



## The Measurement of Aflatoxin in Rice and its Microbial Count in Gilan Province

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### ABSTRACT

The rice which is under natural conditions is not considered as appropriate for the growth of *Aspergillus* and aflatoxin but when it is exposed to heavy rains or high humidity it can be at risk of aflatoxin contamination. Various assessments have been conducted in various parts of the world which indicate the presence of significant amounts of aflatoxin and ochratoxin in rice. Since rice is the main food of most people in the world, the presence of aflatoxin contamination can be a serious health risk. For the microbial evaluation and assessment of aflatoxin levels, the rice samples of different fields in west of Gilan were obtained by referring to the fields and factories. First, the colony cultivation and count were done. The size of toxins was determined by ELISA kit. Mean values obtained in Rasht, Khomam, Khoshkbijar and Tehran were respectively 5/5, 17/98, 16/8, and 23/11 pbb. The obtained values show that the Roudsar rice that even reached in the amount of 50 pbb in 1392 was higher than any other city in Gilan Province and also higher than the international standard and there should be further investigations to provide a method for reducing it. According to the results, the rice mechanized harvesting should be developed in northern Iran to separate the paddy from the stem and at the same time separate the paddy from the grain. Development of warehouses and silos for the storage of paddy and rice prepared in standard conditions is the next case in reducing the contamination with mycotoxins: Development of processing industry and processing of rice and its by-products. Standardization and regular annual monitoring program on the contents harvested from warehouses and silos and their valuation and standardization of values and practices.

**Key words:** aflatoxins, ELISA, microbial count, rice, Gilan



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## INTRODUCTION

The rice which is under natural conditions is not considered as appropriate for the growth of *Aspergillus* and aflatoxin but when it is exposed to heavy rains or high humidity it can be at risk of aflatoxin contamination. Large amounts of aflatoxin have been reported in the half cooked rice. Various assessments have been conducted in various parts of the world which indicate the presence of significant amounts of aflatoxin and ochratoxin in rice. Since rice is the main food of most people in the world, the presence of aflatoxin contamination can be a serious health risk.

Aflatoxins are toxins produced by some fungi that grow on animal feed and food products and can cause Aflatoxicosis disease in humans and livestock. Numerous studies have been done about these toxins and diseases around the world. There are several environmental factors on Aflatoxin production. Thus, the severity of contamination depends on geographic location, agricultural method, the sensitivity of agricultural products before the process of food and storage conditions.

Mycotoxin contamination in rice is less common than the other cereals. In any case, the contamination with luteoskyrin (Shibata and Kitagawa., 1956) in imported rice has been reported since the World War II. There is a report from Sujimoto et al. (1977) which addresses the details of local contaminated rice with OTA, citrinin and sterigmatocystin. Nurizuki and colleagues reported that commercial rice in Greece is contaminated with aflatoxin (Nourizuki et al., 1987). WiddenBuerner also reported omemycotoxins found in rice. Since food was limited after the World War II, rice was imported to Japan. Some rice was infected with fungi. The Japanese government stopped the distribution of the rice. Since then, the Japanese people were safe from the mycotoxins (Weidenboerner., 2000). SujitaKunishi et al (2006) reported the normal contamination of aflatoxins and ochratoxin (ochratoxin< OTA>) in rice retail in 2004 and 2005. Aflatoxins were not found in 53 samples. The quantitative range was 0/1 µg/kg. OTA was not found in 50 samples of rice retail. The range was 0/1 µg/kg. Ministry of Agriculture, Forestry and Fisheries reported the results of the analysis of mycotoxins contamination in several cereals n May 2006. In this report, no OTA was found in 90 samples of rice. Its quantitative range was 0/0003 mg/kg(Press release from MAFF in Japan., 2006). A large variety of micro-organisms or their toxins, with different mechanisms are involved in the development of food-borne diseases. Most diseases are caused by bacteria and viruses and parasites are followed in the next step. Some Food-borne contagious bacterial diseases are botulism, campylobacteriosis, E. coli infection, salmonellosis and shigellosis. The extent of the studies on fungal contamination in samples of rice, as mentioned in the previous paragraphs, shows the importance of this issue in this area. In this research an attempt has been made to measure the aflatoxin contamination of rice in the province of Gilan and estimate the colony counting on them and ensure the health of the rice. If the above cases were founded in rice samples its amount should be specified with standards. Otherwise, there should be a way to reduce it.

## MATERIALS AND METHODS

### Sampling

Rice sampling is taken from the early June to mid-September, and include the rice that collected from agricultural grounds of Khomam, Rasht, Khoshkbijar, Rudsar, Kapurchal, Langrood, Rudbar, Kelachay, and Rezvanshahr and were stock in rice mill factories to separate the rice from the shell. The samples of collected rice from these factories are belonged to the year 1392 and 1393 respectively (Per 10 tons 100 g).

Sixteen samples were coded for the rice of the year 1393 from which include: Khomam, Choukam village and Kochiacity of Rasht, Pir Bazar village and Pasyndan, Khoshkbijar town, Bassdin village and Kelachay, Meshkaposht and Aminabad, Roudsartown, Narsra village and Gyshajan. For the year 1392, 6 samples out



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of 14 coded samples were selected from Roudsar town and the villages of Naser Sara, Moradin and Aroos Mahaleh. After coding the samples, we weighted them with weight scales and separated 5 grams. Then the samples were milled and poured into 15 cc of falcon. After that, the solvent was added so that it covered the surface of the rice and per falcon was stylished for 15 minutes and was kept 2 days in the refrigerator in a comfort condition. When the materials were collected in the surface, the material was poured into the test tubes and was put in water bath at 100 ° C for 30 minutes. Then it was taken a vial of the surface of the material by a sampler and was stored and frozen in 1/5 cc micro tube. For providing the sample of POOL (total) of the year 1392 a sample was taken from 6 villages of Rudsar (from the surface of material in the last stage) and it was stored in 2cc micro tube by a sampler. For the year 1393, from 4 towns (Roudsar, Khoshkbijar, Khomam and Rasht) 4 total samples were separately stored in a micro tube from the village of each city.

**Preparation and extraction of the samples**

To start, the rice samples were stored inside the envelopes (to rice does not mold) and then the samples were encoded. After encoding, we weighted 20 g of each of the samples with METLER balance and then milled them. After that we separated 5 g of each sample again and thrown into the falcon 50. Then, the solvent was added, to the extent to which it covers the samples (the recipe of the solvent: a tablet PBS phosphate buffer solution mixed with 500 ml of distilled water after dissolving, 50 ml of ethanol and 50 ml methanol and 300 ml of acetone were mixed in a container. 350 ml of the volume of the solution was added to the first buffer and distilled water. The solution is ready). Then, we stylish each sample 2 rounds for 15 minutes and then we stored it in a comfort condition in the refrigerator for two days. In the next step, we poured the material collected on the surface into a test tube and put it at 100 ° C water bath for 30 minutes and then a vial of the surface material were stored in the 1.5 cc micro tube by the sampler 1000 and then were frozen.

**ELISA test**

The name of the used kit was ANTI RABIT IgG COATED MICRO well.

**ELISA test method**

From the total samples of the years 1392 and 1393, 58 samples were selected randomly. Then, 50 microliter from the samples was poured into the wells by the pipet (except for the well of standards). After that 50 microliter conjugate enzyme was added and 100 microliter the anti-aflatoxin antibody was added to the wells and was incubated for 20 minutes at room temperature. Then the liquid in the wells was poured into the sink. With the severe impact of high and low to the absorbent paper, we removed the remaining solution from the well and washed after 5 times buffering.

In the next step, we poured 200 microliter of chromogenic solutions to each well and incubated for 20 minutes at room temperature and then we added 50 microliter of the Stop solution. In this step the liquid in the kit becomes blue and yellow. After that absorbance measuring was done at 450 nm in 10 minutes.

**Counting colonies**

Typically the plates with 10 to 150 colonies are counted. If the dominant fungal flora is mold, the wells closer to the lower well are selected for counting. If the dominant fungal flora is yeast, the wells closer to the upper well are selected for counting.



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In annual harvest season of rice in 1393, while the samples collected from these centers of the rice crop samples of 1392 collected and sampled in sterile containers falcon 50 cc and transferring it in the microbiology laboratory refrigerators are done. 10 g of each sample was comminuted in a sterile container with 40 mL of sterile phosphate-buffered tampon by apearl and stylish. Then, the upper suspension separation precipitated and 2 ml was separated from the area of deposit and collected in sterile micro tubes. Using a sterile swab soaked in, the culture table was done in the well containing supported dextrose agar. Incubation was done at  $2 \pm 25$  and after counting on the 3th day, encoding wells was reviewed and grown colonies subculture of colonies in 1 ml micro tubes by phosphate-buffered were accomplished. At the end of the third day, all the isolates retaining encoded the culture was done in the plates containing potato dextrose agar. The wells containing grown colonies

**RESULTS**

The average of aflatoxin in rice samples from different towns of Gilan.

In three cities Khomam, Rasht and Khoshkbijar in 1392, the amount of aflatoxin was zero. This amount changed in 1393 into 2/2 ppm, 15 and 3/19 respectively. The reduction of the amount of aflatoxin in 1393 in the samples of rice of Roudsar than 1392 is remarkable.

**Mean values, minimum and maximum levels of aflatoxins in the samples of rice in 1393**

The mean value of Aflatoxin obtained from the samples of rice from Rasht, Khomam, Khoshkbijar and Roudsar were 5/56, 18, 17 and 23/11, respectively. Among them the aflatoxin levels observed in Roudsar was above all.

**Mean values, minimum and maximum levels of aflatoxin in samples of rice in 1392**

The mean value of aflatoxin for Roudsar was 40/113 ppm in 1392 and three other towns have no samples that year.

**DISCUSSION**

Studying statistical analysis of the levels of aflatoxin in the grain tank samples in 1393, we found no significant difference (paddy of Rasht 0/621, Khomam 2/022, Khoshkbijar 16/801, Roudsar 23/111). However, there can be seen a meaningless relationship between the paddy and bran. Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice (Roudsar 40/113) and grain tank (Roudsar 34/397) and the samples of rice (Roudsar 40/113) and bran tank (Roudsar 19/946) and the samples of paddy (Roudsar 34/397) and rice tank (Roudsar 51/785) and the samples of rice (Roudsar 51/785) and bran tank (Roudsar 19/946) separated of it in 1392 all of them aren't significant. Based on what was said earlier, because of lack of opportunity in the production of fungi colony and toxins in the production of the year 93 toxin it cannot be seen a significant difference in the toxin existed in the harvest and storage tank. In addition in 1392 because of the significant differences between the minimum times possible to produce toxin it cannot be seen a significant difference in the toxin existed in the harvest and storage tank. It indicates that within 4 weeks after conception is an important limit period in maintaining the product from preventing organic corruption, especially fungal decay and the production of fungal toxins.

Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice tank in 1393 (Rasht 15/059, Khomam 2/222, Khoshkbijar 3/179, Roudsar 3/924) and separated bran (Rasht 3/231, Khomam 0/074, Khoshkbijar 1/160, Roudsar 27/655) was not significant. Studying significant numerical difference between the amounts of aflatoxin in the sample of rice (the rice of Rasht 5/560, Khomam 17/982, Khoshkbijar 16/801, Roudsar 23/111) of 1393 with these separated bran (Rasht 11/123, Khomam 10/494, Khoshkbijar 0/909, Roudsar 32/081) was not



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significant. Studying significant numerical difference between the amounts of aflatoxin in the sample of product of the year 1392 (the bran of Rudsar 21/101) with the rice of 1393 (Rasht 5/560, Khomam 17/982, khoshkbijar 16/801, Rudsar 23/111) was significant with the amount of error 6%. It seems that the amount of bran poison of the product of the year 1392 is (Rudsar 21/101) and the amount of the rice poison of the product of the year 1393 is (Rasht 5/560, Khomam 17/982, Khoshkbijar 16/801, Rudsar 23/111). Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice of the product of 1392 (Rudsar 40/113) with the separated bran (Rudsar 21/101) is not significant. Examining the relationship between toxins found in the rice and the shell separated from which, that is the milled bran, shows that there is no significant relationship in the samples of 1393 and there is less toxin. While this feature is not significant in 1392 in bran and rice in spite of using more poison. In addition, there is a significant degree of numerical difference in the items taken from the year 1393. It can be concluded that the turmoil in the maintenance of bran after the separation of white rice bran, more valuable, overshadowed by the importance of maintaining rice and because the small amounts of bran used for direct human consumption, the public perception is that the health of its maintains is not considered the human consumer. While, the toxin found in bran, grain and chaff with obtained products entered directly into the human food chain of consumers through animals fed. By feeding consumption of these products more toxins being reached to the human beings in comparison with bran because of concentration of toxin in per unit weight of the animal products. Therefore, the problem is tenfold, and unfortunately these problems are hidden or neglected by the officials and experts.

Studying significant numerical difference between the amounts of aflatoxin in the sample container of rice of the year 1392 (Rudsar 51/785) and the rice tank of the year 1393 (Rasht 15/059, khomam 2/222, Khoshkbijar 3/179, Rudsar 3/924) has not been significant. It can be found that the low humidity of the white rice (Water activity) causes less vulnerability against mold growth and toxin production. Therefore, the condition of retention in less than 20% moisture and proper storage conditions, away from light and ventilation ability of the air increase rice durability and maintenance.

Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice in 1393 (Rasht 5/560, Khomam 17/982, Khoshkbijar 16/801, Rudsar 23/111) and rice tank of the year 1393 (Rasht 15/059, Khomam 2/222, Khoshkbijar 3/197, Rudsar 3/924) is not significant.

Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice in 1392 (Rudsar 40/113) and rice tank in 1393 (Rasht 15/059, Khomam 2/222, Khoshkbijar 3/179, Rudsar 3/924) has not been significant. Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice in 1393 (Rasht 5/560, Khomam 17/982, Khoshkbijar 16/801, Rudsar 23/111) and rice tank in 1392 (Rudsar 15/785) has not been significant. Studying the significant numerical difference between the amounts of aflatoxin in the sample rice (Rudsar 40/113) and rice tank in 1392 (Rudsar 15/785) has not been significant. Studying the significant numerical difference between the amounts of aflatoxin in the sample of rice in 1393 (Rasht 5/560, Khomam 17/982, Khoshkbijar 16/801, Rudsar 23/111) with rice in 1392 (Rudsar 40/113) has not been significant. This future in the white rice in 1393 and 1392 and comparison between the samples of 1392 and 1393 with each other prove that the condition of rice due to its nature and its valuable features and its small size than other rice products are optimized. At the end of this chapter we will consider the mean values of aflatoxin obtained from samples of rice in 4 towns of Gilan with the international standards (Europe, America and the Food and Agriculture Organization) that is between 10 – 20 ppb. The obtained mean values in Rasht, Khomam, Khoshkbijar and Rudsar are respectively 5/5, 17/98, 16/8, 23/11 ppb. According to the charts of the forth chapter, it is clear that the rice of Rudsar was more than other cities of Gilan. It was even 50 ppb in the year 1392. It is also higher than the international standard and further investigation and providing a way to reduce it, should be done in this area. Of course, we should mention that standard amount of for using total aflatoxin in the country is 30 ng/ g.





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### Colony counting

There was 1 colony in microbial counting for the rice of Khomamin 1393 in Kochia area. It created 1 colony in Pir Bazar of Rasht. In addition it created 1 colony in Pir Bazar of Rasht, Mobarak Abad village. It created 1 colony in Rudsar, the village Naser Sara. It created 1 colony in the rice of Rudsar, Moradin village and Meshki Aroos Mahale.

The bran was in this way for the rice of year 1393: Khomam, Choukam Bijarkol village 72 colonies, Khomam Choukam 34 colonies, Rasht Pir Bazar 1 colony, Pirbazar Rasht 4 colonies, Khoshkbijar Kelachy 11 colonies, Khoshkbijaramin Abad village 34 colonies, Rudsar Naser Sara 7 colonies, Rudsar Gishajan 4 colonies. The bran was in this way for the rice of year 1392: Rudsar Naser Sara 2 colonies, Rudsar Moradin 15 colonies, Rudsar Bazkoul 13 colonies, Rudsar Meshki Aroos Mahale 15 colonies. There is no standard evaluation method for dry materials and there is an estimated method for counting and it is not standard.

### DISCUSSION

Reddy et al (2009) reported that 67.8% of 1200 samples of rice from India were infected to AFB1 and the amount of the pollution had been between 0.1-308 g / kg.

The amount of AFB1 content in the milled rice is 0.5-3.5 g / kg. The maximum amount of AFB1 was founded only in 2% of the samples. Another study was done by Totija et al (2006). In this study 1511 samples of half-cooked rice were tested. The amount of AFB1 in 38.5% of samples was  $\geq 5$  g / kg, while the amount of AFB1 in 17% of samples was greater than 30 g / kg (India's legal limitation). The average of AFB1 in the provinces of Assam, Bihar and Tripura in India was 15 g / kg, while the average in the other provinces of India was  $< 5$  g / kg (Toteja, 2006).

However, several studies from other countries have reported detectable amounts of aflatoxin in rice as well. For example, all collected samples (n = 256) in the studies in Iran (2007-2008) were contaminated with AFB1. The amount of AFB1 and the total founded AF were respectively 0.0-5.8 g / kg and 0.1 - 6.3 g / kg. AFB1 contamination in 75.8% of cases was less than 2 g / kg. The amount of AFB1 in 21.5% of the cases was more than 2 g / kg, while the remaining 2.7% contain more than 4 g / kg of the total AF (Rahmani et al., 2011). In another study Feizy et al (2010) from Iran, used HPLC to analyze 261 samples of rice. They found that 68.9% of rice samples were infected at the rate of more than 0.2 g / kg to AFB1. Bansal et al (2011) reported the results of their study in Canada. Approximately, 200 samples were tested during the study of the different types of rice. The average concentration of AFB1, considering the positive index of 56% and 43% was respectively 0.19 and 0.17. Five samples of the most polluted samples per year, contained 1.44 - 7.14 g / kg of AFB1 (Year 1) and 1.45-3.48 g / kg of AFB1. Ferdland et al (2009) tested 99 samples of collected rice from the retail stores in Sweden. Most of the samples were in accordance to Law 401/2006 of Europe Commission. The bulk of Basmati rice (71%) and Jasmine rice samples (Jasmine- 20%) contained detectable amounts of AFB1 (slightly = 0.1 g / kg). The amount of Aflatoxin in 2 samples of Jasmine rice and 10 samples of Basmati rice was higher than the EU limit. The existence of *A. flavus* in 21% of the samples shows that mismanagement of rice during production and storage of the fungal growth lead to subsequent production of aflatoxin (Bansal., 2011).

Reddy et al, 2008, done a comprehensive study with regard to reducing pollution of the rice to mycotoxin in various ways that including herbal methods, microbiology and cooking. Considering the facts mentioned above, a comprehensive plan is needed for the delivery of healthy food and healthy eating, not only for rice, but also for all the food. On the other hand, a lot of works have to be done in practical ways for the detection and quantification of aflatoxin. However, to have a representative sample of the total samples under evaluation, sampling is prior and then monitoring the sample and finally analyzing are important. Mycotoxins can enter at any stage to the the food chain and infect food. If the weather conditions are favorable for growing fungal, achieving in this way will be difficult. Protective measures such as good agricultural practices should be used during the drying and storage of the



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products. Educational measures should be done to maintain and control aflatoxins. The government and industry must continue to work with farmers and producers and stakeholders to reduce as far as possible, the amount of aflatoxins in food and animal feed. For example, growers and processors must voluntarily continue "good manufacturing practices" involves monitoring the growth of the fungus and sample testing. Fungal species *Eurotium*, *Aspergillus*, *Penicillium* are prevalent in milled rice of Pakistan. It is known that the grains under transmission are infected with these fungi. Cereals that are transported via ship without air ducts (the boxes), have favorable conditions for the growth of xerophile like *A. restrictus* and *Eurotium*. An ecological succession occurs to infect with *Xerophil* fungi and then resistant fungi to drought (Xerotolerant) such as yeast, *A. candidus* and other genera of *Aspergillus*, *Penicillium*. Most of these fungi in grains during storage heating involved. It is known to carry grains by ship and stored big bags of maize in sub-Saharan of Africa are significantly contaminated with fungus such as: *Aspergillus. candidus*, *A. fumigatus*, *A. flavus*, *Thermoas. Cusaurantiacus* (Reddy et al., 2008).

*P. pinophilum* and *P. chrysogenum* are the most common of *Penicillium* that are reported in the food grain milled rice and soybeans, which are located under the transmission. *P. chrysogenum* also been reported in the atmosphere. *P. pinophilum* is known as an active factor in the degradation of biological and isolated from corn and peanuts (Wallace & Sinha., 1975, Milton & Pawsey 1988, Taligoola et al., 2010).

The amounts of AF, AFB1 and OTA in 100 samples of rice in Turkey are respectively, 65%, 35% and 38%, which was higher than the diagnostic range. The amount of AF and AFB1 in all cases was according to the Food Turkey (TFC) and the Commission Rules of Europe. Only in three cases, the amount of OTA, was higher than the limit range. Rice, wheat and corn, are important food in many countries around the world. They are considered as the main food in many countries. Rice provides 27% of energy and 20% of the daily protein around the world (FAO., 2005). A number of studies have been conducted on the presence of mycotoxins in the world.

Ghali et al in their previous study tested 16 samples and 12.5% of the samples were infected with AF, with the average value of 4.7 g / kg, respectively. Reddy et al found that the presence of AF in 3 of 48 samples of rice was more than the acceptable range. In this study most of AF's results was less than what Bandara et al and Ghali et al found. It is more than what Liu et al found. In another survey Tutija et al analyzed 1511 samples of half-baked rice in India that 38.5% of the samples were contaminated with AFB1. Cispidiz and Diaz reported that AFB1 was found in 36.3% of samples. AFB1 percent in this study matched the results. However, Osman et al found that 48.2% of rice samples are contaminated with AFB1. Salyz and Yushi Nishizawa indicated that AFB1 is detectable in 74 of 78 samples of rice (94.8%). 51% of 100 samples of rice in Vietnam and 67.8% of 1200 samples of rice in India were positive in terms of AFB1. The results showed that AFB1 approach in the rice of Turkey is relatively critical to human health. The results showed that the temperature and relative humidity of the Turkish government meteorological services (TSMS) has no statistical effect on aflatoxin samples of rice. These findings are consistent with the findings of Cimaset al to investigate the presence of mycotoxins in grains and find no relationship to weather factors. However, Nogoenet al reported that the toxins in the rice are strongly influenced by seasons and especially rainy season has been proven as a major risk factor for AFB1 (Ghali., 2008).

Usually, rice can be harvested in a very high humidity (35 to 50%). Therefore, mycotoxin-producing fungi can infect the grain and produce high OTA during the storage. In this study, the amount of OTA contamination in rice was between 0.042 and 3.02 and the average was 0.82. Pena et al (2005) found that the concentration of OTA in Portugal is in the range of 0.09- 3.52  $\mu\text{g} / \text{kg}$ . In previous reviews which was reported by Trunget al (2001), Gonzales et al (2006) and Scudamore (1998) et al, the high level of OTA was respectively estimated in this range: 21.3 - 26.2  $\mu\text{g} / \text{kg}$ , 4.3 - 27.3  $\mu\text{g} / \text{kg}$  and 1.0-19.0  $\mu\text{g} / \text{kg}$ . It is possible that these differences are due to the extraction methods and analysis techniques. Castegnaro et al (2006) found that the determined OTA will reduce by increasing PH extract and in an alkaline environment OTA will change to an OTA with an open loop, which is not detectable by antibodies. However, the percentage of discovered OTA was more than the results of Park et al (2005) and Simonato et al (2003). It



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was less than the results of Zinedieneet al (2007) and Sangare -Tigori, et al. (2006). This could be due to the region's geographic conditions, storage conditions and the effects of climate.

Zinedieneet al (2007) believes that grains, spices and derivative products can be affected by the pollution of micotoxin due to climatic conditions, especially humidity and temperature of the area. The highest amount of OTA in the study and in these cases has been found in the winter and with the amount of 1.11 g / kg that is considerably more than substantial in the summer. This may be associated with relatively high moisture content. Cousin et al reported that OTA is the most important mycotoxins in the cool weather.

The results of the microbiological analysis have shown that the rice samples are less than the limit of food hygiene law Commission of Ireland (FSAI., 2001) (5, 6 log cfu / g for TMC) and TFC (5 log cfu / g for TMC, 4 log cfu / g for MY) (Turkish Food Codex., 2006). According to the results of the study, the highest value of TMC is (3.60 log cfu / g) and the highest value of MY is (2.78 log cfu / g) that has been determined in the summer which has the highest temperature in all seasons in the province. The lowest value of TMC is (3.27 log cfu / g) and the lowest value of MY is (1.58 log cfu / g) that in the winter the minimum temperature in all seasons has been calculated (Zinediene et al., 2007).

Temperature is considered as the main agent for microbial quality of food at the store stage and the consumer. Microbial growth can be seen in parallel with increasing temperature.

**SUGGESTIONS**

The development of mechanized harvesting rice in north of Iran separate paddy from the stem. We can separate simultaneously separate paddy from the seed. The development of centers, warehouse and silo storage of paddy rice produced in a standard and upgrade condition. The development of processing industry and processing of rice and its by-products. Standardization and annual monitoring programs and permanent on the harvested crops from the contents of warehouses and silos and value of their content and standardization values and practices.

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**Figure1. Samples of collected raw rice**



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**Figure 2- Preparation of the samples for testing (samples after grinding combined with the solvent).**



**Figure 3. Samples of prepared rice.**

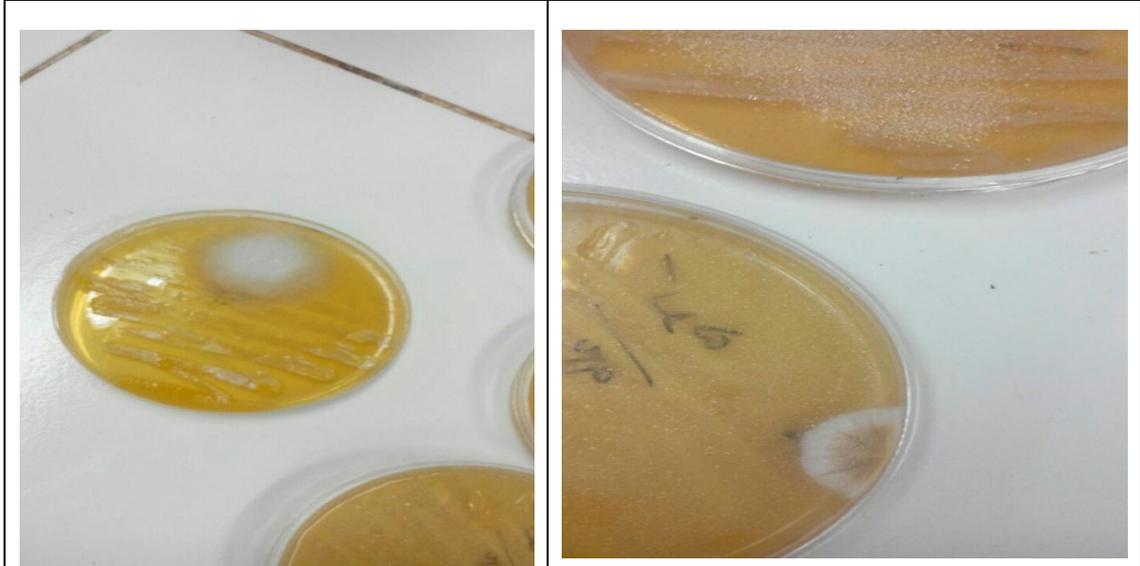


**Figure 4- The extracts of prepared samples for ELISA test**

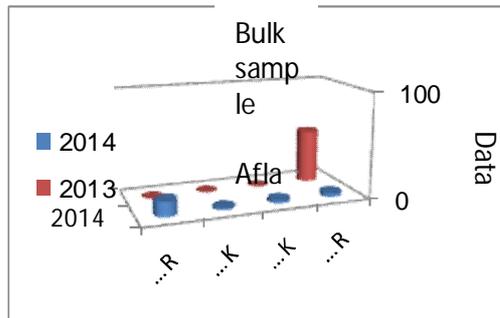




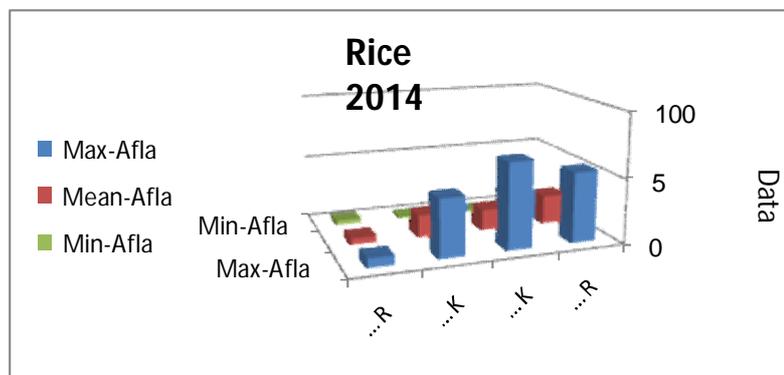
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**Figure 5- The wells containing grown colonies**



**Chart1. The amount of aflatoxin in rice samples in 1392 and 1393.**

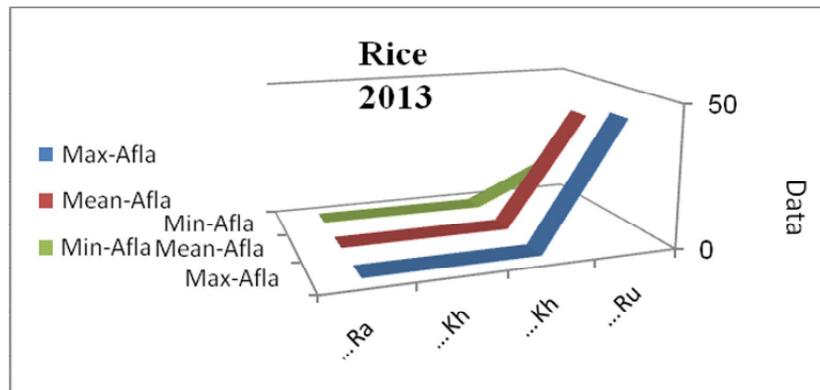




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2014			
	Max-Afla	Mean-Afla	Min-Afla
City	Rice	Rice	Rice
Rasht	7.71	5.5603	4.074
Khomam	45.373	17.982	1.465
Khoshkebijar	67.195	16.801	0.83
Rudsar	55.02	23.111	7.638

**Chart 2. Means values, minimum and maximum levels of aflatoxin in the samples of rice in 1393**



2013			
	Max-Afla	Mean-Afla	Min-Afla
City	Rice	Rice	Rice
Rasht	0	0	0
Khomam	0	0	0
Khoshkebijar	0	0	0
Rudsar	44.49	40.113	13.267

**Chart 3- The mean values, minimum and maximum levels of aflatoxin in the samples of rice in 1392**





## Legal and Social Protections from Elderly Victimizations

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### ABSTRACT

Victimization has root in multiple factors such as poor physical and psychological health, emotional disorders, lack of social status and lack of environmental care, but some people's offence is because of their physical, psychological and the other physiological specifications more than others. Aging means losing mental and physical powers that occurs over time and based on living conditions and culture it differs in different countries. The elderly always are group of people vulnerable of being the targeted to crime. Unfortunately, the existing laws have very limited support. Also, there are behaviors which from perspective of government's criminal laws may not be considered crime but affects the elderly and their environment strongly. As a result, addressing them besides the acts and omission acts that controvert criminal laws of the governments, in order to understanding the causes of the elderly abuse, preventing it and reducing that damages influencing the elderly seems essential. So, according to extensive development in criminal laws and differentiation policy view of legislators to this area of study the existence of corporate policy in this area is required. But unfortunately there is no position for corporate policy in Iranian society and less attention is paid to it.

**Key words:** Asthenic Persons, Victimization, Elder, Protection, Etiology

### INTRODUCTION

Victimization is often caused by several factors such as poor physical mental and emotional imbalances, lack of social status and lack of environmental care, the level of victimization of some people is more than the others because of special characteristics. Misbehavior with the elderly is the consequence of increase in the number of the olds in



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families and society increasing the rate of them in two past decades. Of course there are not any official statistics of the elderly abuse rate in Iran. These days' women and children are mostly considered as the main victims of violence in families and the elderly less addressed. Although child abuse and spouse abuse differs in different societies based on their cultural and social structures. These kinds of abuse are more prevalent but it doesn't mean that there is no elderly abuse.

**Elderly victimization****Concept**

Victimization is often caused by several factors such as poor physical and mental health, emotional imbalances, lack of social status, and lack of environmental care and this factor caused increase in victimization rate among some persons with special characteristics more than the others. In other word, the rate of elderly victimization is not more than the others but the elderly vulnerability in special crimes & certain attacks is more than the others. Also the causes of victimization in elderly are different from the causes of victimization in others and the effect of victimization in elderly is more in depth comparing younger people and their damages that caused by crime and abuse against elderly cannot easily be recovered. In order to achieve supporting solutions, firstly, we should investigate the origins and causes of violence against elderly, and after considering the result of this investigation, measures should be taken to write a supportive program for elderly.

According to expressed content, the elderly victimization can be state as "elderly who suffer through the act or omission that violate criminal law -and this suffering includes laws that are prohibit the abuse of power-, and imposes mental or psychological pain, economical loss toward the elderly fundamental rights individually or as a group" (Zandi,2010).

**Also abusing against the elderly includes**

- 1- Physical abuse,
- 2- Medical abuse,
- 3- Emotional and psychological abuse,
- 4- Sexual abuse,
- 5- Sociology abuse,
- 6- Financial abuse,
- 7- Family abuse,
- 8- Institutional abuse,
- 9- Neglecting

**Categories of elderly victimization****Victimization caused by common crimes**

Common crimes are crimes that usually have been described criminally in the criminal law of the most countries and negligence of them by legislator is accompanied with a penalty. The goal of these penalties to Bulldoze interpellationand Reparation of guilties, which includes:

Victimization against the physical integrity of the individual: murdering, assault.





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Victimization against the spiritual and mental integrity of the individual for example: the crime related to the drug or insult and obscenity.

Victimization due to crimes against the physical and moral integrity for example: victimization due to physical abusing and victimization due to abduction, sequestration and victimization due to excruciation.

Victimization due to crimes against properties and ownership, that includes: victimization due to steeling, purse theft and picking. The victimization due to financial abuse and spoof.

#### **Victimization caused by uncommon crimes**

Sometimes the people, especially those who protect the elderly do something against them that in the law of most nations are not considered as crime. These actions include planned and systematic actions in different form of psychological abuse. It looks necessary to bring them into the legal system of countries in term of criminal mass or tort. The base of this crime can be the act or omission from persons who have the duty of restraining the elderly or those who abuse civil liberties, like: excluding the elderly from their fundamental rights, refusal of giving information, excluding from life, private facilities, depriving of meeting with visitors, deprivation or censoring their letters, postal correspondence and so on. There is significant a significant testimonials that illustrates that the elderly are suffering from victimizations or abuses especially from those who watching them.

#### **Victimization caused by armed conflicts**

The war between governments and civil armed conflict remained irreparable disasters on the society. War effects will be remaining inside community and even generations for many years. Ruinous wars of I & II, killing of Armenians and Jews, massacre in Hiroshima and Nagasaki and Iraq invasion of Iran are the examples of bloody armed conflicts which expect destructions and harm against innocent people and civilians, had no benefit to the countries. Therefore, the attention and supportive measures in order to prevent the elderly victimization in conflicts, in the form of prevention policy of government & NGOs needs a special and differential protection of them.

#### **Etiology of elderly victimization**

Lack of social status and lack of environmental care, mental and emotional imbalances, social isolation, high vulnerability, diseases, abuses and violencepathy towards the elderly make them vulnerable to victimization by potential guilties. Nevertheless, elderly have natural talent of being victims; they suffer more injuries at the time of confrontation with victimization.

Elderly are sometimes the goal of attacks that caused by their children, grandsons, relatives or the persons responsible for their care. So they need special attentions. Using protection efforts and covering deficiencies in law – for instance: necessity of impeachment against the elderly and more cultural respect for the elderly- can be ended up in worthwhile results. For example, with cultural education in schools and families the true kind of manner with elderly can be taught. Victimized elderly refuse to impeach for reasons such as of: lack of awareness of their rights and possible litigation, the complexity and difficulty of the procedure, fear of scandal, financial dependence to family, feelings of economic insecurity and loss of shelter, fear of being kept in institution such as nursing homes for elderly, or fear of retribution. It provides a base for increasing the durability and crimes against the elderly in community. The main causes of elderly victimization include:





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### Personal and personality factors of elderly

Physical weakness and specific physical properties and characteristics of the elderly and lack of appropriate defense make them potential victims. Different types of violence against the elderly (like: domestic violence) are the resonator factors of victimization.

Criminologist divided victimizations based on the process of victims, into two categories: stimulus and seductive; About first group, "Shaffer" divided the criminal responsibility to the offender and offenses, and about the second group he said, since they always should predict the risks and take the necessary proceedings, They should not be considered as guilty, so this is necessary to be considered guilty partially.

### Cultural factors

Culture consists of customs, morals, beliefs and educational and religious institutions, and all common ideas that rooted in people's lives, it defines the scope and boundaries of criminal law in society. Culture includes the values that their refusal considered as crime, however, it supports actions and thoughts that prefers. (Najafi Abrand Abadi, 2008, p 80) despite the emphasis of our culture to respect the elderly, elderly experienced different types of financial abuse and inattention. Therefore, having knowledge of elderly abuse can arise the awareness and sensitivity of individual and organization related to this phenomenon until effective measures being taken in order to program a system that detects the elderly who are at risk and makes the culture ready to preserve the elderly more and more.

### Economic factors

Unfortunately, many of the elderly suffering from lack of financial independence and are not supported by insurance and retirement payments. The elderly poverty and financial dependence are the important causes of violence against them.

This dependence put them neutrality at wide variety of vulnerability, targeted to victimization, suffering all kinds of physical, emotional and psychological violence that never report them.

In some families and institutes deal with the elderly in the way that a child is behavioral or is dealt with in some way that he is not able to decide about his economic and social affairs they decide instead of him or usurpation economic independence of him for example some elderly do not have access to their bank accounts and their estates is blocked.

Therefore it looks necessary to implement policies and programs to eradicate poverty or lower it, for instance payments such as: "Social security insurance", retirement payment, disablement insurance and health insurance payment.

### Social factors

Violence against the elderly in community (like, murder, assault and trauma) causes fear, intimidation and insecurity in the life of the elderly. Other factors includes lack of direct and fair supervision on the elderly social service centers and the role of public media that are capable of implementing a huge impact on the society manner and play an important role in the sociability, transition of values and counter-values in the society from an early ages for a typical member of society.



**Seyed Adel Heydari and Hesam Abbasi****State factors**

Much of the latent elderly victimization is not considered as guilty in private environments and at the process of trial cannot be easily proved and verified. Therefore malpractice and negligence of the states are reasons that vacillate and resonate violent behavior against elderly. When the government looks with negligence and tolerance to violent offenses such as violence in private environments like families, it provides appropriate area for frequent and continuous victimizations.

**A review of legal propositions concerning the elderly**

Iranian legislator mentioned in 206th line of Islamic criminal law: "in the case where the murderer did not intend to kill and does something that is not typically deadly but might be deadly due to age, illness, disability or being underaged, the crime be typically deadly and the murderer is aware of that" and also in the 271th line of the same law it is explained "when the murderer is not going to mutilate or main and his act doesn't conclude to it, but murderer knows that the victim is potentially vulnerable of mutilate or murder because of being underaged, weak ill or old". Also in the 633th line mentioned when one person individually or in one's order deserts a child or someone else who is not able to protect himself..."

**Legal shortcomings concerning the elderly**

Iranian legislator never employed elderly abuse in his texts but it was better that the legislator used the word "elderly" besides "child" in 633th and 619th lines of Islamic criminal law because illness, age, being disabled, underaged and woman are conditions that make a person vulnerable from the viewpoint of criminology.

Children and the elderly are more vulnerable to victimization than everybody else. The child because of usual attempt for pleasure strong excitement, and dependence to the family and elderly because of physical weakness and mental imbalance. In other words, an insult or curse and ridiculing an elderly that legislator mentioned in 619th line can imprint a great sorrow to the spirit of elderly. According to finding of criminology potential villains select their victims among those that have the least dangers and costs, so the elderly with their special characters are potential victims. Also there are behaviors that may not be considered crime in criminal law, but affects the elderly and their surroundings, as a result the necessity of criminology and legal punishment in case of misconduct, abuse and ignoring essential rights, of the elderly and in present law, punishment intensification with guilties is needed and criminology of this crimes is a fundamental duty of legislator. For example evading from crime report and misbehavior with the elderly can be explained as following: everybody that is aware of the right depriving, and misbehavior with the elderly, patients, pregnant women, physically and mentally handicapped individuals and children and with the ability of reporting crime, evades reporting the crime..." define a punishment and with the criminology of these crimes, and increasing the cost of crime through increase in criminal costs, disturb their motivation.

**CONCLUSION**

Unfortunately elderly abuse is not a well-known phenomenon in Iran; if the situation of this crime becomes obvious, it will show a significant number. This is a very bitter reality that we are viewers of an apathy to elderly abuse cases. A glance to the current law of Iran indicates its incorrect and inefficient situation regarding elderly abuse. Even in some cases elderly abuse is supported through other subjects of criminal law. According to special needs and condition of senility, the presence of special elderly social workers seems essential, and it is in a situation that there is no special social worker for the elderly in clinics as it is clear that the presence of elderly special social worker helps





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them in social and mental aspects of their life. Paying attention to the shortcomings of Iranian law regarding the elderly is a common criminal policy and this shortcoming is obvious in Iran current law. Using cultural tactics and finding best ways of respect them and proposing methods to prevent elderly abuse case can be very helpful. "Prohibitive supports" regarding the elderly abuse through prohibitive efforts of governments or non-governmental organizations and by the use of special supports like a review in law about violent crimes that provides a wide area in interpretation of criminal law can be very helpful. Also criminology of behaviors against the elderly in families and in society, besides taking to the consideration of supportive aspects of GuarantyPerformanceandPayoffadoption are the other ways to cover this shortcoming in Iranian criminal law. Finally it is worth-mentioning that in area of confronting with the crime as a whole and elderly abuse as a case, the best way is providing a safe social system and with the least amount of crime commitment and violence. A social system that all people have the same opportunities, a system in which the way to progress is paved for all equally. From those who learned violence, heartlessness and injustice is not anything expected but injustice and violence. So, only after providing these circumstances, the society has the authority to punish the guilties to accompany them to the society and turn them back to the society embrace.

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## Ritual Approaches of Art in the Advent of Islamic Art and Civilization in Iran

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### ABSTRACT

A form of art that in each community has a special credibility and depends on the religious beliefs of that society is the ritual arts; an art form, which is rooted in the beliefs of the people of each society. The present study seeks to present a definition of beauty, which is the necessity of ritual and Islamic art and also to identify the challenges and difficulties that it faces in contemporary Iranian art. It is assumed that providing a proper education about the ritual arts for today's generation is necessary, so that this kind of art would not undergo any change and would not be forgotten. Arts of Iranian rituals are not only customs and traditions, but they also conceive and manifest their identity, culture and Islamic Iranian background along with themselves. Since this type of arts are considered as a kind of historical identity of Iranian arts, they enjoy features, such as being indigenous and Iranian as well as the religious thoughts that are within our tradition and culture. Accordingly, the following questions are proposed in the present study:- What is the origin of art and how is its relationship with human?- What is the source of Islamic art and how is its relationship with Iranian art?- What is the ritual art and how is its impact on people? And is it possible to maintain and revive the ritual arts in promoting Islamic national identity and culture of the country through contemporizing the ritual arts?- How the formal features and concepts and functions of the ritual arts of Islamic Iran will be presentable in contemporary Islamic Iranian society?

**Key words:** Beauty, Art, Ritual Art, Islamic, Iranian



**Fatemeh Shahriyari Nasab and Ahmad Mirza Koochak Khoshnevis****INTRODUCTION**

If we encounter with the question that when and where the art was emerged and if we inspect the history of human existence, we will find out that art is connate with human. Traces of art can be seen at any time and place. It seems that man was created by art, has lived with art and has gone from this world to another by the art. This companionship of human with the art, indicate the essential and intrinsic relationship of art with the human. If the art was an extrinsic matter for human, it would never find such a correlation with it. Motahari, Wittgenstein and others believe that human perception of any reality does not necessarily mean the ability of human in defining it (Fahimifar, 2008). Philosophers often have expressed their inability in defining some concepts and basic facts- such as justice, science and others- and perhaps because of this issue, from the perspective of some individuals like Martyr Motahari, it is thought that beauty cannot be defined. According to him, the beauty "can be perceived but not described" and he criticizes Plato, who believes that the beauty can be defined, by stating that: "First of all, it is not clear that Plato's definition of beauty is a correct and sound definition and secondly, if it is assumed to be a correct one, then it is not a complete definition. He has said the beauty is the coordination of components with the whole. If the whole and a set possess proportionate components, then it would be beautiful "(Tajeddini, 1990). In the definition of beauty, it is not necessary to determine size and proportion, and if the reality is understood, it is not necessary to know and define it (Tajeddini, 1990).

**LITERATURE REVIEW****Origin and the nature of art**

From the perspective of Islamic philosophers, all the movements of this world, even the intrinsic movement that bustles all caravans of this world in a form of single entity, generate the love (Motahari, 1993). An artist's art will be pure and divine to the extent that he is enlightened with the beauty and perfection of God and his heart is filled with love for God. Motahari believes artistic taste has greater congruency with mysticism, hence the mystics have been successful in spreading their claim among the public through the language of art (Ibid). From the perspective of Motahari, art has a divine origin and is an act of human for reducing the pain of separateness. Because separateness is the source of love and separateness is along with the pain that will not be cured except by uniting with the Beloved. According to him, art work originates from the intrinsic praise of the artist's spirit against the truth and tries to manifest the beauty and perfection of that reality equal to its perception and understanding. Since the artist, like all human beings, has observed the manifestation of divine perfection and beauty, he has fallen in love. When philosophers for the first showed their serious interested in art, the thing that more other issues attracted their attention was the effect that the art had created in social life of people. Plato has banished poetry and poets from his ideal city, because they were considered dangerous for the city. A few centuries later, the church elders condemned the captivating attractions of art that delayed or prevented the realization of the city of God (Bastide, 1994: 33). After a long time we have found out that the art is not an inconclusive simple personal game, but rather it affects the lives of a group of people and can change the fate of human societies. But this is one of the aspects of the issue. The other aspect is that we must ask ourselves that whether it is a two-way relationship and whether the art is the product of human social life and its fate is tied to the fate of human societies? The difference between the poems of north and south is explained through an anthropological view by showing difference in imagination, which, in turn, is caused by contradiction of cloudy and sorrowful sky of North with clear and sunny sky of the South. (Ibid: 34). The emergence of an art work as a product of intellectual and practical work requires a transition from potentiality to actuality and in a sense, from nothingness into existence (Madadpur, 2005: 22).



**Fatemeh Shahriyari Nasab and Ahmad Mirza Koochak Khoshnevis****Beauty and art from the perspective of Islamic philosophy and mysticism**

Islamic culture, especially the Shiite, is full of philosophical and mystical elements, and a review of the history of Islamic civilization, indicates that the teachings and words of religious leaders along with the philosophical and cognitive implications have had a great effect on Islamic art. According to many historians, factors such as tendency of the Ilkhanid, Timurid and Safavid rulers towards Islam, Shi'ism and Sufism, approaching of Shiite scholars and mystics to the court and the tendency of religious scholars towards mystics, are the most important factors in shaping the Shiite and mystical art of these periods (Wilber, 1986: 36-33). In fact mystical and Shiite interests of religious scholars and the tendency of mystical and religious leaders of the eight to eleven centuries and their support from the artistic works and figures were among the most important factors that had considerable contribution to the link between art and mysticism. Another reason of interest in the mystical art of this period is the tendency of mysticism towards the spiritual aspects and triviality of jurisprudential differences between Shiites and Sunnis. Mysticism did not intensify the differences between Islamic sects, but rather it helped to create a unity among them and if sometimes the artists were not knowledgeable about the mystical themes of symbols, motifs and other elements used in works of art, nevertheless they utilized the mystical tradition in creating works of art. Study of Chivalry Epistles in the history of Islamic civilization is one of the best ways to understand the business and professions, including the jobs that are today known as Fine Arts and reveals the relationship between spirituality and art and the interaction between the two. The relationship between mysticism and art, on the one hand, has resulted in the writing of Chivalry Epistles in some traditional arts by the mysticism and ethics leaders; arts that have had legitimacy and were consistent with the principles of chivalry, and on the other hand reflect the privacy and framework that Islamic teachings have expressed regarding the arts. In fact the study of Chivalry Epistles, in addition to identifying the business, is an attempt to understand the history of arts and because of the close relationship between religion, life and career in Islamic culture that some of the artistic jobs were also included within the jobs, the relation between the religion and art can be expressed in Islamic civilization. Marzban (1993) believes that the flourishing of Islamic Art is indebted to Muslim conquests and familiarity with the culture and civilization of civilized nations. Unlike the "Christine Price", who tries to show that the Islamic civilization is indebted to Western civilization (the Greeks), "Gustave Le Bon" considers that such a view is corrupted, he believes that the Orient essentially have had a rooted culture and civilization and the Arab people have been familiar with civilization. He says (Le Bon, 2005: 113) that the Orient has always been the center of scientists and literary scholars and industry leaders and argues that if the language and culture of a nation has suddenly manifested itself in the history, this sudden manifestation is the result of its development during a long period of time. The position of the art in the Islamic world and Islamic civilization is different from its position in the Western thinking. Our perception of art in the world of Islam is contrary to the perception of Westerns. In fact, a certain concept of art is emerged within Western thinking that is associated with the creation of artistic work. In this kind of thinking, the artist is considered the one who has an immediate presence and relation and he manifests this immediate relation in his work of art. In Islamic civilization, if the presence of an individual is considered then this presence must be religious and mystical spirituality presence and if that person is reluctant for presentment and is interested in constructing and business and craftsmanship, he will be included among the artisans and craftsmen. Therefore, such a perception does not exist in the Islamic world that while preparing a work of art, a person can manifest a secular presence in that work. This is an Athenian and Greek perception. Therefore the words that have been used for the art in the Islamic world are lesser in the sense of preparation. The meaning that the term implies is referred to good and virtue; as the art is derived from «Honareh» in Pahlavi language. In this language "ho" means good and "Nareh" means brave and courageous man (Website of NavahiHeidar, 2012). This means that in Islamic civilization, art and artistry are after gaining a position of bravery and courage and goodness. Bravery and courage are achieved when the person gets rid of the anxiety and fear and vacillations and reaches to the state of confidence, security and peace. In this way, it must be said that the art in Islamic civilization, is greatly a sense and an inner virtue; a virtue that is related to the heart of man. This perception of art is different from the perception which is based on the preparation and construction that is common in the Western world (Website of NavahiHeidar, 2012).



**Fateme Shahriyari Nasab and Ahmad Mirza Koochak Khoshnevis****Islamic art**

Islamic art is one of the instances of traditional and sacred art. Burckhardt is one of the individuals who have made a great effort to introduce the position and status of Islamic art to Western world in big art festivals and present the reason of being Islamic independent from art of other civilizations. He believes that Islamic art has matter and form and by the form he means the meaning, content or in Aristotle's interpretation, the thing that the realization and actualization of the matter, which is potential and talent, takes place through it. In his view, the origins and roots of Islamic Art are originated from the revelation of Quran and the Qur'anic teachings and as the form strengthens the matter, revelator elements also strengthen the Islamic art. According to him the Islamic art has been consisted of two parts of wisdom and technique and believes that paying attention to wisdom is necessary for understanding the meaning of spirituality, metaphysics and cosmology of Islamic art, especially architecture. He says that, although the matter of Islamic art, i.e. the methods, techniques, materials and motifs in Islamic art are influenced by the previous cultures, but this does not create any impairment in the issue that the formal language or principles and the main source of Islamic art are derived from divine teachings and the meaning and content of Islamic art, which are derived from divine teachings and sacred art is located at its heart, have moral and spiritual features. (Website of Islamic Republic of Iran Broadcasting University of Qom) Islamic art, as one of the status and dignities of Islamic culture and civilization possess the grace of the same reality that the Islamic science and politics possess it. In more details, because the core of Islam is the name "Allahu Akbar" (God is [the] greatest), the science of Islam is "representative of God" and the policy of Islam is the realization of "Guardianship of God" and real art of Islam in the position of innovation is the "attributes of God" (Madadpur, 2005: 117) However, popular artistic forms in Islamic civilization cannot be utterly referred to wrong beliefs, but rather, it must be admitted that, more or less, they have benefited from the reality of Islam, particularly, the major part of arts like calligraphy, music, painting, architecture and fine arts that have been compiled with chivalry and spiritual journey of age of religious revival, or poems that almost certainly cannot be the imitation and innovation of attributes and the names of Allah and in which, the poet, who is in the position of the Wise Man, have observed and discovered the attributes and manifestations of God in the universe and man. Even in miniature designs, religious and mythological thought and tradition are manifested, especially at the time when these motifs violate the subordination of Euclidean space of Greek metaphysics and Cartesian mechanical space; or Arabesque and floral motifs and generally geometric and plant and animal motifs in Tazhib (Illumination) and Tashir (Decorating manuscript's margins) and imitate a space that is neither the Greek natural space nor the new visual space, especially the Islamic and Koranic lines are added to it, and give it a spiritual state. However, it cannot be said that the whole arts of the Islamic civilization are referred to reality of Islam i.e. Allahu Akbar. For example, buildings and palaces of debauchery and corruption that in the decorations have followed the same rules that have been observed in religious buildings or paintings, carvings and stucco that have been nothing but the manifestation of the satisfaction of lusts of kings and princes and ornaments of their palaces and buildings or poems written in praise of these people and old lyrical music like the era of ignorance, can be nothing but imitation of ego and it is this music that has adorned the orgy parties of caliphs and emirs, these absolute arts are those type of arts that have been abolished with the advent of the Prophet and Prophetic Guardianship and the construction of Medina (Madadpur, 2005: 119). Recognition of religious art depends on the perception of the meaning of "holiness" and the concept of "art"; an art that is now separated from human life and has been exiled in the isolation of several buildings called "Museum". Of course by "tradition" we do not only mean common manners and customs, but the traditions are descended from heaven and have spiritual and metaphysical basis. "Tradition" in Arabic and Persian language is the same "religion" in a broad sense of the word. As such, traditional civilization is a civilization in which all aspects of life, from religious rites in places of worship to politics and economics, and even the way of baking bread are regulated on the basis of specific principles that are derived from revelation. On the other hand, in non-traditional communities, these principles have been rejected completely or they have been weakened, in such a way that none of behaviors of human are influenced by them. (1971, G.P) The Holy, indicates the manifestation of superior factors in spiritual and material realms. Traditional art, due to its features, in all these cases possesses religious and spiritual value, but in comparison to the art, which is directly associated with esoteric practices or common religious rites, it has indirect spiritual role. Undoubtedly the ideal state is a situation in which





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the whole life of human is ritual and no difference is left between the sacred and the secular. This is the fact which is seen in the life of prophets, in a way that their whole life is like a screen from the holy exhibition. (1971, *ibid*) The origin of the issuance of the sacred is spiritual world which is beyond mental and material realm and it should never be confused with it, as in the Islamic teachings, the first one is associated with 'soul' and the second one is related to "ego". "Tradition" and "sanctity", despite being inseparable, are not the same. The adjective of "traditional" indicates those manifestations and expressions of traditional, that directly or indirectly, manifest the spiritual principles of that civilization, but the word "holy", especially when it is used to address the art, only represents those traditional manifestations, which immediately refer to mentioned spiritual principles. Hence, sacred art has a close connection with the religious practices and are rituals of initiation that possess religious themes and spiritual symbolism. Concepts of "sacred" and "traditional" can be applied in all art forms, including visual arts, poetry, music, theater, etc. For example, in the field of theater we can refer to traditional theater of India, Indonesia or Japan and even the "Ta'zieh" (passion play) that all of them are traditional, but are not old immediately. On the other hand, instances of religious theater can also be searched literally; an example of sacred theater is the imitation of the movements "Buddha" that is called "Mudra" in Sanskrit and in Japan, in Buddhist religion of "Schengen", it is performed as a ritual of initiation to obtain spiritual knowledge. (1971, *ibid*) But during the human history, due to the existential and temporal separation from the illuminating source of existence and revelation, we have reached to the point where, even in traditional societies, all aspects of life are not included in the sacred. That is why sacred art becomes necessary for maintaining the "manifestation of God" and "light of the heavens", otherwise the darkness will prevail. The life of tradition human, in all its forms, from working to eating and sleeping, is spiritual. At the same time, religious rites and rituals exist in his everyday life and they reflect the prevailing principles of life in more immediate manner. Similarly, although sacred art is a branch of the traditional art that has been associated with the traditional life, but in particular, it contains those activities and creativities that are directly related with mysteries and spiritual and religious practices. (1971, *ibid*)

## METHODOLOGY

The purpose of this paper is to understand the concepts of art, Islamic art and ritual arts and its place in people's lives and it is used the documentary studies. In this paper, taking into account the conducted comparative studies the ideas of theorists have been used to explain different aspects of art. Analysis of documents is carried out by the internal and external analysis which the internal content of sources and documents are examined in the internal analysis, whereas the relationship between content and external reality is addressed in the external analysis. The following assumptions will be investigated in this study:

To introduce the position and context of Islamic art to Iranian contemporary society, it should be provided them a ritual art to their benefit according to the different issues of the day.

The meaning of ritual art and its position in Iranian contemporary society are introduced better to people when they maintain their traditional authenticity and also are compatible with today's palatable conditions of people.

Ritual arts should play a live role in the daily lives of people living in our community; for this purpose, it is essential theorizing to define the principles and practices and today's traditional concepts. There are two theories about existence of beauty included: subjective theory and external or objective theory (Croce.1960). Believers in the subjective theory claim that beauty is not something that exists in the outside world which can be defined with specified terms and conditions, but it is a quality created by the human mind against some of the tangibles. According to Croce, beauty is a spiritual activity with a sense, not an attribute of the tangible object. He believes that beauty does not exist principally as a reality independent of human being, but the interpretation of existence by the human results in considering something as beautiful and ugly and that is why the people do not have a common understanding of beauty and ugliness, some people consider things beautiful and some others consider the same



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things obscene (Croce, 1960). According to the subjective theory by Croce, beauty is not inborn quality of objects, but it is in the soul of the beholder, because it is the result of mental activity of a person who attributes beauty to objects or discovers it in the objects (Ibid). For a person who is able to this discovery, the beauty to be found everywhere and finding out this beauty is the art. Other groups believe that beauty is one of the objective attributes of the creatures and the human mind understands it with specified rules and principles as it can understand other information in terms of the rules relating to them (Croce,1960). Despite these views, martyr Motahari believes that “there is no doubt in existence of beauty, certainly there is something in the outside called “beauty” - whether or not human being understands its beauty- like many other things in the universe” (Jafari,2010). Overviewing the different definitions and perspectives provided about the art, it can be resulted that the formation of different styles and forms of the art is due to difference of opinions on the definition of beauty and this is the beauty of art. All senses have external appearances but the aesthetics sense is stronger than all of them. For a beautiful display, a majestic view, our inner pleasure is more powerful that it can be kept only for oneself and creates a need for expression and transfer it to another and you live it with another, as stated in this hemistich of the poetry: and when I see beauty, I love to be two persons. (Bastid, 1994:51)

**Analysis of the collected data****What is the ritual?**

Works related to the history of culture, drama, myth and religious sources have interpreted ritual continuously as the cosmological primitive mentality and also have considered a mysterious, holy nature and mandate for it. Therefore, discovery of the views affected by the occult and supernatural inspirations and series of the mysterious and powerful forces that govern the fate of societies and determine the religion-oriented methods in primitive communities has been always considered in the analysis of ritual (NasriAshrafi, 2004).

**The word of Ritual** was originally meant customs and traditions and later it was used exclusively in the sense of religious traditions. Hence it can be said: Ritual behaviors are the particular kind of behavior that have been accepted by society and establish the relationship between people in that community and the meta-material and supernatural phenomenon. So, the ritual ceremonies can be known as a particular type of the regular speech and actions originated from religious and supernatural teachings or is used for expression of religious feelings and because of their long history, have joined to the tradition and history of the peoples of a region in most cases and also have become a part of the daily and undeniable culture of the people. As aforementioned, the ritual ceremonies are the executive means of doctrines and religious orders in any society. Since these orders often include moral teachings that are modulators of behavioral excess and negligence for community members, it can be clearly realized the direct relationship between ritual ceremonies and moral values, so that in most cases it is observed the moral transcendent and ideal samples of the people in a community during their ritual ceremonies. Respect for the work and culture, mutual aid (cooperation), fulfill the covenant, and keep the sanctity of the elderlies, child care, love to religion and homeland, blaming the evil, condemnation of injustice and oppression, courage, stability, intimacy, devotion,... are some examples of moral values which are transmitted through the ritual ceremonies (Traditional Ritual Arts Center of Alashtar, 2014).

**What is the origin of ritual art?**

From the perspective of Mircea Eliade "myths, symbols and ancient rituals" of a nation should be judged as cultural values prevailing in structure of a society. Human is linked to rituals and rituals may be considered as an integral aspect of human life since the past times up to this day. When we talk about the rituals, the first common image that comes to the mind is the image of exotic and magnificent rituals of primitive manor rituals that are related to traditional societies and mythical thinking, but ritual, has a meaning that is much broader than festivals, carnivals,





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celebrations and magic and praying ceremonies. Ritual, in fact, is the practical aspect of human thought, external manifestation of inner concerns and thoughts of a nation and practical manifestation of epistemology of the people of a territory or a historical period. In fact, the individual and social aspects of the human life have a ritual aspect, taking from dressing, eating and drinking to the ceremonies, parties, songs, drama, theater and collective arts. But among these, perhaps the role of theater as a practical collective experience, which has been directly derived from the rituals, is more notable than other arts and is similar to the mental picture of the ritual issue. As we know, the formation of theater has been in the trajectory of collective ancient rituals and hence theaters all over the world have completely an organic relationship with rituals and through it, with the thought of people, their myths and collective psychology. (GhotbiYaghoubi, 2011). According to Durkheim the art, like the science and duty, is generated out of the religious passion of gathered community. The role of primitive religious ceremony, as totemic religious ceremonies, is to simulate the individual motives and energies through collective religious rites and rituals and in this way, help the human to leave the normal route of life, which is the blasphemy world and guide him to the path that will reach to superior existence. This superior existence is the sacred world. But in this agitation of energy, always some excess energy will be created that needs to be depreciated without purpose, and only for pleasure, screaming, strange movements and dance. According to Durkheim, apparently first forms of art have been emerged from the religion... there are some forms that we cannot easily distinguish the share of social affairs and art in them, because the two have been mixed together. These forms create a phenomenon which can be called sociological art, like magic and religions with their rituals and ceremonies and rites, language, familial, tribal and national symbols, set of traditional and collective forms, formalities that give a specific order to the actions and behaviors of human, urbanization and eventually popular culture; a vast area in which the forms have both the elegant traits and the collective value. (Ibid: 71) Every religion and ritual is the starting point of the drama, provided that it has ceremony and formalities: medieval religious plays that were first performed in church and later in the fields around the church were Christian theater that was aborted and the core of the new theater of Japan is the mysterious beliefs of the East. (Ibid: 124)

#### Manifestations of ritual art in Iran and its application

The history of our art is rooted in hoary centuries. Our art forms, including mythical – ritual dramas, Ta'zieh (passion play), narration, masticatory, natal, Pardeh-khaani (mobile singling, storytelling read off a curtain) RuHowzi (comical acts on domestic life) and field plays... all exhibit the theatrical factors and elements and are notable. The fermentation that is experienced by the believers who participate in the ritual is inevitably manifested as extreme movement that will not simply serve to predetermined targets. Parts of this movement get out of the mainstream of ceremony and aimlessly open their wings just for fun and engage in a variety of games that create mutual pleasure. Due to performance of these movements, religious ceremonies, regardless of their actual meaning, always provide a place for recreation i.e. the art. Considering the mentioned issues, one can understand why religious ceremonies can take a form of celebration in their natural state, and vice versa, celebrations, even non-religious celebrations, can take religious state. (Bastide, 1994: 43) From the Soog-e Siavash to Yadegar-e Zariran, chattiness of scholars of poetry and expert players of battle fields and stunt of strugglers in the discussion- over the time period- significant monuments have been remained on the screen of drama and ritual theatre and invite us to artistic banquet. The soil of this world is the battlefield of evil and innocence. It is the scene of the challenge and battle of good and evil and innocence and adversity. According to a narrative, the first Iranian threnodies have been manifested in Siavash life and the story of Siavash is a perfect example of the display of the confluence of purity and impurity. One of the greatest achievements of ritual art is the demonstration of good and bad, oppressor and oppressed, and the humanitarian and non-humanitarian manifestations of events and behaviors in the life of the community. In Persian territory, sitting on the mourning for a young man is said (Soshun) and in the west of Iran and among Lors, women sing music with a sad song and moan in their mourning and they call this action (Sosush or the mourning for Siavash). In the mythological worldview, if someone's life string is torn cruelly, it forms again in another way and resumes life undoubtedly. Square of the villages, public streets, markets, passageways, courtyards of caravanserais, coffee houses and ... have seen the traditional plays performance and sometimes we have paid to look at ruhowzi, Siahbazi and tomfoolery in





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the enclosed scenes. Certainly these dramatic actions demanded a “scene”. Although this scene has been a rural square or prairie and a place next to a spring or a four-head and public street, however, it was considered a place and blazers blew in their horns and informed an evil event or a pleasure celebration. When the monotheistic religions removed the mask from the face of the primary rituals, some of the old customs including mourning for the failed good characters were found suitable than Ashqya’ and the legendary figures were replaced by true face.

Among the functions of the ritual ceremonies, we can mention the following items:

1. Bringing people together at regular intervals and keeping the lines of communication and collaboration among them, is one of the most important functions of ritual ceremonies that through the integration of society, gives credibility to the existing situation and, ultimately provides social stability in society.
2. Providing the grounds for the strengthening and reaffirmations of commitment of the community to a variety of specific beliefs and values, that may be forgotten or faded.
3. Providing psychological support and reducing anxiety, fear and panic among the community members.
4. Reducing social conflicts among community members.
5. Strengthening the social supervision through civil society and organizations and non-governmental organizations and groups of elites and experts.
6. Indirect transmission of values and traditions from generation to generation during the ceremony.
7. Another important function of ritual ceremony is the creation of moral balance in society. As it has been observed that in some periods, according to the requirements of time and political and social circumstances and economic crises of the society, more attention has been paid to those ritual ceremonies that have a stimulating, neutralizing or modifying role in that crisis and have been performed with greater excitement and passion and sometimes they have been even the origin and driver of changes and social revolutions, that the perfect example of it can be observed in the mourning role of the months of Muharram and Safar toward fulfilling the Islamic Revolution of Iran and eliminating the shortcomings caused by the revolution. (Hamid Abedi, 2006)

## CONCLUSION

Many of the artists before the Islamic Revolution, due to the love and devotion to the religion, people and their thoughts, dealt with the religious and Ashoura art and painting school of Saqqakhaneh (a neo-traditional style of art that derives inspiration from Iranian folk art and culture) is great witness to this claim. After the revolution, the artists dealt with mysticism and wisdom in their works and they maintained and expanded their links with religion and society. People give more importance to ritual art; for this reason, artists of ritual arts should present greater and deeper works. Conveying the religious and ritual art to the new generation by the artists is arguable and has to be dealt with. Resources and concepts of it should be defined and investments are needed for its instruction. For teaching students, we should not only suffice to practice eyes and hands, but also we should make them familiar with the principles of ritual art in mental and ideological terms, in order to create lasting works. (Tahir Sheikh Alhokamaei, 2014) Now, with these descriptions of existence and nature of ritual we conclude that rituals are considered as the intangible spiritual heritage of each society, particularly, deep-rooted and civilized societies, that due to their intangible nature and many other factors, they exist in the form of light off and sometimes disappear as they are light off. For this reason, today the cultural and relevant circles have attempted to make a global movement



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for the study and understanding and recording of these rituals. As we have heard from the experts of technology and art, just talking about the ritual and folk arts of a nation is not enough for promoting this heritage and transferring it to the future generations, but rather like any other area of activities of people, it also needs to be instructed to remain as it is or even get inside other areas of public life and contains greater scope of life and forgotten traditions and revive them and this requires a special and academic view towards this kind of folk arts.

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## Effect of Group Play Therapy on Behavioral Problems of Students with Learning Disabilities

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### ABSTRACT

This study was conducted to evaluate the efficacy of group play therapy on behavioral problems of students with learning disabilities. The population consisted of all students admitted in the learning disorders association of Sirjan. 50 disabled is selected as sampling set and divided into two groups of 25 individual. The applied Method was quasi-experimental and it was did by design of before test and after test with control group. Tools for study was Connors behavioral problems in children parents questionnaire forms (1960) that before and after the independent variable (group play therapy) was performed. Then obtained data analyzed by SPSS software and applying covariance statistical methods. The results showed that the group plays therapy reduces behavioral problems in children with learning disorders and you can use it as a useful intervention method.

**Key words:** Group Play Therapy, Behavioral Problems, Learning Disabilities.

### INTRODUCTION

Children due to the low level of abstract thinking are not able to express their emotions, suppression and lack of skills in expressing negative feelings, especially the mental health of the children will be able to find a non-verbal way of expression of emotions that seem absolutely necessary. Some toolscan help children to express themselves





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regardless of race, language and emotions with learning disabilities to be mainly normal level of intelligence. Students with learning difficulties in compare with their peers are less popular and therefore they are at risk (Jamshidi, 1383).

One method is used to improve the treatment of behavioral disorders in children's play. Play therapy is a technique by which the nature of the child is an expressive means and methods to deal with stress as well as for children with emotional turmoil caused by problems in family. Therefore, it can be used to play therapy and believe that this technique allows children issues that may arise in their daily work, and with the guidance provided in the form of game that shows therapist negative emotions.

Play therapy approach to the treatment of Weber's theory that learning processes and establishing the relationship between natural and normal children. (Karmykhayyl, 2006; Lndrs, 2002) believe that intervention treatment programs for children with disabilities learning and behavioral problems in pre-school and primary level may be useful if we treat the children in elementary school before learning problems due to failure in school (for example, low self-esteem, difficulties in friendships, etc.) and to change the attitudes of adults and children interact with parents is getting worse, we can do an effective early intervention (Wallace and Mac Finn 1993, Gray 1373).

Shahim (1382) study showed that children with learning disabilities in compare with normal children have behavioral problems at home. Further, based on their situation three exogenous problem on behaviors are recognized. Brian (1974) found that children with specific learning disabilities in compare with their peers having more problems such as in non-social, terrified, worried, anxious, nervous, and these children who never had a good time and they are unhappy. Therefore, researchers believe that children with learning disabilities having problem in hearing and their social perception and mostly they fail to communicate with others (Ramezani, 1383).

This approach links into two treatment groups that play therapy in an effective treatment for children with social and mental problems in learning. Other group play therapy provides an opportunity for the therapist to help children learn and resolve conflicts (Dale Jones 2002). Group therapy is one of its effectiveness and many studies show that the use of this treatment, increase the effectiveness of that group (Dan Bauer 1997).

#### Propose Method

Subjects include all students, male and female center of learning disorders in the 94-93 school year. The school year in the first 3 months, 125 patients referred to the center of the city of Sirjan have learning disabilities, which is 50 samples. The control group (25 patients) and control group (25 patients) RayGuy decided to sample.

Data for this study is collected by questionnaire. And Conner's questionnaire Children's Behavior Problems Parents form is used. After sampling of play therapy on children with learning disabilities based on a different method of play therapy, its application in the treatment of behavioral and emotional disorders in children Sohrabi surprises (1390) was conducted in 10 sessions on average, 30 minutes.

#### RESULTS

To investigate this hypothesis, the type of data and research methods Multivariate analysis of covariance was used based on the assumptions of normality assumptions (Table 1), the same assumption variances (Table 2), and the assumption of homogeneity of regression slopes (Table 3) Covariance matrix of variance-equal assumptions (Table 4) confirmed.





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#### Minor Assumptions and Factors of Behavioral Problems

In order to study behavioral problems and test hypotheses multivariate covariance is used. First, the overall results of univariate analysis of covariance is presented (Table 5) In order to evaluate the hypothesis of present sub-group differences in individual variables (Table 6) and then adjusted mean by the groups (Table 7) These findings confirmed.

Individual and social behavioral disorders abundance creates problems. Studies show that approximately 30 percent of children that are having experience a mental disorder, getting treatment, but 70 to 80 percent of them do not receive proper treatment. This disorder, to malfunction in various fields such as education and family background leads that ultimately, fail or cause criminal behavior. (Evans et al, 2005). In Iran it is shown the prevalence of behavioral disorders in children is more than expected percentage. Abolqasemi et al (1384) the 5136 primary school students found that girls and boys 3% of students Primary school conduct disorder.

Students with learning disabilities who have constantly repeated academic failure experience to social and behavioral problems - are more vulnerable emotionally. (Treasure, and certain ZahdablanKia, 1391). Therefore it is expected that students' experience, feelings of incompetence after several consecutive years of study, signs of distress are important on accruing emotional problems. (Archer, 2003). The data suggest that up to 25 percent of children with disorder problems are hyperactive children with dysgraphia and thought to be at higher risk of social problems. (Kaplan et al, 2007, foster, 1387). The reason is because many of the students have learning disabilities feel a negative value due to the failure or the difficulties of learning takes (Mercer, 1992, Karimi, 1380).

Therefore, due to the repeated failure of the school with learning disabilities often have beliefs about the progress that itself creates problems that go beyond the original disturbance. Therefore, treatment is important in reducing behavioral problems and can be one of the methods used to improve the behavior of children is play therapy treatment. (Lndrs, 2002, translated Davarpanah, 1390)

The results of analysis of covariance showed that the mean scores in pre-test and post-test are significantly different. Therefore, it can conclude that group play therapy on behavioral problems of students with learning disabilities. The study results of King and colleagues (1391) and Zare et al (1386), Bagri (2009), Ray (2008), Brown (2007), Baratvn (2005), Dngr and Indrs (2005), Jones and Indrs (2002), and Kazankrnbrg (1999), and Dvgravyraran (1999) study, Rezai (1378), r. (1376) all have examined the effectiveness of play therapy on the disorder in children.

As Table 1 shows that results of all levels significantly higher than the amount given (05/0) for analyzing. These results suggest no violation of the normality assumptions and scores of groups. Table 2 shows that significantly higher levels of 05/0 is not violated the assumption of equal variances. The slope of the regression test the homogeneity of assumption variables that are interacting with groups in Table 3 and show the statistics for all study variables is significant. So regression homogeneity assumption is confirmed.

#### CONCLUSION

The results of the variance-covariance shows the same Covariance (Table 4) of the two groups are not statistically different (05/0 < p). Output univariate analysis of covariance with the control group, the effect of pre-test showed significant differences in total factor behind of the test.

The results of analysis of covariance Univariate (Table 5) Effect on group play therapy and behavior problems of students with learning disabilities.





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The overall results to compare the groups in terms of mean variables in Table 6 shows that the overall analysis of four different test measures offer the same results. As the above table shows all the significant levels of usability testing, multivariate analysis of covariance allows ( $0.01 > P$ ) These results indicate that even after controlling for the effect of pre-test, two groups in mean variables are significantly different from other groups in at least one of the dependent variables there was no significant difference ( $0.01 > P$ ),  $56/119 F = .079/0 = \lambda$  Wilks).

The results indicates that the symptoms of behavioral problems showed a significant decrease. Further, four factors indicate that there are significant differences between the two groups ( $0.01 > p$ ). In other words, there are also pre-test control variables, the scores for conduct problems, social, psychosomatic and anxiety in the post-test and post-intervention groups compared to controls have been significantly reduced. The effect size indicates the highest standard difference which is related to conduct problems (83/0). Further, the adjusted mean significant as compared to the control group decreased the effectiveness of intervention.

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**Table 1 : Wilk Test**

Variable	Group	Base	Degree of freedom	Significant
Behavioral problems	Control	983/0	25	935/0
	Trial	0/978	25	0/838
Conduct Problems	Control	0/969	25	/ 615 0
	Trial	0/961	25	0/453
Social problems	Control	0/955	25	0/329
	Trial	0/948	25	0/318
Psychosomatic problems	Control	0/940	25	0/138
	Trial	0/938	25	0/134
Anxiety shy.	Control	0/960	25	0/611
	Trial	0/971	25	0/630

**Table 2: The Results of Tests to Evaluate withthe Same Variance**

Significant	The first degree of freedom	The second degree of freedom	Base	
0/195	1	48	1.73	Conduct Problems
0/782	1	48	0/078	Social problems
/ 095	1	48	2/907	Psychosomatic problems
0/171	1	48	1/934	Anxiety shy.
/ 088	1	48	3/032	Behavioral problems





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**Table 3- The Assumption of Homogeneity of Slopes of Regression Testing Two Variables**

Variable	The source changes	Base	Significance level
Conduct Problems	Group pre-test *	278/3	077/0
Social problems	Group pre-test *	389/5	025/0
Psychosomatic problems	Group pre-test *	459/0	501/0
Anxiety shy.	Group pre-test *	964/3	053/0
Behavioral problems	Group pre-test *	823/0	369/0

**Table 4 - Variance-Covariance Matrix of Test Results the Same Assumptions**

Test box	Base	Degree of freedom 1	Degrees of freedom 2	Significant
45/12	06/1	10	37/4135	38/0

**Table 5. The Results of Analysis of Covariance Univariate Effect of Group Play Therapy on Behavior Problems of Students with Disorder Learning**

Resource change	Total squares	Degree of freedom	Mean square	Base	Significant	ETA	Ability test
The effect of pre-test	75/612	1	75/612	32/25	001/0	35/0	99/0
Group	91/13849	1	91/13849	38/572	001/0	92/0	1
Error	24/1137	47	19/24				
Total	285979	50					

**Table 6 - Mean Adjusted in Managing Behavioral Problems in the Test Groups**

	Analysis		Control	
	The mean	SE	The mean	SE
The overall operating behavior problems	21/56	996/0	30/90	996/0





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**Table 7. The overall results Mankva analysis to compare the groups in terms of mean variables**

	Exam Name	Deal	Base	Degree of freedom Hypothesis	Degree of freedom Error	Significant	Square Effect size
Group	Pylayy effect	921/0	56/119	4	41	001/0	92/0
	Wilks lambda	079/0	56/119	4	41	001/0	92/0
	Hotelling effect	66/11	56/119	4	41	001/0	92/0
	The root of the	66/11	56/119	4	41	001/0	92/0

**Table 8 - Results of Covariance Analysis for Each Outcome Variable of the Study**

The variables in	Total squares	Degree of freedom	Mean square	Base	Significant	ETA	Ability test
Conduct Problems	57/1819	1	57/1819	68/221	001/0	83/0	1
Social problems	79/460	1	79/460	01/93	001/0	67/0	1
Psychosomatic problems	67/579	1	67/579	30/148	001/0	77/0	1
Anxiety shy.	58/189	1	58/189	22/61	001/0	58/0	1

**Table 9 - Average of Adjusted Results Groups**

Variables	Analysis		Control	
	The mean	SE	The mean	SE
Conduct Problems	447/13	607/0	913/26	607/0
Social problems	092/11	472/0	868/17	472/0
Psychosomatic problems	220/9	419/0	820/16	419/0
Anxiety shy.	767/9	373/0	113/14	373/0





## Effect of Deterioration on Emotional Intelligence of Staff in Education Kerman Province

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### ABSTRACT

This paper aims to study the effects of emotional intelligence (EI) on staff's and employees' citizenship behavior. Further, this article attempts to search the possible correlations between job significant and staff's citizenship behaviors. All analysis in this paper is based on 1393 employees who are working in education offices of Kerman province. The table made by krejcie and Morgan (1970) are used for organizing samples. Some standard questions organized in questionnaires and distributed among staffs. Our findings with study the results of questionnaires suggest that job of staff was a significant inverse relationship with their emotional intelligence and employee citizenship behavior, and ultimately there is a significant positive correlation between job and their citizen behaviors.

**Key words:** Depersonalization, Emotional and Physical Fatigue, Reduced Performance, Job Burnout, Emotional Intelligence, Citizenship Behavior.

### INTRODUCTION

Different definitions for emotional intelligence have been proposed. However, no one of these definitions are accepted by all researcher up to now. Because the concept of intelligence represents a set of processes or perceptions that reveal the behaviors and responses (Rasouli and et al., 1390: 147). Despite numerous tests to measure the emotional intelligence and its effects which are made, but the nature of intelligence is not clear yet. Many researchers' efforts have been made to resolve these ambiguities. The results of study made by Agha babaei, (1386) resolve these issues and concluded the results of applying various approaches for solving these problems (Aghababaei, 1386: 62).



**Masoumeh Makiabadi and Mehdi Yadollahi****Theoretical Framework**

Manpower loyal and consistent on goals of an organization is beyond the obligation and set of duties in job and activities. Further it is the major factor in the effectiveness of the organizers. There is such a force in the organization, not only led to higher levels of performance and lower rates of absenteeism, turnover and delays, but also makes good reputation in the community organizations with providing suitable conditions for development (Dawlatabadi , 1388).

Mirsepasi(1380) research shows that one of the important issues in large organizations is deterioration of labor employment and subsequently reduction of individual and organizational productivity. These organizations, because of poor planning are facing with production reduce, the high costs for health issues cause (such as illness and disability). Figures in industrialized countries show, the annual loss of millions of working days due to the absence, transfer, leave, early retirement and billions of dollars are imposed to organization because of damages that are happening in there structures or products.

Babylonian (1379) research showed that physiological effects of deterioration are: irregular heartbeat, low blood pressure, kidney function decline, dementia, and even heart failure. Researchers believe that many of the physical diseases that are associated with a variety of behavioral symptoms including irritability or any kind of threats in the current situation, the development of negative attitudes of suspicion, the factors which are leading to behaviors such as frequent absences, lethargy, loss of accuracy in performing tasks and etc.

The relationships of disease, and psychopathology in Poor social and family have declared. In this context, understanding the factors that are having role in the development of atrophy is important because it reduces the effectiveness and increased absenteeism in people who suffer from atrophy (radial, 1392: 23). On the other hand, individual working behaviors in the last decade has been focused (residing, 1384: 21) more. Managers must be work with different people with various behaviors and predict their opinions and responses, the extract each member's ability to achieve the goal of an organization (Rahmani Yazdanifar, et al, 1388). Some of these undesirable behaviors, which can be harm the members of the organization must be figure out (such as: incomplete work, physical aggression, verbal objections, and etc.). The behavior of people help administrators to identify the removal of barriers to improve their performance (Shy'm, M., 1388). On the other hand, desired behaviors are consciousness, a sense of altruism, generosity, forgiveness and punctuality to improve the effectiveness, efficiency and overall productivity (Abraham B., 1388). OCB is seen as desirable, because such behavior increases the resources available and in the other hand need to reduce costly and formal control mechanisms (Abel et al, 1388).

Organizations, voluntary do not desire to work or develop the effectiveness of their collective wisdom. Difference between forced and voluntary cooperation is important. Duty efforts insight favor for capabilities flourishing authorized organization. In this case, people usually go out of their own interest and responsibility in order to prioritize the interests of others. In this case, the trust and commitment of great importance, and in the absence of a voluntary cooperative behavior is rarely achieved. In addition to change their current behaviors, voluntary cooperation is a key factor in the effective implementation of strategic decisions. Implementation of the strategic objectives requires simultaneous of action on creativity and the spirit of cooperation (Chegini et al, 1389). Given the importance of citizenship in modern societies with job burnout as a factor that asset of any organization, is very necessary. We seek the impacts of the different variables on this issue, thus, the following hypotheses were formulated.





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#### The Main Research Hypotheses

The main hypothesis is: job burnout among staff on organizational related with emotional intelligence has a significant positive impact on the province.

This hypothesis is analyzed in three parts. First, the impact of EI on job burnout followed by the impact of EI on job burnout citizenship behavior and ultimately the impact on citizenship behavior is discussed.

#### The Objectives of This Study

Examining and describing the state of deterioration of employees in the departments of education in Kerman province.

Examining and describing the state of emotional intelligence education of staff in the offices in Kerman province.

The relationship between different dimensions of job burnout on emotional intelligence and education of employees in offices on Kerman province.

## METHODOLOGY AND RESEARCH DESIGN

To minimize the ambiguity of the research methodology for data collection and interpretation method is important. The framework for achieving the objectives of this study and test the hypothesis operations or actions and providing answers to the research questions, is designed. Appropriate research methods should be selected based on research propositions (Sarmadet al., 1384).

#### Questionnaire Survey

The data for this study is collected through three questionnaires as follow

Job burnout questionnaire: Questionnaire applied in two standard model. The questionnaire consists of 16 questions related to depletion of traits related to physical and emotional exhaustion, and also related to a decrease in performance.

Emotional Intelligence Questionnaire: Questionnaire staff bradby Jane Graves et al, (2005) consists of 28 questions related to consciousness, the self-management, social awareness, and relationship management.

#### Analysis Method

This research includes two major sections for data description and analysis. Data description section describe and indices demographic and variables of research by distribution abundance and statistics. Data analysis section checks assumptions and research questions. In this research 338 employees from educational office in Kerman are selected. Thus, for checking assumptions solidarity Pearson, a NOVA and t-test are used to measure the effects of independent and dependent variables with applying regression model to decomposition and analysis data SPSS is used.

#### Description of Quantitative Variables

This research aims to examine the values of the cross-check status of job burnout and its dimensions (devoid of personality traits, emotional and physical fatigue, and reduced performance), EI and its dimensions (self-management of awareness social relationship management) and OCB and its dimensions (loyalty, friendship, virtue citizenship, sportsmanship, respect and reverence) as it is shown in Table 2.





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#### Analysis Method

This research study aims to analyze the perception atrophy, emotional intelligence and behavior of citizens from different dimensions. Data should be examined by analytical tests. In this regard, the assumption of normality of the variables studied and determined by interpretation of the coefficient of skewers and elongation factor. If the ratio is between -2 and +2 are normal data (Hare, 2006). The data normality test, Pearson and Spearman's tests are recommended. The coefficient of job burnout variable is between 0.3- and 0.6 and coefficients between 0.3- and 1.0 EI and variable coefficients between 0.2- and 1.3 citizenship behavior was determined by the amount of data normality was confirmed.

In addition, histograms of variables as normal (bell), so assuming normality of data Pearson test the hypotheses of this study were selected for analysis. To demonstrate this review charts normality of the variables are presented as follows. As specified in the histograms (4-8) over a small deviation from the normal line that represents normality of data. Box plot of (4.10) with respect to the median line is located approximately in the middle of the trail lines in remote parts of the balance is also seen in the graph does not have all these data are normal. In this paper first examines the impact of EI on job burnout will be followed by the impact of EI on job burnout citizenship behavior and ultimately the impact on citizenship behavior will be discussed. The relationship between job burnout (X) and EI (Y) using the Pearson correlation coefficient, scatter plot and regression line ( $Y = \alpha + \beta X + \epsilon$ ) is determined. Considering the correlation coefficient was calculated (the correlation coefficient is close to 1 to 1 ratio, and the stronger the desire, a strong negative correlation between the two variables) and  $\beta$  is estimated with respect to the regression line The scatterplot, job burnout and emotional intelligence is a negative correlation between the calculated and the P value (0.000) in the table of coefficients test, analysis of variance and less than 05/0, so there is a linear regression fit The test statistic is the F, which is quite a bit more than 69 significant level zero and this is supposed to be derived assuming H0 is rejected and H1 accepted. Resulting in the deterioration of emotional intelligence education among employees in Kerman province, revealed a significant relationship (001/0> P), this relationship is reversed and since the amount 0.41- calculated Pearson's correlation coefficient (Table 3). The relationship between the average level. Meanwhile, according to the modified coefficients of determination ( $R^2_{adj}$ ) estimated that 16% of EI by deterioration is predictable (Tables 4-10, 4-12 and Figure 4- 11 and 4-11). For Validity regression analysis, normality, constant variance and uncorrelated errors ( $\epsilon$ ) are studied. Based on the camera's value and Watson (91/1) is between 5.1 to 5.2.

You cannot use the standard regression coefficients column which is calculated as follow:

Atrophy (32/0 -) + 65/4 = EI

The questionnaire was distributed between 350 job burnout, emotional intelligence and citizenship behavior among 31 staff in education department of Kerman province, 338 questionnaires were suitable for evaluation. The amount and percentage of the demographic characteristics of employees by age, gender, and education level are presented. SPSS 22 software is used for analysis and the results of analyzing data by applying Pearson normality test between independent variables (job burnout), dimensions of personality traits, physical and emotional exhaustion and reduced performance of the variable intermediate (EI) and the mediator and the dependent variable (OCB).

#### RECOMMENDATIONS BASED ON THE RESULTS

Because most of the people in the province's education with almost middle-aged range and with work experience have formed the analysis of strain immobilize planning and executing the senior managers. Since there is a significant positive correlation between EI and citizenship behavior, so it is recommended to increase the staff's behavior and citizenship classes for enhancing emotional intelligence.





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With excessive regulation and lack of personal relationships, repetitive tasks that cause excessive depletion of character traits, and this is naturally effectson the mediation of emotional intelligence on citizenship behavior. Job rotation causes the spirit of diversity, therefore, it is suitable for employees in various jobs. Entertainment programs and creating a friendly environment will authorize more number of people, thus preventing the deterioration of proposed measures in this area must be implemented.

The purpose of this study was to evaluate the impact of job loss on citizenship behavior with the mediator role of emotional intelligence in education departments in Kerman province. The study population included 2,781 employees of the Office of Education, the province and the sample size was calculated using the table Mvrgan-krejcie. The sample was made by applying stratified-random selection. To collect data from a questionnaire consisting of demographic questions, the questionnaire job burnout, emotional intelligence questionnaire was used OCB. Among the selected people (8/75 percent) was Male and (24.2%) of the samples was female. The most frequent education level in the sample with a BA 8/67 Percentage of subjects with a mean age of 40 years, was the highest. Most people in the sample included people with experience of 20 years were married (90.3%). These statistics suggests that staff education is mostly older people and are on the age of retirement.

## CONCLUSION

In order to do this research, four hypotheses were formulated and software SPSS and Pearson's correlation test, T-test and Anova to measure the correlation are used for testing our hypotheses. Based on our results, the linear regression of variables influence the behavior of citizenships. The results in the expression of the fact indicate that, three factors including depletion of personality traits, physical and emotional exhaustion, are reduced performanceof job burnout inversely and significantly related to emotional intelligence and behavior of citizens. Emotional intelligence is also correlated positively with OCB. Therefore, job burnout significantly associated with citizenship behavior and related with the emotional intelligence of educational staffs in province.

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**Table 1. The Frequency and Percentage of Subjects According to Age and Education**

Age				20-30					
Total	Top 51	41-50	31-40						
	9	3	3	2	1	Abundance	Diploma	Education Level	
	2.66	0.88	0.88	0.59	0.29	% of total			
	62	6	31	19	6	Abundance	Diploma		
	18:34	1.77	9.17	5.62	1.77	% of total			
	229	5	92	107	25	Abundance	License		
	67.75	1.47	27.21	31.65	7.39	% of total			
	38	0	14	22	2	Abundance	MA		
	11:24	0	4.14	6.5	0.59	% of total			
	338	14	140	150	34	Abundance	Total		
	100	4.14	41.42	44.37	10:05	% of total			

**Table 2. Descriptive Indices of Variables**

Variable	Dimension	Count	Fashion	Middle	Average	Standard deviation	Skewness	Elongation	Minimum	Maximum
Atrophy	Devoid of personality traits	338	2	2	2.1	0.8	0.7	0.4	1	5
	Physical and emotional exhaustion	338	2	2	2.4	0.9	0.3	0.1-	1	5
	Reduced performance	338	2	2	2.1	0.5	0.8	1.8	1	4
	Total	338	2	2	2.2	0.6	0.3	0.6	1	5
Emotional Intelligence	Consciousness	338	4	4	4.3	0.6	0.4-	0.2-	2	5
	Management of	338	4	4	3.5	0.7	0.08	0.3-	2	5
	Social Awareness	338	4	4	3.9	0.5	0.3-	1.1	2	5
	Relationship Management	338	4	4	4.1	0.6	0.5-	1.4	1	5
	Emotional Intelligence	338	4	4	3.9	0.5	0.3-	1.0	2	5
OCB	Deontology	338	4	4	4.3	0.6	1.1-	3.1	1	5
	Altruism	338	4	4	4.2	0.7	0.9-	1.1	1	5
	By virtue of citizenship	338	4	4	4.1	0.6	0.9-	3.1	1	5
	Chivalry	338	4	4	4	0.8	0.6-	0.5	1	5
	Reverence	338	4	4	4.2	0.6	0.5-	0.7	2	5
	Total	338	4	4	4.1	0.5	0.2-	1.3	2	5





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**Table 3. Summary Pearson Test EI Versus Atrophy**

Emotional Intelligence	Atrophy		
0.413-	1	Pearson coefficient	Atrophy
0.000		P	
338	338	Samples	
1	0.413-	Pearson coefficient	Emotional Intelligence
	0.000	P	
338	338	Samples	

**Table 4. Summary Linear Model of Emotional Intelligence against Deterioration**

The correlation coefficient (r)	Coefficient of determination (R <sup>2</sup> )	Coefficient of determination Amended (R <sup>2</sup> <sub>adj</sub> )	Estimation error	Watson camera
41/0	17/0	168/0	45/0	91/1

**Table 5. Linear Regression Analysis of Emotional Intelligence against Deterioration**

Source of	The sum of squares	Degree of freedom	Mean square	F	P
Regression	49/14	1	49/14	03/69	0.000
Error	54/70	336	21/0		
Sum	04/85	337	-		

**Table 6. Test Parameters (A and B) Model of Emotional Intelligence against Deterioration**

Variable	Estimate	SE	t	P
(Fixed)	65/4	088/0	65/52	0.000
Atrophy	32 / 0-	039/0	3/8	0.000





## Predicting the Marital Satisfaction of Teachers Based on their Metacognitive Beliefs and Differentiation

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### ABSTRACT

This study aims to predict marital satisfaction of teachers based on metacognitive beliefs and their differentiation. For this study 240 primary teachers in Sirjan city were selected. For studying the metacognitive beliefs, three types of questionnaires are used for collecting data including: (MCQ-30) (Wells and Cartwright - Hutton, 2004), short form of differentiation inventory (DSI-R) (Drake, 2011) and short form of Enrich Marital Satisfaction Scale (Fowers and Olson, 1993). Descriptive and inferential statistical methods are used for analyzing the collected data. The results showed that negative beliefs about uncontrollability of thoughts has significant negative effects on predicting the differentiation of teachers and positive beliefs are significant positive effects on predicting the marital satisfaction of teachers. Further, poor cognitive confidence has negative effects on predicting the marital satisfaction of teachers. Differentiation has significant effects on positive predictor of marital satisfaction of teachers and differentiation in the relationship between meta-cognitive beliefs and marital satisfaction plays an intermediary role. In addition, the results showed that poor emotional reactivity and lack of emotional cutoff have significant effects on positive predictors for marital satisfaction of teachers. Finally based on the results, this investigation attempts to propose a solution for improving teachers' marital satisfaction.

**Key words:** Marital Satisfaction, Metacognitive Beliefs, Differentiation, Positive Predictor, and Negative Predictor.





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## INTRODUCTION

Marriage as a social phenomenon has been studied by several researchers (Beach, et al, 2000). These researchers focused on study the marriage satisfaction and stability as important issues that deserve more attentions by researchers. According to Anderson and his colleagues (1994) healthy marriage depends on elements such as commitment, sexual satisfaction, and the lack of elements of violence and betrayal. It seems that consent of the spouse and satisfaction with their marriage and the marriage commitment for the success of a marriage is important. In addition, several studies on this subject found that marital satisfaction of wives is an important predictor of stable and constructive marriage (according to Hugh and Lindsey, 2007). Marital satisfaction dedicate their relationship, (Vyrdn et al., 2008 ). Since there are several factors that effecton marital satisfaction and play a significant role in improving marital satisfaction.

Metacognition, knowledge about self-knowledge, or the knowledge or cognitive process that involves evaluation, supervision or control cognition (Flavl, 1979; quoted Zvhr, 1991). Metacognitive knowledge can be considered as general aspects that play a role in all cognitive activities. Meta-concept includes several aspects of knowledge (beliefs), cognitive processes and strategies evaluate inspection or control (Zvhr, 1991, Wells, 2000).

Model metacognitive has two kinds of belief metacognitive and identified as:

Beliefs and positive cognitive. Beliefs have benefits and involvesactivities.

Metacognitive negative beliefs control thoughts (wells, 2009).

Differentiation hint to ability creation balance between processes intellectual and processes affective at mental level and creation balance between protection individuality along with experience intimacy between individual (the tvaysvn and friedlander, 2000)

Franklin (2000), proposed four factors: emotional reaction that differentiated people. At next inside mental, capacity to access to a feeling tight and identity own and speech free thoughts and views individual is at the level between individuals that differentiated relation and close feeling comfort. On the other hand patterns between individual actions and beliefs or separation affective shows mechanisms for management of emotions extreme or understanding threats and security. Exaggeration has been from away and independence from others at condition tense play. At conversely, mixture between individual to title ambiguity at borders between individuals or members family or lead to role full color wet compulsion and emergency, the problem own catch tolerance difference views and the problem at decision website. Results show that separate life and independent life far from family effects on people's marital life.

Based on these discussions, the main issue of this study is analyzing the effects of metacognitive beliefs on teachers' marital satisfaction or separation. How can increase marital satisfaction of teachers.

Marriage is an almost universal human foundations (Terman, 1939; quoted Hamidi, 1386). A substantial number of people in the stages of their lives have intimate relationships, according to recent statistics on marital trends by the US Census Bureau (1996), more than 94 percent of men and Women at least once in their lives up to age 60 are married. According to the reports which are published by Statistical Centre of Iran in 1387, 841,107 marriages registered in the same year, 99,852 divorces were registered, which is about 5/8 percent. According to the report of that center, the divorce rate has been increased in the recent years.





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A study which is done by Stanley (2002) in Oklahoma. Researchers asked from 2.300 residents in this city the reason of divorce. They concerned on 10 factors for identifying the divorce reasons, 58% of divorce happened because of lack of consent. So, it is necessary to figure out all factors that cause healthy marriage. Some of these factors are: intimacy, commitment, emotional communication, conflict resolution skills and spirituality (Shourd, 2008). It is known that the most important predictor of marital satisfaction of spouses in a marriage is stable. Life-long commitment to marriage, loyalty to his wife, a strong moral values, respect of his wife as a best friend and a commitment to sexual fidelity of the characteristics of marriage are satisfied with life more than 20 years (according to the Hyvy et al., 2007) . Therefore, the results of the above study, suggests that research on marital satisfaction and its influencing factors for the development of a stable marriage is important and necessary. Considering the fact that research in the role of metacognition and differentiation in the form of interactive communication and marital satisfaction is considered, there is need for this research is necessary and this study on our knowledge Background factors influencing marital satisfaction will be added to the results of this study whatever it is can help couples and the authorities concerned to adopt sustainable methods to provide the right conditions for the marriage of the problems of relating to the failure to satisfy the irreparable losses to the individual and society associated with (such as divorce and relationships decrease).

#### Theory and History

**Metacognition** : metacognition, knowledge about self-knowledge, or the knowledge or cognitive process that involves evaluation, supervision or control cognition (Flav1, 1979; quoted Zvhr, 1991). Metacognitive knowledge can be considered as general aspects that play a role in all cognitive activities. Meta-concept that includes several aspects of knowledge (beliefs), cognitive processes and strategies that evaluation, inspection or control (Zvhr, 1991, Wells, 2003, translated Mohammadkhani, 1388). Metacognitive beliefs subscales:

Negative beliefs about uncontrollability of thoughts.

Positive beliefs which help an individual person to deal with his/her problems.

Cognitive awareness to attention of individual person.

Make poor cognitive memory.

The need to control thoughts, inability to control person's thoughts or weakness (Wells, 2000, translated Bahrami, 1385).

**Differentiation:** Differentiation the fertility the concept theory the system and family is and by Bowen provided from is, the ability man at resolution processes intellectual and feeling his from others to show and a. Individuals differentiation finding can direction his to at life selection the and at location and highly emotional that at most from individuals lead to outbreak behavior other voluntary and catch decision failed and there, check own to from lose and with considering wisdom and logic decision of they (bowen, 1978). Various aspects of differentiation include:

**Emotional reactivity** a condition in which one's feelings on reason and logic prevailed and only the individual decisions based on emotional reactions take place. a less differentiated, more emotional reaction and more energies to experience the intensity of feelings is noticed. For such a person, it may be difficult to remain calm in response to the AS Vatf others. In a world of emotional, trapped (blue and Palmer, 2006).

**My position** means having clear ideas and beliefs in life. I have strong differentiation of personal identity or position of the strong and the consent of others and their beliefs do not change behavior (Hryg, 1986).

**Romantic getaway:** Children who are placed in the family projection process and typically during adolescence or even before that, a variety of strategies to escape from the bondage of family bonds are unresolved. These strategies





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can be physical distance from the family or create psychological barriers such as not speaking with a member of the family (Askvrn and Dandy, 2004; Tvasvn and Friedlander, 2000).

**The mix with others** : According to Bowen (1975), the main problem in the family, emotional fusion and differentiation is its fundamental solution. It is said that those less differentiated, close relations, too busy or mixed with others (Thomson, 2003).

Marital satisfaction, marital satisfaction form of marriage in which the couple together and happy feeling satisfied. Marital Satisfaction match between the current situation and the situation is expected. The definition of marital satisfaction is achieved when the present status of marriage is consistent with the expected one (Harmon, 2005).

#### Domestic and foreign research

Michael, pakpur and ganji (1391) study entitled "**comparison of metacognition in bright and normal students**". The results showed that knowledge school sharp intelligence and normal at beliefs metacognitive difference. In addition, between knowledge school sharp intelligence and normal at small factor of consciousness cognitive and belief about need to check thoughts, difference meaning there were at factor and confidence cognitive, beliefs the positive about all beliefs negative about management and risk, difference means of observation there.

Rajabi and Rasaii (1388) conducted a study entitled "**Evaluation of the subjective components of happiness and the level of differentiation in predicting marital satisfaction in Kerman government staff**". The results showed that: the components of happiness and mental components of its differentiation. Further, there is a significant positive correlation with marital satisfaction. 2) The stepwise multivariate regression analysis showed that only the components of satisfaction among the five components of mental happiness is predicted marital satisfaction. 3) Of the four components of "self-differentiation" only elements of "emotional injury" and "My Place" is predicted marital satisfaction (according to the righteous, 1392).

The research which is done by Badrvsh (1392) to **investigate the relationship between attachment and intimacy and marital satisfaction** consisted of 100 subjects who were selected randomly and the results showed a significant positive correlation between secure attachment style and marital satisfaction.

Saidi (1389) studied **the relationship between metacognitive beliefs optimism. This research** reported that among all non-meta-cognitive beliefs, there is a significant relationship with optimism. And also the relationship between positive beliefs about cognitive self-consciousness with optimism and positive and negative beliefs about uncontrollability and belief in the need to control negative correlation with optimism.

Dundee (2004), studied the **relationship between differentiation and anxiety**. In their view, the dynamics of mixed families with emotional dependence, lack of autonomy and near the extreme (high support) is determined, there may be a sense of confusion, stress and anxiety in family members. The abnormal family relations, to understand processes.

Green (1986), studied **the relationship between differentiation and psychological function in healthy people, patients and outpatients of the Psychiatry**. They concluded that outpatient and inpatient, in compared to healthy people, levels have low differentiation (according to the righteous, 1392) .

Garner (1990), made a research about **the effectiveness of cognitive and metacognitive strategies**. There results shows that the behavior of the strategic or corporate strategy, increases learning. It is clear that skilled learners know when to act strategically.





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## METHODOLOGY

The data collection and also identifying correlation between variables are studied in this section. The study population consisted of all married teachers in primary schools in Sirjan. The number of teachers on the basis of statistics obtained from Department of Education Sirjan was 627 people that were working in 75 primary schools. Krejcie table on the basis of population and Morgan (1970) sample of 240 was determined and random cluster sampling respectively. 240 patients evaluated 13 did not specify their gender. Out of 227 respondents, 60 (25%) were male and 167 (6/69%) were female. 221 individual respondents had 34 (2/1, 4%) Education Diploma, 52 patients (21.7%) and, 114 (5/47 percent) of graduate studies, 36 patients (15%) postgraduate and 3 (3 / 1%) had a doctoral degree. 240 patients' evaluated 19 patients did not specify their age. 221 individual respondents, and 66 (29.9 Percent) had age between 21 and 30 years, 88 patients (8/39 percent) had age between 31 and 40 years, 50 patients (22.6%) had age between 41 and 50, 17 (7.7%) were between 51 and 60 years old. Therefore, 12 elementary schools were randomly selected and distributed questionnaires among school teachers.

Data for this study was gathered from questionnaires which were used as follows :

**Enrich marital satisfaction questionnaire:** The questionnaire by David Ach.alsvn, Dyvydjy, Fvrnyrv've Joanne. Drankmn made and the purpose of this questionnaire the areas of labor and marital strengths. The use of this questionnaire is to identify couples who need counseling and strengthen their relationship. In addition, the questionnaire as a valid tool in many clinical studies to evaluate the ENRICH marital satisfaction Ast.prsshnamh used is composed of 12 subscales. First, the 5-item scale, and other factors each of which has 10 questions. Subscales of the questionnaire is as follows: distorted ideal, marital satisfaction, personal issues, communication, conflict resolution, financial management, leisure activities, sex, children, parenting, family and friends, and egalitarian roles religious orientation. In this study, the Short Form 15-item questionnaire by Favrz and Olsen 9 (1993) Validation is used. Answering questions of the questionnaire range from strongly agree (5) to strongly disagree (1) is scoring. Also scoring questions 2, 5, 8, 9, 12 and 14 reverse.

**Metacognition questionnaire (MCQ-30):** The questionnaire Cartwright Wells and Hutton (2004) has 30 items, which is built on four degree range disagree to strongly agree with the scoring. The questionnaire consists of five subscales: negative beliefs about uncontrollability of thoughts, positive beliefs about worry, cognitive self-consciousness, poor cognitive confidence and belief in the need to control thoughts.

**Inventory differentiation (DSI -R) :** This questionnaire by Askvrn (2000) built a 46-item instrument that is used to measure the degree of differentiation and the lack of emotional reaction Chharkhrdh scale, my position, lack of emotional escape, and a mixture of low emotional others made. For each question on a scale from 1 to 6 degrees (in my case it is not correct to 6 (completely true in my case) is scoring. In order to calculate the overall scoring of the questionnaire subscales scores of each question above (with respect to reverse scores) are added together. The interpretation of these results is that low scores are indicative of the low differentiation and high scores high marks differentiation. In this study, the Form 20-item questionnaire by Drake (2011) Validation is used. In the questionnaire, the questions of 2, 4, 5, 6, 7, 8, 9, 11, 13, 14, 15, 16, 17, 18 and 19 reverse.

### Methods of Data Analysis

Various Researches for analyzing data with Samples applied statistics descriptive methods. Statistics descriptive statistics such as central descriptive indicators (mean, mode and median), measures of dispersion (standard deviation and variance) use indicators skewness and elongation. To Analysis data and test hypotheses different methods such as statistical pearson correlation, regression and hierarchical regression analysis are used and SPSS as a software is used.





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## FINDINGS AND HYPOTHESES

### First Hypothesis: Metacognition Predictor of Differentiation Teachers

Stepwise regression analysis to test metacognition is estimated that a significant differentiation predicts was ( $0.10 > p$ ,  $61/22 = 2.34$  and  $5F$ ) and Watson statistic camera  $92/1$ . The results showed that metacognitive beliefs  $1/31\%$  of the variance that had de-differentiation ( $311/0 = R^2$  with t-statistics and the regression coefficients. The results suggest that negative beliefs about uncontrollability of thoughts and a significant negative predictor for teachers differentiation ( $0.10 > p$ ,  $513/0 = \beta$ ), but other significant predictors of metacognition for differentiation not teachers.

### The Second Hypothesis: Metacognition Predictors of Marital Satisfaction Are Teachers.

Stepwise regression analysis to test metacognition, is estimated that a significant marital satisfaction of teachers was significant ( $0.10 > p$ ,  $64/9 = 2.34$  and  $5F$ ) and Watson statistics  $07/2$  camera was. The results showed that metacognitive beliefs  $3/15$  percent of the variance in marital satisfaction may be explained ( $153/0 = R^2$ ). The regression coefficients with statistic t is a significant level. The results show that metacognitive beliefs, positive beliefs on positive predictor of marital satisfaction teachers are ( $05/0 > p$ ,  $143/0 = \beta$ ), but make poor cognitive predictors of marital satisfaction and significant negative Teachers are ( $0.10 > p$ ,  $295/0 = \beta$ ).

### Third Hypothesis: Differentiation Predictors of Teachers' Marital Satisfaction

Stepwise regression analysis to test for significant differentiation estimated that a teacher's marital satisfaction was ( $0.10 > p$ ,  $08/17 = 2.38$  and  $1F$ ) and camera Watson statistic was  $2.14$ . The results showed that differentiation  $3/6\%$  of the variance explained the de-differentiation ( $063/0 = R^2$ ). The results show a significant positive predictor rate of marital satisfaction differentiation Teachers ( $0.10 > p$ ,  $259/0 = \beta$ ).

### Fourth Hypothesis: Differentiation in the Relationship between Metacognitive Beliefs and Marital Satisfaction of Teachers is the Role of Mediator

A hierarchical regression analysis to examine the relationship between metacognitive beliefs and marital satisfaction differentiation estimated that a teacher has the role of mediator and used the model for significant ( $0.10 > p$ ,  $302/9 = 2.33$  and  $6F$ ) and Watson statistic camera  $08/2$ . The results showed that differentiation in the regression model, the coefficient of determination from  $153/0$  to  $172/0$  changed, so metacognition and differentiation  $2/17$  percent of the variance in marital satisfaction may be explained.

The results of Table 4, show that model can be differentiate the amount of regression coefficient ( $\beta$ ) to negative beliefs uncontrollability of  $143/0$  to  $148/0$  thoughts rise, but the regression coefficient ( $\beta$ ) to ensure poor cognitive  $295/0$  to  $287/0$  is reduced. Login differentiation also led to the regression model, the regression coefficient ( $\beta$ ) is significant for cognitive self-awareness. Further, self-knowledge is positive predictor of marital satisfaction of teachers ( $05/0 > p$ ,  $132/0 = \beta$ ). Thus, hierarchical regression analysis showed that differentiation in the relationship between metacognitive beliefs and marital satisfaction plays the role of mediator. Further, the relationship between metacognitive beliefs and marital satisfaction is affected.

### Fifth Hypothesis: Elements of Differentiation Predictors of Marital Satisfaction Are Teachers.

Stepwise regression analysis estimated that a component of differentiation significantly marital satisfaction of teachers was significant ( $0.10 > p$ ,  $45/7 = 2.35$  and  $4F$ ) and camera Watson statistic was  $2.20$ . The results showed that





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elements of differentiation 7 / 9% of the variance explained the marital satisfaction of ( $0.97/0 = R^2$ ). The regression coefficients in Table 12 along with the statistic  $t$  is a significant level. The results show that the elements of differentiation, serious emotional reaction ( $0.1/0 > p$ ,  $277/0 = \beta$ ) and lack of emotional escape ( $0.05/0 > p$ ,  $190/0 = \beta$ ) predicts teachers significant and marital satisfactions.

## CONCLUSION

The results showed that metacognitive and positive beliefs having positive effects on predicting marital satisfaction of teachers, but poor cognitive are weak predictors for marital satisfaction of teachers. Increasing marital satisfaction emphasizes the positive beliefs and attempts to ensure a couple of poor cognitive decline.

The results showed that negative beliefs about uncontrollability of thoughts and negative predictive value for differentiation of teachers based on their marital satisfaction; reduce the quality of their marital relationship, because the results showed that people are differentiated from higher marital satisfaction.

The results showed that the elements of differentiation, serious emotional reactions and lack of emotional escape significant positive predictor of marital satisfaction of teachers. Their feelings can be expressed and the pleasure. The reason of separation and is differentiated due to these features and higher marital satisfaction. It is suggested that couples do not separate themselves from their partner.

The ability to overcome urgent changes is an important factor for maintaining a good quality of life, and this is possible only through medicine and biology. Further, psychological variables and features improve cognitive subject. Therefore, health professionals and researchers in the field of body and mind, attempt to increase and enhance the features, such as increasing psychological metacognition, differentiation of individual attention and conditions for notification and information effect.

It is suggested to seminars and workshops organize more, since there are positive beliefs to people. Poor cognitive confidence and belief need to control thoughts of couples.

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**Table 1: Forecasts Teachers Differentiation Based on Metacognition**

Model	Not standardized coefficients		Standardized coefficients	t	P
	B	SE	Beta (β)		
Constant	415/5	295/0		368/18	001/0
Negative beliefs about uncontrollability of thoughts	591 / 0-	084/0	<b>513 / 0-</b>	076/7	001/0
Positive beliefs about worry	028 / 0-	065/0	027 / 0-	436 / 0-	663/0
Cognitive self-consciousness	048 / 0-	090/0	032 / 0-	529 / 0-	597/0
Make cognitive poor	042 / 0-	070/0	040 / 0-	607 / 0-	545/0
The need to control thoughts	044 / 0-	090/0	031 / 0-	495 / 0-	621/0

**Table 2. Predicted Marital Satisfaction of Teachers on the Basis of Metacognition**

Model	Not standardized coefficients		Standardized coefficients	t	P
	B	SE	Beta (β)		
Constant	162/4	276/0		059/15	001/0
Negative beliefs about uncontrollability of thoughts	108 / 0-	078/0	111 / 0-	383 / 0-	168/0
Positive beliefs about worry	125/0	061/0	<b>143/0</b>	067/2	040/0
Cognitive self-consciousness	161/0	084/0	127/0	909/1	057/0
Make cognitive poor	260 / 0-	065/0	<b>295 / 0-</b>	990/3	001/0
The need to control thoughts	127 / 0-	084/0	106 / 0-	505/1	134/0

**Table 3: Predicted Marital Satisfaction of Teachers on the Basis of Differentiation**

Model	Not standardized coefficients		Standardized coefficients	T	P
	B	SE	Beta (β)		
Constant	004/3	190/0		785/15	001/0
Differentiation	219/0	053/0	<b>259/0</b>	133/4	001/0

**Table 4: Predicted Marital Satisfaction of Teachers Based on Metacognition and Differentiation**

	Model	Not standardized coefficients		Standardized coefficients	t	P
		B	SE	Beta (β)		
The first model	Constant	162/4	276/0		059/15	001/0
	Negative beliefs about uncontrollability of thoughts	108 / 0-	078/0	111 / 0-	383 / 0-	168/0





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	Positive beliefs about worry	125/0	061/0	<b>143/0</b>	067/2	040/0
	Cognitive self-consciousness	161/0	084/0	127/0	909/1	057/0
	Make cognitive poor	260 / 0-	065/0	<b>295 / 0-</b>	990/3	001/0
	The need to control thoughts	127 / 0-	084/0	106 / 0-	505/1	134/0
The second model	Constant	328/3	427/0		795/7	001/0
	Negative beliefs about uncontrollability of thoughts	017 / 0-	085/0	018 / 0-	202 / 0-	840/0
	Positive beliefs about worry	130/0	060/0	<b>148/0</b>	162/2	032/0
	Cognitive self-consciousness	168/0	083/0	<b>132/0</b>	018/2	045/0
	Make cognitive poor	254 / 0-	065/0	<b>287 / 0-</b>	932/3	001/0
	The need to control thoughts	120 / 0-	083/0	100 / 0-	439/1	131/0
	Differentiation	154/0	061/0	<b>182/0</b>	543/2	012/0

**Table 5. Predicted Marital Satisfaction of Teachers Based on Components Differentiation**

Model	Not standardized coefficients		Standardized coefficients	t	P
	B	SE	Beta ( β )		
Constant	995/2	205/0		621/14	001/0
Serious emotional reaction	170/0	050/0	<b>277/0</b>	3/365	001/0
My status	029/0	050/0	042/0	588/0	557/0
Lack of emotional escape	091/0	030/0	<b>190/0</b>	013/3	003/0
The lower mixing with others	083 / 0-	047/0	139 / 0-	753 / 0-	081/0





## Presenting a New Approach for Compressing Sequential Patterns in the Mining Process

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### ABSTRACT

Data mining is the process of discovering the valid, new and understandable patterns. It can be say that data mining is the process of finding patterns and correlations among dozens of data by analytical tools which leads to extract new information from a data base . Two examples of sequential patterns are as follows: "80% customers who buy a TV , they will be buy camera on the same day. Every time that stock of Microsoft Corporation falls 5%, IBM stock will be reduced during the 3-4 days." The first model helps to manage the store shelves well and the second model helps to operate in economic crisis in companies, properly. In this study, we conducted a review on the pattern extraction algorithms and then, they have studied on the basis of the historical sequence of providing the algorithms .These patterns will be divided based on two categories Apriori and FP-Growth. Then, the two - proposed algorithms GoKrimp and SeqKrimp introduced by using the least description minimum length principle i.e, the models are useful which can compress the base more and more and we call them new Krimp and finally, we observed the results on the standard data base.

**Key words:** Data Mining, Pattern Exploration, Combined Database, Extraction Algorithms, Train .





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**INTRODUCTION**

Data mining is the process of discovering the valid, new and understandable patterns. Exploration the sequential patterns, which are extracted the repeated subsequence from a sequential database, in recent years, due to its high use such as analysis of customer behavior, prediction the stock and sequence analysis of DNA, has attracted much attention in the field of data mining. Sequence exploration item was introduced in [ 2 ], firstly. Two examples of sequential patterns are as follows: "80% customers who buy a TV, they will be buy camera on the same day. Every time that stock of Microsoft Corporation falls 5%, IBM stock will be reduced during the 3-4 days." The first model helps to manage the store shelves well and the second model helps to operate in economic crisis companies properly. Also, exploration the sequential pattern is important to analyze biological data [3, 4]. Sequence exploration.

Sequential exploration can be considered as dependence extraction in temporal database [5, 6]. In sequence exploration, we can be extracting the current sequence patterns. For example, after the occurrence of an event, likely, another event might occur too. The use of prior and initial algorithms leads to extraction the obvious patterns or more patterns. In this article, we want to reduce the number of repetitive patterns by compressing the extracted sequences in order to deduction the repeated number of sequences and in other words, compression in sequences.

**Problem the Exploration the Sequence Patterns**

Let  $I = (i_1, i_2, \dots, i_k)$  is a set of items. A subset of  $I$  will be called item set or element. One sequence 's' will be shown by  $\langle t_1, t_2, \dots, t_l \rangle$  that "tj" will be called item set. According to this definition " $t_j \in I$  for  $1 \leq j \leq l$ ", we can show item set of  $t_j$  by  $(x_1 * x_2 * \dots * x_m)$  which "xk" is as an item and therefore,  $(x_k \in I \text{ for } 1 \leq k \leq m)$ . Number of items in a sequence will be called "length". Sequence of length 1 called 1-sequence. If

$1 \leq i_1 < i_2 < \dots < i_n < m$  within  $a_n \in b_{i_1}, \dots, a_2 \in b_{i_2}, a_1 \in b_{i_1}$ , therefore,  $S_a = \langle a_1, a_2, \dots, a_n \rangle$  sequence will be within  $S_b = \langle b_1, b_2, \dots, b_m \rangle$  sequence.

If the above condition is satisfied,  $S_a$  will be subsequence of  $S_b$  and  $S_b$  will be up sequence of  $S_a$ . Suppose, we have a sequence of  $S = \langle S_1, S_2, \dots, S_l \rangle$  and a item, in this case  $S_a$  indicates the connection of  $S$  to a which has two output forms. The first form will be called Itemset Extension (IE) and we have  $S_a = (S_1, S_2, \dots, S_l \cup \{a\})$ . The second form will be called Sequence Extension (SE) and we have  $S_a = (S_1, S_2, \dots, S_l \{a\})$ . If  $S^i = PS$ , therefore, P will be prefix of  $S^i$  and S will be suffix of  $S^i$ .

Sequence database of  $S$  is a set of sequential pairs of  $\langle sid, s \rangle$  which sid indicates the sequence of id and also, s includes a sequence. It is said that the resort pairs of sequences  $\langle sid, s \rangle$  has a sub-sequence of  $\beta$ . If  $\beta$  was a sub-sequence of s, therefore, backup amount of  $\beta$  sequence will be equivalent to the number of resort pairs which including  $\beta$  and it will be show by support ( $\beta$ ). Due to a positive number to be determined by the user, we can be say that sequence of  $\beta$  is repeated if  $\text{support}(\beta) \geq \dots$ .

**Related Works**

Exploration algorithms of present sequence patterns will be divided into two categories. One of these categories are Apriori-like such as [ 2 Apriori-all ], [ 10GSP ], [ 7SPADE ] and [ ASPAM ] can be named. Another category are projection-based algorithms such as [ 9PrefixSpan ] can be named. In continue, we will be explain these five algorithms.





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### Apriori Algorithm

Exploration the sequence patterns introduced, firstly and authors presented three algorithms based on Apriori .All three algorithms concluded five phases. For convenience, we will use the data set in fig. (1) .

### Sort Phase

First , data base transactions sorted based on custom-id and then , they will be sort based on time transactions . Fig.1 shows data base after sort phase .

### L-itemsets

After sort phase , we separate the set items those have one member and their support number is more than the predicated threshold number .For example, if the minimum support was given as 60%, minimum repeated numbers equals to 2. Output of this phase has been shown in Fig.2 . As you can see in Fig.2 , repeated items has been written as c,b,a,d

### Transformation Phase

In this phase , each customer sequence is transformed by replacing each transaction with the set of repeated items . Also ,count of repeated items will be written by new counts ( in this example , at the end of phase , each customer has a sequence of transformational repeated items . As example , customer through customer-id equals to 1 , he will be contribute < ac(bc)d(abc)ad>.

### Sequence Phase

This phase is a critical phase and all of repeated sequential patterns will be obtain through transformational database.

### Maximal Phase

Sequence patterns will be back draw in order to deduction the increased information which are within the other sequences (greater) because these greater patterns ( Maximal ) provides more attention by users.

Other studies has been shown that sequence phase has most the processing time [2].In follow , we will be explain the AprioriALL algorithm since it has a better performance among the three proposed algorithms . AprioriALL algorithms has two stages ,candidate generation-and-test paradigm. At first step , we generate those sequences that may appear repeated several times . At second step , require to scan the database totally , in order to checking the support counts of each candidates items to maintain a large amount of intermediate candidates in main memory during the mining process. Operation time depends to count of scan steps in a set data and count of repeated items.

As proposed technique in [ AprioriALL ] , the Heuristic Apriori used in order to draw back the candidates sequence that its subsequence is no repeated . The difference in the sequence pattern exploration and dependence principle exploration that sequence pattern e is a more general model to other ones and it can be generate more candidates .As example , three candidate <ab>,<ba>,<(ab)> will be generated based on a and b items but only <(ab)> will be generate in dependence principles . It obvious that candidate sequences counts is more than in sequence patterns to dependence principles . At table 1 , you can see how sequences of length 5 will be generate through sequences of length 4. As example ,both <(bc)ad> and <(bc)(ac)> have length of 4 and their first – three





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items equals together.  $\langle (bc) (ac)d \rangle$  sequence will be generate based on joint condition Apriori. As similarity, other sequences (length of 5) will be generated.

AprioriAll algorithm was the first algorithms among the other ones in order to exploration the sequence patterns. Much scans on database is the main disadvantage of AprioriAll algorithm.

#### GSP Algorithm

GSP algorithm introduced by authors of Apriori algorithm which is an algorithm based on Apriori in order to exploration the sequence patterns. Difference in these algorithms results from that GSP algorithm add some Constraints to exploration process. Of one of these constraints can be refer to time limitation and to convenience the definition transaction for time constraints has been determined the minimum and maximum gap between adjacent transactions in one sequence. Two sequence transactions was no included in one sequence if there is no interval between two transactions in dimensions of minimum and maximum. This algorithm will be easier the definition of transaction by sliding windows. Items will be considered as a transaction if interval between minimum and maximum of transaction times is no greater than the sliding window, The sliding window enhances the timing constraints by allowing elements of a sequential pattern to be present in a set of transactions that occur within the user-specified time window. Finally, the user-defined taxonomy (is-a hierarchy) which is present in many datasets allows sequential patterns to include elements from any level in the taxonomy. Hierarchy will be applied in order to generation the multi-levels of sequence patterns. Exploration of sequence patterns as follows by helping these parameters. We have one data sequence  $D$ , hierarchy  $T$ , minimum and maximum of time constraints of determined gaps by user, determined length of sliding window by user and we can extract the sequences that their counts is more than the threshold number by using the determined threshold number and user [10]. Assume that we have  $S = \langle S_1, S_2, \dots, S_n \rangle$  sequence and also, subsequence of  $c$ , so, we can say that  $c$  is adjacent subsequent of  $S$ . If the follow conditions is satisfied: 1)  $c$  can be obtained of  $S$  by deletion one item  $S_1$  or  $S_n$ . 2)  $c$  can be obtained of  $S$  by deletion the element  $S_j$  which has at least two items. 3)  $c$  can be indicate as adjacent subsequent of  $c^f$  and so,  $c^f$  will be adjacent subsequent of  $S$ .

Candidate sequences will be generate in 2 phases

#### The Join Step

The candidate sequence with length of  $k$  will be generated by joining two sequences which have similar adjacent subsequence and have  $k-1$  length, too. This process similar with joint process of AprioriAll algorithm and one item can be add to other item and becomes a separate element. For example,  $\langle d(bc)a \rangle$  and  $\langle d(bc)d \rangle$  includes one adjacent subsequent  $\langle d(bc) \rangle$ , therefore, candidate with length of 5 would be  $\langle d(bc)ad \rangle$  and  $\langle d(bc)ad \rangle$  and or  $\langle d(bc)da \rangle$ . These stages can be considered separately or can be joint to present element, Briefly, this stage has been shown in [APSAM] algorithm by names of I-Step and S-Step.

#### The Prune Step

Candidates are deleted if they contain a contiguous  $(k-1)$  subsequence whose support count is less than the minimum specified support. In addition, structure of hash-[11tree] will be use to improve the speed process. The algorithm terminates when there are no frequent sequences from which to generate seeds, or there are no candidates generated. Test phase composed of two other phases: forward phase and backward phase. The forward approach deals with successive elements as long as the all of pattern explored. Here, we show by example how sequence of  $d$  concludes of candidate sequence of  $S$ . 1) Forward phase, if difference is more than max-gap then the algorithm switches to the backward approach 2) backward phase, GSP algorithm pulled up the pervious element. Assume





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that  $S_i$  is current element by having the end time  $t$ , therefore, GSP algorithm check for transactions which have  $S_{i-1}$  and transaction time will be occur after gap maximum. After selection the  $S_{i-1}$ , the difference between  $S_{i-1}$  and  $S_{i-2}$  may be no satisfied the gap constrain where the algorithm moves backward in order to satisfaction the constrain of gap maximum by differences of  $S_{i-1}$  and  $S_{i-2}$  or by selection the all of elements. The algorithm then switches to the forward approach. During of this process,  $d$  has no S sequence if any element no selected GSP algorithm has a better performance to AprioriAll because number of candidate sequences is lesser than Apriori algorithm. Also, explored sequential patterns conclude reasonable definition for users.

#### SPADE Algorithm

[7SPADE] algorithm is based on Lattice Theory and it applied temporal joining in order to founding the sequence patterns, Also, this algorithm is based on Heuristic Apriori and has a better performance to Apriori and GSP algorithms.

Primary sequence database has been transformed into id-list form in SPADE Algorithm, horizontally. Above the per item of list will be mentioned SID(customer property) and TID (temporal property). Database has been shown as horizontal form of Fig.1 in Fig.4.

As example, item a is at (1,1),(1,5),(1,6),(2,3),(3,3) and support count equals to 3. Repeated items of length 5 can be extractable at database with one review. For examination the repeated patterns of length 3, main data base should be scanned again and one horizontal database generate into vertical along categories of items with equal number SID and ascension order of TID. Horizontal database into vertical has been shown in Fig.5

Sequences of length 5 will be generate by scanning the horizontal database into vertical. All the sequences with length 2 will be used in order to Lattice construction. Every Lattice will be analyzed into various classes. Sequences which have similar prefixes belongs to a similar classes. By analyzing the Lattice into smaller parts, they can be locate in main memory. In this scan, database belongs to all longer sequences can be generate by temporal joining.

There are two methods for counting the repeated sequences of one class. Breadth first search (BFS) and depth first search (DFS). In breadth first search, classes will be generate into backing form of bottom-up. As example, all sequences with length 2 should be processed in order to generation the sequences with length 3. In DFS, only one sequence with length 2 and one sequence with length k is necessity to generation the sequence with length  $k+1$  against of BFS. BFS requires to more memory concern to DFS because it saves all the sequences with length 2 but DFS requires to saves only the last sequence with length 2 and sequence belongs to length k. However, BFS has more information in order to prune the candidates with length k. All the pattern with length k will be generate by applying the repeated patterns temporal joining which have similar prefix with length  $(k-2)$ . Output of joining has three mode in SPADE algorithm as GSP algorithm.

#### Suggested Procedure

All the algorithms which has been considered had some disadvantages that limited their capabilities. In first algorithm which mentioned was Apriori by 5 phases which sequence phase has devoted the most temporal itself since repeated sequential pattern obtained from transformational database. Next algorithm was Apriori and it performed much scans on database and also, obtained count of repeated items was no economic in terms temporal. In GSP algorithm which involved sliding window. Amount of this sliding window dependent to minimum and maximum of gap and so, user could no determined number threshold belongs to patterns sequence support. This algorithm had no sufficient efficiency, too. Another algorithm was SPADE which worked based on Lattice (temporal joining) and since it should be scanned based on sequence length of database totally in order to generate the longer





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sequences with temporal joining , therefore, it was no good in point of temporal and consumed memory and finally , it laid aside. In SPAM algorithm , scanning bite used for construction and scanning the database but since database should be equals to zero for presenting one item count after database scan , therefore , it caused for using the high space of memory . In PREFIXSPAN ,whole the database categorized in per scan. And then , database performed breath to breath joining based on applied categories on database . The length of sequences patterns may be very long . Disadvantage of this algorithm is high space and temporal in constructing and scanning of database , especially , in the stage of database scanning . Costs will be increased by breath to breath joining. In new method which is similar to Gokrimp algorithm attempted to compressing the database twice as much in reasonable time .In new algorithm has been attempted to much decreasing the consumed temporal and volume of memory. This purpose will be obtained as follow formula .

Calculating the volume compressing formula for purposed algorithm which is called newkrimp as follows . We indicated mentioned formula by compressing definition in [6]. In this formula ,freq meaning data or same input number into compressing and nwordshows counts of numbers which are similar together .

$$\frac{freq \cdot \log(nword)}{\log(2) - freq} \cdot \frac{\log(freq)}{\log(2)}$$

Compressing will be performed as counts and numbers will be placed near together according to pattern near to mean in order to compressing them and its middle will be obtained as follows formula . These numbers indicates the compressed counts of input strings.Obtained number normalization of compressed counts will be accessed by follow formula :

$$Pdf = \frac{1}{\sqrt{2 \cdot \pi} \cdot \sigma}$$

In pdf formula ,pi=4.0arctan(1.0)is a consonant for round off and also , x is obtained vale from compressing in this parameter . Therefore , it should be say that pdf is main index of compressing . Another parameter can be indicated in this case when one string input into parameter , the compressing percent should be explained , too. By helping this formula and 1-pdfrelation can be obtained un compressed data.

- 1.Input :data base D={s1,s2,.....Sn}
- 2.Output:P,H,P\* The best compressing pattern
- 3.P←{0},H←{0},B←{0}
- 4.While (true ) do
- 5.event←event in data withhighest support
- 6.Add event to patter n
- 7.If compression size (data or pattern)<best pattern then
- 8.data←data add to event
- 9.else
- 10.delete event that their frequency in less than median
- 11.end if
- 12.end while
- 13.return p
- 14.break
15. while |H| <k do
- 16.p\*←best compression (data)
- 17.H←H∪{p\*}





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```

18.delete from data all subsequences replaced by pointer to p*
19.compute all of the relevant event to this pattern with signtest
20.add the pattern to dic
21.end while
22.return H

```

#### Simulation & Compression

In order to simulation and examination the newKrimp in Java in script environment , program should be examined based on principles and for applying one examination on program we will be examined the program with compressed database GoKrimp which has 374586.8535300043 volume and primary database has 688212.2424658813 volume , too. The obtained results as follows : newKrimp concludes compressed ration 1.8372567963353865 and also , final output generated at time 1599 second.Results: newKrimp compressed database has 451854,0777464489 volume and primary database has 687956,0 volume . Thus ,it has compress ratio 1,5225180736025936 . And also , final output generated at time 293 second.

## RESULTS

#### Data Set Connect

New Krimp compressed database has 627064,9234740486 volume and primary database has 1210751.162091212 volume. Thus , it has compress ratio 1,870490821078392 . And also , final output generated at time 293 second.Data Set Kosarak 10kResults the GoKrimp : compressed database has 1111167.6611244602 volume and primary database has 1129521.705280704 volume . Thus , it has compress ratio 1.0165177990670375 . And also , final output generated at time 1065second.Results the newKrimp compressed database has 1111167.6611244602 volume and primary database has 1129521.705280704 volume . Thus , it has compress ratio 1,0068001955546235 . And also , final output generated at time 56 second.Data Set mushroom Results the GoKrimp : compressed database has 650465.775552961 volume and primary database has 1154167.5736837233 volume . Thus , it has compress ratio 1.7743709462693333. Andalso , final output generated at time 6616 second.Results the newKrimp: compressed database has 714042,9681435465 volume and primary database has 1154167.5736837233 volume . Thus , it has compress ratio 1,6157781134651. Andalso , final output generated at time 2267 second.Results of temporal compression and compressing ratio has been shown in follow figures .You observe that our method can be delete more events to GoKrimp method . Our proposed method caused that calculation applied on fewer pattern and events. And ratio the our compress is lesser than GoKrimband it will be justifiable due to consideration the fewer patterns. In Werkin and etc. methods that shown in [14], using the knowledge algorithm of two-phase axis has been mentioned that applying by two procedures. First , it read input string from data set and at the time of information input , one learning starts from their transformational process . We can be say that, this learning or same train phase has been explained based on spmf algorithm . In second phase, operation of compressing will be applied based on mentioned learning because this operation will be applied in form of behavior and it used the first phase of learning that concludes high relative error .It will be as follows by applied simulation.

In figure.1 , the reason and superior of newKrimp method to GoKrimp is that mentioned method works based on temporal . We used accurate mathematic relationship in our method which is no based temporal , it calculate accurately and then it normalized in order to decreasing the compressing error.





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In Fig.2 , you can see that ratio of compressed volume improved and concludes the better performance . It is one reason for better performance of our method to Go Krimp method[14].In follow Fig. we improved the consume cost by using the new Krimp method , it was no considerable but we can think about it.

It can be see that by using the new Krimp , we can save the memory. Since using the reference method has learning phase so , it involves much memory for itself but we did not use the temporal learning phase of spmf in newKrimp. We solved the problem by presenting the mathematic method and then .it normalized . This normalization will be a negative phase in our proposed method but it will improved , wholly

## CONCLUSION

Data mining is knowledge of information extraction among the high bulks of information so that extracted information would be understandable for individuals. One examples of data mining methods is extraction the sequential patterns and in recent years , it has attracted more attentions in dimension of data mining for the sake of much applications as customer analytical behavior , stock prediction and sequence analysis of DNA. In this research ,we provided an overview on present algorithms in sequential patterns extraction that has been divided into two categories based on Apriori and FP-Growth . We considered the Apriori, SPADE , GSP and SPAM algorithms among of several algorithms . We provided SeqKrimp and GoKrimp algorithms since mentioned algorithms in second section have some problems .Problem is that when these algorithms extract patterns , they are similar together in more cases . Our two proposed algorithms extract the patterns based on description principle of minimum length which have few similarity together and they will be compressed based on sequence database very well .In this research, we provided one algorithm same as GoKrimp algorithm and we compressed data base twice so much by its examination on standards of data base Chess , mushroom ,Kosarak 10 k and connect . Finally, results obtained at the reasonably time.

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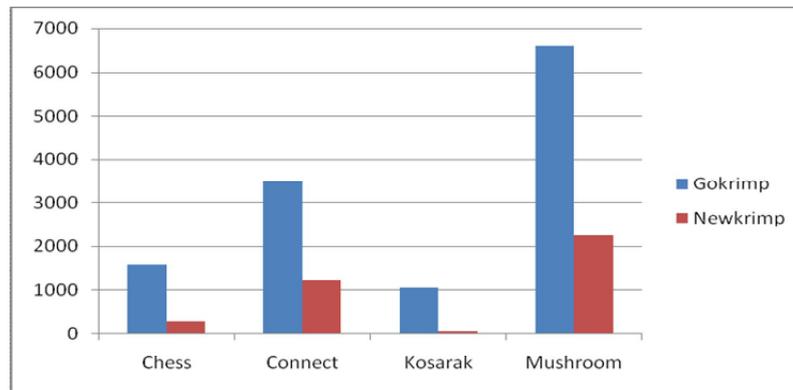
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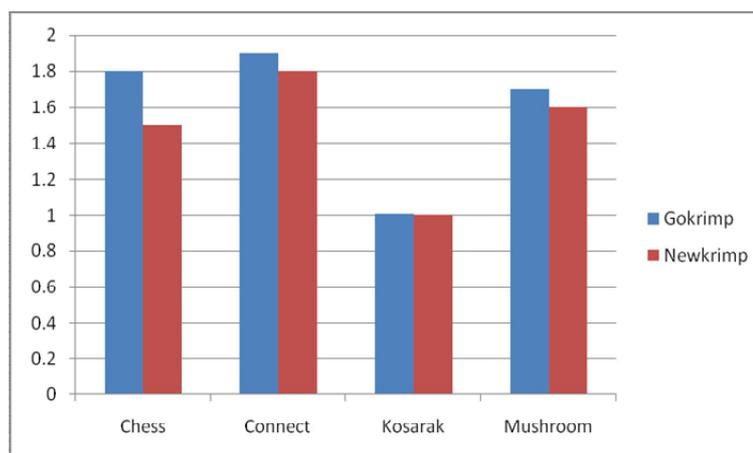


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**Figure .1:Temporal Compression for applying the newKrimp and GoKrimp in various Dataset**

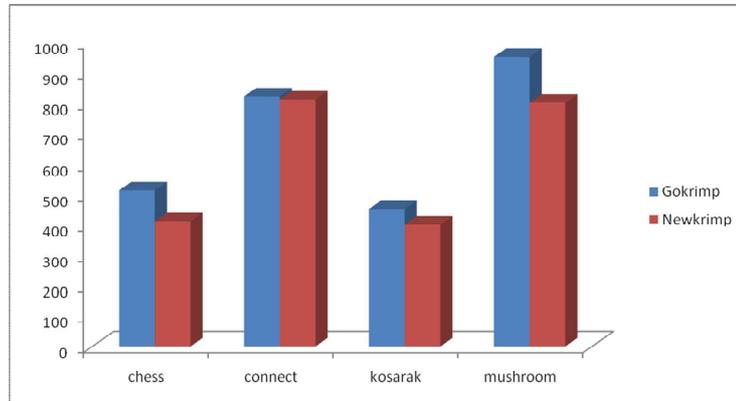


**Figure.2 : Ratio Compression of Two Algorithm**





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**Figure.3 : Compression the Consumed Memory of Algorithms Based on Mega Bite.**

Customer Id	Transaction Time	Items Bought
1	July 3'07	Apple
1	July 6'07	Strawberry
1	July 8'07	Banana
1	July 10'07	Pear
1	July 12'07	Apple ,banana
1	July 16'07	Apple
1	July 21'07	Pear
2	July 4'07	Banana
2	July 7'07	Pear
2	July 9'07	Apple , banana
2	July 10'07	Apple
2	July 15'07	Pear
3	July 7'07	Pear
3	July 9'07	Apple , banana
3	July 10'07	Apple
3	July 7'07	Strawberry

**Fig(1-1) :Sorted Database based on ID and Time Transactions**





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Large itemset	Mapped to
Apple	a
Banana	b
Strawberry	c
Pear	d

**Fig.(1-2)Repeated Set Items**

Customer Id	customer sequence
1	<ac(bc)d(abc)ad>
2	<b(cd)ac(bd)>
3	<d(bc)(ac)(cd)>

**Fig.(1-3)Transformational Database**

a		b		c		d	
SID	TID	SID	TID	SID	TID	SID	TID
1	1	1	3	1	2	1	4
1	5	1	5	1	3	1	7
1	6	2	1	1	5	2	2
2	3	2	5	2	2	2	5
3	2	3	2	2	4	3	1
				3	2	3	4
				3	3		
				3	4		

**Fig. (1-4): Horizontal Database**

SID	(Item ,TID)pairs
1	(a,1), (c,2), (b,2),(c,2), (d,4),(a,5),(b,5),(c,5),(a,6),(d,7)
2	(b,1), (c,2),(a,2),(a,3),(c,4),(b,5),(d,5)
3	(d,1),(b,2),(c,2),(a,3),(c,3),(c,4),(d,4)

**Fig.(5-1):Horizontal database into vertical**





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**Table:(1-1) Generation the Candidates 5-Sequences from candidates 4-Sequences by Apriori**

Candidates 4-Sequences	Candidates 5-Sequences
{b(ac)d}	{(bc)(ac)d}
{bcad}	{d(bc)ad}
{bdad}	{d(bc)da}
{bdcd}	{d(bc)(ad)}
{(bc)ad}	
{(bc)(ac)}	
{(bc)cd}	
{c(ac)d}	
{d(ac)d}	
{dbad}	
{d(bc)a}	
{d(bc)d}	
{dcad}	

**Table: (1-2) Generation the Candidate Sequence C5 based on L4**

Large 4-sequences	Candidate 5-sequences after joining	Candidate 5-sequences after pruning
<b(ac)d>	<(bc)(ac)d>	<(bc)(ac)d>
<bcad>	<d(bc)ad>	<d(bc)ad>
<bdad>	<d(bc)da>	
<bdcd>	<d(bc)(ad)>	
<(bc)(ac)>		
<(bc)cd>		
<c(ac)d>		
<dbad>		
<d(bc)a>		
<d(bc)d>		
<dcad>		





## The Effectiveness of Play Therapy on Reducing Anxiety in Educable Retarded Children

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### ABSTRACT

This research focuses on the effectiveness of play therapy on reducing anxiety in educable retarded children. The population of the research includes all sirjan town retarded schoolchildren and 30 individuals have been sampled by the cluster random sampling. The samples received 8 sessions of play therapy. The method which is used in this research to measure children's anxiety was spilberger state-trait anxiety test. The collected data were analyzed by SPSS software. The significant level was  $p < 0/001$ . This research used semi experimental method and the results show that play therapy is effective on reducing anxiety in educable retarded children.

**Key words:** Play Therapy- Anxiety- Educable Retarded Children, Simple Random Sampling, Sirjan State, spilberger state- trait anxiety test.

### INTRODUCTION

Childhood is the best time to diagnose children's problems, intervene timely and prevent further emotional, social and educational problems which may occur in the future. In fact, timely intervention and maladaptive behavior correction of children in this critical period can enhance their social skills and popularity among peers and adults and prepares them to take responsibility in the upcoming years (Shahim, 2007). Anxiety is one of the most common problems among children and it is the most important reason to take them to a psychotherapist (Godwin et. al. 2003). In recent decades, anxiety and the related issues has been subject to one of the interesting researches (Dadsetan, 2003).



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Beygmoradi (2013), examined the impact of rhythmic play and training on reducing the anxiety in pre-school children of Kerman city. The results of this study showed that rhythmic plays are effective on reducing children anxiety in pre-school children of Kerman city.

Shahriyari, et. al. (2012), studied the effect of control training on tension, anxiety and depression among mothers of educable retarded girls. The results of this study confirmed the positive effects of control training on tension, anxiety and depression among mothers of educable retarded girls.

Baghaee Moghaddamet. al. (2011), investigated the effectiveness of life skills training on the level of anxiety, happiness and anger control among adolescents with physical-motor disability. The results showed that life skills training are effective on anxiety, happiness and anger control among adolescents with physical-motor disability.

The main reason of anxiety is still under debate. Recent studies show that anxiety disorders are the most frequent in the whole population of people (Dadsetan, 2004). All the people experience this feeling and tension during some periods in their life which can be facilitative or sometimes debilitating. Facilitative anxiety makes one to contemplate and follow own goal, but debilitating anxiety hinders one's goal and limits his contemplation. (Rabiee, 1380). Anxiety disorder is a serious mental illness which results from predicting future misfortunes. Many anxieties, like worries, are baseless and the product of one's own internal turmoil without any external stimuli. There is a close connection between psychoneurosis and intensity of anxiety, therefore those children who get worried frequently tend to experience anxieties which finally dilapidate their physical health and psychic balance (Ahadi and Bani Jamal, 2006).

One of the major problems of retarded children is anxiety and it is mostly a response to the failures which are inevitable at a time (Ilaghi, 2000). Mental retardation, or in other words intellectual developmental deficiency is not a new case, nevertheless in any period and time, there are people which are having fewer mental activities than normal (Milani Far, 2012). The birth of a retarded child, as a crisis, can affect family relationships and interactions deeply. Those families who have an open, effective and permanent relationship and are adaptable members can adapt to the crises. Generally, anti-social behaviors, aggression and anxiety are among the most common reasons why retarded children are taken to Mental Health Clinics (Venables and Simon, 2001).

Several studies have been done to represent the importance of this research. Faryabi (2014), compared the effectiveness of rhythmic games on decreasing aggression in children with mild mental retardation and children with learning disorders with normal children. The results of this study showed that rhythmic games are effective on decreasing aggression in children with mild mental retardation, children with learning disorders and normal children.

Hashemiet. al. (2010), examined the effectiveness of puppet show (with UV light) on reducing aggression in educable retarded students. The results of this study showed that puppet show (with UV light) is effective on reducing aggression in educable retarded students.

Emadpoor (2007), studied the impact of art performance on learning capability of educable retarded children. The results showed that art performance is effective on learning capability of educable retarded children.

Social psychologists believe that as anxiety is learned through training and modeling, therefore it can be reduced or controlled by training and modeling. (Najariyan et. al. 1999). One of these trainings is Play Therapy. It seems that, there are few doubts about play as a method of therapy. Play Therapy is a technique to treat children, their problems and disorders. Play Therapy is used in any childhood disorders, including; children's depression, fears, behavioral problems rooted in anxiety, nocturnal enuresis, nail biting, lying, aggression, hyperactivity, attention deficit, and



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etc.in most cases has proved effective (Graham, 1998). According to Charles E. Schaefer (1985) research, play reduces the tension and makes repressed feelings free, lets the child compensate the annoying experiences of reality in his imagination. Finally, play is the natural medium for the child to communicate with each other's. Therefore it is used effectively in almost any children psychotherapy. (Hughes, 2007).

Dinarvand (2014), compared the effectiveness of Play Therapy, Music Therapy and the combination of these two decreasing the emotional problems of primary school children in Shoosh Daniel county. The research findings showed that play has a meaningful impact on kid's emotional problems reduction.

Mehrdad (2011), investigated the impact of Play Therapy on educational achievement of mentally retarded elementary school students of Khorram Abad city in 1388-1389 school year. The results showed that Play Therapy (individually or in group) is effective on educational achievement of retarded students. Also, group Play Therapy enhances the educational achievement of the retarded students than does individual Play Therapy. Finally, it was concluded that the student's gender does not make a difference in their educational achievement.

Zare Poor et. al. (2009,) in a study entitled "Effect of group play therapy on depression in children with cancer" showed that Play therapy significantly reduced depression in the intervention group compared with the control group. The game can be an effective intervention by health care team members to help the hospitalized children along painful procedures and preparing and adapting to the stress of hospitalization. In this study, the impact of Play Therapy was examined on reducing the anxiety in educable retarded children.

**METHODOLOGY**

The present research is semi-experimental with pretest and posttest of a control group. The population of the research includes all Sirjan town retarded school children. Random cluster sampling is used for selecting samples from all Sirjan exceptional schools. Two classes of one school with 15 students are selected as our sample group. One of the classes is selected as experimental group and the other is named as control group. The method which is used in this research to collect data is Spielberger state- trait anxiety test. The inventory consists of 40 items which the first 20 consists of state anxiety (overt) with four options (never, sometimes, usually and very much) and from 21 to 40 consists of trait anxiety (hidden) with four options (almost never, sometimes, often, almost always). The scoring of this test allocates 1 to 4 for each answer, depending on the answers given to each item of the inventory. Those sentences associated with the concept of presence of anxiety are scored from 1 to 4 and those without this concept are scored from 4 to 1 (inversely). In other words, total intensity of anxiety is rated like 1-2-3-4, instead of 1, 2, 3 and 4, according to the scores of the given answers. Those items that are not indicative of the presence of anxiety and therefore rated inversely include;

State anxiety scale: 1-2-5-8-10-11-15-16-19-20

Trait anxiety scale: 21-23-26-27-30-33-34-36-39

The minimum score that participants earn is 20 and the maximum is 80. Spielberger et. al. (1971) reported that the correlations of Spanish and Indian Forms with English Form are between 0.83 and 0.94. Spielberger (1983)'s studies indicated correlations between this inventory and the TMAS ranging from 0.79 to 0.83. In Mahram research (1994), the reliability and validity in State Anxiety scale was measured with Cronbach's  $\alpha$  coefficient which was about 0.91 and in Trait Anxiety scale, it was about 0.90 for 600 participants of a standard group.





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With the agreement of the head of Sirjan Office of Education, those participants who were ready to do the test were introduced. Then they were split into 2 groups of 15 members. At first they were provided with Spielberg's State-Trait anxiety test to measure the intensity of anxiety. After that, the independent variable (Play Therapy) was applied on experimental group twice per week for four subsequent weeks. Then to examine and study the degree of effectiveness of independent variable, the same test was applied to measure the intensity of anxiety in participants. Every session, there was a warm-up for 20 minutes; then, the following games were played with them.

**Stand up and Sit down:** This can also be done inversely, it means that the children should sit when you say stand up, and stand when you tell them to stand.

**Find the Pebble :** A person hides something small in one hand and holds out hands, the other person should guess in which hand it is.

**Chair Game:** Chairs are placed in a row in the center of the room so that alternate chairs face in opposite directions. The number of chairs should be one less than the number of players. The instructor decides on the number of players. Players start the game by walking around a row of chairs as the music begins and chants. When the music stops, the players rush for chairs. The player without a chair is out of the game and takes with him one of the chairs. The game continues until there are only two players encircling one chair. The player who secures it wins. Others cheer the players up by applauding.

**Tug of war :** Three lines mark the ground. The middle mark must be exactly at the center. There is a red mark made in the middle of a thick rope. Two teams of players queue behind their mark on the ground. Either team must take hold of one side of the rope (nobody must tie the rope around his wrist or waist). The red mark on the rope needs to be at the exact center point on the ground. By the commencement of the game, teams pull against one another until they come across the line in any way. The team who crosses the center point loses the game.

**Taking off and putting on hat :** One hat is given to the players. Every player must take the hat off his head and put it on the next player's. In this game, music accompanies the game which makes the game much more fun. When the music stops the player with the hat on his head must go out of game. The game continues until one person which is remains and he/she is the winner.

**Targeting game :** A basket is placed on a table and from a short distance where a line marks the ground, the students, standing in line, must throw the balls into the basket.

**Look and guess game:** one student who is volunteer must keep in his mind where each object in room is located, and then we ask the student out of class, others change the place of some objects. When the student returns, he/she must be able to guess half or more of the changes, if so the student wins the game.

**Oral Name Guessing Game :** One of the players says one name and the other must say another name starting with the last letter of the former. The game continues the same way and those who fail to say the name in certain time will be looser. (Dinarvand, 2014).

In this study, considering the scale of measuring data, the collected data is analyzed by SPSS software performing descriptive and inferential statistics. In descriptive statistics standard deviation and mean are measured and in inferential statistics, covariance analysis was used.



**Asma Soleymani and Jaffar Pouyamanesh****FINDINGS**

Tables 1 and Table 2 show mean and standard deviation in two perspectives of State anxiety and Trait anxiety respectively.

The value of measured F, with degree of freedom (1and 28) was 2.15 for State Anxiety and 1.62 for Trait Anxiety which confirms the zero hypothesis and also variance homogeneity of experimental and control group.

To study the intervention effect multivariate analysis of covariance (MANCOVA) is used on the post-test scores and compared with pre-tests. Table 4 shows that there is a significant difference between experimental and control group in terms of at least one of the dependent variables (State Anxiety or Trait Anxiety).

Table 5 shows that the analysis of covariance in state anxiety variables ( $p=0.01$  and  $f=37.40$ ) and trait anxiety ( $p=0.01$  and  $f=34.62$ ) are significant. According to obtained results we can say that there is a significant change in experimental group and the scores of anxiety variables are reduced (state anxiety and trait anxiety) by play therapy intervention in post-test of experimental group.

**CONCLUSION**

According to the obtained results, there had been no significant difference in the anxiety rate (state anxiety and trait anxiety) of experimental and control group, before applying play therapy. But after applying play therapy there was a significant difference in anxiety rate of experimental group. Therefore, it can be concluded that play therapy reduces the anxiety rate in educable retarded children. Result of this study is proving the before researchers which are done by: dinarvand (2014), faryabi (2014), beygmoradi (2013), shahriyariet. Al. (2012), baghaemoghaddamet. Al. (2011), mehrdad (2011), hashemiet. Al. (2010) and zare poor et. Al. (2009). All of these mentioned researches are related to study of the impact of play therapy on reduction of anxiety in educable retarded children.

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**Table1: Mean and Deviation in State Anxiety**

Group	Variables	Number	Mean	Standard deviation
Experimental	Pre-test	15	38.16	2.82
	Post-test	15	33.02	4.27
Control	Pre-test	15	37.84	3.02
	Post-test	15	38.73	3.24

**Table 2 : Mean and Deviation in Trait Anxiety**

Group	Variables	Number	Mean	Standard deviation
Experimental	Pre-test	15	44.06	3.44
	Post-test	15	39.22	4.88
Control	Pre-test	15	45.74	2.03
	Post-test	15	46.05	2.38

**Table 3: Love in Test Results to Compare Hypothetic Variance Homogeneity of Dependent Variables in Experimental and Control Groups**

Subscale	Degree of freedom of numerator	Degree of freedom of denominator	F-value	Significant Level
State Anxiety	1	28	2.15	0.16
Trait Anxiety	1	28	1.62	0.27





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**Table 4: The Summary of the Results of Multivariate Analysis of Covariance, to Compare the Mean of State-Trait Anxiety Pre-Tests with the Post-Tests in Experimental and Control Group**

Effect	Test	Value	F	dfhypothesis	df error	Significant level
	Pill's trace	0.89	78.34	2	24	0.01
Group	Wilks' lambda	0.07	78.34	2	24	0.01
	Hotelling's trace	10.84	78.34	2	24	0.01
	Roy's largest root	10.84	78.34	2	24	0.01

**Table 5: The Results of Univariate Analysis of Covariance in MONCOVA to Compare Post-Testsof Dependent Variables with Pre-Tests in Experimental and Control Group**

Effect	Dependent variable	total squares	Degree of freedom	Average of squares	F	Significant level	ItaSquare	Test ability
	State anxiety	1377.61	1	1377.61	37.40	0.01	0.59	0.99
Group	Trait anxiety	601.68	1	601.68	34.62	0.01	0.57	0.99





RESEARCH ARTICLE

## Effect of Deterioration on Organizational Citizenship Behavior among Staff and Education Staff Kerman

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### ABSTRACT

This paper examines the impact of deterioration employees on organizational citizenship behavior and its effects on intelligence level of educational staff. The purpose of this research is applying various methods to extract all of the correlations between organizational citizenship behavior and intelligence level of staff. The total number of data in this study is collected from 2781 persons who were personnel of educational departments in 1393. The results of our study show that, there positive correlation between EI and citizenship behavior of staff, so it is recommended to increase citizenship behavior staff in programs and classes to raise their emotional intelligence.

**Key words:** Depersonalization, emotional and physical exhaustion, Citizenship Behavior, intelligence level

### INTRODUCTION

Nowadays in this world with full struggles and competition, developing of knowledge, business ability and economic to reach the welfare in every society use capacity and human resources of each country. Therefore, every human or practitioner at each section or job is capable to motivate the successful in that country at various scientific, economic and social aspects. Moreover, great goals need strategic and long time protection and rehabilitation of human resources in every organization (saatchi, 1380). One of the main principles is the effect of transition on protection and rehabilitation human





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resources at every organization's management. With analyzing dislocation of job we can check mental pressures of human resources at environment working (saatchi, 1380 and s. 1380).

According to study which is done by Bardvyk (1986), deterioration of livestock is effected in the life of employees and employers organizations. Most of the people within three years in a skilled job is work and then leave and start new activity. In this case, the person feel helpless and already know their work is undervalued and obnoxious. Attitudes and behaviors, and physical and psychological pressure are also affected to their life. The results of study with is done by making several interviews with half of the directors declared that, managers who have more stress also have more disease and less willing to work and have less job satisfaction (radial, 1392: 12).

The people who attempt to analysis career development path, they assume to do greater responsibilities. Some of steps in career development path are temporary parameters which may cause promotions or transfer the responsibility of developers to some other individual decision makers in organization (Taliqani 1381: twenty-two). The deterioration is due to the inability of a person to relieve or ease the physical and mental symptoms. However, deterioration occurs by poor performance and lack of motivation and can be create health problems such as high blood pressure, insomnia, depression and addiction symptoms (Shahsavari, 1386: 25). Maslesh Jakson theory (1981) is one of the theories which is related to job burnout. The main dimensions of job burnout in this theory are devoid of personality traits, physical and emotional exhaustion which is create performance reduction.

## METHODOLOGY

After collecting data, appropriate research methods should be selected based on research propositions (Sarmad al., 59: 1384). Since the purpose of our research is applying the methods for detecting correlation between variables, the rate and severity of these relations, therefore, this study examines the status of the staff of province's education department and the correlation and relationship between some variables such as (job burnout, citizenship behavior and emotional intelligence).

### History deterioration

The concept of job burnout or "No sit" is introduced in the 1970s by an American psychologist (named as Herbert Frydnbrgr) from New York for the first time. He tried to analyze the characteristics of health care workers with physically and mentally check up. Further, Maslesh Jakson and Panyz (Akbari et al., 1390: 2) in California are looked more deeply this matter. In the 1980s, research on burnout is shifted to n the experimental approach and used various methods such as questionnaires to study a larger population as well as participating. At this time, offering more precise definition of burnout is also considered that was based on an accurate tool for measuring burnout creation. Jakson Burnout Inventory (MBI) was used in different countries in various fields and showed significantly strong psychometric properties (Akbari et al., 1390: 2). Today, the media attention is one of the high-frequency matters in the field of work and organizational psychology (akbariet al., 1390: 2).

### Word Definitions Job Burnout

Maslesh jakson (1983) on the new job burnout phenomenon introduced stress which is effect on the following factors:

Burnout affective

Reduction of output performance

Metamorphosis of characters

Growers (1375) analyzed dislocation. He concerned on four styled diagnosis, prevention, mediation and remedy building to reduced dislocation and Tarys (2006) consequently, showed that individuals with dislocation had performance job weak.





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In analyzing dislocation in organizations and individuals, Disease fatigue and depression are declared (bakhtiari, 1387: 137).

Burnout job is defined as "the syndrome which includes symptoms of fatigue, amnesia, self-commitment and adherence to an external factor, working severe and long for feeling pressure. Effects of pressure in staffs be cruel and must be taken attention with creating limitation on needs (akbari et al., 1390: 2).

#### Deterioration Reasons

Rosenberg believes that the following factors are involved in deterioration occurring (s perspective, 1386: 24):

Hard work where there is the possibility of dismissal from work.

Hard work, but without reward

Start a bad way

Lack of sufficient time outside of work

Due to the hard work of employees

People who have the desire and motivation to do their work, in special circumstances, they are the first victims of state failure especially when they ignore or organization has limited innovation and is constantly thinking of their own interests will suffer heavily problems. In such a situation, the relevant job is probably too involved. This is most likely the effects of fatigue, frustration and helplessness caused by out-of-tolerance requirements of an individual. Their enthusiasm and motivation as well as the actual person who is burning and destruction undermine and ultimately spoil the results. At this stage it is possible to go to work feeling a little fear. You may spend a lot of time to work but fail to do less work and intellectual and physical disabilities may show (began, and griffin, farsi translation, 1374: 175).

#### Statistical Society

The population of the entire Group, events or things implies that the researchers want to investigate them (Delaware, 1385: 69). The research staff (official contract) of all provincial education departments Kerman are our target group. The number of these samples in 1393, according to the Table 1 is more than 2781 people.

#### Sampling

Since the aim of study is based on the analysis of behavior of staffs, therefore, it is important that a representative sample of the community which is large enough selected. The number of people who have similar characteristics with the characteristics representative of the heterogeneity and homogeneity of society and the population must be included in the selected sample group (Hafez Nia, 1388: 122).

For selecting the samples, among the number of employees in 31 cities in Kerman province, we announced 2781 of Morgan office employees and 338 was the number of sample that are selected. Questionnaires distributed among 350 and 338 staff returned questionnaires, which were usable.

Depending on the number of employees in each department and the number of schools we determined for distribution of questionnaires related to staff in each department. Because of the decimal point is not counted on human data to more accurately calculate the number of the nearest and most offices were distributed among employees (Table 3).





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**Data collection tools**

The data of this study, are collected by a standard questionnaire as follow:

Job burnout questionnaire is Questionnaire Maslach-Jackson model (1981). The questionnaire consists of 16 questions. (Questions 1-6) are related to the depletion of the features, (questions 7 to 10) are related to emotional and physical exhaustion, and (questions 11 and 16) are related to decreasing the performance. Meanwhile, questions 11, 12, 13, 14 and 16 have been scored in reverse order (see Appendix 1).

Emotional Intelligence Questionnaire employees Bradbury questionnaire Travis and Jane Graves (2005). This is a questionnaire with 28 questions. (Questions 17-22) are related to self-awareness (questions 23 to 31) are for the management of (questions 32 and 36) are related to social awareness, and (questions 37 to 44) are related to relationship management (Appendix 2).

Using a standard questionnaire citizenship behavior (2000). The questionnaire consists of 19 questions. (Questions 45-47) are related to conscientiousness (questions 48 and 51) of the altruism, (questions 52 to 56) are related to civic virtue (questions 57 and 59) are related to chivalry, (questions 60-63) consist of reverence (Appendix 3).

The number of questionnaires distributed was 338 copies, all of which, upon completion, were collected and were analyzed.

**Validity and Reliability of Research Tools**

**Validity**

The purpose of the narrative is that the measurement device is able to measure the desired properties and characteristics. It is important that the validity of measurements can be inappropriate and insufficient in scientific research. Credit originally measurement accuracy is achieved on (Delaware, 38: 1385).

The questionnaire used in this test, consists of the deterioration in employment, citizenship behavior and emotional intelligence standard, and the validity of the other organizations. From five professors of Islamic Azad University Master of Public Administration and they were asked to put their views on the appropriateness of the questions in the form of options suitable, convenient, fair, poor and very poor states of expression. After collecting the questionnaires, with the supervisor, structural reforms are necessary to form the data.

**Reliability**

The concept of reliability is the validity, accuracy and reliability of the interpretation. When questionnaire used several times and every time the results are similar to results of previous occasions it is necessary to make validity and reliability of the questionnaire (Hafez Nia, 158: 1388).

In this study, to determine the reliability of the questionnaire, the Cronbach's alpha was used. For this purpose, a pilot study on 30 people, population, job burnout was approved 75% reliability (Appendix 4); 70% reliability emotional intelligence (Appendix 5) and 81% reliability citizenship behavior (Appendix 6) using Cronbach's alpha. Statistics





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#### Statistical Data Analysis and Hypothesis Testing

In this study is to describe the data, various types of descriptive statistics such as frequency distribution, frequency, median, mean, mode, and standard deviation were used. Further, to determine the relationship between variables, Pearson test is performed. Moreover, to determine the impact of the independent variable on the dependent variables, the regression was used.

#### The Tests Used in This Study

The descriptive statistics (mean, median, mode, standard deviation, variance, etc.) and in according to data normality parametric tests such as regression, Pearson correlation coefficient is used.

#### CONCLUSION

Since most of the people working in province's educational organizations are in middle-aged, therefore, it is recommended that, top management office control them to reduce their apathy and to prevent atrophy in that organizations. Further, there are positive correlation between EI and citizenship behavior of staff, so it is recommended to increase citizenship behavior staff in programs and classes to raise their emotional intelligence.

Moreover, some factors such as lack of personal relationship, repetitive tasks can be effect emotional intelligence and cause excessive depletion of the personality traits. therefore, it is recommended that the appropriate people are appointed to various positions to prevent their deterioration. Using entertainment programs and the creation of friendly environment will motivate more people to the authorities and thus prevent their deterioration. It is suggested that regular programs staffed by specialists to evaluate physical and mental health and prevent their possible mental and physical exhaustion. Further it is recommended that, create programs to increase the performance of staffs and increase their satisfaction.

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**Table 1. The Sample Size (Reference: HR Department of Education Kerman)**

Row	The name of the city	Number	Sample	Row	The name of the city	Number	Sample
1	Office	329	38	17	Shahrbabak	100	11
2	ORZOOIYEH	47	6	18	Tribal Kerman	51	7
3	Pomegranate	35	5	19	Nbrabad	35	5
4	Tissue	167	21	20	Faryab	70	9
5	Bardsir	47	6	21	Fahraj	35	5
6	Bass	136	16	22	Castle treasure	59	8
7	Jiroft	113	14	23	Kerman. District 1	148	17
8	Chatroud	31	4	24	Kerman. District 2	247	28
9	Rubber	44	6	25	KASHKOOYEH	47	6
10	Rayen	87	11	26	Koohbanan	73	9
11	Rhine	58	7	27	Oriental	73	9
12	Rafsanjan	96	11	28	Mahan	84	10
13	Reagan	53	7	29	Manoj	115	13
14	Zarand	77	10	29	Nrmashyr	50	6
15	Sirjan	217	25	31	Noogh	22	3
16	Shahdad	35	5		Total	2781	





RESEARCH ARTICLE

## Analytical Reggio Emilia Approach to Education and Pre-School Centers to Assess the Knowledge of the Directors and Educators about the Basic Elements of the Curriculum

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### ABSTRACT

This study aimed to assess the knowledge and analytical study of the Reggio Emilia approach to education administrators and teachers at pre-school centers which is the basic element of the curriculum. The community consists of 10 centers and pre-school institutions, 61 coaches and 10 directors of the Center. Data is collected via questionnaire in this study, and interview with directors of centers and using their knowledge (including purpose, contents, methods, learning environment, staff and evaluation) separately evaluated. Information obtained through simple test were examined and the results of the analysis of the data showed that the knowledge of the directors, learning environments, procedures, personnel, evaluation, objectives and contents. Finally, recommending the use of the Reggio Emilia approach to pre-school institutions.

**Key words:** Pre-school, Reggio Emilia approach, managers and coaches, learning environments.

### INTRODUCTION

The importance of proper nutrition and body Mental utero to different stages of growth. In the other hand, we can say that the magnitude of the problem is Beyond our thoughts. (Allen translation: no race, 1370, p. 27). Due to the training and education during early childhood is the development of quantitative and qualitative of the training started after Birth until the end of six years continues. In these years Children are the most important stages of their life in terms of personality and the training of social spending (useful, 1381, p. 45)





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At Ministry of Education and current conditions Education and Welfare Organization as the two pillars of education at this level, due to the overall goals of the Islamic Republic of Iran point of Planners' view to the Supreme Revolutionary Cultural Council, to grow Comprehensive children Study objectives are concerned and to address these shortcomings, exclusion and cultural background target children that have set. (Useful, 1381, p. 47)

With Given the overall objective of pre-school in the statute of the preschool at six hundred and ninety-ninth session of the Supreme Council of Education, dated 28/11/1382 approved the principles and the framework programs and educational activities and training courses in seven Higher Education Council meeting on 25/4/1387, which is stated objectives of the course:

Raising children's capabilities in various aspects including physically, synchronization and motion.

Contribute to children's emotional development, increased self-esteem, understanding the environment and enhance understanding of beauty.

Facilitation of interest and feel the joy of participating in activities Group.

Boost interest in religious values and moral national identity.

Development of appropriate personal and social behavior in children based on their age. (Office of Planning textbooks, 1390, p. 10)

Since the goals and objectives listed in the Reggio Emilia approach, there can be common to see in the world to learn about approaches and there's how much familiarity in the use of and inspired by this according to culture and community, how can we reach the goals of this course the help.

Reggio Emilia educational approach leads the children of adventure private, indoors and restricted in an organization (such as education) to become one of the most important social issues in the community. Reggio Emilia system was able to bring up the following four principles, considered education as a social process, so that children's educational issues as the agenda of the mayor, MPs and local authorities to be exposed. The four principles are: Due to the several talents of children which creates opportunities for children to recognize their talents, train and develop.

Children to sustain the cultural values of their society. Everything that we've learned throughout history right can be transferred to the future through our children.

Children present the future citizens of our society and supporting them would be to ensure the future of everyone.

Children have the right to have the best. They deserve the best, highest quality materials and educational programs.

In every system the scene of the community and children's issues and education is a general duty is raised. (Yousefi, 1391, p. 237)

Cole in 1995 (1374 AH.Sh) mentioned that overall of the program in early childhood education pays. Further these research explains all aspects of these types of programs. Happy children in pre-school need a rich content program, because any judgment about the importance of this period of training depends on the quality of programming content.





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Fyrlyk3 (1990) is an American visitor attempted to exact center of Reggio Emilia preschool, using the Czech lists (lists check) and various questionnaires to introduce and analyze the strengths EVER Reggio centers and applied to the benefit.

Nelson 4 (2000) made an interview and undertake the observations, notes, books, photographs, lectures for analysis. They mentioned the most important factors for successful implementation of Reggio Emilia approach in America. They considered that such a visual expression of children is not in the minds of other activities..

Lim Bo 5 (2000),studied three approaches for aesthetics. The first study, while coaches and procedures aesthetic understanding of these patterns in the arts in schools that benefit from these patterns, been studied, differences in approach compared to the coaches as well as each other. The findings of this study show that although all three of these approaches, broad prospects in the visual arts, music, poetry, stories and games, but coaches in each approach, a different attitude toward art education, art experiences, general notions art artistic guidance of this difference, more than anything unique to the philosophy of Dewey, Vygotsky and Steiner and theory of art and aesthetics that emphasize different aspects, different philosophies can be traced back to the dominant aspects of the view that the Children, as social beings, intelligent and efficient, or spiritual, he said.

Edwards 6 (2003) in an article entitled "Good design from Italy: Monte Syrian and Reggio Emilia", the comparison of these two approaches from various directions. represents an ideal integration of explicit violence and war to the peace process. Participation and cooperation in both the approach is very important. Both approaches have different views about the nature of children's needs, interests, training methods are.

Take a look at early childhood education through a comparison of three models in England, New Zealand and Italy (Reggio Emilia) and differences in the concepts, knowledge of the type of learning they are, and how those patterns differ regarding their national or local form have been the subject of an article were developed in 2003.

Using the case study on research in which four players at 7 session theories and techniques have been introduced to special documentation, training, study concludes that the increase in efficiency when compared to the coaches on the implementation of the appropriate documentation Venice did not enjoy the training compared to the coaches that have not received special training, has a positive influence. (Myg , 2003)

"Education and training for democracy and peace education in kindergartens," Masters Thesis Kvtyk (2003) in which to investigate such education and training and that such training should be provided for children under what conditions, and Reggio Emilia schools Waldorf as part of the introduction of such centers.

"The experience of children to be heard by teachers and child care centers and schools" as a doctoral dissertation The Fleming (2003), in which the study of subjects such as hearing what is heard is the code? How can we know that a coach can not hear? And. . . Active listening indicators such as attention, concentration, visible, audible words ask children to a clear understanding of the proposed solution is described. It's the kind of hearing Reggio Emilia educators to introduce active listening.

"Educational models" mentioned in an article of Dodge (2004), the general Venice Reggio Emilia approach to project patterns of Surrey and the scope Monte electors each pattern to the questions, ask when choosing points out the When choosing patterns that need to be addressed, such as the expected output data, and Group's individual needs, the needs of families in the states.

"Magic brush and paint" another article from Lim Bo (2004) approach with a focus on art in Bank Street, Reggio Emilia and Waldorf and painted as part of the curriculum of these approaches have been introduced interminable.





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"Reggio experience in Hong Kong" report that the two projects by children in Hong Kong where the compatibility of these centers by Reggio Children suit the needs of their community, and it's a very useful way to introduce the Venice ((Reggio approach from the perspective of Asians)) is the title of an article in which researchers Lee Lai Van colleagues to study growth opportunities - Cognitive Asian, North American Reggio have benefited model, this method many Useful refer.

Comparison of curriculum preschool in an article on the workshop in 2003 to coordinate policy planning early childhood in Sweden was held during the national program of Sweden, the scope and Reggio Emilia and experiential education provided is. This article looks at the similarities and differences between these programs concluded that all of them are of high quality, high resolution is a good start in life and maintain quality with respect to the culture of different countries, depending on the merit specialist coaches , Derbe using these templates. (Samuelson, , et al., 2006)

"The teachers' views about document in front of them", an article in which strict morphology and knife (2006) because of the coaches of the document to the low level of their knowledge of the importance of documentation and how to implement limited resources for the use of the document.

Study experience some of the world Reggio Emilia, Canada, and Hong Kong. . . Which was conducted and how the overall compatibility in the utilization of project managers suggests actions. Research collections in this regard has been made, it follows that because teachers have an important role in implementing an innovative and doing this is by far the burden of toward its own way is a positive and a positive attitude toward coaches Project method does not happen, unless first of all, look at the children's mentors change. They also handle the procedure, need a support system, especially managerial support that allowed them to show creativity and flexibility in work can receive good feedback. The following are the categories:

"How Canada can benefit from the experience of Reggio Emilia?" In this paper, the authors describe the picture that Canadian school system of children is what Reggio Emilia approach will provide capabilities of children, to the point at which roots in Canada are children and originated the children as beings inefficient, fragile and those who can not afford to communicate with the community, they can be seen. view of children is not possible to implement the experience of Reggio Emilia.

" workout ideas, growing experience," which describes the experiences of a private school in the Canadian coach of Reggio Emilia has to implement them. (Young , 2007)

Compare -school learning environments based on American programs paper that the American writer, there are some examples of learning classes like this class, unlike American Reggio alphabet, calendar paid jobs is not America's The program proved that the culture of acceptance within order valued more than children's dreams and tells, it is time that this country needs to examine how it's standards and scale them to limit and how trends Political determines. The author also emphasizes the necessity of changes coaches learning environment.

"The frequency of six pre-school educational approach" as a ten-year study of preschool education. Analysis of the contents issue of pre-school education of America in 2007 by Bridget and Petty respectively. Bank Street approach, , the scope, Monte Surrey, Reggio Emilia and Waldorf study that showed, articles approach was more abundant. The next time approach in the articles, more frequency, and then mount the Syrians, the scope, Bank Street at the end of the Waldorf lowest frequency in the number of papers themselves.

"Mathematics in pre-school, research-based strategies applied logic" as an article in which the authors (Linder and Costello ) In 2011, the method implemented programs inspired by the Reggio Emilia approach as a means of effective education for children of pre-school numbers have described Recommended strategies for young teachers





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and aims to expand the mathematics in basic training. By employing this strategy for early childhood mathematics education, teachers can motivate students to higher levels of understanding to acquire a set of numbers.

"Which teachers can learn music from Reggio **approach**" as an article in which L Bond (2013) states that schools in America are coordinated with the approach adapted. Still, music teachers may not be aware of the principles of this approach. The objective of this paper is to describe thinking and Reggio approach is the basis for recommendations how its principles can be integrated with the content of American music classroom.

## METHODOLOGY

### Sampling

Since the Reggio Emilia approach to society is not familiar approach for the first time by a woman doctor from AllamehTabatabai University community., it is natural that the study sample is small. According to data obtained 10 compound, planned in this approach were introduced to try to draw inspiration from this approach which had been studied. The number of participants consisted of 10 directors, 61 of whom were trained in this center.

### Measuring instruments

The research was conducted through a questionnaire to the knowledge of the directors and coaches centers in Tehran that the approach used in their applications, to take measures for: the development of design criteria for the preparation of the approach is:

Full study of the subjects through books in both English and Farsi languages  
interviews with experts on the Reggio Emilia approach  
The study examined Internet resources  
The conclusion of the evaluation

To create a questionnaire that is given to indicators, to writing multiple-choice questions that included 23 questions. In the following, the options for developing the questions in the original questionnaire is used to write the statement. Questionnaire included 76 questions directors and coaches be a knowledge of the basic elements of the school curriculum Reggio Emilia approach (goals, content the learning environment, methodology, staff **evaluation**) **measures**.

The approach aims to measure the awareness of managers and coaches from Reggio Emilia, 18 questions were posed Vsalat3-4-19-23-31-32-39-45-50-55-56-57-59-63-65-72-73- 74 questionnaire put it Ram

To assess the knowledge of the directors and coaches of content in Reggio Emilia approach the question was 11-25-27-40-41-64-67 questionnaire put it Ram

To assess the knowledge of the directors and coaches of the Reggio Emilia approach to learning was 22-37-43-47 question questionnaire put it Ram

To assess the knowledge of the directors and coaches from Reggio Emilia approach 18 questions were posed 6-7-8-9-10-15-29-33-46-48-53-54-60-61-68-70-71 -75 questionnaire put it Ram





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To assess the knowledge of the directors and coaches from Reggio Emilia approach employees 22 questions were posed 1-2-5-12-14-16-17-20-24-26-28-30-35-38-42-44-49- 51-52-58-62-66 questionnaire put it Ram

To assess the knowledge of the directors and coaches from Reggio Emilia approach to evaluate the question was 13-18-21-34-36-69-76 questionnaire put it

**The validity of the Questionnaire**

Calculate the reliability coefficient

Cronbach's alpha was used to assess the reliability of the questionnaire.

Regarding to the reported Cronbach's alpha reliability level of 0. 865 is cleared that is appropriate.

The Formal Validity

To calculate the formal validity, getting ideas, administrators and teachers. To determine the content validity of the judgment of experts in this regard which gauges the test questions to represent the content and purpose of the program is used.

**Method of Data Collection**

The Reggio approach in centers are familiar with the extracted information. The questionnaire referred to these centers and in the field was prepared in cooperation with the institutions. The project worked with the creation of institutions that house children, learning to leave the house, the good news kindergarten, kindergarten of October, the Nova Institute, November studio, studio, homes for children and fitness wise, school tomorrow and Home Games respectively. The Reggio approach familiar institutions and their programs use this approach.

**Statistical Analysis**

Analysis data, included three main operations main including: description and preparation of data, then analysis relations between variables; and finally, comparison of observation results with results of hypothesis and expectation respectively.

Nowadays at more research that based on information of total data from topic in case study ,

**Analysis of Descriptive Data**

In this chapter, for analysis and the analysis of data total simple t-test were used.

First, the measures of central and dispersion of knowledge coaches Centers Ago From School of two Elements underlying the curriculum (objectives, contents, environment, learning, methodology, personnel, evaluation) in approach Education Reggio Emilia is paid. This report is provided in Table 2.

To determine the level of awareness trainers' centers ago from school of to of the basic program teaching simple t-test was used. At this section beginning to column level means you see it is if this the amount of 0. 05 smaller is this test at it loss of sense of and differs significantly from the average 3 there is. If the difference between the average at this case positive is shows the level of awareness of teachers is and at case minus the difference between the average of the lower state of consciousness coaches is. If the means significantly greater than 0. 05 is demonstrate the lack of difference between the amount of 3 is and result on the average level of awareness is the coaches.



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Due to the significant level of 0.05 smaller and positive differences in the average basic elements of the curriculum (objectives, contents, the learning environment, procedures, personnel, evaluation) in the Reggio Emilia educational approach characterized coaches know Centers compared to the average of the high school. In Figure 4-1, the knowledge of the basic elements of the curriculum (objectives, contents, learning environment, methodology, staff assessment) reported the highest to the lowest.

First, the measures of central and dispersion of knowledge management Centers From School of Two Elements underlying the curriculum (objectives, contents, environment, learning, methodology, personnel, evaluation) in approach Education Reggio Emilia is paid. This report is provided in Table 4.

To determine the level of awareness of managers centers ago from school of to of the basic program teaching simple t-test was used. At this section beginning to column level means you see it is if this the amount of 0.05 smaller is this test at it loss of sense of and differs significantly from the average 3 there is. If the difference between the average at this case positive is shows the level of awareness of managers is and case minus the difference between the average of the low status of knowledge management is. If the means significantly greater than 0.05 is demonstrate the lack of difference between the amount of 3 is and result on the average level of knowledge managers.

Due to the significant level of 0.05 smaller and positive differences in the average basic elements of the curriculum (objectives, learning environment, methodology, staff assessment) will be determined in the Reggio Emilia educational approach to knowledge management pre-school centers These elements are moderate to high. Due to significant levels greater than 0.05 element content it becomes clear that knowledge management is the element in the middle. In Figure 4-2, the knowledge of the basic elements of the curriculum (objectives, contents, learning environment, methodology, staff assessment) reported the highest to the lowest.

Table 5 indexes variable distribution in central and goals are reported:

In Table 6 measures of central and dispersion variable content.

Table 7 shows Central indicators and variable dispersion methods.

Table 8 Indices the central and dispersion environmental learning variables.

Employees of central and dispersion of the variables in Table 9 employees reported:

Table 10 Indices of central and dispersion variable evaluation.

In order to compare the knowledge of the directors and managers of independent t-test is used. In this case, if the surface is significantly smaller than 0.05 indicated a significant difference between the knowledge of the directors and the trainers there in the elements.

Due to the smaller of the significant level of 0.05 in the two methods is a significant difference between the employee and the awareness of managers and coaches element there. The mean difference between the two reflects the more positive the awareness of managers. In the rest of the bigger significance level of 0.05, there is no significant difference between the awareness of managers and coaches.

## CONCLUSION

The Reggio Emilia approach is too detailed. We can use the Reggio approach through similar studies in different countries to overcome common problems. It is used as the method of trial and error testing with numerous opportunities in each country.





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Based on extensive research conducted by researchers such as: Young (2007), Lee Lai Van (2005), Nelson (2000), Samuel Sun (2006), Edwards (2003), Fleming (2003), L Bond (2013), this approach has been introduced as an efficient points. The investigation coaches, have very important role in the implementation of an innovation.

The general guidelines on this model, helps children practice, thinking skills, enhance growth, and teamwork in project implementation, taking into account the interests of children as intelligent beings, curious, capable and creative and based on a developmental program for Climber in which children work together and help the children keep up with the changes.

When children are exposed to do boring and pointless (activities such as connecting the dots, copying their name, complete the puzzle of a thousand pieces) should be creative and original teacher activities that children cannot pay attention.

Documentation of the processor and the result of this approach are many opportunities available to children, teachers, parents puts managers. Among these parents involved in school makes children feel secure. Documentation, field work and for group discussion between parents provides their participation in the learning process, also makes interactive learning in them, so that children learn from adults and children. Variety of media used for recording activities for children, undeniable evidence of mental abilities of children provides their motivation. Coach also refer to its documentation and review them, diligence support children and be aware of the process.

In terms of different areas with the preschool in Reggio centers and Ziaee Research (1386) in pre-school in Iran, teaching materials and equipment in the variety, quality and frequency have not enjoy.

Physical space Reggio centers, through the arrangement of rooms around a square or piazza, glass doors, movable walls so that their own relationship strengthens. There is natural light, warm and positive atmosphere is created, which is to communicate effectively, can help. The design of the space-time costs, but need not be of benefit to this design space, be overlooked. This kind of traditional architectural space design in our society.

The approach of in-service training each week during the school year almost done with the participation of experts in education activities for children in this class is the subject of debate. Our country must also be held during the school year and effectiveness of the workshop was to further the interests of children's activities.

In this approach, hits, many of the projects are diverse, well-organized and in order to achieve specific goals are planned and implemented. But the visits to kindergartens and pre-school centers, we mainly confined to the Views from the fire department, the police or a park. . . Is. It seems we can more regular pre-school hits, more serious and to hold the content of the projects and they are present as an opportunity to develop the skills of our children.

Reggio approach for the implementation of the requirement to fit all environments (society, family, city, neighborhood, environment) to share the learning process and this in small urban areas, rural areas more communication between In this environment, we can all contribute to the child's learning process with the help of advantages of the Reggio approach to strengthen social interactions and internal cohesion of the social ills facing society groups.

Teachers in Reggio, constantly learning and this is a lesson that, no matter culture education should benefit from it. Another lesson is that the approach of Reggio do not be afraid of failure. We must make our children to the challenges to achieve their potential. and believe the future of society and along with the progress of our time. School should not be a basis for future work in progress, but in addition also be a constant challenge. Anyone who claims





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this approach mimics, should know that any society have different culture. The Reggio approach, introduced nine models and the model is unchanged, but the approach can be taken by people who use, develop and become mature.

#### Limitations of the study

The time limit for the review of rigorous is practical aspects of this approach.

The absence of a standardized questionnaire on the subject.

The lack of awareness of pre-school institutions of this approach.

limited number of institutions with research approach.

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**Table 1: Cronbach's Alpha Coefficients**

Reliability Statistics	
Cronbach's Alpha	N of Items
.865	76

**Table 2: Measures of Central Tendency and Dispersion Awareness Trainers**

	Number	Average	Standard deviation
Goals	61	3.2881	0.47847
Content Vsazmandhy	61	3.1479	0.49357
Method	61	3.4351	0.38847
Environmental Learning	61	3.6694	0.49417
Staff	61	3.4336	0.3423
Evaluation	61	3.4072	0.4227

**Table 3: Compared to the Coaches' Knowledge of Basic Programming Course**

Elements underlying the program curriculum	Test Value = 3					
	T statistics	Degrees of freedom	The significance level	The mean	The 95% confidence	
					Lower limit	Upper limit
Goals	4.702	60	.000	28805	.1655	.4106
Content	2.341	60	.023	.	.0215	.2743





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Vsazmandhy				14793		
Method	8. 747	60	. 000	. 43508	. 3356	. 5346
Environmental Learning	10. 580	60	. 000	. 66940	. 5428	. 7960
Staff	9. 894	60	. 000	. 43361	. 3459	. 5213
Evaluation	7. 524	60	. 000	. 40720	. 2989	. 5155

**Table 4: Measures of Central and Dispersion of Knowledge Management**

	Number	Average	Standard deviation
Goals	10	3. 315	0. 2746
Content Vsazmandhy	10	3. 2167	0. 56237
Method	10	3. 7251	0. 3583
Learning environment	10	3. 8	0. 5244
Staff	10	3. 6756	0. 3329
Evaluation	10	3. 3804	0. 38677

**Table 5: Managers' Knowledge of the Elements Underlying the Program Curriculum**

Elements underlying the program curriculum	Test Value = 3					
	T statistics	Degrees of freedom	The significance level	The mean	The 95% confidence	
					Lower limit	Upper limit
Goals	3. 628	9	. 006	. 31503	. 1186	. 5115
Content Vsazmandhy	1. 218	9	. 254	. 21667	-. 1856	. 6190
Method	6. 400	9	. 000	. 72515	. 4688	. 9815
Environmental Learning	4. 824	9	. 001	. 80000	. 4249	1. 1751
Staff	6. 418	9	. 000	. 67561	. 4375	. 9137
Evaluation	3. 110	9	. 013	. 38036	. 1037	. 6570





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**Table 5 Indices of Central and Dispersion Variable Goals**

	Number	Average	Standard deviation	The mean standard error
X3	69	4.2029	.86738	.10442
X4	70	3.8286	.96266	.11506
X19	69	1.9565	1.25364	.15092
X23	70	1.9571	1.10906	.13256
X31	71	3.6197	1.32413	.15715
X32	70	3.9714	.91638	.10953
X39	68	4.0000	1.00744	.12217
X45	70	2.7571	1.19705	.14307
X50	68	2.3676	1.17059	.14195
X55	69	1.6377	.83966	.10108
X56	71	2.7465	1.05178	.12482
X57	71	4.2817	.67998	.08070
X59	70	2.6857	1.21038	.14467
X63	70	4.4143	5.96728	.71323
X65	69	3.7681	1.22648	.14765
X72	71	2.5211	1.18151	.14022
X73	70	4.1000	.88711	.10603
X74	69	4.3333	.79828	.09610

**Table 6:Indices of Central and Dispersion Variable Content**

	Number	Average	Standard deviation	The mean standard error
X11	70	4.1000	.81915	.09791
X25	70	2.3286	1.23619	.14775
X27	70	3.7714	.96566	.11542
X40	70	4.0143	.97048	.11599
X41	68	2.7794	1.27952	.15517
X64	70	2.1857	1.13307	.13543
X67	68	2.8971	1.06700	.12939

**Table 7 Indices of Central and Dispersion Variable Method**

	Number	Average	Standard deviation	The mean standard error
X6	70	4.3571	.70270	.08399
X7	69	3.7971	1.00849	.12141
X8	70	4.5857	.64814	.07747
X9	70	3.9571	.99907	.11941





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X10	68	4. 1765	. 82753	. 10035
X15	70	4. 2571	. 69545	. 08312
X22	70	4. 1714	. 93206	. 11140
X29	69	2. 6812	1. 25432	. 15100
X33	71	3. 5493	1. 01120	. 12001
X46	71	3. 7324	1. 09489	. 12994
X48	70	2. 7571	1. 17258	. 14015
X53	70	3. 4714	1. 11279	. 13300
X54	69	2. 5072	. 91753	. 11046
X60	69	3. 0725	1. 30968	. 15767
X61	70	2. 1143	1. 01500	. 12132
X68	69	2. 6957	1. 10219	. 13269
X70	71	3. 9718	. 87785	. 10418
X71	71	2. 3239	. 98234	. 11658
X75	68	3. 8529	. 91854	. 11139

**Table 8 Indices of Central and Dispersion Environment Variable Learning**

	Number	Average	Standard deviation	The mean standard error
X37	70	3. 0714	1. 27770	. 15271
X43	69	3. 6522	. 98258	. 11829
X47	71	3. 8028	1. 10350	. 13096
X22	70	4. 1714	. 93206	. 11140

**Table 9 Indices of Central and Dispersion Variable Staff**

	Number	Average	Standard deviation	The mean standard error
X1	71	2. 1972	. 93533	. 11100
X2	71	4. 0704	1. 00462	. 11923
X5	70	4. 0571	. 93073	. 11124
X12	70	2. 5429	1. 01704	. 12156
X14	70	3. 2286	1. 27599	. 15251
X16	70	3. 7571	. 99907	. 11941
X17	69	4. 0870	. 79962	. 09626
X20	67	4. 0448	. 94441	. 11538
X24	70	4. 0000	1. 10335	. 13188
X26	67	2. 7910	1. 40925	. 17217
X28	67	2. 8209	1. 05780	. 12923
X30	66	3. 3788	. 73934	. 09101
X35	69	3. 6522	1. 32650	. 15969





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X38	68	2. 4118	1. 27239	. 15430
X42	68	4. 0147	1. 05791	. 12829
X44	65	3. 3231	1. 14711	. 14228
X49	70	4. 3571	. 88524	. 10581
X51	65	4. 1231	. 81983	. 10169
X52	70	3. 5857	1. 12279	. 13420
X58	69	2. 7101	. 98670	. 11878
X62	70	3. 5143	1. 00351	. 11994
X66	64	3. 7656	1. 00384	. 12548

**Table 10 Indices of Central and Dispersion Variable Evaluation**

	Number	Average	Standard deviation	The mean standard error
X13	71	3. 0423	. 94773	. 11247
X18	69	4. 5362	. 73923	. 08899
X21	69	4. 0435	1. 10393	. 13290
X34	71	2. 1690	1. 06886	. 12685
X36	69	3. 2609	1. 24442	. 14981
X47	71	3. 8028	1. 10350	. 13096
X69	70	2. 9571	1. 13490	. 13565
X76	69	3. 4348	1. 02151	. 12298

**Table: Rate of Managers and Coaches to the Basic Elements of the Curriculum Reggio Emilia Approach**

Ingredients	T						
	T	Degrees of freedom	The significance level	The mean	The difference between the standard error	The 95% confidence	
						Lower limit	Upper limit
Goals	. 173	69	. 863	. 02698	. 15594	-. 28410	. 33806
Content Vsazmandhy	. 400	69	. 690	. 06874	. 17163	-. 27366	. 41113
Method	2. 210	69	. 030	. 29007	. 13124	. 02826	. 55188
Learning environment	. 768	69	. 445	. 13060	. 16997	-. 20849	. 46969
Staff	2. 080	69	. 041	. 24200	. 11637	. 00985	. 47414
Evaluation	-. 188	69	. 851	-. 02684	. 14267	-. 31147	. 25778





## Effect of in Ovo Feeding and Dietary Feeding of *Silybum marianum* Extract on Performance and the Development of Chicken Intestine under Heat Stress Conditions

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### ABSTRACT

This experiment was conducted to investigate the effect of in ovo feeding (IOF) and dietary feeding of *Silybum marianum* (SM) extract on the development of chicken intestine under heat stress conditions. A total number of 360 fertile eggs from broiler breeder strain (Ross-308) were used for IOF, 0, 100, and 200 ppm of SM extract in 17.5th days of incubation. After hatching, chicks were transferred to the experimental cages and exposed to heat stress condition during the 7-28 d for 4 hours a day. Two experimental diets have been consumed by chickens: a diet includes 100ppm of SM extract, and the other diet was without SM extract. The chicks were divided into six treatments with four replicates as a completely randomized 2×3 factorial design. The results implicated that chickens consumed SM extract containing diet had the highest feed intake and daily weight gains and the lowest feed conversion ratio ( $P \leq 0.01$ ). The dietary feeding of 100ppm SM extract led to increment of relative weights of the jejunum ( $P \leq 0.05$ ) and ileum ( $P \leq 0.01$ ) at 28d. Also the relative weight ( $P \leq 0.05$ ) and length ( $P \leq 0.01$ ) of cecum were lower in dietary feeding of SM extract treatments. The interaction effects between IOF and dietary feeding of extract indicated that the relative weight of ileum was higher for 100ppm dietary extract fed groups ( $P \leq 0.01$ ). In addition, the length of cecum was lower in dietary extract fed groups ( $P \leq 0.05$ ). The dietary feeding of the extract decreased the length ( $P \leq 0.01$ ) and weight ( $P \leq 0.05$ ) of the cecum of



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Chickens were fed by 100ppm of extract at 42d. The dietary extract increased the length and width of gut villi in 28d ( $P \leq 0.01$ ), also the interaction effects confirmed that the villi length ( $P \leq 0.05$ ) and width ( $P \leq 0.01$ ) of the dietary feeding of the extract groups were significantly higher. The dietary feeding of the extract was affected the villi length to crypt depth ration and villi length in 42 d significantly ( $P \leq 0.01$ ). Finally the results showed that the IOF of Silymarin extract did not have any effect on the development of digestive tract but dietary feeding of SM extract improves the growth of different parts of gut.

**Key words:** in ovo, *Silybum marianum* extract, chicken intestine, heat stress, crypt, cecum, villus.

## INTRODUCTION

Chickens growth and development are depends on nutrient digestion and absorption, which is a direct result of the functional and morphological development of the small intestine (Yamauchi et al., 1996; Uni, 1999). Previous studies have shown that feeding immediately post hatch leads to an acceleration of small intestine morphological development (Noy and Sklan, 1998), whereas late access to external feed results in delayed and improper development of the small intestine mucosal layer (Uni et al., 2003b). Thus, because immediate access to feed after hatch is vital for the development of the intestine, nutrient supply during the pre-hatch period [at d 17 or 18 of incubation, using in ovo feeding (IOF)] would be expected to enhance development of the small intestine (Uni and Ferket, 2004). Stress is the reaction of the animal organism (i.e., a biological response) to stimulants that disturb its normal physiological equilibrium or homeostasis. During stress, the release of norepinephrine from sympathetic nerves that innervate the myenteric plexus, the submucosa and mucosa of the intestine, can accelerate intestinal motility, colonic transit and transepithelial ion transport, which can influence the microbial population of the gut (Freestone et al., 2008). Environmental stressors, such as heat stress, are particularly detrimental to farm animals (Renaudeau et al., 2012; Nardone et al., 2010). Some researchers have expressed that the high environmental temperature can affect the performance of different poultry species, including turkeys (McKee and Sams, 1997), young chickens (Henken et al., 1983) and broilers (Cooper and Washburn, 1998). To reduce the adverse effects of heat stress, the researchers are working on improving feed efficiency and growth rate of livestock by using medicinal plants (Bunyapraphatsara, 2007). *Silybum marianum* (Milk thistle) is considered as an important medicinal plant throughout the world and its fruit contains silymarin, which is an isomeric mixture of flavonolignans (Morazzoni and Bombardelli, 1995). Adding medicinal plants (such as thyme) to the poultry diets causes to enhance the activity of trypsin, pancreas and small intestine amylase on the chyme in jejunum (Lee et al., 2003; Jang et al., 2004). In this way, the evidences show that the medicinal plants may have desirable effects on intestine (the passage rate of digesta, digestive enzymes activity and nutrient absorption) and also these additives may stimulate the intestinal mucosal secretion (Jamroz et al., 2006). To our knowledge, potential growth effects of in ovo feeding of Silymarin to poultry have not been studied. Therefore, the purpose of this trial was to study the effect of in ovo feeding and then post hatch dietary feeding of *Silybum marianum* extract on performance and the small intestine histology of broiler chickens under heat stress conditions.

## MATERIALS AND METHODS

**In ovo solution preparation :** In this experiment a commercial extract termed *Silybum marianum* was used. *Silybum marianum* water extract composition was analyzed in advance via HPLC by Qingdao BNP Co., Ltd (Qingdao, China). This commercial silymarin extract contains Silymarin ( $\geq 80\%$ ) and Silybin isomers ( $\geq 30\%$ ) and its solvent is acetone and water. The preparation of in ovo solutions was done by dissolving the extract in distilled water (solvent). So that stock solution (200 ppm) (w/v) was obtained by dissolving 200mg of the extract in 1 liter of distilled water. Then for preparing the 100 ppm solution, a proportion of the stock solution was poured in a separate vessel and was diluted by twice volume of the solvent.



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**In ovo feeding (IOF) procedure :** Eggs (n=500) were obtained from a broiler breeder strain (Ross-308) at 43 weeks of age. At 17.5 days after incubation, eggs were candled, and the infertile ones were removed. The fertilized eggs were used for the in ovo feeding of Silybum marianum extract. Then eggs were weighed on a balance with 0.1 g precision, and 360 eggs weighing  $55 \pm 1$  g were incubated at 37.8 °C and 63% RH. The eggs were divided into three groups (each group 120 eggs) with an equal weight frequency and then 1 ml of in ovo solution was injected into the amniotic fluid of each egg using a syringe with 21-gauge needle which was identified by candling before. The IOF procedure was performed as described by Tako et al. (2004). The treatments were 0 ppm (distilled water only), 100 and 200 ppm Silybum marianum extract in distilled water. After the eggs were injected, the injection pores were sealed with molten paraffin, and the eggs were placed in hatching trays and were returned to the hatcher until the day of hatching.

**Birds and diets :** After hatching, chicks (n=240) were transferred to the experimental cages (130×120 cm) with floor pens bedded with soft wood shavings and given ad libitum access to water and a commercial diet for the first (from d1 to d21) and second (from d22 to d42) periods, (Table 1).

The diets were formulated on the basis of Ross strain (Ross 308). Two dietary factors were investigated (0 and 100 ppm of Silybum marianum extract). This experiment was affected by 2 factors, the first one was included 3 levels of the IOF of extract (0, 100 and 200 ppm) and the other one was included 2 levels of dietary feeding of extract (0 and 100 ppm). The chicks were divided into six treatments (40 chicks/treatment) with four replicates per treatment(s). The treatments included three levels of 0, 100, and 200 mg/l of extract injected in ovo and two levels of 0 and 100 mg/kg of extract in the diet post hatch. The experimental treatments were as follow:

- In ovo feeding of no extract solution (distilled water) with a control diet (without extract)
- In ovo feeding of no extract solution (distilled water) with diet containing 100 ppm of extract
- In ovo feeding of 100 ppm extract solution with a control diet (without extract)
- In ovo feeding of 100 ppm extract solution with a diet containing 100 ppm of extract
- In ovo feeding of 200 ppm extract solution with a control diet (without extract)
- In ovo feeding of 200 ppm extract solution with a diet containing 100 ppm of extract

The heat stress conditions (optimum temperature +4°C) were set for 4h per day (12:00h -16:00h) during day 7-28 of the experiment for all chickens. The heat stress was stopped after 28 d, but the diets continued to be fed. The chickens were maintained according to the Iranian Council of Animal Care guidelines (1995).

**Recording performance and carcass parameters :** During the trial, body weight gain (BWG), feed intake (FI), and feed conversion ratio (FCR) were measured every week and the results of BWG and FI were reported for three periods (starter, grower and the total period) whereas the results of FCR was reported for 7-42d. At 28 and 42 d of age, two birds from each pen were starved for 6 h before slaughter. Chickens were slaughtered by Islamic amputation of head, plucked and eviscerated, carcasses were weighed after removing the head, neck and feet, then the relative weight (% of BW) and the length of different parts (including duodenum, jejunum, ileum and ceca) of intestine of each chicken were recorded.

**Collecting ileal tissue samples :** Intestine was removed and gently flushed with 150 mM of NaCl solution to remove the intestinal contents. Samples of ileum (~2 cm) were taken from 10cm terminal part of ileum, then were fixed in separate tubes contain 10% neutral-buffered formalin solution for intestinal histomorphology.

**Morphological Examination :** Intestinal samples (ileum region) at 28 and 42d of age from each treatment were fixed in fresh 10% (vol/vol) buffered formaldehyde, dehydrated, cleared, and embedded in paraffin. Serial sections were cut at 5 µm and placed on glass slides. Sections were deparaffinized in xylene, stained with hematoxylin and eosin, and examined by light microscopy. Morphometric measurements of villus height and width were performed with an



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Olympus light microscope using EPIX XCAP software. 5 Villus surface areas were calculated from villus height and width at half height (Uni et al., 1998).

**Statistical analysis** Data were analyzed by using the GLM procedure of SAS (2005) to determine statistical differences between the treatments. This experiment was designed for all parameters as a completely randomized 2×3 factorial design ( $Y_{ij} = \mu + a_i + b_j + ab_{ij} + e_{ijk}$ ) except for hatchability parameters that were a completely randomized design ( $Y_{ij} = \mu + T_i + e_{ij}$ ). Differences between the treatments were compared by Tukey test following ANOVA, and the values were considered statistically significant at ( $P < 0.05$ ).

**RESULTS**

Average feed consumption, daily weight gain and feed conversion ratio of chickens are presented in table 2. It was observed that the feed consumption in 7-21d was significantly lower for IOF treatments ( $P \leq 0.01$ ), but no significant differences were observed in 21-42d and 7-42d periods. Also the feed consumption in 7-21d was affected by dietary feeding of extract, so it has increased the feed consumption significantly ( $P \leq 0.01$ ) but there were no significant differences in 21-42d and 7-42d periods.

Interaction effects between IOF of extract and dietary feeding of extract during 7-21d was determined. It was concluded that feed consumption was higher for 0 ppm IOF of extract and dietary feeding of extract treatments ( $P \leq 0.01$ ), but likewise there were no significant differences in 21-42 and 7-42d for feed consumption. It seems that the presence of extract in diets lessens the effects of high temperature on feed consumption reduction especially in 7-21d when the chicks were under heat stress condition. The results of daily weight gain (DWG) showed that the effect of IOF of extract was only in 7-21d and was decreased significantly in IOF of extract treatments ( $P \leq 0.01$ ), but there were no significant differences in 21-42 and 7-42d for DWG. Whereas dietary feeding of extract was significantly increased DWG in 7-21, 21-42 and 7-42d ( $P \leq 0.01$ ). The results of interaction effects proved that chickens fed extract containing diet had the highest DWG ( $P \leq 0.01$ ). The feed conversion ratio of chickens was not affected by IOF of extract and no significant differences were observed between the treatments. Whereas dietary feeding of extract caused feed conversion decline for these treatments in 21-42 and 7-42d which was due to their higher DWG ( $P \leq 0.01$ ).

Also the interaction effects between IOF of extract and dietary feeding of extract had similar processes and the lowest feed conversion ratio was observed in treatments fed with extract at 21-42d and 7-42d ( $P \leq 0.01$ ), whereas there were no significant differences at 7-21d. In a recent study, broilers exposed to chronic heat stress experienced significant reduction in feed intake (-16.4%), lower body weight (-32.6%), and higher feed conversion ratio (+25.6%) at 42 days of age (Sohail et al., 2012; Deng et al., 2012).

The relative weights (%BW) and length of various parts of intestine at 28d of age are given in table 3. The results showed that the relative weights and length of duodenum, jejunum, ileum and ceca were not affected by different levels of IOF of extract. However the dietary feeding of extract affected some parameters so that the relative weights of jejunum ( $P \leq 0.05$ ) and ileum ( $P \leq 0.01$ ) were significantly higher in those treatments which were fed by 100ppm of SM extract. In the other hand the relative weight ( $P \leq 0.05$ ) and length ( $P \leq 0.01$ ) of ceca were significantly lower in dietary feeding of extract treatments.

The interaction effects between IOF of extract and dietary feeding of extract indicated that the relative weight of ileum was higher for 100ppm dietary extract fed groups in comparison with other groups ( $P \leq 0.01$ ). In addition the length of ceca was significantly affected by dietary feeding of extract and was lower in dietary extract fed groups ( $P \leq 0.05$ ).



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Similar to the results of 28d of age, the relative weights (BW%) and length of various parts of intestine were not affected by different levels of the IOF of extract at 42d of age, but the dietary feeding of extract (100ppm) decreased the length ( $P \leq 0.01$ ) and weight ( $P \leq 0.05$ ) of the ceca of chickens significantly (table 4). Also the interaction effects between IOF of extract and dietary feeding of extract showed the significant decrease of ceca length for treatments fed 100ppm of extract ( $P \leq 0.05$ ). The other measured parameters at 42d of age were not affected by experimental treatments. Table 5 represents the ileal pathological parameters of experimental chickens at 28d of age. The results showed that the IOF of extract did not have any effect on intestinal villi and its muscle tissue but the dietary feeding of extract was increased the length and width of intestinal villi significantly ( $P \leq 0.01$ ). Likewise the interaction effects confirmed that the villi length ( $P \leq 0.05$ ) and width ( $P \leq 0.01$ ) of the dietary feeding of extract groups were significantly higher. The results indicate that the IOF of extract did not influence on the measured pathological parameters in experimental chickens at 42d of age (table 6); but the dietary feeding of extract was significantly affected the villi length to crypt depth ratio and the villi length ( $P \leq 0.01$ ) in a way that they were higher in 100ppm dietary extract fed groups compared to other groups ( $P \leq 0.01$ ). It was observed in evaluations of interaction effects, the villi length was completely influenced by dietary feeding of the extract as it was significantly higher for treatments fed 100ppm of extract ( $P \leq 0.05$ ).

**DISCUSSION**

The results showed that dietary feeding of *Silybum marianum* extract have potential to decrease deleterious effect of heat stress, raise daily weight gain and improve feed conversion ratio; whereas the IOF of extract had not same influences. The results are in agreement with the findings of Tedesco et al. (2004) who reported that addition of silymarin resulted in 14.83% increase in body weight. Similar results were also reported by Zahid and Durrani (2007) who fed milk thistle to broilers and observed efficient feed conversion ratio in broilers. Zahid and Durrani (2007) fed milk thistle to broilers at the rate of 15 g/kg feed and found better FCR (2.2) as compared to the control group (2.4). Also Gowda and Sastry (2000) confirmed significant influence of milk thistle on body weight gain and attributed the effect to antioxidant activity that stimulated protein synthesis by bird's enzymatic system. Regarding to the results, the dietary feeding of the extract had impact on the length and weight of different parts of intestine and it can be influenced by several factors. It has been suggested that gastroprotective effects of Silymarin might be related to the protection of gastric mucosal and non-protein sulfhydryl groups and the modulation of capsaicin-sensitive gastric sensory afferents (Shin et al., 2013). It is also well known that polyphenols are provide antioxidant protection in the lower parts of intestine and can alter colonic flora (Moco et al, 2012). Polyphenols, including silybin, are extensively metabolized by gut bacteria into a complex series of end-products that affect the functional ecology of symbiotic partners that can change the host physiology (Moco et al, 2012). This implies that stress mediators can alter the mucosa-bacterial interactions and so affect the commensal microbiota and/or the outcome of a bacterial infection (Lyte et al., 2011). Any factor that increases the activity of an organ above threshold levels can lead to increases in organs weight and length by hypertrophy and hyperplasia of the related organs (Yakhkeshi et al., 2012). It seems that tested silymarin induce intestinal activation and increases intestinal weight and length.

The ceca are the main site of microbial activity in the gastrointestinal tract of poultry, and it seems that decreasing their weight and length by dietary feeding of the extract can be due to the reduction of microbial activity. As it has been reported in a previous study, silybinin showed antibacterial activity against the Gram-positive bacteria *Bacillus subtilis* and *Staphylococcus epidermidis* (dong et al., 2003). It has been suggested that the consumption of a diet rich in plant foods with high dietary polyphenol content may enhance the gastrointestinal health of the host through microbiota modulation. The major mechanism of medicinal plants is adhesion and thrust of bacterial membrane which inhibits bacterial enzymes activation (Guo et al., 2004; Sarica et al., 2005). These reactions can reduce pathogenic populations in the intestine by reducing gram-negative bacteria, coliforms, and total number of bacteria in ileum by the inclusion of silymarin in diets. One another possible mechanism of antimicrobial effect of medicinal plants is reducing of intestinal pH (Surai, 2015). Unfortunately, there is no data available about the effect of silymarin



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on gut microbiota, but we can suggest the same changes would occur as described above for other flavonoids. Therefore, it seems likely that reduction of oxidative damage, decreased inflammation, modulation of colonic flora and variation in gene expression are involved in the modulation of intestinal function by polyphenols, including silymarin (Surai, 2015). The results of this experiment are in agreement with the findings of Makki et al. (2013) who evaluated different levels of B1 aflatoxin and Silymarin in broiler chickens and found that the total length of intestine, ileum and jejunum were enhanced by increasing Silymarin level in diets contain aflatoxin. In another research Kalantar et al. (2014) used Silymarin and Curcuma spp. to the broiler chicken diets and reported the lowest microbial population in chickens fed Silymarin in comparison with control and other treatments. Also they expressed that the length and weight of intestine of experimental chickens in this treatment were higher than the others.

Indeed, it is still unclear whether silymarin has any direct antioxidant effects in vivo, although it might be capable of exerting such effects within the gastrointestinal tract, where silymarin may come into direct contact with cells without having undergone absorption and metabolism (Surai et al., 2004). As is clear from the results of ileum histology, the length and width of intestinal villi were significantly influenced by the dietary feeding of extract. Also Caspary (1992) reported that the further absorption area created by the impact of villi growth probably would increase the absorption capacity of available nutrients in intestine and this led to the better bird performance especially in early ages. In an experiment oxidative stress induced by challenged with hydro peroxide on the intestinal morphology (Yi et al., 2012). Oxidative stress might be influence functional damage to the intestine by interfering with normal cellular migration along the crypt-villus axis function (Ramachandran et al., 2002) so the challenged with hydro peroxide treated ducks had a lower villus height and higher crypt depth than the control group and the oxidative stress might exert unprofitable effects on mucosal cellular migration from crypt to the tip of villus but in treatments with 100 or 200 mg kg<sup>-1</sup> silymarin could increase the villus height but did not affect the crypt depth in intestine of challenged with hydro peroxide ducks. They reported that silymarin could reverse the adverse effects of challenged with hydro peroxide on intestinal morphology to the normalcy by stimulating the enterocyte proliferation in mucosa (Yi et al., 2012).

**CONCLUSION**

The results of this experiment showed that the in ovo feeding of Silymarin extract did not have any effect on the development of digestive tract but dietary feeding of Silybum marianum extract caused to improve the growth of different parts of gastrointestinal tract, especially it was increased the growth of ileum and cecum which this effect could be due to the antimicrobial activity of this extract.

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**Table1- Ingredient composition and calculated values of the basal diets (as fedbasis)**

Ingredient (g/kg)	0 – 21 d	21 - 42 d
Corn	547.0	622.5
Fish meal	30.0	20.0
Soybean meal	355.0	297.3
Soybean oil	35.0	30.0
Oyster shell-flour	12.0	12.5
Dicalcium phosphate	11.2	9.0
Sodium chloride	3.9	3.0
Methionine	1.40	0.7
Trace mineral-vitamin permix <sup>1</sup>	5.0	5.0
Calculated values		
Metabolisable energy (kCal/kg)	3016.0	3081.0
Crude protein (g/kg)	216.8	192.6
Calcium (g/kg)	9.43	8.67
Available phosphorus (g/kg)	4.24	3.37

Supplied per kg of diet: antioxidant (ethoxyquin), 100 mg; biotin, 0.2 mg; calcium pantothenate, 12.8 mg; cholecalciferol, 60.0mg; cyanocobalamin, 0.017 mg; folic acid, 5.2 mg; menadione, 4.0 mg; niacin, 35.0 mg; pyridoxine, 10 mg; trans-retinol, 3.33 mg; riboflavin, 12.0 mg; thiamine, 3.0 mg; dl-tocopheryl acetate, 60.0 mg; choline chloride, 638.0 mg; Co, 0.3 mg; Cu, 3.0 mg; Fe, 25.0 mg; I, 1.0 mg; Mn, 125.0 mg; Mo, 0.5 mg; Se, 200.0mg; Zn, 60.0 mg.





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**Table 2- The effect of dietary feeding and *in ovo* feeding of *Silybum marianum* extract on performance of broiler chickens under heat stress condition**

	Feed intake (g)			Daily weight gain (g)			Feed conversion ratio		
	7-21	21-42	7-42	7-21	21-42	7-42	7-21	21-42	7-42
<i>In ovo</i> feeding (IOF)									
0 ppm IOF	<sup>a</sup> 63.57	120.72	96.99	<sup>a</sup> 40.42	71.78	59.23	1.57	1.68	1.63
100 ppm IOF	<sup>b</sup> 59.06	120.02	96.18	<sup>b</sup> 38.30	71.23	58.05	1.54	1.69	1.65
200 ppm IOF	<sup>b</sup> 59.69	122.18	97.86	<sup>b</sup> 37.68	72.50	58.57	1.58	1.69	1.67
SEM	0.64	1.03	0.93	0.29	0.73	0.42	0.02	0.014	0.012
Sig	**	NS	NS	**	NS	NS	NS	NS	NS
Dietary feeding									
Diet without SM extract	<sup>b</sup> 58.98	120.05	96.21	<sup>b</sup> 37.05	<sup>b</sup> 69.68	<sup>b</sup> 56.63	1.59	<sup>a</sup> 1.72	<sup>a</sup> 1.69
Diet with 100 ppm SM extract	<sup>a</sup> 62.57	121.89	97.82	<sup>a</sup> 40.55	<sup>a</sup> 73.99	<sup>a</sup> 60.61	1.54	<sup>b</sup> 1.64	<sup>b</sup> 1.61
SEM	0.53	0.84	0.75	0.24	0.59	0.35	0.01	0.01	0.009
Sig	**	NS	NS	**	**	**	NS	**	**
Interaction									
0 ppm IOF × No dietary feeding	<sup>a</sup> 64.48	119.49	96.38	<sup>a</sup> 40.06	<sup>c</sup> 69.36	<sup>b</sup> 57.63	1.60	<sup>a</sup> 1.72	<sup>ab</sup> 1.67
0 ppm IOF × 100ppm dietary feeding	<sup>a</sup> 62.66	121.95	97.60	<sup>a</sup> 40.78	<sup>a</sup> 74.20	<sup>a</sup> 60.83	1.53	<sup>c</sup> 1.64	<sup>c</sup> 1.60
100 ppm IOF × No dietary feeding	<sup>b</sup> 55.51	118.98	94.67	35.72 <sup>b</sup>	<sup>c</sup> 68.66	<sup>c</sup> 55.49	1.55	<sup>a</sup> 1.73	<sup>a</sup> 1.70
100 ppm IOF × 100 ppm dietary feeding	<sup>a</sup> 62.61	121.05	97.69	<sup>a</sup> 40.87	73.79 <sup>ab</sup>	<sup>a</sup> 60.62	1.53	<sup>c</sup> 1.63	<sup>c</sup> 1.61
200 ppm IOF × No dietary feeding	<sup>b</sup> 56.94	121.69	97.57	<sup>b</sup> 35.36	71.03 <sup>bc</sup>	56.76 <sup>bc</sup>	1.61	<sup>ab</sup> 1.71	<sup>a</sup> 1.72
200 ppm IOF × 100 ppm dietary feeding	<sup>a</sup> 62.45	122.67	98.16	<sup>a</sup> 40.00	73.98 <sup>ba</sup>	<sup>a</sup> 60.39	1.56	<sup>bc</sup> 1.65	<sup>bc</sup> 1.62
SEM	0.91	1.45	1.31	1.42	1.03	0.60	0.02	0.02	0.01
Sig	**	NS	NS	**	**	**	NS	**	**

Means within a column with no common superscript differ significantly (\* P<0.05, \*\* P<0.01), NS= non-significant. Data are means of 4 replicate pens of 10 birds each





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**Table 3- The effect of dietary feeding and in ovo feeding of *Silybum marianum* extract on length (cm) and relative weight (% of BW) of intestine of broiler chickens under heat stress condition at 28 days of age.**

Item	Duodenum		jejunum		ileum		ceca	
	length	weight	length	weight	length	weight	length	weight
In ovo feeding (IOF)								
0 ppm IOF	26.33	1.00	61.33	2.41	67.00	2.20	12.96	0.484
100 ppm IOF	26.83	1.02	58.66	2.41	66.16	2.28	13.61	0.500
200 ppm IOF	26.83	1.01	60.66	2.41	67.83	2.26	13.76	0.518
SEM	1.414	0.033	1.748	0.038	2.112	0.031	0.426	0.035
Sig	NS	NS	NS	NS	NS	NS	NS	NS
Dietary feeding								
Diet without SM extract	27.44	0.987	59.77	2.35 <sup>b</sup>	66.89	2.14 <sup>b</sup>	14.42 <sup>a</sup>	0.549 <sup>a</sup>
Diet with 100 ppm SM extract	25.88	1.039	60.66	2.46 <sup>a</sup>	67.11	2.36 <sup>a</sup>	12.47 <sup>b</sup>	0.453 <sup>b</sup>
SEM	1.154	0.026	1.427	0.031	1.724	0.025	0.348	0.028
Sig	NS	NS	NS	*	NS	**	**	*
Interaction								
0 ppm IOF × No dietary feeding	27.00	0.97	60.66	2.34	66.00	2.10 <sup>b</sup>	13.93 <sup>ab</sup>	0.436
0 ppm IOF × 100ppm dietary feeding	25.66	1.02	62.00	2.48	68.00	2.31 <sup>a</sup>	12.00 <sup>c</sup>	0.532
100 ppm IOF × No dietary feeding	27.66	0.99	58.33	2.36	67.00	2.17 <sup>b</sup>	14.83 <sup>a</sup>	0.460
100 ppm IOF × 100 ppm dietary feeding	26.00	1.04	59.00	2.46	65.33	2.40 <sup>a</sup>	12.40 <sup>bc</sup>	0.541
200 ppm IOF × No dietary feeding	27.66	0.99	60.33	2.35	67.66	2.16 <sup>b</sup>	14.50 <sup>a</sup>	0.463
200 ppm IOF × 100 ppm dietary feeding	26.00	1.04	61.00	2.46	68.00	2.36 <sup>a</sup>	13.03 <sup>abc</sup>	0.574
SEM	2.00	0.046	2.472	0.054	2.987	0.044	0.603	0.050
Sig	NS	NS	NS	NS	NS	**	*	NS

Means within a column with no common superscript differ significantly (\* P<0.05, \*\* P <0.01), NS= non-significant. Data are means of 4 replicate pens of 2 birds each.





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**Table 4- The effect of dietary feeding and *in ovo* feeding of *Silybum marianum* extract on length (cm) and relative weight (% of BW) of intestine of broiler chickens under heat stress condition at 42 days of age.**

Item	Duodenum		jejunum		ileum		cecum	
	length	weight	length	weight	length	weight	length	weight
In ovo feeding (IOF)								
0 ppm IOF	40.81	1.55	95.06	3.67	103.85	3.54	21.08	0.830
100 ppm IOF	41.59	1.58	90.33	3.67	102.55	3.51	20.64	0.825
200 ppm IOF	41.59	1.58	94.03	3.64	105.141	3.50	20.65	0.825
SEM	2.19	0.050	2.709	0.093	3.274	0.043	0.802	0.073
Sig	NS	NS	NS	NS	NS	NS	NS	NS
Dietary feeding								
Diet without SM extract	42.53	1.53	92.65	3.64	103.67	3.50	22.85 <sup>a</sup>	0.95 <sup>a</sup>
Diet with 100 ppm SM extract	40.12	1.61	94.03	3.67	104.02	3.53	18.73 <sup>b</sup>	0.69 <sup>b</sup>
SEM	1.78	0.041	2.212	0.076	2.673	0.035	0.655	0.060
Sig	NS	NS	NS	NS	NS	NS	**	*
Interaction								
0 ppm IOF × No dietary feeding	41.85	1.51	94.03	3.63	102.30	3.51	23.08 <sup>a</sup>	0.94
0 ppm IOF × 100ppm dietary feeding	39.78	1.59	96.10	3.71	105.40	3.58	19.07 <sup>bc</sup>	0.72
100 ppm IOF × No dietary feeding	42.88	1.54	90.41	3.66	103.85	3.52	22.99 <sup>a</sup>	0.98
100 ppm IOF × 100 ppm dietary feeding	40.32	1.62	91.45	3.68	101.26	3.50	18.29 <sup>c</sup>	0.66
200 ppm IOF × No dietary feeding	42.71	1.54	93.51	3.64	104.88	3.48	22.47 <sup>ab</sup>	0.93
200 ppm IOF × 100 ppm dietary feeding	40.20	1.62	94.55	3.63	105.40	3.51	18.83 <sup>c</sup>	0.71
SEM	3.100	0.071	3.831	0.132	4.630	0.061	1.135	0.104
Sig	NS	NS	NS	NS	NS	NS	*	NS

Means within a column with no common superscript differ significantly (\* P<0.05, \*\* P <0.01), NS= non-significant. Data are means of 4 replicate pens of 2 birds each.





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**Table 5- The effect of dietary feeding and in ovo feeding of *Silybum marianum* extract on ileum pathological parameters of broiler chickens under heat stress condition at 28 days of age**

Item	villus Length (µm)	villus width (µm)	Crypt depth (µm)	Muscle thickness (µm)	villus Length/ Crypt depth
In ovo feeding (IOF)					
0 ppm IOF	937.91	150.26	136.77	204.54	7.00
100 ppm IOF	940.98	159.99	138.84	200.97	6.81
200 ppm IOF	950.06	164.37	144.72	203.07	6.66
SEM	17.247	5.237	4.251	5.084	0.216
Sig	NS	NS	NS	NS	NS
Dietary feeding					
Diet without SM extract	903.77 <sup>b</sup>	133.91 <sup>b</sup>	151.52 <sup>a</sup>	201.41	6.98
Diet with 100 ppm SM extract	982.19 <sup>a</sup>	182.50 <sup>a</sup>	148.70 <sup>b</sup>	204.31	7.67
SEM	14.08	4.27	8.471	4.151	0.576
Sig	**	**	NS	NS	NS
Interaction					
0 ppm IOF × No dietary feeding	891.39 <sup>c</sup>	129.28 <sup>b</sup>	150.43 <sup>ab</sup>	203.10	5.95
0 ppm IOF × 100ppm dietary feeding	984.43 <sup>a</sup>	171.24 <sup>a</sup>	143.11 <sup>d</sup>	205.98	8.05
100 ppm IOF × No dietary feeding	906.63 <sup>bc</sup>	135.33 <sup>b</sup>	144.89 <sup>abc</sup>	199.54	6.26
100 ppm IOF × 100 ppm dietary feeding	975.33 <sup>ab</sup>	184.65 <sup>a</sup>	152.79 <sup>bcd</sup>	202.41	7.36
200 ppm IOF × No dietary feeding	913.30 <sup>abc</sup>	137.11 <sup>b</sup>	159.23 <sup>a</sup>	201.60	5.73
200 ppm IOF × 100 ppm dietary feeding	986.83 <sup>a</sup>	191.62 <sup>a</sup>	150.20 <sup>cd</sup>	204.54	7.60
SEM	24.391	7.407	9.012	7.191	1.305
Sig	*	**	NS	NS	NS

Means within a column with no common superscript differ significantly (\* P<0.05, \*\* P <0.01), NS= non-significant. Data are means of 4 replicate pens of 2 birds with 5 villi measured for each bird





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**Table 6- The effect of dietary feeding and in ovo feeding of Silybum marianum extract on ileum pathological parameters of broiler chickens under heat stress condition at 42 days of age**

Item	villus Length (µm)	villus width (µm)	Crypt depth (µm)	Muscle thickness (µm)	villus Length/ Crypt depth
In ovo feeding (IOF)					
0 ppm IOF	1385.58	237.53	202.82	286.35	6.84
100 ppm IOF	1367.87	238.15	202.38	281.36	6.76
200 ppm IOF	1367.88	237.11	204.10	284.30	6.70
SEM	17.384	7.010	3.072	7.118	0.126
Sig	NS	NS	NS	NS	N
Dietary feeding					
Diet without SM extract	1330.49 <sup>b</sup>	235.69	204.24	281.98	6.51 <sup>b</sup>
Diet with 100 ppm SM extract	1417.05 <sup>a</sup>	239.51	201.96	286.03	7.02 <sup>a</sup>
SEM	14.194	5.728	2.508	5.812	0.103
Sig	**	NS	NS	NS	**
Interaction					
0 ppm IOF × No dietary feeding	1342.95 <sup>bc</sup>	235.33	202.94	284.34	6.61
0 ppm IOF × 100ppm dietary feeding	1428.21 <sup>a</sup>	239.74	202.69	288.37	7.07
100 ppm IOF × No dietary feeding	1330.95 <sup>c</sup>	236.13	205.52	279.35	6.47
100 ppm IOF × 100 ppm dietary feeding	1414.79 <sup>a</sup>	240.18	199.23	283.38	7.05
200 ppm IOF × No dietary feeding	1317.59 <sup>c</sup>	235.62	204.26	282.24	6.45
200 ppm IOF × 100 ppm dietary feeding	1418.16 <sup>ab</sup>	238.61	203.95	286.36	6.96
SEM	24.585	9.922	4.345	10.067	0.178
Sig	*	NS	NS	NS	NS

Means within a column with no common superscript differ significantly (\* P<0.05, \*\* P <0.01), NS= non-significant. Data are means of 4 replicate pens of 2 birds with 5 villi measured for each bird.





## Studying Technological Barriers of Internationalization of Curriculum in Higher Education

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### ABSTRACT

The goal of this study is to search for the role of the technological barriers in the internationalization of Kerman Azad universities' curricula according to the faculties' views. That is a survey and the research method is descriptive. The Statistic population included 1474 members of full time faculties in these universities and 330 participants were selected based on multi stages cluster sampling. The tools used in this survey were a questionnaire which included 22 statements. The validity was emphasized and accepted by 10 experts in this field and the reliability of questionnaire was 0.93 based on Chronbach's Alpha. For the analysis of data, a combination of descriptive and inferential techniques including one sample t test and Friedman ranking test were used. Findings indicate according to the faculties' views technological barriers related to teaching strategies, technological content barriers, technological equipment barriers, technological barriers related to web and technological financial barriers are the technological obstacles in the internationalization of Kerman Azad universities' curricula.

**Key words:** Information and communication technology (ICT), Internationalization of curriculum (IOC), Internationalization of higher education

### INTRODUCTION

The dramatic developments of the twentieth century and the scientific predictions, and information management in the twenty-first century, indicates the uncertainty of facing humanity in the face of future. Today is the era of





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globalization, culture, society, economy, education, politics, etc and twenty-first century world is facing the most recent and extensive development which is affected by this phenomenon. But the impact of globalization on educational systems is more sensitive and fateful effect for the individuals in the society (Carnoy, 1999). Information explosion, communication development, changes in government and political system of governance, has undergone a fundamental change of perspective, the need and look at higher education (Kharrazi Azar, 2009). The increasing development of Information and communication technology and establishing tele-conference calls between the continent and the nature of knowledge indicates that's out of the question to make a boundary for science and expertise and as a result, universities are inevitable international institutions (Arefi, 2005). Information and Communication Technology (ICT) with opening the new visions of science and technology, will encounter learners and teachers with the new approaches in education, and teaching-learning process. For the cultural development, development of higher education system as a custodian of education, research and technology with having different specialties and also training of expert human resources not only causes the development of the institutions under its control, but also will provoke personal growth and enrichment and education of human sources. The phenomenon of globalization and international cooperation has led universities and higher education institutes toward eliminating the distance between science and technology and strengthening academic, educational and cultural exchanges among nations.

#### Problem Statement

Globalization is a term with cultural, social and economical dimensions (Blossfeld et. al, 2008). Globalization theories are widely associated with the economic ,cultural and political categories (Olssen et. al , 2004). According to Cheng's view (2002), there are several types of globalization in the new millennium which includes technological, economical, social and cultural globalization (Cheng, 2002). Potential effects of globalization and also internationalization as a dimension of globalization will leave important consequences on the growth of those educational systems that have not been fully evaluated (Carnoy, 1999). Internationalizing the curriculum is one of the main goals of universities and a group of experts considers the curriculum as one of the main elements of internationalization of universities (Navarro, 2004). Since the Islamic Azad University as an institution of higher education is no exception to this trend, and largely accepts the conditions of globalization and internationalization, through this research effort is to identify technological barriers of the internationalization of Azad University's curricula to meet the step in order to remove the requirements and possible damages. Therefore, the aim is to answer this question:

What are the technological barriers to internationalizing the curriculum of Kerman Azad Universities?

For this purposes, the following sub-questions has determined:

What are the technological barriers related to teaching methods of internationalizing curricula of Kerman Azad Universities?

What are the technological content barriers of internationalizing curricula of Kerman Azad Universities?

What are the technological equipment barriers which are related to internationalizing curricula of Kerman Azad Universities?

What are the technological barriers related to web of internationalizing curricula of Kerman Azad Universities?

What are the technological financial barriers of internationalizing curricula of Kerman Azad Universities?

## REVIEW OF LITERATURE

### INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOL AND INDEX OF THE DEVELOPMENT OF HIGHER EDUCATION

One of the characteristics of ICT which is remarkable in all matters is the speed of its development. This speed arises from a relatively appropriate communicative field that is now widespread throughout the world. Development



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indicators in higher education is the number of universities and educational institutions, the number of classes, the number of teachers in comparison to the number of students and also training facilities and equipment in higher education. Increasing of communicative channels through means such as e-mail, discussion and negotiation groups, chat rooms, great flexibility from this issue that teachers and students do their tasks when and where (Rawat & Rawat, 2006), increasing and improving the quality of courses through partnerships between teachers and students in planning and preparing teaching materials, a motivation caused by different sources in order to improve teaching and learning process, the development of learning styles, programs designed to facilitate teaching and learning materials, easy access to learners and university's information at any time and place is one of the main advantages of applying ICT in educational systems all over the world (Jalali and Abbasi, 2004). To compete in international education in an era of information and communication technology, that's not possible with traditional teaching methods and will not be responsible for educational conditions and students' needs nowadays. This should be considered by politicians and investors of higher education, and ICT planners and professionals. To create a better relationship with the term, four kinds of purpose or rationale has been determined for the usage of ICT in education which includes:

1. Encouraging the acquisition of ICT skills as a goal for users
2. Enhancing the learners' abilities in the curriculum through ICT
3. Curriculum reform through changing in howness of learning the lessons and learned content
4. Reforms of the organizational structure in the university (Downes et. al, 2002)

Higher education is one of institutions that has had the most effective and increasingly mutation in applying ICT in 1990 (Stensaker et. al, 2007). Today, various information and communication technologies have this ability to facilitate the learning process (Khosravi Negad et. al, 2010; Kirkwood & Price, 2005; Passey, 2006; Wang, 2008). Increasing number of Iranian students in universities, of undergraduate students to pursue higher education, increasing demand for educational materials within and outside universities, ascending educational activities associated with ICT, changes in the nature of the teaching - learning process affected by ICT, and the expansion of new forms of computer are the main reasons for applying technology in the educational system. In addition, ICT can support international contributions in professional development and training of education. Video conferences, multimedia, Web Sites, etc. can help teachers to facilitate teaching. In fact, there are documents that the information and communication technologies may provide the teachers in this era with the effective and flexible professional ways (Jung, 2005; Voogt & Pelgrum, 2005; Nelsone & Kuh, 2004; Sheppard, 2000). Rapid changes and technological advances not only will be effective in our life style and establishing communicative ways of ourselves with each other, but also has been effective in teaching and learning methods. PCs and a widely access to Internet has created an effective environment in educational systems (Brefen et. al, 2001). Nowadays, learning merely is not obtaining information in a separated environment such as educational environment, but effective learning in the new era occurs in IT and network environments.

**Network learning and human and local development in the global environment**

According to Mok & Cheng (2001), creating a network of human and technological environment not only helps the individual learning but also develops social awareness. In other words, through a network, personal and social knowledge on global education for human development spreads in a local and national society and credits. When learners of communities form as an interconnected network through Information Technology (IT), will put a significant impact on the volume of available data sets and individual and organizational learning stimulus (Mok & Cheng, 2001). Since the Information and communication technology (ICT) has accelerated the information feedback process for members of the learning system and this speed with a large accessible volume of information which transmits through information networks not just means age of information explosion, but it means that in the era of rapid changes of globalization, the networked environments are the places for growth and development of





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individual and organizational learning. Now, learning is not merely obtaining the information in an environment such as school, but effective learning in the new era occurs in IT and network environments, a place where facilitates learners' intelligence and motivation levels, and also makes easy mutual interactions of hardware and technology for validation and dissemination of various types of knowledge into local knowledge (Cheng, 2002 & 2004).

#### Internationalization of Curriculum (IOC)

In order to understand the concept of Internationalization of Curriculum (IOC) in a better manner, it is essential to clarify the relations of some concepts such as globalization and internationalization. Globalization is generally defined as complex processes which include the global flow of people and goods, ideas and ideologies, issues, investments and technologies (Clifford, 2007).

Based on Giddens (1990), globalization is an enhancement in social relations at the global level so that local communities away from each other somehow be connected with together that local events affect by the occurrence of incidents that take place many miles away and vice versa. The increase in global communications has caused educational systems in different countries exposure in a position that students, teachers and administrators are working in different fields of cultural, social and economic aspects (Mclaren, 1995).

The concept of globalization is not usually supposed the same as internationalization. A definition that one of the famous experts in the internationalization domain Knight (1997) suggested and represented was valid and effective. He has defined the internationalization as follows:

"The process of combining the international aspect of teaching functions, research and services of an institute of higher education is called internationalization." In 2004, Knight revised his definition of globalization as following:

"Globalization is called as the process of combining the international, intercultural or global aspects in objectives, functions or the teaching and training strategies of an institute" (Knight, 2004).

#### Main objectives of the internationalization of the curriculum

The revolution in communications and technology via creating of a related world has made important conditions in which the transfers speed can be accelerated, as Marginson and Wende (2007) and Crawford & Kirby (2008) have recognized the reinforcement of the technological aspect in internationalization of higher education as an effective factor( Marginson, 2007; Crawford & Kirby,2008). In such circumstances, higher education plays a basic and fundamental role in preparing individuals for their future in a globalized and interconnected world (Ginkel, 2002). The main objectives of the curriculum from this perspective can be considered as the following:

1. Preparation of the university students to face the important and relevant global realities such as activities in the competitive environment at the international level.
2. Increasing students' understanding of culture, religions, their own political system and other nations.
3. Development of insight and a global or comprehensive perspective toward the international community and also equipping them with necessary skills in order to do conscious judgments with regard to issues in the contemporary world and their role in the world.
4. Promoting world peace (Hanson & Meyerson, 1995).



**Mahshid Mehrjoo and Amine Ahmadi****Internationalization in Higher Education**

Internationalization has been one of the most important global processes of higher education in the past two decades (Alladin, 1992; Lim, 1995; Anneke lub, 2002; Knight, 1997). Internationalization is a process that prepares the communities to participate successfully in an increasingly dependent in the world. The process that must motivate all forms of educational system after secondary education and cultivate global understanding and improve skills to work and live in different environments of the world. Internationalization means fostering cooperations, preparing opportunities for teachers in order to grow and develop their own experiences, identifying the role that different fields can play in the internationalization and encompasses the students in different fields (Rizvi, 2006).

**METHODOLOGY**

This study is a descriptive one and the survey method is used. The statistical population was 1474 of full time faculty members in Kerman Azad Universities. A number of 330 participants were selected through multi stages cluster sampling. The research tool is a researcher-made questionnaire containing 22 statements based on Five-degree Likert's scale. The tool's validity was confirmed by 10 experts' views and its reliability was determined with participating 30 faculty members of statistical population based on Chronbach's alpha and the coefficient was 0/93. For the analysis of data both descriptive and inferential statistics including single-group t and Friedman ranking test were used.

**FINDINGS**

What are the technological barriers related to teaching methods of internationalizing curricula in Kerman Azad Universities?

Given the above table and with emphasis on the amount of t (14/32) which is significant in the 0/05 confidence level, it can be said that there is a significant difference between actual (3/50) and theoretical (3) Mean. Since the actual average is higher than the theoretical average, it can be concluded that in terms of scientific group of Kerman Azad Universities, barriers to teaching method can be effective as one of the major barriers in internationalizing curriculum of Kerman Azad Universities.

What are the technological content barriers of internationalizing curricula in Kerman Azad Universities?

Given the above table and with emphasis on the amount of t (14/57) which is significant in the 0/05 confidence level, it can be said that there is a significant difference between actual (3/72) and theoretical (3) Mean. Since the actual average is higher than the theoretical average, it can be concluded that in terms of scientific group of Kerman Azad Universities, barriers to content can be effective as one of the major barriers in internationalizing curriculum of Kerman Azad Universities.

What are the technological equipment barriers which are related to internationalizing curricula of Kerman Azad Universities?

Given the above table and with emphasis on the amount of t (15/58) which is significant in the 0/05 confidence level, it can be said that there is a significant difference between actual (3/75) and theoretical (3) Mean. Since the actual average is higher than the theoretical average, it can be concluded that in terms of scientific group of Kerman Azad Universities, technological equipment barriers can be effective as one of the major barriers in internationalizing curriculum of Kerman Azad Universities.



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What are the technological barriers related to web of internationalizing curricula of Kerman Azad Universities?

Given the above table and with emphasis on the amount of  $t$  (14/83) which is significant in the 0/05 confidence level, it can be said that there is a significant difference between actual (3/73) and theoretical (3) Mean. Since the actual average is higher than the theoretical average, it can be concluded that in terms of scientific group of Kerman Azad Universities, technological barriers related to web can be effective as one of the major barriers in internationalizing curriculum of Kerman Azad Universities.

What are the technological financial barriers of internationalizing curricula of Kerman Azad Universities?

Given the above table and with emphasis on the amount of  $t$  (14/83) which is significant in the 0/05 confidence level, it can be said that there is a significant difference between actual (3/73) and theoretical (3) Mean. Since the actual average is higher than the theoretical average, it can be concluded that in terms of scientific group of Kerman Azad Universities, technological barriers related to web can be effective as one of the major barriers in internationalizing curriculum of Kerman Azad Universities.

As it can be seen in Table 6, based on Friedman Rank Test, financial barrier with rank (5/83) has been considered as the biggest obstacle to the internationalization of Azad Universities curricula in Kerman Azad Universities and the teaching method barrier with rank (3/60) is the lowest obstacle among the technological barriers of internationalizing curricula of Kerman Azad Universities according to the faculties' views

## CONCLUSION

From the perspective of faculty members, all the considered statements associated with teaching method, content, equipment, network and technological financial affairs are blocks of internationalizing curricula of Kerman Azad Universities. It can be related to the traditional methods of teaching, or mismatch of teaching methods with technology, and may be it originates from the lack of communication with other universities. Any attention to the latest scientific and research developments in the world, lack of proper and appropriate use of the information and communication technologies in education and teaching, low bandwidth, lack of knowledge towards applying technology in teaching – learning process, lack of interaction through the network environment, inadequate budget for universities to equip software and hardware are another problems in Azad Universities. Lack of long-term strategic goals has caused that these universities haven't had any program to attract students from the neighbor countries. While these universities have great ability and potential in some areas such as science, research, services and cultural and religious heterogeneity. According to the obtained results, task of planners, policy makers and custodians of the Islamic Azad University is finding solutions to overcome these barriers. Our modern society expects of Azad University that in addition to transferring knowledge and culture and training human resources, plays as a center for cultural innovation, scientific, social and technical innovation. Instead of inflexible and book centered programs, runs flexible, constructive and live ones. It must be the focus of dynamic more than before, and unlike the past, instead of sitting away from the scientific community and the isolation blends with the community and applies the science and technology in the era of knowledge-economy to promote the country's needs and development goals.

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**Table 1- One group t test for the first question**

V	T. A	RA	SD	DF	t	SL
Technological Barriers of teaching method	3	3/50	0/63	329	14/32	0/001

**Table 2- One group t test for the second question**

V	T. A	RA	SD	DF	t	SL
Technological content Barriers	3	3/72	0/90	329	14/57	0/001

**Table 3- One group t test for the third question**

V	T. A	RA	SD	DF	t	SL
Technological equipment Barriers	3	3/75	0/88	329	15/58	0/001





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**Table 4- One group t test for the fourth question**

V	T. A	RA	SD	DF	t	SL
Technological Barriers related to web	3	3/73	0/89	329	14/83	0/001

**Table 5- One group t test for the fifth question**

V	T. A	RA	SD	DF	t	SL
Technological Financial Barriers	3	3/73	0/89	329	14/83	0/001

**Table 6: Friedman ranking test to investigate IOC barriers of Kerman Azad Universities according to the faculties' views**

Barriers	Rating Average	Ranking
Financial barriers	5/83	1
Technological barriers related to web	4/84	2
Equipment barriers	4/83	3
Barriers of content	4/80	4
Barriers of teaching method	3/60	5





## Internet Pornography Child and its Impact on Society

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### ABSTRACT

The purpose of this study was to the survey internet pornography child and its impact on society. Estimates suggest that up to 90% or more youth between 12 and 18 years have access to the Internet. Concern has been raised that this increased accessibility may lead to a rise in pornography seeking among children and adolescents, with potentially serious ramifications for child and adolescent sexual development. The problem of child pornography possession was thought to have been minimized prior to the emergence of the Internet. The availability of child pornography had declined due to legal actions and statutory revisions.

**Key words:** Internet Pornography, Child, Society

### INTRODUCTION

Although child sex crimes have been a recognized social problem for more than two decades (Finkelhor, 1984), recent policy and media attention has focused on the commission of these crimes via the Internet. The emergence of Internet-facilitated sex crimes, including Internet child pornography possession, has raised crucial questions regarding the use of the Internet by offenders and the law enforcement challenges in addressing these offenses. The problem of child pornography possession was thought to have been minimized prior to the emergence of the Internet. The availability of child pornography had declined due to legal actions and statutory revisions (Jenkins, 2011). However, there is a general consensus that the Internet has made child pornography more accessible and available to collectors and distributors (Biegel, 2001; Jenkins, 2011; Wolak, Mitchell, & Wells, 2002). Electronic child pornography can be obtained and traded on the World Wide Web, using Internet Relay Chat and via other online sources (Taylor, Quayle, & Holland, 2001). Online, child pornography possessors can download child pornography for collections and distribute images to other consumers. Internet child pornography possession cases involve the use of the Internet or computer technology to possess and/or collect electronic images of child pornography. These





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investigations present challenges for law enforcement agents in the USA and around the world. This study explores law enforcement dilemmas related to defining child pornography in a sample of 34 Internet child pornography possession cases in which no offender was arrested. This study identifies specific dilemmas emerging in these investigations and presents recommendations related to these incidents.

#### **Pornography research**

The majority of pornography studies have been conducted with adults. This is largely due to the ethical and legal considerations of exposing children and adolescents to potentially harmful material. A handful of adolescent studies suggest no relationship between pornography and behavior. For example, a retrospective study of adolescent sex offenders found no relationship between prior exposure to pornography and the number of victims. Additionally, in a more intensive interview with a sub-sample of youths, the majority of offenders denied that their use of pornography in any way led to the subsequent sex crime. Clearly, more research is needed about child and adolescent consumption of pornography. Importantly, as the Internet is used by more and more young people, the effects of access to and exposure of online pornography on child and adolescent development will be a child and adolescent health issue of increasing importance.

#### **What is Internet Child Pornography?**

Within the USA, there is currently no uniform definition of child pornography, and therefore, significant variation exists among state statutes. US federal law defines a youth under the age of 18 as a 'child' and includes in its definition of child pornography photographs and films of conduct that are sexually explicit (Klain, Davies, & Hicks, 2001). Sexually explicit conduct may include sexual intercourse, bestiality, masturbation, and 'lascivious exhibition of the genitals or pubic area.' These federal definitions have been adopted by some states and interpreted broadly, such that it is difficult to identify one specific definition for child pornography. Child pornography possessors may use child pornography to validate their sexual interest in children, to groom children and lower their inhibitions, or to blackmail victims or other offenders (Klain et al., 2001; Tyler & Stone, 1983). Others may be motivated to collect child pornography out of curiosity, for sexual arousal, or for other reasons. As noted, this study examines law enforcement dilemmas in alleged Internet child pornography possession and does not include cases of child pornography production. Therefore, the cases classified here as Internet child pornography possession did not involve any online correspondence, exchange of images, or other Internet connection between an adult suspect and an identified juvenile victim. Law enforcement agents in this sample did not identify or contact any of the youth depicted in the child pornography images.

#### **Internet use among children and adolescents**

More than 90% of young people between the ages of 12 and 18 years use the Internet in the United States. A vast amount of information is now widely and easily accessible to anyone who has an Internet connection. Although positive aspects of the Internet are frequently cited, including the availability of important and sometimes sensitive health information the often unfettered access to web sites may lead to an overall increase in the numbers of young people seeking out pornographic material. To safeguard against this type of exposure, filtering and blocking software has been developed to prevent access to specific sites, and several child-oriented organizations recommend the usage of such software on home computers. The use of blocking software on public computers such as those in public libraries remains controversial because of free speech issues.



**Effat Sanjari Najad****Prevalence of intentional Internet exposures**

Several studies have asked youth about purposeful exposure to sexual material online. A survey of young people attending a private, urban school in the Midwest reports that 21% have ever visited a pornographic site for at least 3 min. A national telephone survey of young people between the ages of 12 and 17 found that 15% have lied about their age to gain access to a web site. Interestingly, this percentage is similar to the corresponding value observed for adults in the same survey. Males, older youths, those with greater months/ years of Internet experience, and those who use the Internet more intensively (i.e., 5+ h/day) are more likely to report purposefully seeking out these sites.

**Issues in Internet Child Pornography**

This analysis examined law enforcement dilemmas related to defining child pornography in Internet crimes. Law enforcement agencies investigate these cases using traditional and undercover techniques and may encounter specific dilemmas related to the nature of these incidents. Additionally, there is considerable statutory variation among state and national definitions of child pornography and there can also be challenges related to establishing with certainty the ages of young people depicted in images. These issues can create obstacles for law enforcement (Zillmann, 2009).

**Adolescent beliefs about Internet exposures to sexual material**

Although there are no studies about exposure to sexual material on the Internet and resulting behavioral changes, a national study of older teenagers illuminates concerns about changes in the attitudes and beliefs of young people. Over half (59%) of respondents believe that viewing Internet pornography may encourage young people to have sex earlier. Almost one in two respondents (49%) indicate that Internet pornography promotes negative attitudes towards women, with a similar percentage (49%) indicating that the images may promote the perception that unprotected sexual activity is "okay." Beyond perception and belief, no information is available about actual outcomes or linkages between purposeful exposure to Internet pornography and psychosocial or developmental challenges (Ponton & Judice, 2013).

**Dilemmas in Investigating Internet Child Pornography Possession**

Despite these emerging investigative practices, law enforcement investigations of Internet child pornography possession can also present specific investigative challenges. These cases may require digital evidence collection, undercover operations, and tailored interviewing practices (SEARCH, 2001). In addition, these cases may involve multiple law enforcement jurisdictions when child pornography is transmitted via the Internet. Due to the global reach of the Internet, an individual may possess child pornography images created or disseminated from anywhere in the world (Copine Project, 2003). There is a general consensus that global partnerships and international law enforcement collaboration are needed to effectively address online child pornography (International Centre for Missing & Exploited Children, 2002; 'International Cooperation to Tackle Child Pornography,' 2001). The Internet has opened up new avenues of child pornography possession and law enforcement agencies have developed approaches that facilitate investigations and convictions in these crimes. However, investigations of Internet child pornography possession may pose some dilemmas and require specific resources. Computers may need to be purchased or upgraded for electronic communication, personnel are needed to work online, training in online investigations may be required, and specific digital technology is often useful in tracking suspects.





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## Effects of Putrescine, Nitric Oxide and Chloride Calcium on Quality Attributes of Strawberry (*Fragaria ananassa* Duch.Cv. 'Queen')

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### ABSTRACT

Strawberry is non-climatic and perusable fruit. A study involving split plot design with 3 replicate of treatment was conducted to evaluate effects of putrescine (at concentrations 1, 2 mmol L<sup>-1</sup>), nitric oxide (at concentrations 3, 5 mmol L<sup>-1</sup>) and chloride calcium (at concentrations 25, 50 and 75 mmol L<sup>-1</sup>) and combinations of treatments on quality attributes strawberry. Even control fruits treated with H<sub>2</sub>O<sub>2</sub>. Fruits stored at 2C with 85-95% RH. Quality attributes of strawberry evaluated in 7day, 14day. Fruit firmness, decay, total acidity, total phenolic, vitamin C evaluated. The results showed all treatments in 14day different significantly on protective firmness, controlling decay, preventing reduces Vitamin C and phenol content and protective acidity (P<0.01). The treatment with combination of Putrescine 1mmol, chloride calcium 25mmol L<sup>-1</sup> and NO 3mmol L<sup>-1</sup> significantly preserved Vitamin C in 7day and 14day. The results showed that Chloride calcium (more affected) showed a more improvement in controlling decay. In addition, the treatment with combination of Putrescine, Nitric Oxide and Chloride calcium significantly protected firmness fruits.

**Key words:** Strawberry, Putrescine, Nitric Oxide, Chloride calcium.



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## INTRODUCTION

The increasing world population has led to increased demand for food and reduced per capita availability of arable land and irrigation water. Compounding this problem is the fact that most farmers in the developing world own only small plots of land that have the potential to feed one family and generate income. Low soil fertility and crop losses from pests and droughts have reduced harvests to below subsistence levels (Vasil, 1998; Conway and Toenniessen, 2003). Small-scale farmers in developing countries are faced with many problems and constraints. Pre-and postharvest crop losses due to insects, diseases, weeds and droughts result in low and fluctuating yields, as well as risks and fluctuations in incomes and food availability (Tonukari and Omotor, 2010). Strawberry is an important small fruit, grown throughout the world. It is deep red in color with unique shape and flavor. The major strawberry producing countries of the world are USA, Spain, Japan, Poland, Korea and Russian Federation. The estimated production of strawberries in the world during 2007 was 5822 thousand tons (Sharma et al., 2009).

Losses can be categorized on the basis of cause into three classes: Mechanical damage, physiological damage (storage disorders) and biological damage (insect and pathogen diseases) (Ferguson et al., 1999). Biological damage is the most important portion of pre-harvest losses of strawberry production in Iran. Fresh strawberries are a good source of ascorbic acid and phenolic compounds but their quality declines rapidly after harvest. The beneficial effects of Ca on maintaining fruit quality are well documented by many researchers. Pre and postharvest application of Ca have been practised commercially in many fruits and vegetables for improving quality, delaying senescence, reducing postharvest decay and controlling the physiological disorder (Poovaiah, 1986; Conway et al., 1994). Foliar applications of Ca during the growing season have been reported to delay ripening and mold development in strawberries (Cheour et al., 1990; Cheour et al., 1991; Chung et al., 1995).

Calcium as postharvest treatment has been used as firming agents to extend postharvest shelf life in whole and fresh cut fruits. Rosen and Kader (1989) found that CaCl<sub>2</sub> treated strawberries by dipping resulted in higher calcium content and were firmer than water dipped. Agar et al (1999) also found CaCl<sub>2</sub> maintained the firmness throughout storage for kiwifruits dipped in 0.5 or 1% CaCl<sub>2</sub>. It was also reported that the rate of fruit softening depends on fruit calcium status. Texture, one of the sensory quality attributes appreciated by the consumer, plays an important role in the quality of fruits and vegetables. One major problem in processing fruits is their susceptibility to textural change during harvesting and handling. The changes in some fleshy fruits appear as tissue softening and loss of cohesiveness, as well as a decrease in the extent of intermolecular bonding between cell wall polymers (Van Buren 1979). Textural changes of fruit during ripening and senescence can arise from a loss of turgor or degradation of starch. However, modification of the fruit cell wall is frequently attributed to the enzymatic degradation of cell wall materials (Tucker and Grierson 1987; Hulme 1970). Several studies have been done on textural change, such as the effects of ripening, storage and cooking on the alteration of cell walls, particularly directed to changes in pectic substances (Bartolome and Hoff 1972; Chang et al., 1993).

The free radical gas nitric oxide (NO) has commanded considerable attention in animal research in recent years (Feldman et al., 1993). NO exerts contrasting effects on many physiological and pathological processes in mammalian tissues and has found therapeutic use to alleviate aschemia, asthma and other pulmonary hypertension complications. Nevertheless benefits are concentration dependent since high endogenous levels are associated with stroke, septic shock and migraines (Schmidt and Walter, 1994; Moncada et al., 1991). The existence and direct characterisation of endogenous NO in higher plants was reported only recently by Ya'Acov and Haramaty (1996) who found that, on a molar basis, pea foliage emitted more NO than ethylene and that the ethylene precursor aminocyclopropane-1-carboxylic acid (ACC) enhanced both NO and ethylene emission. It has been suggested that ethylene production in growing plants may be regulated by NO and that under short term environmental stress such as water deficit, heat and salinity, NO emission may act as a natural stress coping agent (Ya'Acov and Haramaty, 1996).



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The aim of this research is to investigate the effects of post harvesting application of Nitric Acid, Chloride Calcium and Putrescine (as a polyamine) in conservation of qualitative attributes of Queen strawberry and preservative role of these compounds in preventing decomposition of fruit's advantageous compounds such as Vitamin C and phenolic compounds.

**METHODS****Chemical compounds**

Gallic acid, Folin-Ciocalteu, Sodium Carbonate, Ascorbic Acid, 2, 6-Dichlorophenol indophenol, Sodium Nitroprussiate Dihydrate, Metaphosphoric Acid, 1, 4-D-Amino Butane and Hydroxide Sodium purchased from Sigma Company located in St. Louise, MO, USA.

**Treatment with Putrescine**

Fruits were treated with Putrescine via a immersing method for two minutes and were placed in plastic dishes after drying and were transferred to a refrigerator at 2 degrees and relative humidity of 85-95 percent. For this research, strawberry fruits were immersed in a solution containing 0, 1 and 2 MM of 1, 4-D-Amino Butane.

**Treatment with Chloride calcium**

For this purpose, Queen Strawberries were immersed in 0, 25, 50 and 75MM solutions of Chloride calcium for two minutes and afterwards, were dried in lab atmosphere and were kept in a refrigerator at 2 degrees for 14 days.

**Treatment with Nitric Acid**

For this purpose the Queen strawberries were sprayed with 0, 3 and 5MM solutions of Sodium Nitro-Prucide which releases Nitric Acid. After the treatment, fruits were put in a refrigerator on a plastic dish at 2 degrees for 14 days with humidity of 85 to 95 percent. For undertaking each of the aforementioned treatments, a number of 15 healthy strawberries without any physical deformities and abnormal shape were selected. Ultimately, the control fruits were also treated with distilled water.

**Total Phenol**

Total phenolics in the fruit extracts were determined using the Folin-Ciocalteu reagent according to the method of Waterhouse (2002).

**Vitamin C (Ascorbic acid)**

Ascorbic acid was determined using the Dye method [35]. Fruit pulp tissues (10 g) from five Strawberry fruits were homogenized with 90 mL of 3% metaphosphoric acid (HPO<sub>3</sub>) using a kitchen blender, the mixture was filtered through cotton wool. Five mL of aliquot was titrated with a standard dye solution (2, 6-dichlorophenol-indophenol) to a pink colour that persisted for 15 seconds. The ascorbic acid content (Vitamin C) was expressed as (mg-1 100g) of fresh fruits.





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### **Titration acidity (TA)**

After firmness analysis, strawberries were cut into small pieces and homogenised in a grinder and 10 g of ground strawberry was suspended in 100 ml of distilled water and then filtered. The pH and titration acidity of the samples were assessed using a pH meter (pH-526; WTW Measurement Systems, Wissenschaftlich, Technische Werkstätten GmbH, Weillhelm, Germany) and titrated to pH 8.1 using 0.1 MNaOH. Titration acidity was expressed as grammes of citric acid per 100 g of strawberry weight.

### **Texture analysis**

Firmness was measured as the maximum penetration force (N) reached during tissue breakage and determined with a 5 mm diameter flat probe. The penetration depth was 5 mm and the cross-head speed was 5 mm s<sup>-1</sup> using a TA-XT2 Texture Analyzer (Stable Micro Systems, Godalming, UK), MA. Strawberries were sliced into halves and each half was measured in the central zone. Fruit firmness values were an average of 25 strawberries.

### **Fungal decay**

Fungal decay was visually inspected daily during the storage period. Strawberry fruits showing surface mycelial development were considered decayed. Results were expressed as the percentage of fruits infected.

### **Statistical analysis**

Statistical analysis of the results was performed using a one-way analysis of variance (ANOVA) with the statistical software of SAS 9.1. Differences between means were studied with Duncan's test and differences at  $p < 0.05$  were considered to be significant. All storage treatments were done with three replications.

## **RESULTS AND CONCLUSION**

Since the sampling and evaluation of attributes were carried out in two different times, in addition to applied material, the element of time is also introduced to calculations. Two sampling times are as follows:

Time1: 7<sup>th</sup> day after storage in refrigerator

Time2: 14<sup>th</sup> day after storage in refrigerator

### **Total phenol**

The content of phenolic compounds was declined in all treatments at the end of storage time and this declination was lower in treated fruits with first compositional treatment and Putrescine in both densities. Among the implemented materials, the compositional treatment 1 (putrescence 1MM + Chloride Calcium 50 MM + Nitric Oxide 3MM) and Putrescine treatments were more effective in maintenance of total Phenol in both densities. This is while compositional treatment 2, 3 had the least effectiveness in maintenance of total Phenol in treated fruits (Fig 1).

In the present research, the content of Phenolic compositions had declined for all treatments at the end of storage time and this declination was lower in treated fruits and therefore, the entire undertaken treatments had a significant effect on inhibiting the reduction of total Phenol value except for distilled water treatment. It seems that treatment with Putrescine and Chloride Calcium inhibits the deterioration of total Phenols via inhibiting the activity of Enzymes which dissect Phenolic compositions such as Poly Phenol Oxidase and respective reduction in production



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of ethylene. It is also been said that concentrations of Nitric Acid of less than 1MM per liter impose a preventive effect of the activity of Poly Phenol Oxidase and Phenyl alanine Ammonialase (Zhu et al. 2009). Treatment with Chloride Calcium and Putrescine decreases aspiration and as a result declines the production and effects of Ethylene and also leads to a decreased activity of Phenyl alanine Ammonialase and ultimately prevents loss of total Phenol value (Hyodo, 1978). Valero et al. (1997) indicated that treatment of pomegranate with Polyamines leads to preservation of the density of Ascorbic Acid and increased Phenolic compositions compared to control fruits. This suggests the decrease of activities of Phenol Oxidase Enzyme and as a result, the brownish effect decreases. Their findings are in compliance with the results of Duan et al. (2007).

**Titration Acidity**

According to variance analysis table 1-2 it could be inferred that implemented chemical treatments in Queen strawberry fruits are significant at 0.01 in terms of acidity. Control group fruits featured the lowest level of acidity while among the implemented treatments; maximum acidity value was related to the treatment of 25MM Chloride Calcium and 3MM Nitric Oxide which were both ranged in one statistical group with no difference (Fig 2). Application of Putrescine also leads to a lower declination of acids compared to control treatment which points to the role of Putrescine in maintenance of acids in the fruits of strawberry and pomegranate (Serrano et al. 2003). During the post-harvest period, the values of acidity and PH are respectively expected to decrease and increase. Research conducted by Cheour et al. (1991) revealed that strawberries which were treated with Calcium had lost less acidity after 14 days of storage. This could be as a result of lowered speed of fruit's ripening process because of application of Calcium which leads to decomposition of organic acids to other compositions. Results of this research are not in compliance with the results of researches conducted by Esna-Ashari and Zakaei Khosroshahi (2009). They stated that Putrescine has no significant effects on inhibition of loss of acidity in strawberries and apricot.

**Vitamin C**

According to variance analysis table 1, chemical treatments have a significant effect on the level of Vitamin C at significance level of 0.01; in a way that according to means comparison table, the compositional treatment 1, 2, 3 had the most effective influences on maintenance of the level of Vitamin C. on the other hand, the existing data in aforementioned table shows that control group fruits and fruits treated with 1MM Putrescine had the lowest level of Vitamin C. results of this test indicated that all these compositions were significant at 0.01 in maintaining the level of acidity. This difference was bolder in seventh day. Among the treatments, the 3MM Nitric Oxide in seventh day and applied compositional treatments in 14<sup>th</sup> day had the most effects in maintaining the acidity.

As a result of consumption during aspiration, organic acids decrease while the fruit ripens and their decrease is directly related to metabolic activities. In fact, organic acids are reserved sources of energy for the fruit which are consumed at the time of ripening with increase in metabolism (Rahemi, 2006). Studies indicate that elements that cause decreased aspiration and production of ethylene prevent loss of organic acids as well as increase of solid particles in solutions as a result of reduced sugar consumption (Rahemi, 2006). In this research, application of Nitric Oxide significantly affected the maintenance of level of acidity. Nitric Oxide leads to decrease of cell's metabolic activities such as aspiration and production of ethylene and therefore, the loss of acidity decreases.

According to the results of Singh et al. (2009) treatment with Nitric Oxide has significantly postponed the loss of total acidity which complies with our results in this research (Fig 3). Presence of relatively high values of vitamin C in strawberry has turned this fruit into one the most desirable products in the market. On this basis technics and solutions for maintaining the values of vitamin c as well as prolonging its post-harvest life can play a significant role in post-harvesting process of strawberry. During the storage period the value of Ascorbic acid which is a main anti-oxidant decreases. The reason is consumption of this vitamin as a provider of electron for oxidants for diffusing free



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radicals (Smirnoff, 1995). Decreased vitamin C content can be a result of activity of enzymes such as Ascorbic Acid Oxidase. These enzymes are more active in cut tissues (Klein, 1987).

Putrescine leads to a linear decrease in the level of Ascorbic Acid which is under the influence of Polyamine treatments through increased activity of Ascorbic Oxidase. Decrease in total Oxidant levels is a result of increased activities of Cytochrome Oxidase, Ascorbic Acid Oxidase and Peroxidase Enzymes. Reduction in color development in external application of Putrescine is related to a reduced deterioration of Chlorophyll and postponed aging process. Polyamine treatments are effective on the ratio of weight loss which significantly increased the ratio of solid materials in the solution compared to acids during the process of ripening. Treatment of pomegranate fruits with polyamines led to maintenance of density of Ascorbic Acid and increased Phenolic compounds compared to control group fruits as a sign of reduced activity of Phenol Oxidase Enzymes and respectively decreased browning effect (Mirdehghan et al. 2007).

Chloride Calcium and Nitric Oxide also prevent decomposition of cell walls and restrict production of free radicals through preventing the production of ethylene, reduction of aspiration and delaying aging and therefore, as a result of reduced free radicals the cell's need for consumption of Ascorbic Acid also decreases and overall, the levels of vitamin C are maintained in the fruit (Smirnoff, 1995). It's been reported that the vitamin C content of Lebanese yellow apples treated with Chloride Calcium are significantly higher than control group fruits. This fact could be attributed to a postponed fast Oxidation of vitamin C by Chloride Calcium (Akhtar et al. 2010). Results of this research are in compliance with the results of researches conducted by Abdullahi et al. (2011) regarding strawberry.

**Firmness fruits**

According to variance analysis table 1-2, the performed treatments significantly affected fruit's firmness at the significance level of 0.01. According to means comparison table 1-2 it can be observed that among the performed treatments, the control group fruits had the least firmness while the firmness of other performed treatments was significantly highest than the control group. Results of this test indicated that among the compositional treatments, treatments which were compositions of three different materials showed the highest level of firmness after 7 and 14 days of storage (Fig 4).

During the storage period, enzymes such as Pectinestrace, Cellulase and etc. lead to decomposition of cell walls and a respective decrease in product's firmness (Hernandez-Munoz et al. 2008). Aging, decomposition of cell walls and loss of weight are among factors which lead to decreased firmness of products and loss of marketability (Vargas et al. 2006). Results of this research indicated the positive effects of Calcium on optimization of firmness of the tissue of samples. The main role of Calcium in strengthening membranes of plant tissues reflects in different ways. A large portion of Calcium embeds in the walls of plant tissues. This unique condition of calcium is a result of several places of consolidation of calcium in the cell walls and its extremely restricted displacement from the membrane of cytoplasm to the inside of the cell's cytoplasm. On the middle edge, calcium is connected to carboxyl groups related to Pectin and the solution's Pectate calcium decreases. On the other hand the existing Pectate on the cell walls of organic plants is decomposed by Poly Galactronase enzyme. High concentrations of calcium severely reduce the activity of the enzymes in charge of this composition. Therefore, with increase of the value of calcium in the tissue, the activity of this enzyme reduces and the decomposition of cell walls slows down. Therefore, with increase in the level Calcium present in the tissue, the activity level of this enzyme reduces and decomposition of the cell wall slows down. Calcium also causes cellular stability by attaching to groups of Phosphates, Carboxylates, Phospholipids and proteins on the surface of the membranes (Cheour, 1991). Calcium is known as an intermolecular attaching element in stabilization of the middle edge's pectin protein complex; in addition calcium reduces the softness of the tissue via preventing the process of solubility.

By being established inside the cell wall as an intermolecular connector which stabilizes the compounds of the middle edge, calcium preserves the structure of cell wall. On the other hand, calcium influences the structure and



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task of the cellular membrane and by connecting the enzyme proteins and non-enzyme proteins to the phospholipids of the cell membrane plays its role. In this way, reduces the activity of ethylene producing enzymes which also have a protein like structure. Ultimately, with a reduced level of ethylene production, which is the stimulator of the activity of enzymes which hydrolyze the cell wall the cell wall suffers a reduced amount of damage and calcium treated fruits will remain firm. On this basis, by establishment inside the cell wall and stabilizing it and also reducing the amount of ethylene production, calcium plays its role in maintaining the firmness of fruit's membrane (Wang et al, 1993).

The destruction of pectates is carried out by poly-Galactronase enzymes and when there are sufficient amounts of calcium, their destruction is prevented (Reddy et al. 2004) and in this way, plant shows resistance against destruction of cell walls. The operation mechanism in this case is that although the most of the calcium is established inside the cell wall, the production of ethylene is related to destruction of the plant due to destruction of the cell wall but treatment with calcium strengthens the cell wall and reduces aspiration leads to reduction and minimization of the level of produced ethylene (Conway and Sams, 1984). In addition, treatment with calcium chloride reduces the damages due to low temperature and freezing through preserving the fluidity of membrane and fixing the ratio of polyunsaturated fatty acids to saturated fatty acids and ultimately leads to firmness of plant's membranes (Quiles et al. 2004).

The effect of Putrescine on increasing the firmness of fruit's pomace could be related to its bonding with pectin compounds of the cell wall. This bonding leads to stability and fixation of cell's wall which is detectible right after treatment. The aforementioned bonding also prevents the activity of enzymes which decompose the cell wall including PME, PE and PG (Valero et al. 2002). Decrease in softness of fruit by Putrescine could be as a result of reduction of activity of enzymes which decompose the cell wall including Ando Poly Galactronase, Exo poly Galactronase and Methyl-Esterase. Increase in the firmness of fruit in treatment by Polyamines: Polyamines raise on negative loads of phospholipid compounds or anionic areas on the membranes and therefore, multiples the stability of these membranes. The bonding of polyamines with pectin materials restricts the accession of enzymes which decompose cell walls to pectin materials. Application of 1MM Putrescine on Plum fruits during the storage period in at 10 degrees of temperature led to maintenance of membrane's firmness and the result was increased storability of the fruit. Immersion of fruits in Putrescine solution led to removal of Fungi's spore and reduces contaminations and the surface of polyamines effectively increases in leaves contaminated with black spots, fungal diseases and gray mold which show the role of these compounds in plant's pervasive reactions against pathogens. It's been reported that pre harvest treatment with Putrescine on peaches increased the firmness of the fruit and delayed their ripening (Bregoli et al. 2002). Results of this research comply with the findings of researches conducted by Ponappa et al. (1993) on strawberries and Serrano et al. (2003) on plum fruits.

**Decay**

According to variance analysis table 1-2, the applied chemical treatments have significantly affected the prevention of decay at the significance level of 0.01. Results of this research indicated that the decay level of treated fruits with all three compounds was significantly less than control fruits. According to yielded information, there were no significant differences between compounds on the seventh day of testing. This was while, on the fourteenth day, the treatment of chloride calcium 75 MM showed the least decay level (Fig 5). The yielded results indicated that as the level of absorption of calcium in the fruit is increased, the level of wilting is decreased. The Poly-Galactase enzyme leads to decomposition of all pectin compounds inside the fruit except for the cell wall and as a result provides a site for fungal contamination therefore, treatment with chloride calcium in addition to strengthening the membranes of the fruit, also prevents fungal deterioration.

Through firming the cell wall, calcium leads to increased strength against enzymes produced by fungi. Also, calcium increases the level of Oxalate and soluble pectin (Gupta et al. 1980).



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During the past 20 to 25 years, researchers have found out that increase in fruit's calcium level in addition to increasing the firmness of the membrane, causes a decrease in the level of wilting. In a test, Delicious apples were treated by 8% calcium solution via stressed penetration method and were kept in storage for three months. Afterwards, fruits were inseminated with blue mold after storage period and the signs of wilting in calcium treated plants were recorded as being approximately 40% less than control group fruits. After 5 months of storage there was no difference between treated fruits and control group fruits (Conway, 1983).

Results of research conducted by Marquenie et al. (2002) on strawberries and cherries comply with the findings of this research. Investigating the level of contamination of tomato showed that the low concentration of calcium in raw extracts was accompanied with higher level of contamination. Also in storage, the suitability of resistance against physiological and fungal diseases is related to fruit's deterioration (Malakooti, 2000). On the other hand, it's been reported that plant's sensitivity against contamination by pathogenic elements is in a converse relation with the calcium levels of plant's membranes (Malakooti, 2000).

Chang et al. (1993) sprayed the solution of calcium chloride in concentrations of 0.3 and 0.9 percent two weeks before harvesting and observed the significant effects of these treatments on reducing the level of fruit's deterioration. On the other hand, the durability of Scoya strawberries was increased from 3 days to 16 days without any type of contamination (De souza et al., 1999). According to the theory of Conway and Sam (1987) the present calcium in the cell wall highly protects the plant from microbes which try to enter the fruit via breaking the pectin. Some performed studies on different varieties such as apples, pears and pineapples revealed that also Peroxidases might be related to enzyme induced browning. Although, the quality of these effects is not clear but this issue, as it was declared by Poovalah (1988) and Picchioni et al. (1995), could be a result of the fact that calcium helps the stability of the membranes. Nitric Oxide stimulates the defensive responses of host membrane and might also have a direct impact on growth of pathogens or even indirectly increase the resistance of host against the pathogen (Qadir and Hashinaga, 2001). Different evidence has indicated that Nitric Oxide synthesizes as a result of pathogens invasion by Nitric oxide and could incorporate with H<sub>2</sub>O<sub>2</sub> for the purpose of establishing defensive reactions (Neill et al. 2003). It's also been reported that Nitric Oxide plays a role in development of systematic acquired resistance (Durner et al. 1998) and probably there is a signaling relation among H<sub>2</sub>O<sub>2</sub>, NO and Salicylic Acid during ultra-sensitive reactions and systematic acquired resistance (Romero-Puertas and Delledonne, 2003).

Leshem and Pinchasov (2000) conducted a research and showed that application of Nitric Oxide leads to an increases storability and decreased deterioration. Production of Nitric Oxide has a converse relation with production of Ethylene in fruit's maturity and ripening stages. Leshem and Pinchasov (2000) reported that strawberry's storability was increased by Nitric Oxide vapor. Yang and Hoffmann (1984) reported that surface of ACC are the restrictor factors in ethylene's production cycle. Results of this research are in compliance with the findings of other researchers in this context.

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**Table-1, results of analysis of the variance of the effects of treatments, storage time and mutual effects on measured attributes and Queen Strawberry.**

Means square (MS)					Degree of freedom (df)	Source of variable (SOV)
Decay	Firmness	Vit C	Acidite	Total phenol		
139.136**	1522.009**	16.167**	0.004**	68266.80**	10	Main ) Treatment(factor
0.723	2.273	0.431	9.12	73.344	20	Treatment's test (EA) error
5786.72**	82751.045**	5398.32**	0.0240**	1599942.06**	1	Time storage(subsidiary factor)
6742.22**	1225.578**	10.038**	0.0018**	54258.96**	10	Treatment× (A×B) Time
ns 1.273	ns 0.727	ns 0.235	ns 4.091	ns 24.242	2	(R×B) Repetition×Time
0.723	4.961	0.849	2.42	17.092	20	Time 's test error (EB)



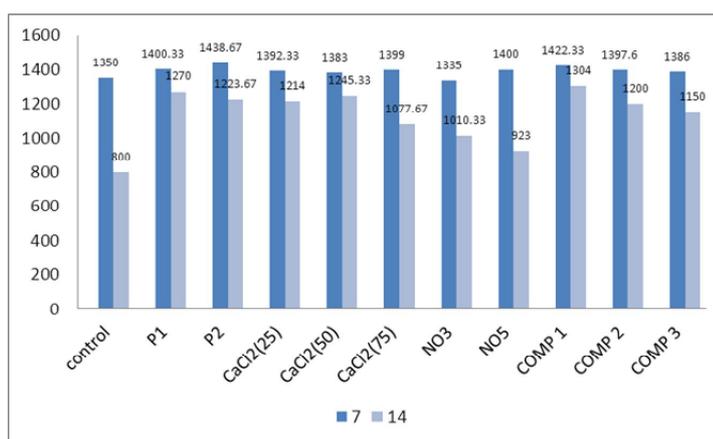


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**Table 2, effects of chemical treatments on qualitative attributes of Queen Strawberry**

Decay (%)	Firmness (N)	Vit C (mg 100g <sup>*1</sup> ascorbic acid)	Acidity (mg 100g <sup>*1</sup> citric acid)	Total phenol (mg Gallic acid /100 gr)	Treatment
19.50 <sup>B</sup>	256.83 <sup>E</sup>	25.83 <sup>DC</sup>	0.586 <sup>DC</sup>	1316.667 <sup>C</sup>	Put 1mm
17.66 <sup>C</sup>	266.50 <sup>C</sup>	26.86 <sup>DC</sup>	0.598 <sup>C</sup>	1331.167 <sup>B</sup>	Put 2mm
11.5D <sup>E</sup>	247 <sup>F</sup>	25.86 <sup>D</sup>	0.650 <sup>A</sup>	1303.167 <sup>D</sup>	CaCl2 25mm
10.16 <sup>E</sup>	257.50 <sup>E</sup>	28.21 <sup>B</sup>	0.591 <sup>DC</sup>	1314.167 <sup>C</sup>	CaCl2 50mm
8.66 <sup>F</sup>	264.66 <sup>DC</sup>	26.21 <sup>D</sup>	0.621 <sup>B</sup>	1238.33 <sup>E</sup>	CaCl2 75mm
12.66 <sup>D</sup>	259.33 <sup>E</sup>	27.81 <sup>BC</sup>	0.638 <sup>A</sup>	1172.667 <sup>F</sup>	NO 2mm
10.50 <sup>E</sup>	263.33 <sup>D</sup>	28.56 <sup>B</sup>	0.596 <sup>C</sup>	1161.50 <sup>G</sup>	NO 5mm
12.50 <sup>D</sup>	274.66 <sup>B</sup>	28.36 <sup>B</sup>	0.588 <sup>DC</sup>	1363.167 <sup>A</sup>	COMP1
10.16 <sup>E</sup>	283.50 <sup>A</sup>	27.51 <sup>BC</sup>	0.593 <sup>DC</sup>	1116.167 <sup>H</sup>	COMP2
10.66 <sup>E</sup>	277.50 <sup>B</sup>	30.40 <sup>A</sup>	0.581 <sup>ED</sup>	1090.33 <sup>I</sup>	COMP 3
24 <sup>A</sup>	225 <sup>G</sup>	24.50 <sup>E</sup>	0.570 <sup>E</sup>	1070 <sup>J</sup>	Control

Put1: 1MM Putrescine, put2: 2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide,COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.



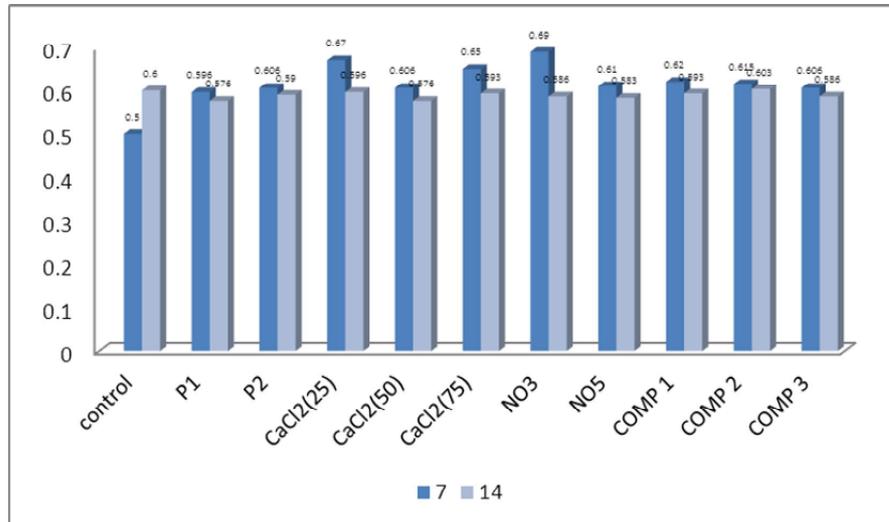
**Fig.1: The effect of chemical treatments on total phenol of queen strawberry**

Put1: 1MM Putrescine, put2: 2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide,COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.



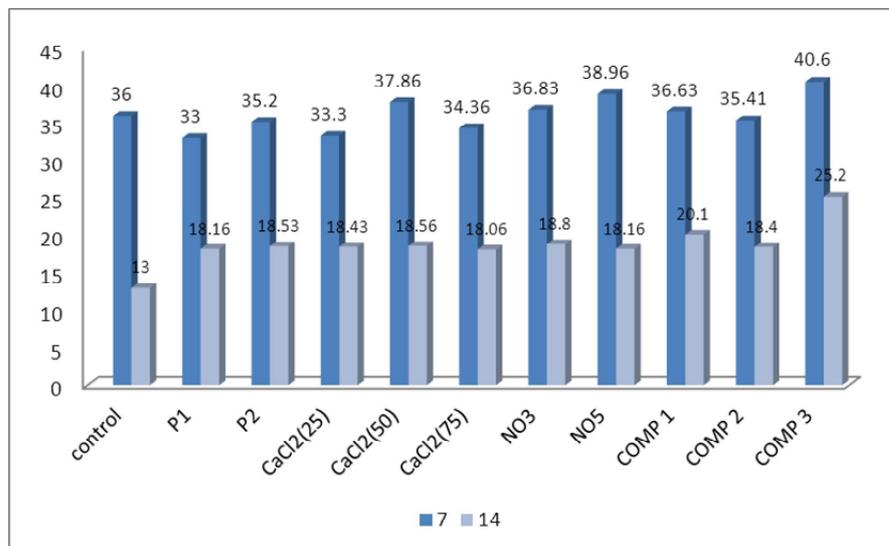


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**Fig. 2: Effects of chemical treatments on the acidity of Queen Strawberries**

Put1: 1MM Putrescine, put2: 2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide, COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.



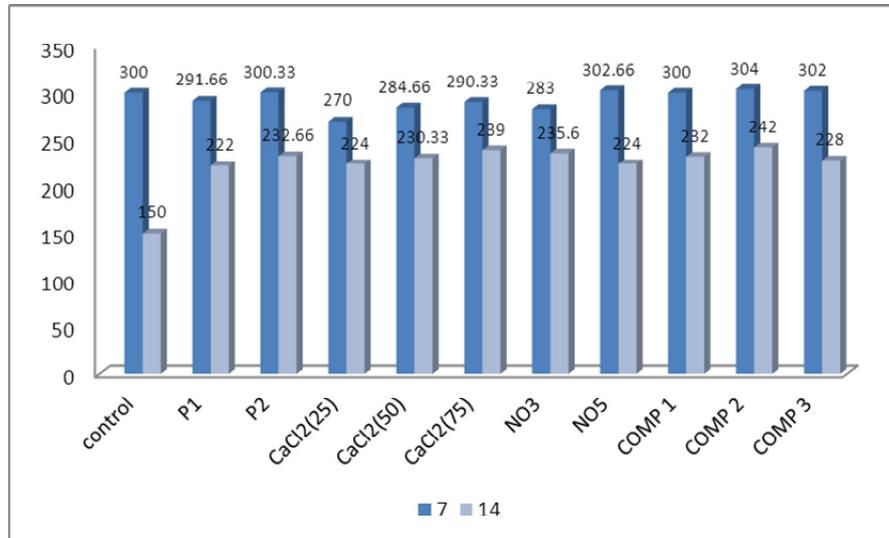
**Fig. 3: Effects of chemical treatments on Vitamin C levels of Queen Strawberry**

Put1: 1MM Putrescine, put2: 2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide, COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.



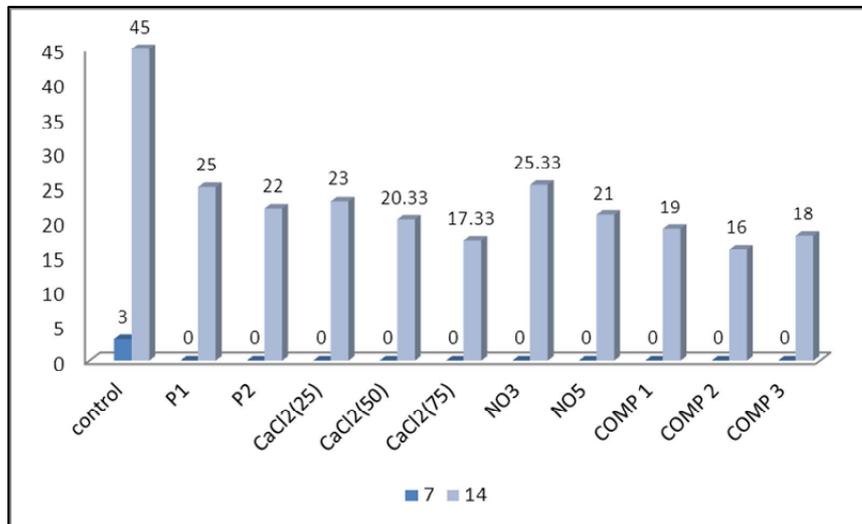


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**Fig. 4: Effects of chemical treatments on firmness of Queen Strawberry**

Put1: 1MM Putrescine, put2: 2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide, COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.



**Fig. 5: Effects of chemical compounds on wilting level of Queen Strawberry**

Put1: 1MM Putrescine, put2:2MM Putrescine, CaCl2 25: 25MM Chloride Calcium, CaCl2 50: 50MM Chloride Calcium, CaCl2 75: 75MM Chloride Calcium, NO3: 3MM Nitric Oxide, NO5: 5MM Nitric Oxide, COMP1: 1MM Putrescine + 50MM Chloride Calcium + 3MM Nitric Oxide, COMP2: 2MM Putrescine + 75MM Chloride Calcium + 5MM Nitric Oxide, COMP3: 1MM Putrescine + 25MM Chloride Calcium + 3MM Nitric Oxide, Control: Control treatment.

