

## **THE GHAEN EARTHQUAKE: PREPAREDNESS AND RESPONSE AMONG RUSTIC PEOPLE**

**F PARSIZADEH<sup>1</sup>**

### **SUMMARY**

Iran has been known as one of the active seismic regions and therefore each moment, there is a possibility of an earthquake occurrence in any region of this land. The safety of populous centers, preparedness of individuals for preventing earthquake losses and making necessary provisions for confronting any possible earthquake are discussed as some of the most important factors in the sustainable development of the communities.

On may 1997 a major Earthquake have affected large area 10,000 square kilometer in southern parts of khorasan province, in Iran. This is a of the Rustic people about Earthquake, and their reaction during this natural phenomenon.

### **INTRODUCTION**

Iran has been known as one of the active seismic regions and therefore each moment, there is a possibility of an earthquake occurrence in any region of this land. The safety of populous centers, preparedness of individuals for preventing earthquake losses and making necessary provisions for confronting any possible earthquake are discussed as some of the most important factors in the sustainable development of the communities.

Generally, two main resources can be provided for estimating the different reactions that may be undertaken by the people during an earthquake: first, the proved studies done by sociologists and psychologists and second, the explanations and sayings of those who themselves have witnessed the disaster.

Studies done by Turner<sup>1</sup> and et al in 1986 revealed that families with a young child or children are more prepared for confronting an earthquake. Likewise various studies about research done in child care centers in California show that the more experienced are the child trainers who have lived in California for a long time, the more they are prepared than the others.

In 1992, David Dooley<sup>2</sup> and his colleagues made a careful match study and compared two different cases in relation to earthquake preparedness. The results showed that sex, race and the martial status are among the most important factors in people's attention for being more prepared against earthquakes.

According to Thyhurst<sup>3</sup> (1950), different reactions of people in an event can be categorized in three main groups: The first group reactions toward the occurrence of an event can be classified as "indifferent", (about 12-25%) meaning "calm" and therefore they are able to make a proper decision and apply it. About 50 to 75% of the reactions are "normal". In these cases, the person feels confused and indifferent. Yet all these behaviors are abnormal. And about 10 to 25% of behaviors result from some improper reactions including "fear and extreme agitation".

<sup>1</sup> *International Institute of Earthquake Engineering and Seismology, IIEES*

## GHAEN EARTHQUAKE

Ghaen is located in the southern part of the Khorasan province, with an extension of 17/5 thousand Kilometers per square. The area concerned is located in a dry region. Its winter is cold and its summer is too hot.

In the afternoon (12:27:51) of May tenth 1997, a major earthquake with a magnitude of 7/1 on the Richter scale shook a large area of 10.000 kilometers. This earthquake had several hundred aftershocks which some of them were as high as 5.5 on the Richter scale. Due to this earthquake, 127 villages were destroyed. The destruction of these villages was between 45-100%. Meanwhile, the destruction of 75% of the villages was between 80-100%. The number of households stricken by earthquake was 12589 and the total population of the affected villages in this area was 38188. 49% of the area population was male and 57% were female. The most important occupations of the villagers are husbandry, farming and carpet weaving. The percentage of unemployed people is 4/3%. Also, 35% of the total number of these villagers are illiterate and belong to the age group more than 35.

This research has been done in order to investigate and estimate the knowledge level of the people stricken by Ghaen Earthquake; 1) about the seismicity of their region and, 2) their reactions during the occurrence of the earthquake. The main goal of this research is to propose more adaptable guidelines for applying public education methods in the rustic areas.

The research has been done 3 weeks after the Ghaen Earthquake in order to gain the above- mentioned goals. Therefore, a questionnaire was prepared including information such as age, sex and educational level of those tested villagers including general questions. These information were collected and then within a period of 6 days, the research was made in 9 villages (with about 85-100% destruction). Finally all these collected information and answers were studied and analyzed.

### FINDINGS

In this research, 549 persons from a number of selected villages were questioned. Meanwhile, the number of women participated in this interview was equal to that of men.



**Figure 1- Proportional distribution of correspondents on the basis of their sex.**

The youngest correspondents were 10 years old and the oldest ones were 76 years old. All correspondents were classified in seven age groups. The least percentage of correspondents (3/6%) belonged to age group 70 and elder, whereas those between 20 to 29 years old placed in the greatest percentage of the whole correspondents (26%). 69/4% of the whole correspondents were between 10-39 years old and the rest 20/6% were in the age group 40. The results show that the most percentage of the correspondents were younger than 40. More studies show that 71/6% of male and 67/2% of female correspondents were among 10 to 39 years old and 28/4% of men and 32/8% of women were categorized in age group 40 and elder. Therefore, the proportional distribution of age could be called as the "young" group.

From 549 persons who answered the questionnaires, (32/6%), that is 179 persons, were low educated, whereas only 11 persons, that is 2% of all correspondents had M.A or M.S degrees. Also 49% of them were in elementary or secondary levels and 18/4% had diploma or higher- degrees. In other words, 67/4% of correspondents were low educated and 32/6% were literate.

More investigations show that from 275 men, 40% were low educated, 56% in the elementary level to diploma, and the rest 4% were B.A and M.A holders and from 274 women, 25/2% were low educated and 65/3% in elementary level to diploma, and 9/5% were B.A and M.A holders. Therefore, the women were more educated than men.

## THE EXAMINATION OF THE RELATIONSHIP BETWEEN SOME FACTORS SUCH AS: AGE, SEX AND EDUCATIONAL LEVEL.

In order to measure the correspondents' level of awareness and familiarity with their region, they were asked "Are you aware of the seismicity of your region?" The percentage of those who gave a positive answer was 51/9% and those with a negative answer were 48/1%. The percentage of females' who were informed of the possibility of the occurrence of earthquake in their dwellings were 57/2% and the percentage of men was not more than 42/8%. The negative answers were 58% among men and 42% among women. The results show a higher level of information among rustic women than men. In fact, it can be said that sex is a determining factor in villagers' understanding of the seismicity of the region.

Educated people had more information than low educated or those with lower education. In fact, 28/1% of the total number of low educated was aware of the seismicity of the area and this percentage for literate persons reaches to 71/9%.

With comparison of different age group answers, it was revealed that age is not an important factor and the results showed that the answers of the greatest part of different age groups were similar. Another question was asked from the correspondents "How do you get information about the seismicity of your region?" 52% stated that they had learned about earthquake from their families and 4% had come to know about it by their friends.

All these points show that face to face communication, particularly in rustic areas can be regarded as one of the best ways for obtaining general information. This is while that the percentage of those who had obtained their information about earthquake via mass media has not exceeded than 4/6%. This shows that formal mass media has not found its proper place among the villagers yet. 61/5% of those who had got their information from different kinds of mass media were female and the rest 38/5% were male. It is worth mentioning that 2/8% of correspondents already have had knowledge of earthquake and its consequences through their teachers or textbooks.

For the purpose of examining different reactions of the correspondents' in the time of an earthquake, they were asked "what was your first reaction at the time of the earthquake?" From the total of 549 persons who answered this question, 180 persons, meaning 32/8% have answered that they have run away from their houses at the time of the earthquake. 56/7% of them were male and 43/3% were female. This reaction seems to be very normal and is one the ways for keeping safe. The first actions taken by 30% of female correspondents were to save their children's lives. This attitude can be analyzed from two different aspects: first, the motherly affection and second, the fact that the earthquake occurred in the time when most women were at home.

In Ghaen earthquake, there were great evidences of this motherly affection and the women's efforts for saving their children. In Ghaen, a mother took her elder child out of building in the time of the earthquake and returned again in order to save the life of her new-born baby, but again a sudden quake happened and she died while she was embracing her little child. These researches revealed that 20% of correspondents had run to an open area in the time of an earthquake and this is one of the important reasons for their safety.

Most of those who were not sure about the strength of their houses against earthquakes or did not have the proper knowledge about the safest places in their houses, did not try to get sheltered. In fact, just 7/5% of correspondents had searched for safe shelters or secured places at the time of the earthquake. But this was not the case in Ardekul. Following a severe earthquake in 1978, all buildings were built and restored according to uniform building codes. Because of that, some of the rustic people moved to those places as a safe place for sheltering. The people of the region stated that the victims were sheltered in those safe places in the time of the earthquake; but unfortunately, those places have not been built resistant enough.

As the results show, 4/7% of the correspondents were shocked and not able to remember what they have done during the earthquake. 7/7% of them did nothing, because they were among injured or those with psychological problems resulting from the consequences of the earthquake.

Again for estimating the correspondent's knowledge and awareness, they were supposed to answer this question "why do you think an earthquake happens?" and then the relationship between their answers and their sex was studied. Based on these studies, there is a significant relation between sex and the answers of the correspondents. 37/3% of correspondents, meaning 205 persons, believed that earthquake is nothing but a divine exam or punishment of God and in their opinion, the causes of this punishment were people's evil actions, disobedience, and sins. 50/2% of this group was female and 49/8% were male. 24/6% of correspondents stated that they were not aware of the causes of an earthquake occurrence. 58/7% of these persons were male and the rest 41/3% were

female.

25/3% of correspondents gave scientific answers such as the movement of the earth and the fault failures as the main causes of the earthquake occurrence. 62/5% of these people were female and the rest were male. This static shows the more awareness among the women than men. 11/3% of the correspondents did not answer this question.

The age of correspondents were also analyzed in this respect. The analysis indicated that 36% of the age group 10-19 answers were scientific. Meanwhile, the correspondents of the age group 30 or elder believed in God punishment as their first priority. This result can be obtained by learning the relevant subject matters in their high-school textbooks. 41/5% of people who did not have any awareness of this matter and 40/5% of those who believed in earthquakes as the divine punishment belonged to low educated group.

Based on these researches, the most educated persons have more scientific knowledge about the earthquake. 24/9% of them with elementary education, 15/6% of those with secondary education, 8/8% of diploma holders, 6/8% of B.A degrees and 3/4% of M.A or M.S degrees believed that earthquakes could result from the divine anger. Whereas 81/3% of the persons who gave scientific answers were among educated and literate persons.

The correspondents also were asked “ *what do you think about the possibility of the occurrence of another earthquake in your region?*” . 70/5% of them approved the potentiality of next earthquake and 29/5% of them negate the possibility of such an occurrence. Table 1 shows the proportional percentage of correspondent’s answers on the basis of their sex, age and educational level.

**Table 1- Do you think another severe earthquake may happen in your region?**

NO	YES		
23/7	76/3	Female	Sex
53/3	64/7	Male	
41/2	58/8	10-19	Age
56/4	34/4	20-29	
48/4	51/6	30-39	
50	50	40-49	
41/5	58/5	50-59	
36/6	63/4	60-69	
55	45	70 & elder	Education
41/3	58/7	LOW EDUCATED	
39/2	60/8	Elementary level	
18/1	81/9	Secondary level	
9/4	90/6	Diploma	
3/8	96/2	B.A Holders	
—	100	M.A Holders	

On the basis of this table, women and the age group 60-69 and students with M.A degrees were the greatest part of those who believed in the potentiality of another severe earthquake in the region. 76/3% of female correspondents, 63/4% of 60-69 year old persons and 100% of M.A holders believed that there is a possibility of occurring another sever earthquake in the region. In other words, 35/3% of male correspondents, 56/4% of the age group 20-29 and 41/3% of low educated negated the possibility of the occurrence of any other earthquakes in the region.

Again, researchers asked, “ *What should be done for reducing the next earthquake losses?*” . 26/8% of correspondents replied that all buildings should be constructed according to the uniform building codes. 10/4% stated that proper places should be built in which the potentiality of earthquakes is less than the other places. 37/5% expected more help for constructing buildings from the government. 11/8% of correspondents did not have any ideas in this regard. 4/4% of the answers were completely irrelevant.

Table 2 shows the relationship between sex, age and the educational levels of the correspondents with their answers to this question. 43/8% of female correspondents, 43/9% of 60-69 years old persons and 57/7% of the M.A. or M.S. holders, mentioned the structural safety of buildings as one the first and most important actions for reducing the earthquake losses. Also 10/6% of women, 13/6% of age group 40 and 18/2% of M.A. holders brought up the idea of selecting the proper dwelling places. 41/8% of men, 46/3% of 50-59 years old and 43/6% of illiterates expect help from the government. The interesting point is that, 5/7% of male correspondents, 25% of 70 years old or more, and 17/3% of illiterate people stated that they are completely unaware and did not answer this question.

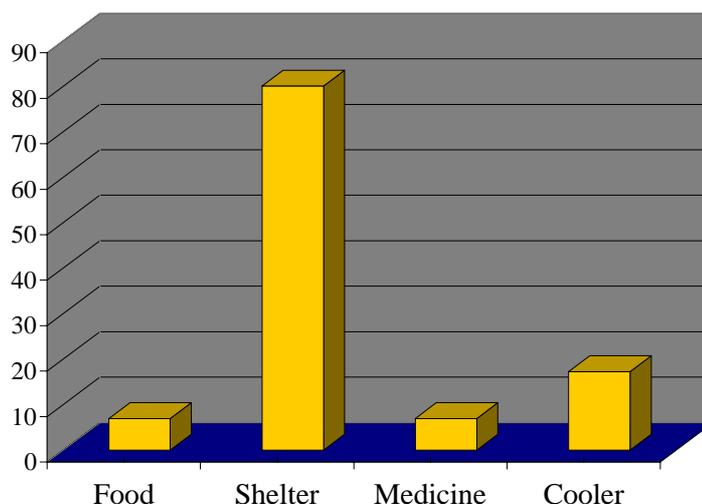
**Table 2- what should be done for reducing the next earthquake losses?**

Miscellaneous	I do not know	Government's supervision on construction	Selection of proper and safe places	Construction according to the standards		
4/4	8	33/2	10/6	43/8	Female	Sex
2/5	15/7	41/8	10/2	29/8	Male	
2/6	7	43	9/7	37/7	10-19	Age
2/8	9/1	37/1	11/1	39/9	20-29	
4/8	16/2	30/6	12/9	35/5	30-39	
3	10/6	39/5	13/6	33/3	40-49	
7/4	14/6	46/3	7/3	24/4	50-59	
—	14/6	36/6	4/9	43/9	60-69	
5	25	30	—	40	70 & elder	
3/7	17/4	43/7	6/1	29/1	Low edu	Education
4/6	16/3	32/7	10/5	35/9	Elementary level	
2/6	6	39/7	15/5	36/2	Secondary level	
1/6	3	34/4	9/4	51/6	Diploma	
3/8	—	27	11/5	57/7	B.A. Holders	
9	—	27/3	18/2	45/5	M.S. Holders	

These researches indicate that women and educated people are more familiar with this phenomenon, its consequences and the necessity of having structural safety codes for the building construction.

Since this research has been started three weeks after the occurrence of the Ghaen earthquake, all correspondents were asked another question “ *what is your emergency requirements within the next 2 months after the earthquake?*”

Regarding the extreme destruction of the great parts of the villages, 80/1% of the correspondents mentioned the long-lasting settlement as one of their emergency requirements. Due to the hot weather in the region, the next priority was providing Coolers, shelter, food, and medicine in their tents. Table 3 shows the prior needs of the affected people just three weeks after the earthquake.



## CONCLUSION

The relationship between some factors such as age, sex and educational levels in relevance to Ghaen Earthquake is presented. This research also aims at investigating and studying the various reactions and ways of the rustic people's thinking in an earthquake.

It can be observed that the view of educated people toward the earthquake phenomenon is more scientific, their expectation for reconstructing safe places is more, and their awareness of the seismicity of their region is also much more.

The study also shows that the rustic women have more expectations for owning safe houses than rustic men. This is because they spend much longer time in their homes than men.

Finally, it can be concluded that the old people and low educated ones are still insisting in their wrong beliefs and always search for help from the governments or the governmental experts.

A detailed discussion of the basic factors such as the above-mentioned will provide a brighter idea for encountering the probable next earthquakes in the country for reducing the human and economic losses.

## REFERENCES

1. Turner, H.R., *Waiting for Disaster, Changing Reaction to Earthquake Forecasts in Southern California, Mass emergencies and disaster no.2*, 1983.
2. Dooley, D., and others. Earthquake Preparedness, Pre-history in "Community Survey, *Journal of Applied Psychology*", 1992.
3. Tyhurst, J.S., Individual's Reaction to Community Disaster. The Natural History Psychiatric Phenomenon, *American Journal of Psychology*.