Archives of Hygiene Sciences
Qom University of Medical Sciences

https://jhygiene.muq.ac.ir/
10.34172/AHS.12.2.1.417
Vol. 12, No. 2, 2023, 62-69

Original Article

Comparing the Effectiveness of Mindfulness Training with Schema Therapy on Cognitive fusion and Job Burnout in Female Nurses

Mehrnoush Safaeian[1], Alireza Kakavand[2*], Maryam Bahrami Hidaji[1], Fatemeh Mohammadi Shirmahaleh[3], Tahereh Ranjbaripour[1]

[1]Department of Psychology, Karaj Branch, Islamic Azad University, Karaj, Iran
[2]Department of Psychology, Faculty of Social Science, Imam Khomeini International University, Qazvin, Iran
[3]Clinical Cares and Health Promotion Research Center, Karaj Branch, Islamic Azad University, Karaj, Iran

Abstract

Background & Aims: Nurses as the powerful force of the healthcare system, play a significant role in the development and progress of care, improvement, and promotion of health. Therefore, it is very important to check their mental and occupational health status. Therefore, this research was conducted to compare the effectiveness of mindfulness programs with schema therapy on cognitive fusion and job burnout in female nurses.

Materials and Methods: The research was semi-experimental with a pre-test-post-test design and follow-up with a control group. The statistical population included all female nurses working in Imam Khomeini hospital (RA) in Tehran in 2021, which was 60 available, taking into account the entry criteria and research tools including the cognitive fusion questionnaire and questionnaire Job burnout were selected and replaced in three groups of 20 people. The intervention program was implemented for each of the experimental groups during 8 weekly sessions (1 hour). But the control group did not receive these programs. Hypotheses were analyzed with repeated measures analysis of variance.

Results: The findings showed that the groups had no significant difference in terms of education, shift and work experience, and type of employment ($P<0.05$). Also, both mindfulness and schema therapy have significantly improved cognitive fusion and job burnout compared to the control group. The comparison of intervention programs shows the different effects of these programs on cognitive fusion and job burnout.

Conclusion: Based on the results, therapists and health professionals can use two methods of mindfulness and schema therapy to improve the occupational and psychological condition of personnel.

Keywords: Mindfulness, Schema therapy, Burnout, Professional nursing, Cognitive fusion

Received: September 27, 2022, **Accepted**: November 5, 2022, **ePublished**: May 31, 2023

1. Introduction

Nurses are the most crucial part of the healthcare workforce, who perform a high volume of procedures related to patients [1]. Burnout is one of the fundamental problems in the nursing profession, which occurs because of exposure to long-term stressful work and can lead to frequent absenteeism, low quality of services, and psychological injuries [2,3]. There are many underlying causes. Among them is the need for extensive documentation, resulting in reduced patient contact time and pressure to reduce healthcare costs and hospital stays. Healthcare professionals must contend with high rates of staff turnover, heavy workloads, understaffing, shift work, and night work that contribute to higher stress levels [2]. Higher stress potential in hospital personnel may result from intense moral and emotional activities and a high level of responsibility [4]. The increased awareness of the patient and the high number of multi-morbid patients also contribute to the experience of increased workload by health care professionals, who have to deal with "the most distressing emotional situations such as illness, death, suffering in any form [4,5].

Lim et al [4] showed that burnout decreased the quality of care provided to nurses. Besides this, the high number of corona patients and the fatigue caused by work shifts have imposed an additional psychological burden on nurses [5]; Zhang and colleagues findings [6] also show that cognitive fusion plays a mediating role in job burnout and insomnia difficulties in nurses. Empirical evidence shows that cognitive fusion with interference in time management skills and responsibility hurts the quality of service delivery in nursing personnel [6,7], and with the increase of individual incompatibility [8], the experience of negative emotions [9] and ineffective coping skills are associated [10]. Nevertheless, the improvement of job structures for nurses has been neglected [11,12]. In recent years, the mindfulness program has gained scientific support in improving mental and occupational performance [13,14]. Mindfulness means conscious and non-judgmental attention to the phenomena of

*Corresponding Author: Alireza Kakavand, Email: ar.kakavand@soc.ikiu.ac.ir

life [13]. In this intervention method, people learn to be more aware of their attitudes, conditions, and lives through practical training about stress factors, the effect of thoughts and emotions on stress, practicing formal meditation, and performing daily activities [15].

On the other hand, in the last two decades, the effectiveness of schema therapy in alleviating numerous psychological and behavioral symptoms in different occupational populations has been experimentally confirmed [16], but the feasibility and application of this treatment approach in improving the symptoms of employees of nursing have recently attracted the attention of researchers [17]. Schema therapy is an integrated therapy that provides a regular program to evaluate and adjust initial maladaptive schemas to increase the feeling of worth and causes more accurate cognitive processing and more efficient social interaction [18]. Inefficiency in the job field is the reproduction of incompatible behavior that originates from the underlying cognitive schema in the job context, and any type of job inefficiency can be considered consistent with these schemas [18]. A study by Ghodratifar and Niknam [16] showed that the three schemas of disconnection and rejection, impaired autonomy and performance, and hypervigilance, are effective on job burnout both directly and through the mediation of emotional intelligence. In a systematic review and meta-analysis, Pilkington et al [19] showed the positive effect of this approach on the behavioral and psychological experiences of hospital employees.

Even though the effectiveness of the two approaches of mindfulness and schema therapy has been confirmed in various behavioral indicators [12,15,19], considering the newness of their use in the situation, investigating the effectiveness of these two interventions in the psycho-social and occupational aspects of nurses are at the beginning of their journey and there is a need to conduct more studies to achieve more reliable results. In addition, so far, few studies have evaluated the psychological third-wave approaches to the occupational status of nurses. Therefore, this research was conducted to compare the effectiveness of mindfulness programs with schema therapy on cognitive fusion and job burnout in female nurses.

2. Methods

This semi-experimental study was conducted with a pre-test-post-test design and with a control group with a 2-month follow-up phase. The statistical population of the research included all the female nurses of Imam Khomeini hospital in Tehran in 2021. The authors calculated the sample size based on the study of Javidnasab et al [20] according to G*Power software ($P = 1.7$, $\beta = 0.05$, and $\alpha = 0.05$, it estimated the sample size for each group to be 15 people with the convenience sampling method, but to avoid the loss of external validity and the possibility of dropout in the sample, it considered 20 people in each group.

Sampling was done in such a way that the researcher was present at Imam Khomeini hospital in Tehran, where she was also one employee of this hospital. Then, research tools (job burnout questionnaire, cognitive fusion) were distributed among the volunteer nurses applying for participation in the research, and according to the gained scores in the research tools, 60 nurses were selected and randomly divided into three equal groups of 20 people. The randomization of people was based on odd (experimental groups) and even (control group) numbers. After obtaining ethical consent, the first experimental group underwent mindfulness training for 8 sessions of 60 minutes according to the Kabat-Zinn protocol [21] and the second experimental group underwent schema therapy for 8 sessions of 60 minutes according to They were subjected to the protocol of Young et al [22]. During this period, the control group did not receive any training on mindfulness and schema therapy and remained on the waiting list (in such a way that after the post-test sessions, the people of the control group also underwent schema and mindfulness therapy to comply with ethical considerations). After the completion of the intervention sessions of all three groups, a post-test and a follow-up period were conducted 2 months later. The content of the intervention sessions is presented in Tables 1 and 2.

The criteria for including the research were: female gender, informed consent to participate in the research, ability to participate in intervention sessions, the age range of 25 to 35 years, having job burnout based on a burnout questionnaire, having at least one year of experience in the nursing staff (term of employment), having a bachelor's degree and above, official employment as a nursing staff (job status) and having a night shift in the work schedule. The criteria for excluding the research were lack of motivation to participate in the research, simultaneous participation in educational-therapeutic programs in the field of mental health, inability to participate in intervention sessions, absence of more than one session from participation in therapy sessions, suffering from each of the chronic diseases and the use of special medicines related to the disease and working in two jobs at the same time (education and nursing). In addition to the demographic information form, a cognitive fusion questionnaire and a job burnout questionnaire were used to collect data.

2.1. Cognitive fusion questionnaire

This questionnaire was developed in 2014 by Gillanders et al and has 12 questions with 2 factors of fusion (questions 3, 4, 5, 6, 7, 8, 10, 11, and 12) and fault (questions 1, 2 and 9) is scoring is done on a 7-point Likert scale in such a way that 7 points are assigned to always and 1 point to never. The range of scores on the questionnaire will be between 7

Table 1. Summary of the content of Kabat-Zinn mindfulness training sessions

Meetings	The content of the meetings
First	Introducing members, expressing goals and adjusting expectations, explanations about burnout, cognitive fusion, and referential thinking and their relationship, eating a few raisins mindfully and giving feedback, introducing the automatic guidance system, doing body scan meditation, and talking about the relationship with it, 3-minute breathing space exercises, providing home practice, distributing meditation CDs and pamphlets.
Second	Performing yoga stretching exercises, discussing the experience of home exercises and ways to remove obstacles, body scanning meditation and talking about the meditation experience, and distributing pamphlets.
Third	Doing stretching yoga, discussing the experience of home exercises and ways to remove obstacles, body scanning meditation, talking about the experience of meditation distributing pamphlets.
Fourth	Mindful yoga practice, mindful sitting with awareness of emotions and thoughts, discussion regarding mindful attitude, distribution of pamphlets.
Fifth	Performing body scan meditation, checking the awareness of unpleasant events and emotions, thoughts, and body sensations along with it, practicing 3-minute breathing space, and distributing pamphlets.
Sixth	Conducting a mindful sitting, checking the awareness of pleasant events and the accompanying emotions, thoughts, and bodily sensations, practicing the 3-minute breathing space, and distributing pamphlets.
Seventh	Practicing mindful yoga, doing mountain meditation, repeating exercises from previous sessions, distributing pamphlets
Eighth	Practicing body checks, reviewing the program, discussing the programs, and summarizing the entire program.

Table 2. Summary of the contents of Yang and colleagues' meetings

Meetings	The content of the meetings
First	Acquaintance and relationship building, expressing the importance and purpose of schema therapy and clients' problems as schema therapy.
Second	Examining the aim evidence confirming or rejecting the schemas based on current and past life evidence, discussing and discussing the aspect of the existing schema with a healthy schema.
Third	Teaching cognitive techniques such as schema validity test, a new definition of existing schema validating evidence, and evaluation of advantages and disadvantages of coping styles.
Fourth	Training to strengthen the concept of a healthy adult in the subject's mind, identify their unsatisfied needs, and provide solutions to release blocked emotions.
Fifth	Teaching healthy communication and imaginary conversation, teaching experimental techniques (mental imaging of problematic situations and facing the most problematic ones).
Sixth	Relationship therapy training, relationships with important people in life and role-playing, doing homework related to new behavioral patterns.
Seventh	Investigating the advantages and disadvantages of healthy and unhealthy behaviors and providing solutions to overcome obstacles to changing behavior.
Eighth	Reviewing the contents of the previous sessions and practicing the learning solutions.

and 49, and higher scores indicate more cognitive fusion. The validity of this questionnaire has been confirmed by its creators in research and clinical work. They also reported Cronbach's alpha coefficient of the questionnaire as 0.93 and the retest reliability coefficient as 0.80 after 4 weeks [23]. Also, in the study of Samadifard et al [24], Cronbach's alpha coefficient of the questionnaire was calculated as 0.80. In the present study, Cronbach's alpha coefficient of the whole instrument was 0.79.

2.2. Burnout questionnaire

This questionnaire was compiled in 1981 by Maslach et al and has 22 questions with 3 factors emotional exhaustion (questions 1, 2, 3, 8, 13, 14, 16 and 20); Depersonalization (questions 5, 10, 11, 15 and 22) and feeling of personal sufficiency (questions 4, 7, 9, 12, 17, 18, 19 and 21). It is graded on a 7-point Likert scale, with 6 points being assigned to very much, and 0 points are never given. The range of scores of this questionnaire is between 22 and 110. In this questionnaire, a score of 27 or higher indicates a high level of emotional exhaustion, a score of 13 or higher indicates a high level of depersonalization, and a score of 31 or lower indicates a low level of personal sufficiency. If the subject is at a high level in terms of emotional exhaustion or depersonalization and at a low level in terms of the feeling of personal sufficiency, it indicates job burnout. The validity of this questionnaire was calculated by its creators for three factors, respectively 0.90, 0.79, and 0.71 [25]. Also, in Kazemi and colleagues' study [26], Cronbach's alpha coefficient of the questionnaire was calculated as 0.83. In the present study, Cronbach's alpha coefficient of the whole instrument was 0.76. In addition to descriptive statistics, data analysis was performed with an analysis of variance with repeated measurements. Before the analysis, the assumptions of variance analysis were evaluated and confirmed. SPSS version 24 software was used for all tests at a significance level of 0.05.

3. Results

The results of the demographic findings of the research participants showed that the mean and standard deviation of age in the mindfulness, schema therapy,

and control groups were 28.95 ± 3.18), and 29.00 ± 3.12), and 29.75 ± 3.22, respectively. There was no meaningful difference between the research groups in terms of work shift, education, work experience, and job status ($P < 0.05$). The full results of the participants' demographic information can be seen in the demographic information table (Table 3).

In the following, the results of the descriptive statistics of the research variables show that the average cognitive fusion and burnout in the post-test and follow-up periods in the subjects of the experimental groups decreased (Table 4). Before performing the variance with repeated measurements, the Shapiro–Wilk test and the Levene test were performed, the results of which show the normality of the data distribution (cognitive fusion, $P < 0.575$ and job burnout, $P < 0.138$). And the variance of the errors was the same (cognitive fusion, $P < 0.326$, and job burnout, $P < 0.093$). To measure the assumption of homogeneity of the variance-covariance matrix Box's M test was used, and the results showed that this assumption was valid in the cognitive fusion variable (Box's M = 8.419, F = 1.259, and $P < 0.273$) and in the burnout variable. (Box's M = 7.322, F = 1.095, and $P < 0.362$) are established. Also, Mauchly's sphericity test showed that the significance level of each variable is equal to 0.001. Therefore, the assumption of sphericity is rejected. In this situation, the Greenhouse–Geisser test was used. Based on this and according to the aforementioned statistical assumptions, analysis of variance with repeated measurements was used.

Also, the results of the analysis of variance with repeated measures show that in the total score of job burnout, cognitive fusion, and each of the dimensions of the two dependent variables, all three effects between groups, within groups, and interaction between within and between groups are significant. The comparison of the averages shows that in the post-test and follow-up phases, the two intervention groups obtained better scores in the dependent variables. The effect size of cognitive fusion is equal to 77% and the effect size of job burnout is equal to 76% and the statistical power is 0.999. Also, the effect of interventional methods has continued in the follow-up phase. Therefore, the mentioned two intervention methods have had an effective role in cognitive fusion and job burnout of female nurses (Table 5).

the results of Bonferroni's post hoc test showed that the average difference between the two methods of mindfulness training and schema therapy is significant in the research variables compared to the control group. Also, the results of this table show that there is a significant difference between the two methods of intervention in terms of the impact on the dependent variables. That is, mindfulness training is more effective on job burnout than schema therapy, but the effect of schema therapy on cognitive fusion is greater than mindfulness training (Table 6).

Table 3. Demographic information

Variables		Control group	Schema therapy	Mindfulness training	Chi-square	*P*
		No. (%)	No. (%)	No. (%)		
Work shift	Fixed-part time	4 (20)	2 (10)	3 (15)	0.784	0.676
	Variable-night/day	18 (90)	16 (80)	17 (85)		
Education	Bachelor's degree	15 (75)	16 (80)	13 (65)	0.193	0.551
	Masters' degree and higher	5 (35)	4 (20)	7 (35)		
Work experience	1 to 2 years	9 (45)	8(40)	5 (25)	0.653	0.617
	2 to 5 years	2 (10)	3(15)	5 (25)		
	More than 5 years	9 (45)	9 (45)	10 (50)		
Job status	Official	10 (50)	9 (45)	12 (60)	0.784	0.623
	Contract	2 (10)	4(20)	4 (20)		
	Fixed-part time	8 (40)	7 (35)	4 (20)		

*Significant difference $P < 0.05$

Table 4. The mean and standard deviation of the research variables

Variables	Sources Change	Pre-test	Post-test	Follow-up
Cognitive fusion	Group	41.35 ± 0.988	32.25 ± 2.099	32.60 ± 1.759
	Mindfulness training	39.25 ± 2.074	31.25 ± 2.531	31.40 ± 2.458
	Schema therapy	40.05 ± 1.572	39.70 ± 1.689	39.90 ± 1.683
Job burnout	Control	84.25 ± 2.789	32.35 ± 1.531	32.45 ± 1.669
	Mindfulness training	83.05 ± 2.585	68.00 ± 4.768	68.45 ± 4.893
	Schema therapy	83.55 ± 1.877	73.45 ± 2.350	73.65 ± 2.477

Table 5. The results of the analysis of variance of the repeated measurement of research variables in three stages

Variables	Sources change	F	*P*	Effect size	Eta
Cognitive fusion	Time	428. 317	0.001*	0.883	0.999
	Group	70. 649	0.001*	0.713	0.999
	Time × group	98. 902	0.001*	0.776	0.999
Job burnout	Time	350. 830	0.001*	0.860	0.999
	Group	69. 927	0.001*	0.710	0.999
	Time × group	91. 928	0.001*	0.763	0.999

Table 6. The results of the post hoc test of the research variables in three stages

Variables	Stages	Adjusted mean	Mean difference	*P*
Cognitive fusion	Pre-test	40.22	5.817	0.001
	Post-test	34.40	5.583	0.001
	Follow-up	34.63	0.233	0.067
Job burnout	Pre-test	83.62	8.850	0.001
	Post-test	74.77	8.583	0.001
	Follow-up	75.03	0.267	0.065

$P<0.05$

4. Discussion

This research was conducted to compare the effectiveness of mindfulness programs with schema therapy on cognitive fusion and job burnout in female nurses. The first finding of the research showed that there is a difference between the average of cognitive fusion and its dimensions in different stages of assessment (post-test and follow-up) between subjects in the control and experimental groups, and the effect of schema therapy on cognitive fusion is greater than mindfulness training. This result can be consistent with the results of Song et al [27] and Farhadi et al [28]. Farhadi et al [28] in research based on the effectiveness of mindfulness therapy on executive functions and cognitive fusion in obsessive-compulsive patients concluded that mindfulness therapy can be an effective treatment for increasing executive functions and reducing cognitive fusion in adolescents with OCD. Song and colleagues' findings [27] also showed that the mindfulness approach was effective in improving the quality of sleep and reducing the cognitive distortion of students.

Botter et al [29] also showed that schema therapy has been beneficial in improving the cognitive functions of a group of elderly people. However, it is inconsistent with the findings of Kianpour et al [30] that there is no difference between the effectiveness of emotional schema and cognitive therapy based on mindfulness in reducing cognitive distortions in women with panic disorder. In the explanation of this disparity, it can be explained by the difference in the studied population in the way that in the study of Kianipour et al, a group of women with panic disorder were studied, but in the present study, female nurses were measured, and also more often the sessions (two sessions per week) and the duration of the sessions (90 minutes) were cited.

In explaining the effectiveness of mindfulness training in reducing cognitive fusion, it can be said that mindfulness training provides a set of resources (mindfulness and occupational compassion) for nurses and helps them with cognitive challenges and the main and significant socio-emotional aspects of their job, tolerate more effectively and get rid of these problems faster. Also, mindfulness training makes a person find this opportunity to be more receptive to others and accept others without prejudicial and negative judgments, and also encourages nurses to become kinder and more kind as Patients' needs are very sensitive. Increasing the capacity of people in self-awareness, empathic concerns, and emotional regulation of mindfulness provides steps to increase the cognitive capacity of nurses and causes their cognitive fusion to decrease. Therefore, it is reasonable to say that mindfulness training is effective in reducing cognitive fusion.

In reducing cognitive error, it can be said that the error is to prevent cognitive confusion, that is, to identify the person and his thoughts as the same. Cognitive fault means accepting the separation of thoughts from us and accepting them as temporary private events. The result of the study by Van Maarschalkerweerd et al [31] that schema therapy is more useful compared to short-term cognitive therapy in reducing cognitive fusion in borderline personality disorder patients was in line with the present study. This cognitive fault can be reduced with schema therapy. In this way schema therapy, apart from using cognitive and emotional techniques to treat and change the initial maladaptive schemas, tries correct and improves coping styles by using behavioral pattern-breaking techniques. Incompatible and ineffective coping responses arise from incompatible primary schemas. When these initial maladaptive schemas and maladaptive coping styles are improved in nurses, they will no longer see thoughts as thoughts, and understand feelings as feelings, preventing cognitive fusion in themselves. Therefore, it is reasonable to say that schema therapy is more effective than mindfulness training in reducing cognitive impairment.

Another finding of the research showed that there is a difference between the average job burnout and its dimensions in different measurement stages (post-test and follow-up) in the control and experimental subjects, and the effect of mindfulness training on job burnout is greater than that of schema therapy. This result can be consistent with the results of Bianchini and Copeland [32], Kriakous et al [33], Hilcove et al [34], and Suleiman-Martos et al [35]. Bianchini and Copeland's findings [32] showed that mindfulness intervention can positively change the way stress and job burnout are perceived. The

result of the systematic review study by Kriakous et al [33] also indicated the effectiveness of the mindfulness-based stress reduction program on the mental performance of healthcare professionals and increasing job performance.

The findings of Lowenstein et al [36] are also consistent with the results of the present study and showed that the quality of lifework and mental health improved in those suffering from viral diseases who took part in schema therapy sessions. In explaining the possible reasons for this finding, it can be said that initially incompatible schemas have the potential to be recreated in the work environment in such a way that people recreate negative beliefs and unpleasant feelings related to their schemas in the job. Nursing is a profession that has a stressful nature. When the stressful nature of the job works synergistically despite the initially incompatible schemas, inflexibility of thinking, and control in the work environment, excessive emphasis on rationality causes ignoring emotions and emotional information in oneself and others. Therefore, incompatible design can affect the regulation of one's emotions. Because incompatible schemas are repeated in the form of self-damaging emotional and cognitive patterns in the course of life, this prevents the occurrence of job stress, which completely requires cognitive and emotional flexibility. Job stress is more felt in jobs that deal with providing services to people, especially patients, and they have problems due to the lack of flexibility of thought and emotion in the job field.

Hilcove and colleagues' report [34] showed a reduction in stress and burnout in nurses after participating in mindfulness-based yoga sessions. In explaining the effectiveness of mindfulness training compared to schema therapy in reducing job burnout, it can be said that nurses are one of the job groups vulnerable to job burnout, especially during the outbreak of the coronavirus. Job burnout is a work-related syndrome characterized by emotional exhaustion, disconnection from oneself, and lack of personal fulfillment, and leads to negative consequences in the field of work and personally for the working person [3]. A look at the research background shows the effect of mindfulness training on nurses' burnout [35]. This process can manifest itself in the personality of the employees or it can show itself in the form of organizational productivity. But according to Bianchini and Copeland [32], especially this type of training can be more effective in reducing job burnout and improving job burnout compared to other treatments; This is clinically important. Job burnout is one of the common cognitive and emotional problems in nurses, and mindfulness exercises are more effective than other psychological treatments due to their effectiveness and attractiveness. Also, this treatment encourages nurses not to make negative judgments about feelings and false beliefs and to improve job burnout, which can be more effective than schema therapy, which only focuses on incompatible schemas, due to special exercises and a specific attitude framework. It focuses on primary and unhealthy coping styles. Therefore, it is reasonable to say that mindfulness training is more effective than schema therapy in reducing job burnout.

Regarding the limitations of the current research, we can mention the limitation in sampling, because this research only studied the nursing personnel of Tehran city and failure to control the level of previous knowledge and skills of people regarding educational matters. Also, only a questionnaire was used in this research. For this reason, bias may have been created in the obtained information. In addition, the non-random selection of subjects was another limitation of this research. Holding familiarization workshops with mindfulness exercises and identifying incompatible schemas and their activating factors can improve nurses' job performance.

5. Conclusion

The findings showed that the mean of Job burnout and cognitive fusion and its dimensions in different stages of assessment (post-test and follow-up) between subjects in the control and experimental groups. Moreover, schema therapy has a greater effect on cognitive fusion than mindfulness training. Based on the findings of the current research, it is recommended to use the mindfulness program as well as schema therapy as effective psychological methods to improve the mental and occupational performance of the staff working in the field of treatment, especially nursing personnel.

Acknowledgments

The present research is taken from the doctoral thesis of the first author. Hereby, the researcher would like to express his gratitude to the Imam Khomeini Hospital (RA) in Tehran, all the nurses participating in the research, and the ethics committee in the research.

Competing Interests

There is no conflict of interest.

Ethical Approval

This study has the code of ethics (IR.IAU.K.REC.1401.026) from the Islamic Azad University, Karaj branch.

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