education is 191.49
- Among postmenopausal women, the average body image score of women with primary education is 158.42, women with cycle and diploma education are 165.04 and women with university education are 209.50
- In general, the average score of body image of women with primary education is 158.46, women with cycle and diploma education are 178.29 and women with university education is 195.32.

**Table 19** Effects tests between subjects (model test)

Significance level	Statistics F	Average squares	degrees of freedom	Total squares of	Variable sources
0/849	0/04	70/62	1	70/62	Menopausal condition
0/001	7/75	14925/46	2	29988/91	Level of Education
0/114	2/20	4256/74	2	2513/48	*Menopausal women Level of Education
		1935/91	165	312525/38	Error
a. R Squared = .131 (Adjusted R Squared = .104)					

The results of the table show that in terms of priority, women with primary education level have the lowest average score of body image (158.46) and women with university education have the highest average score of body image (195.32). On the other hand, it can be seen from Table 20 below based on the two variables of

body image and education, women in this study can be divided into two homogeneous groups. So elementary class women are different from cycle and university women in terms of body image score and cycle and university women are not statistically significantly different from each other in terms of body image score.

**Table 20** Formation of homogeneous groups in terms of body image and education

subset	Number	Level of education
2	1	
	158/46	68 Primary
178/29		56 Cycle-diploma
195/32		47 University
0/105	1/00	The significance level

Tukey test

In addition to the difference observed only between the different levels of education in the table above, the difference between the mean non-menopausal and menopausal body image by each category of education is shown. As it is known, the level of significance of women of all levels of education is more than 0.05. In other words, the difference between body image in

postmenopausal women and non-menopausal women at all levels of education is not significant and there is no difference between them.

The significance level of Kolmogorov-Smirnov test was more than 0.05; therefore, it shows that the residues have a normal distribution.

**Table 21** Differences between the means in the Bonferroni test

Significance level	Standard deviation error	Mean difference (I-J)	(J) Menopausal status	(I) Menopausal status	Level of education
0/925	11/44	0/22	Menopausal women	Non-menopausal women	Primary
0/110	13/81	22/47	Menopausal women	Non-menopausal women	Cycle-diploma
0/290	16/82	-18/01	Menopausal women	Non-menopausal women	University

**Table 22** Results of Kolmogorov-Smirnov test

Significance level	Degrees of freedom	Kolmogorov-Smirnov statistics
0/000	172	0/107

**Table 23** Results of Kolmogorov-Smirnov test

Significance level	Degrees of freedom	Kolmogorov-Smirnov statistics
0/052	127	0/083

Since the level of significance of F statistic is more than 0.05 (0.626), it should be said that

the error variance of the two groups is equal to each other and no difference is observed



between them. The variances are established and the results of the two-factor analysis of variance test can be trusted.

**Table 24** Results of two-factor analysis of variance test for equality of error variances

Significance level	Second degree of freedom	The first degree of freedom	Amara Leon
0/626	118	5	0/698

**Table 25** Descriptive statistics for each of the variables

Menopausal mental health *				
Number of respondents	The standard deviation	Average	Education Average	Menopausal status
5	10/80	90/80	Primary	Non-menopausal women
25	9/26	95/04	Cycle-diploma	
30	7/13	25/73	University	
60	8/31	25/53	Total	Menopausal women
40	8/55	88/32	Primary	
16	8/82	89/31	Cycle-diploma	
8	7/52	96/25	University	
64	8/76	89/56	Total	
45	8/72	88/60	Primary	Total
41	9/41	92/80	Cycle-diploma	
38	7/14	95/05	University	
124	8/87	91/97	Total	

**Table 26** Descriptive statistics for each of the variables

Menopausal mental health *				
Number of respondents	The standard deviation	Average	Education Average	Menopausal status
5	10/80	90/80	Primary	Non-menopausal women
25	9/25	95/04	Cycle-diploma	
30	7/13	25/73	University	
60	8/31	25/53	Total	Menopausal women
40	8/54	88/32	Primary	
16	8/82	89/31	Cycle-diploma	
8	7/51	96/25	University	
64	8/75	89/56	Total	
45	8/71	88/60	Primary	Total
41	9/41	92/80	Cycle-diploma	
38	7/13	95/05	University	
124	8/86	91/97	Total	

As you see:

- Among non-menopausal women, the average mental health score of women with primary education is 90.80, women with cycle and diploma education are 95.04 and women with university education is 25.73, which shows a kind of no difference between the means.
- In postmenopausal women, the average mental health score of women with primary education is 88.32, women with cycle and diploma education are 89.31 and women with university education is 96.25, in which case there is no significant difference between the means.
- In general, the average mental health score of women with primary education is 88.60, women with cycle and diploma education

are 92.80 and women with university education is 95.05. In the interpretation of the following table, it can be stated that the separate effect of menopause ( $F = 1/29$ ;  $Sig = 0/258$ ) on women's mental health score was not significant. That is, statistically, the mean score of mental health is not the same between postmenopausal and non-menopausal women and is the same.

Regarding the effect of education variable on mental health, based on the value of F test ( $F = 68.2$ ;  $Sig = 0.073$ ), we see no difference in

education is 95.05. mental health scores between women with different levels of education. The interaction between menopausal status and education and the simultaneous effect of these two independent variables on the dependent variable of mental health is not statistically significant ( $F = 1.42$ ;  $Sig = 0.247$ ). In other words, the mean score of the meaning of life of postmenopausal and non-menopausal women in all three levels of primary, secondary and university education is the same and equal.

**Table 27** Effects tests between subjects (model test)

Significance level	Statistics F	Average squares	degrees of freedom	Total squares of	Variable sources
0/258	1/29	92/01	1	92/01	Menopausal condition
0/073	2/68	191/10	2	382/20	Level of Education
0/247	1/42	100/88	2	201/77	*Menopausal women Education
		71/28	118	8411/34	Error

a. R Squared = .131 (Adjusted R Squared = .025)

As it is known, the level of significance of women of all levels of education is more than 0.05. In other words, the difference between mental health in postmenopausal women and

non-menopausal women at all levels of education is not significant and there is no difference between them.

**Table 28** Differences between the means in the Bonferroni test

Significance level	Standard deviation error	Mean difference (I-J)	(J) Menopausal status	(I) Menopausal status	Level of education
0/555	4/17	2/48	Menopausal women	Non-menopausal women	Primary
0/056	2/91	5/73	Menopausal women	Non-menopausal women	Cycle-diploma
0/600	2/87	-1/52	Menopausal women	Non-menopausal women	University

*Discussion*

**Hypothesis 1:** There is a difference between women's quality of life according to menopause and education. As can be seen, among non-postmenopausal women, the average quality of

life score of women with primary education is 19.40 and the average quality of life score of postmenopausal women with primary education is 21.53, which indicates that postmenopausal and non-postmenopausal women with low quality of primary education

They have a hard feeling of life in the two groups of women and there is no difference between them in terms of menopause.

Also, among non-menopausal women, the average quality of life score of women with university education is 12.81 and the average quality of life score of postmenopausal women with university education is 13.00, which shows that postmenopausal and non-menopausal women have a high quality of life with university education.

It is less in the two groups of women and there is no difference between them in terms of menopause. Among non-menopausal women, the average quality of life score of women with diploma education is 5.24 and the average quality of life score of postmenopausal women with diploma education is 22.91, which shows that non-menopausal and postmenopausal women are different in terms of quality of life and non-menopausal women.

Menopause with higher education has a higher quality of life, which means more difficulty in living in the menopause group. Therefore, it can be concluded that the higher the level of literacy of women, the better the quality of life and the less difficult it feels to live. On the effect of menopause on health-related quality of life Rachel Hess et al (2011) found that women who underwent hysterectomy before menopause had a lower quality of life before surgery or after surgery, which can affect their quality-of-life decisions.

Giannoli *et al.* (2012) focused on 1,140 middle-aged Greek women and found no effect of menopause on their quality of life. This suggests that health development strategies in encouraging regular physical activity in postmenopausal women can improve menopausal symptoms. The results of a study by Chen et al. (2008) showed that menopause is associated with negative effects on the quality of life of Chinese women. Williams et al. (2009) found that the demographic characteristics of postmenopausal women, as well as the menopausal symptoms experienced by them, affect the quality of life during menopause. In the study of Fallahzadeh et al. (2008) in Yazd, there was a significant relationship between quality of life and employment status. The quality of life of working women was reported to be better than working women. In the research of Forough Jafari *et al.* (2009), on the

university education is 12.81 and the average quality of life score of postmenopausal women with university education is 13.00, which shows that postmenopausal and non-menopausal

quality of life and menopause, worked with 349 postmenopausal women (55-45 years old) with at least a diploma. Women who, despite the various postmenopausal changes, had a sense of worth and purpose appropriate to the situation, had a higher quality.

Khaledian (2001) found that the majority of women had a good quality of life in four areas: vasomotor, mental, physical, and sexual. Research shows that educated, employed and women with income have a higher quality of life during menopause (Bloomel et al., 2000). Findings of this study showed that the majority (56%) of people who had a good quality of life, had less education than a diploma and the majority (51.6%) of people with poor quality were illiterate. Khaledian (2001) also found that 35.7% of people were illiterate and all levels of education were in good condition in terms of quality of life. In this study, no significant relationship was observed between quality of life and education.

In a study by Williams et al. (2009) conducted on American women, 57% of women had a college education and quality of life was significantly associated with education. Another study in Taiwan found that education was related to quality of life. In another study, it was found that women with higher education had a better quality of life, and the results of these studies are consistent with our findings. Higher educated women have more access to information resources and are more aware, resulting in fewer symptoms and a better quality of life.

**Hypothesis 2:** There is a difference between the meaning of women's lives according to menopause and education. As can be seen, according to the mean score of the meaning of life of postmenopausal and non-menopausal women and also considering that the separate effect of menopausal status variable ( $F = 0.44$ ;  $Sig = 0.51$ ) on the meaning of life score of women is not significant. So, statistically, the

mean score of the meaning of life is not the same between postmenopausal and non-menopausal women.

Regarding the effect of the variable of education on the meaning of life, based on the test value ( $F = 1.48$ ;  $Sig = 0.23$ ), we also see no difference in the meaning of life score between women with different levels of education. The interaction between menopause and education and the simultaneous effect of these two independent variables on the dependent variable of meaning of life is not statistically significant. In other words, the mean score of life meaning of postmenopausal and non-menopausal women in all three levels of primary, secondary and university education is the same and equal. It shows that there is no difference in the meaning of life between postmenopausal and non-menopausal women according to education level. The value and meaning of life depend on the ultimate goal and end that one imagines for oneself in life, and individuals achieve the ultimate goal and end of their life through social beliefs and the socio-cultural structure of the family. On the other hand, having meaning and direction in life will cause mental health and spiritual health of people and people who have spiritual health will manage different periods of life (such as menopause) more easily.

**Hypothesis 3:** There is a difference between women's body image according to menopause and education. The separate effect of menopausal variable ( $F = 0.04$ ;  $Sig = 0.899$ ) on women's body image score was not significant. That is, statistically, the mean body image score did not differ between menopausal and non-menopausal women and was the same. Regarding the effect of education variables on body image, based on the value of F test ( $F = 75.7$ ;  $Sig = 0.001$ ), we see a significant difference in body image score between women with different levels of education. That is, women with different levels of education have different body image scores. The results show that in terms of priority, women with primary education level have the lowest average score of body image (158.46) and women with university education have the highest average score of body image (195.32). This means that

the higher the level of education of women, the more positive self-image they have.

In other words, the higher the level of education of the respondents, the higher the positive image of their body among the respondents. According to Woodrow (2006), women with better body image show higher self-efficacy in professional decision making. Premenopausal women (who were probably younger) showed a more positive rate of physical and fitness assessments than postmenopausal women who were probably older.

**Hypothesis 4:** There is a difference between women's mental health according to menopause and education. The results show that the distinct effect of menopausal variables ( $F = 29.1$ ;  $Sig = 0.258$ ) on women's mental health score is not significant. That is, statistically, the mean score of mental health between postmenopausal and non-menopausal women is not different and is the same. Regarding the effect of education variable on mental health, based on the value of F test ( $F = 68.2$ ;  $Sig = 0.073$ ), there is no evidence there is a difference in mental health scores between women with different levels of education.

This means that menopause has no effect on women's mental health. The higher the level of education of women, the better their mental health. The lower the level of education of postmenopausal women, the risk of psychiatric disorders increases; as a result, their mental health decreases. In a study on the relationship between menopause and mental health-related quality of life in middle-aged Chinese women, Ko-Lee et al. (2013) found that Chinese women with lower post-menopausal education had reduced mobility, pain, and problems with normal activities. This study is not consistent with the results of this study. The difference between women's mental health in this study and other studies can be due to cultural, social and especially religious differences in different societies that can overshadow the health of individuals.

Education, sports activities and economic status are factors related to the quality of life of women during menopause. Therefore,

according to the results of this study, providing education about menopause and its associated changes and menopausal complications and using pharmacological and non-pharmacological methods to prevent quality of life is believed by many thinkers to include a person's attitude toward himself, including the mental image of the body and the perception of one's belief in one's body reducing body satisfaction can be in line with reducing the quality of life. According to the results obtained from statistical comparison and level of significance, there is a significant difference between quality of life, physical image and mental health with different levels of education. This means that a high quality of life score means feeling difficult during menopause with increasing education level.

### Conclusion

In this study, out of 50 subjects, 0.52% were menopausal and 47.5% were non-menopausal. The lowest among postmenopausal respondents was 34 years old and the highest was 57 years old. Education status of 40.2% of respondents with primary education was 31.8%. Percentage of cycle and diploma and 26.3% had university education. The employment status of the studied women was as follows: 17.3% of the respondents in the public sector, 6.7% of the respondents working in the non-governmental and free sectors, 74.3% of the respondents were housewives and 1.7 percent of respondents were former employees and then retired.

Men and women experience different periods of life during their life on this planet. Infancy, childhood, adolescence, puberty, youth, middle age, old age are different periods that each cause the development of the soul and body of men and women. Menopause is a physiological phenomenon and one of the most important stages of life and resembles a menarche (the first menstruation of girls) increases with the research and contemplation in these periods' day by day to the complexity of this only thinking creature on earth.

The difference is that in menarche, a person moves towards maturity, youth, vitality and

menopausal symptoms and complications such as exercise, lifestyle changes and their role in improvement is essential. The quality of life during menopause is emphasized. Since the

hope whereas in menopause, the person feels closer to the end of life. It is the beginning of life, and it is the beginning of maturity and the application of past experiences, and it can be called the period of self-actualization. This may be what makes menopause more important than puberty. In this study, women with higher levels of education had a better quality of life.

Quality of life is a more comprehensive concept than physical health, people's perception of life status in the field of culture and value system, personality development, psychological states, level of independence, social relations and relationships with prominent social institutions all affect quality of life. In other words, increasing the level of education of individuals can affect these components and make them more desirable. The fact is that with the development of human societies, human understanding and insight into physiological phenomena increased and men and women less. They experience life crisis due to different periods of life.

Advances in medical knowledge have reduced or even eliminated most of the physical symptoms of menopause, such as hot flashes, vaginal dryness, etc. On the other hand, the development of spirituality in most societies, which is now one of the WHO strategies for development of human beings have been introduced to make women less challenged since menopause.

The present study was conducted on women in Tehran's District 5, all of whom were Muslims. This means that spiritual growth, in other words, meaning, dominates their lives. Spirituality affects a person's life and relationships with others, and even quality of life, mental health, and body image can be affected by human meaning-seeking. The results of the study also confirm this important point that menopause has no effect on the meaning of life in both educated and illiterate and low-literate women. Body image, which is



often a degree of satisfaction with physical appearance (Size, shape, general appearance) is defined as made up of conscious and unconscious thoughts and feelings. Many of the issues that were considered trivial and slender body, nose in the form of Anglo-Saxons, avoiding eating Pepsi Cola, etc. are signs of distinct human beings. The medicalization of society, the profiteering of large corporations, and commercial media advertising are changing social structures day by day.

Therefore, the scope of body image and the concern about it has expanded to the point that many people are preoccupied with their daily mental activities and spend a lot of money on thinking and changes in appearance in the body, and the effect of menopause on body image has diminished. The result of our research indicates the fact that the issue of menopause has not had much effect on the body image of women, and on the other hand, postmenopausal and non-menopausal women with a high level of education have a better image of their body and their body as it is desirable. Rather than menopause causing psychological changes, the resulting feeling of aging affects mental health, which in turn exacerbates disorders such as anxiety and depression.

In this study, regardless of education level, menopause has a negative effect on mental health, but if this variable is measured along with education level, women with higher education level have more mental health. In this study, women increase their education level. They have better mental health, have a more positive image of their body, have a better quality of life, and the more aware women are, the more access to information resources and the less symptoms they experience, the more they pay attention to their body. And this increases the understanding and insight into physiological phenomena and more access to health services and more use of medical advice.

This research has been done at the level of women in District 5 of Tehran, so its generalization to the whole society should be done with caution. One of the major limitations of age dispersion is the sample under study.

insignificant in the past few decades have become one of the major concerns in today's society. In the past few decades, eagle nose, eating Pepsi Cola, etc. were signs of a prominent personality, but now having a Another point is that the average age of menopausal and non-menopausal groups is very close. Due to the large number of questions in the questionnaire, it caused boredom among the respondents. Many women respondents did not cooperate in filling out the questionnaire, either avoiding filling it out or leaving the answers to the questions half-done.

This study should be performed on postmenopausal and non-menopausal women in large cities in order to provide solutions to reduce the negative psychological consequences of menopause. Comparison of quality of life between postmenopausal women and men of similar age, comparison of quality of life and other components of research between postmenopausal and non-menopausal women can be addressed by future research. Psychological factors other than research variables that can determine the quality explain life in postmenopausal women is one of the suggestions in line with this research. Through research that can increase the quality of life or empowerment of women, especially research planning to increase the level of awareness of women with low education, the quality of life of these people can be increased.

## References

- [1] G. Apolon, P. Mosconi, *Nephrol Dial Transplant.*, **1998**, *13*, 65-69. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [2] Y.W. Chiu, R.W. Moore, C.E. Hsu, C.T. Huang, H.W. Liu, Dr H.Y. Chuang, *Climacteric*, **2008**, *11*, 201-211. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [3] H. Fallahzadeh, *Quality of Life Research*, **2010**, *19*, 813-819. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [4] P. Giannouli, I. Zervas, E. Armeni, K. Koundi, A. Spyropoulou, A. Alexandrou, A. Kazania, A. Areti, M. Creatsa, I. Lambrinouadaki, **2012**, *71*, 154-161. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

- [5] G.T. Reker, *Personality and Individual Differences*, **2005**, *38*, 71-85. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [6] Mishra GD brown WJ, Dobson AJ. *Qual Life Res.*, **2003**, *12*, 405-412. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [7] J.A. Simon, K.Z. Reape, *Menopause*, **2009**, *16*, 73-76. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [8] T. Satoh, K. Ohashi, *Climacteric*, **2005**, *8*, 146-153. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [9] S. Bal, G. Crombez, V.P. Oost, I. Debourdeaudhuij, *Child Abuse & Neglect*, **2003**, *27*, 1377-1395. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [10] A.J. Christensen, E.G. Benotsch, J.S. Wiebe, W.J. Lawton, *Journal of Consulting and Clinical Psychology*, **1995**, *63*, 454-459. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [11] L.N. Dyrbye, M.R. Thomas, T.D. Shanafelt, *Mayo Clin. Proc.*, **2005**, *80*, 1613-1622. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [12] N.S. Endler, K.M. Coracea, L.J. Summerfeldt, J.M. Johnsona, P. Rothbart, Coping with chronic pain. *Personality and individual differences*, **2003**, *34*, 323-346. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [13] F. Zare Kazemabadi, A. Heydarinasab, A. Akbarzadeh, M. Ardjmand, *Artificial cells, nanomedicine, and biotechnology*, **2019**, *47*, 3222-3230. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [14] F. Miryousefiata, S Sangy, *Journal of Medicinal and Chemical Sciences*, **2021**, *4*, 60-74. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [15] K.M.G. Schreurs, D.I.D. de Ridder, *Clinical Psychology Review*, **1997**, *17*, 89-112. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [16] P. Callaghan, *Journal of advanced nursing*, **2000**, *31*, 1518-1527. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [17] M.P. McCabe. *Journal of psychosomatic Research*, **2005**, *59*, 161-166. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [18] A.D. Sadovnick, R.A. Remick, J. Allen, E. Swartz, I.M.L. Yee, K. Eisen, R. Farquhar, S.A. Hashimoto, J. Hooge, L.F. Kastrukoff, W. Morrison, J. Nelson, J. Oger, D.W. Paty *Neurol*, **1996**, *46*, 628-632. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [19] A. Solari, D. Radice, *Neurological Science*, **2001**, *22*, 307-315. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [20] F.E. Sadr, Z. Abadi, N.E. Sadr, M.M. Fard, *Annals of the Romanian Society for Cell Biology*, **2021**, *25*, 6839-6852. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [21] K. Ghajarzadeh, M.M. Fard, H. Alizadeh Otaghvar, S.H.R. Faiz, A. Dabbagh, M. Mohseni, S.S. Kashani, A.M.M. Fard, M.R. Alebouyeh, *Annals of the Romanian Society for Cell Biology*, **2021** *25*, 2449-2456. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [22] K. Ghajarzadeh, M.M. Fard, H. Alizadeh Otaghvar, S.H.R. Faiz, A. Dabbagh, M. Mohseni, S.S. Kashani, A.M.M. Fard, M.R. Alebouyeh, *Annals of the Romanian Society for Cell Biology*, **2021**, *25*, 2457-2465. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [23] K. Ghajarzadeh, M.M. Fard, M.R. Alebouyeh, H. Alizadeh Otaghvar, A. Dabbagh, M. Mohseni, S.S. Kashani, A.M.M. Fard, S.H.R. Faiz, *Annals of the Romanian Society for Cell Biology*, **2021**, *25*, 2466-2484. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [24] A. Susanabadi, S. Etemadi, M.S. Sadri, B. Mahmoodiyeh, H. Taleby, M.M. Fard, *Annals of the Romanian Society for Cell Biology*, **2021**, *25*, 2875-2887. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [25] H.A. Danesh, *Focus on Medical Sciences Journal*, **2018**, *4* (2), 9-13. [[Crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [26] S.M. Hashemi, M.Sadeghi, A. Vahedi Tabas, S. Bouya, H.A. Danesh, A. Khazaei, A. Allahyari, *International Journal of Cancer Management*, **2017**, *10* (12) e11463. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [27] A. Sargazi, P. Kumar Nadakkavukaran Jim, H.A. Danesh, F. Sargolzaee Aval, Z. Kiani, A.H. Lashkarinia, Z. Sepehri, *Bulletin of Emergency & Trauma*, **2016**, *4* (1), 43-47. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [28] S.M. Hashemi, M. Sadeghi, A.V. Tabas, S. Bouya, H.A. Danesh, HA Khazaei, A. Allahyari, *Health Sciences*, **2016**, *5* (9S), 662-666, [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]

- [29] H.A. Danesh, M. Saboury, A. Sabzi, M. Saboury, M. Jafary, S. Saboury, *Medical Journal of The Islamic Republic of Iran (MJIRI)*, **2015**, *29 (1)*, 105-109, [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [30] H.A. Danesh, M. Saboury, A. Sabzi, M. Saboury, M. Jafary, S. Saboury, *Medical journal of the Islamic Republic of Iran*, **2015**, *29*, 172- 176. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [31] T.A. Izadi, A. Borjali, A. Delavar, H. Eskandari, *Danesh-e-Entezami*, 2009, *11 (344)*, 182-207. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [32] A. Bozorgian, S. Zarinabadi, A. Samimi, *Journal of Chemical Reviews*, **2020**, *2*, 122-129. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [33] N. Kayedi, A. Samimi, M. Asgari Bajgirani, A. Bozorgian, *South African Journal of Chemical Engineering*, **2021**, *35*, 153-158. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [34] S.M.S. Mirnezami, F. Zare Kazemabadi, A. Heydarinasab, *Progress in Chemical and Biochemical Research*, **2021**, *4*, 191-206. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [35] F. Zare Kazemabadi, A. Heydarinasab, A. Akbarzadehkhayavi, M. Ardjmand, *Chemical Methodologies*, **2021**, *5*, 135-152. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]
- [36] S. Sangy, F. Miryousefiata, A. Bahaoddini, H. Dimiati, *Budapest International Research in Exact Sciences (BirEx) Journal*, **2020**, *2(4)*, 458-466. [[crossref](#)], [[Google Scholar](#)], [[Publisher](#)]