

THE EFFECTS OF THE YAZIKÖY-EPICENTRED BURDUR EARTHQUAKE, (MAY 12, 1971) ON THE RESIDENTS OF VILLAGE

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Abstract

It is generally accepted that vulnerability comprises the social, cultural, economic, political and environmental characteristics of societies and that these combine in complex ways to influence people's exposure to earthquakes. Science educators have proposed that the worldviews of individuals influence their ways of interpreting natural phenomena and then impose an effect on conceptual development in science. People, even infants, always try to construct ways of explaining natural phenomena. However, many do not construct scientifically acceptable views. Hence, in the last decades, numerous science educators have devoted themselves to investigating 'misconceptions' or 'alternative conceptions'. Misconceptions or alternative conceptions, clearly, have some basis. Socio-cultural influences may play an important role in their ideas. Worldviews are a set of beliefs or assumptions about the basic nature of reality and they are constructed in socio-cultural environments. Therefore, worldviews of the individuals may influence their interpretations of natural phenomena. In some societies, poor awareness and information provision as to the key requirements for building a 'safe house' are contributing to heavy losses in the event of disaster. This paper seeks to explore some of these ideas in two Turkish villages, Yazıköy and Yarıköy in SW Turkey, exposed to earthquake hazard. In particular it will focus on the traditional building practices that have developed as a response to living with earthquake hazard and the development of a seismic culture of protection. Whilst vulnerability can be discerned spatially, it also has a temporal dimension. The root causes, dynamic pressure's and unsafe conditions that are perceived as providing a sequential progression towards a vulnerable society which may develop over a prolonged period. In cases where events are low in frequency, a seismic culture of repairs may emerge where people are responsive to disaster reduction information in the immediate aftermath of an event but then tend to revert back to pre-disaster building techniques and lifestyles.

Keywords: *Natural phenomena, earthquake, individuals worldview, attitude*

Introduction

North Anatolian Fault Zone-NAFZ, East Anatolian Fault Zone and most of Aegean Region constitute the first degree earthquake areas. In Turkey secondary earthquake zones roughly surround the first degree zones. Third and fourth degree zones, on the other hand, are mostly Inner Anatolia and southern parts of Southeast Anatolia. In Turkey destructive earthquakes occur, in general, a tectonic corridor and alluvial and soft material depositional areas of plains. Yazıköy and Yarıköy settlements are located on such a flat area (Atalay,1987;65).

About 92% of the land in Turkey and 98% of its population are under the risk of earthquakes. Nevertheless, it's seen that the precautions taken against the possible damages of earthquakes are not applicable efficiently (Başbüyük, 2004;1). After the Marmara Earthquake in 1999, whereas activities on earthquake training has been widespread in primary and secondary schools, especially of children, these are not on a desired level for adults (Dyregrov,2000).

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Figure 1: Location map and geology of Burdur Province and Yarıköy-Yazıköy (adapted from Price and Scott, 1994)

The Burdur province, with a population of 55-60,000 is found a seismically active region, with the sector to the southwest having one of the highest frequencies of recorded

earthquake activity in Western Anatolia during the last 100 years. The province is almost wholly comprised of village settlements (2006 in total) and, as such, income is predominantly based on a rural economy with livestock and arable farming being the central economic activities.

In the past, the region has been prone to moderate sized earthquake events (Alsan et al., 1976; Price and Scott, 1994) and experienced an earthquake (M=6.2) in May 1971, which destroyed the village of Yazıköy and resulted in the relocation to government built housing, of survivors in surrounding villages.

Following the earthquake in 1971, this entire village, whose inhabitants previously lived in Yazıköy, was moved into government-built housing 500 m from the original site. This was the only sizeable earthquake (greater than M=6.2) in living memory for many of the people in this village and therefore there was little in the way of experiential knowledge of earthquake hazards. Houses in the original village of Yazıköy had been built using *hatıl* construction, indicating that at some time in the past there had been awareness and attempts to build houses resistant to earthquakes and subsequent generations had possibly copied these techniques unaware of why such architectural styles were used. However, in spite of the incorporation of the *hatıl* into buildings in Yazıköy, the fact that they had been built on alluvium meant that when the 1971 earthquake occurred there was a significant level of damage (Homan, 2004:68).

Problems

“What are the thoughts towards and understanding of earthquake of people who experienced the 12 May, 1971 Burdur Earthquake?”

Question 1: How is the individuals' understanding of the term earthquake who experienced the earthquake ?

Question 2: What are the opinions of the people having experienced an earthquake over the reasons of the earthquake?

Question 3: Which informative sources can the individuals having experienced an earthquake reach about the earthquake's occurrence?

Question 4: What do people having experienced the earthquake think about the endurance of their houses against an earthquake ?

Question 5: What results do the individuals having experienced the earthquake expect from a new earthquake in the area they live ?

Question 6: What are the worries about the results to appear after a probable earthquake?

Question 7: Does an individuals' property they own affect the precautions that they should take?

Question 8: Is it man's ignorance which causes the damage occurring after an earthquake?

Question 9: Do people living in the area expect an earthquake soon?

Question 10: What do people think to do against an earthquake which may happen in the area in the near future?

Question 11: Do people have any information that the place where they live is on an active fault line?

Question 12: Do people of the area believe they will be able to avoid damage from the earthquake?

Question 13: What is the first reaction of the people who have experienced an earthquake during an earthquake?

Question 14: Which precautions have people after having survived the 1971 earthquake taken against the probability of an earthquake?

Question 15: What aids do people living in the research area think to supply for the people harmed by an earthquake?

Question 16: What are the opinions of the people who survived the 1971 earthquake about whether the earthquake could have been predicted or not?

Question 17: What were the things that people from Yazıköy and Yarıköy who experienced the 1971 Burdur Earthquake saw, lived, and felt during it?

Objectives

The aim of this study is to determine the individuals' level of knowledge of earthquakes, their attitudes, viewpoints and the socio-cultural effects of the earthquake in Yazıköy during and after the "12 May 1971-Burdur Earthquake".

Turkey is situated on the Alp-Himalayan (Mediterranean) Earthquake Zone which is one of the three main earthquake zones. Therefore, Anatolia, which is divided into many parts by a large number of faults, suffered from many strong and destructive earthquakes in the past, and still does (Şahin and Sipahioğlu, 2002:39).

These earthquakes deeply affected the society socially, economically and psychologically. Yet, that the reality of earthquakes hasn't been understood well enough in the country causes more damage. However, today there are countries where the damage of earthquakes has been minimized. For example, in Japan and some similar countries, through effective and continuous earthquake training sessions, the damage could be reduced to the minimum level (Başbüyük, 2004:2).

Like in the other disasters, the extent of the problem caused by earthquakes can be understood afterwards, but is forgotten very soon. In this context, in the study area, after the 1971 Burdur Earthquake, during which many deaths occurred and injuries seen, no other precautions were taken except for the limited number of houses built by the state.

In order to minimize the hazard of earthquakes, an understanding and consciousness of earthquakes should be given to the local people. These aims are thought to be realized through media and training activities.

Methods

In this study, a half-structured Earthquake Interview Form prepared by the researcher was used. In Burdur, which is located on the West Anatolia Fault Zones, many destructive earthquakes have been experienced throughout history, and in the earthquake occurring at 8:25 in the morning of 12th May, 1971 around 57 people lost their lives (Özey, 2001).

For this reason, as is in all the seismically active settlements, in Burdur, especially in Yazıköy and Yarıköy, educative activities for the precautions to be taken before, during and after earthquakes gain importance.

In this context, the interview form prepared to determine the socio-cultural effects of earthquake and the viewpoints towards it were applied to the individuals face-to-face in a random manner. In the analysis of the data obtained from 76 subjects, descriptive statistical method and qualitative text content analysis was used.

Findings

The data obtained through face-to-face interviews with subjects were evaluated with text content analysis and descriptive statistics techniques. The findings obtained at the end of the study are given below.

Question 1: How is the individuals' understanding of the term earthquake who experienced the earthquake ?

At the end of the interviews with the individuals who experienced the Burdur Earthquake in 1971 in Yazıköy and Yarıköy, it was attempted to arouse these people's understanding of earthquakes. As a result of the qualitative text analysis applied by the researchers, five different categories of definition were determined.

(25 people) Definition Category 1: "An earthquake is a ground shake" Individuals giving their opinions in this group stated the physical effect occurring during the earthquake. This definition presents a parallel view to Efe's and Sekin's earthquake definition (1998 :12);

that is; an earthquake (groundshake), is the natural phenomenon which occurs in the form of vibrations on the earth coming from the depth of the underground. Below there are some expressions stated in this definition category:

- * An earthquake is a ground shake
- * Swaying / Swinging
- * Shaking, vibration
- * Ground trembling, collapse of weak buildings
- * Quakes, causing disaster

(16 people) Definition Category 2: "An earthquake is the warning from Allah of his subjects". Individuals expressing their thoughts in this category have rated earthquakes as the warning of Allah towards the faults of his subjects. Some expressions taking place in this category are:

- * An earthquake is Allah's warnings of his subjects.
- * An earthquake is a disaster sent by Allah.

(9 people) Definition Category 3: "An earthquake is a terrifying disaster". Individuals in this category expressed the psychological effects of earthquake over people. Some expressions in this category:

- * It's the most terrifying disaster even if you are in an open place.
- * Fear
- * It's a disaster sent by Allah as a lesson to his subjects.

(17 people) Definition Category 4: "An earthquake is the collapse of everywhere". In this category, people chiefly emphasized the economic results of it. Some statements used in this category:

- * Collapse of everywhere
- * Destroying the property and the material and psychological loss of human and animals
- * The fierce shaking of houses and their destruction
- * The big disaster bringing destruction
- * The collapse of instable buildings

(9 people) Definition Category 5: "An earthquake means death". People expressing their opinion in this category considered the deaths occurring as a result of an earthquake. Some expressions in this category:

- * Dying under the collapsed buildings
- * Quakes resulted in death
- * Shaking caused death
- * Dying

Question 2: What are the opinions of the people having experienced an earthquake over the reasons of the earthquake?

In the questionnaire, subjects were asked an open-ended question. "According to me the reason for earthquake's occurring is an open-ended question", and their answers to this question were grouped and analyzed. At the end of the analysis, the answers were divided into two groups. In the first group (Natural Processes) there are reasons caused by the world's own structure such as faults, collapses, plaque movements, the inner energy of earth, etc.; in the second group (unnatural processes), there are reasons caused by the ignorance of moral rules, belief, and lack of worship caused by social and religious aspects. 67.11% (51 people) of the participants joined the study indicated as natural processes as the reasons for earthquakes; yet, 32.89% (25 people) of them stressed unnatural processes.

To accept the natural processes based on science and reason as the reason for earthquake is a feature which can be acquired by education more than anything else. That unnatural processes were shown as a reason for earthquake might have resulted from the age level of the individuals.

Question 3: Which informative sources can the individuals having experienced an earthquake reach about the earthquake's occurrence?

46.05% (35 people) of the subjects stated that they had reached the information about earthquakes through some media source; 35.53% (27 people) from their friends or someone who has knowledge of the topic; 11.80% (9 people) from village teachers; 6.6% (5 people) from the internet. People living in Yarıköy said that in the past teachers used to live in their village, and they also had good communication with village people. However, today teachers live in Burdur city center and they only come to the village for their lessons and then leave the village. Therefore, they can't communicate well with the teachers who are significant sources of knowledge.

Question 4: What do people having experienced earthquake think about the endurance of their houses against an earthquake ?

90.79% (69 people) of the subjects stated that their houses were strong enough to resist an earthquake. Individuals who think their house is strong stated the earthquake houses which are strong against an earthquake as they were built by the state after the 1971 earthquake. People who think their houses aren't strong stated that they couldn't have them built well because of their financial problems.

Question 5: What results do the individuals having experienced the earthquake expect from a new earthquake in the area they live ?

27.63% (21 people) of the people whom the researchers interviewed in Yarıköy and Yazıköy stated that in the case of an earthquake, it would result in the collapse of their houses and stables, loss of people's or animals' lives, and also starvation. 47.3% (36 people) of the subjects said that they wouldn't be affected much from an earthquake as they live in the durable residences built by the state and they believed in the safety of their homes, and also stated that they wouldn't be affected as badly as they were from the "1971 earthquake". 13.16% (10 people) of the interviewees stated that the extent of the destruction caused by the earthquake would depend on the magnitude of the earthquake. 11.84% (9 people) of the interviewees envisioned that an earthquake would arouse things like fear and insecurity onto local people.

Question 6: What are the worries about the results to appear after a probable earthquake?

40.79% (31 people) of the people who participated in the research stated that the most worrying situations caused by an earthquake would be life and property loss; 23.68% (18 people) of them stated that their worries are getting disabled, destruction, and losing their lives; 11.84% (9 people) of them expressed their worry as leaving their children alone without a mother or father; 11.84% (9 people) said they feared becoming homeless as a result of their homes' destruction; 6.58% (5 people) fear to get disabled and to be in need of someone else; and finally 5,26% (4 people) thought their houses were strong, and didn't have any fear or anxiety.

Question 7: Does an individuals' property they own affect the precautions that they should take?

69.74% (53 people) of the people participating in the research in Yazıköy and Yarıköy said that their economic condition prevented them from building their houses resistant to an earthquake, and added that the biggest factor was their economic condition. They used such expressions as "If my financial situation was better, I would have my house built stronger, or I would migrate to the city and live in a better house". 30.26% (23 people) of the subjects stated that their economic condition wouldn't affect the precautions they should take. It was revealed that people having the latter idea showed "earthquake houses" as a support.

Question 8: Is it man's ignorance which causes the damage occurring after an earthquake?

75% (57 people) of the participants joined the study in Yazıköy and Yarıköy think the damage of an earthquake occurs because of man's negligence. "I assume it to be people's

negligence, as houses are not built to be resistant to an earthquake. We can't take precautions because we don't have enough opportunities to take precautions". 25% (19 people) of the interviewees think that the damage after an earthquake isn't due to man's negligence. Some said, "It's something sent by Allah; there is nothing man can do".

Question 9: Do people living in the area expect an earthquake soon ?

52.6% (40 people) of the participants said that in the area they live there can be an earthquake any time. 52.37% (17 people) of them to the question "Do you expect an earthquake in the near future?" said "Allah knows". 13.16% (10 people) of the subjects expressed that they wouldn't expect a violent earthquake. 11.84% (9 people) of them said that they didn't know.

Question 10: What do people think to do against an earthquake which may happen in the area in the near future ?

81.58% (62 people) of the people participating in the research stated that they wouldn't do anything. They said they wouldn't abandon their village and they wouldn't wait for the things that would happen, and was sure that the state would take the necessary measurements. 9.21% (7 people) of the people said that they would move from the village they live in to a place where they wouldn't experience any earthquakes. 9.21% (7 people) of the people said they would set up a tent on an empty area.

Question 11: Do people have any information that the place where they live is on an active fault line ?

80.26% (61 people) of the subjects stated that the place where they live is on an active fault. "As I, myself, experienced the 1971 earthquake, I learned from my elders, from TV, and from earthquake building managements. I also learned from the officials at a hunting course organized in Yazıköy in 2007" they said. 19.27% (15 people) of them stated that they didn't have any idea that the place they lived in was on a fault.

Question 12: Do people of the area believe they will be able to avoid the damage of the earthquake?

86.84% (66 people) of the people living in Yazıköy and Yarıköy believe they can avoid the earthquake's damage. They said they could do this by building houses resistant to earthquakes; by fixing the furniture on the wall; by building the houses on a strong basis; by having earthquake insurance; by setting up a tent in the garden; leaving the place; or getting out of the house. 13.16% (10 people) of them stated that it was impossible to escape from the hazards of an earthquake. They said, "Nothing can be done against a violent earthquake. It's a warning from Allah. You cannot take precaution, and it happens all of a sudden".

Question 13: What is the first reaction of the people who have survived an earthquake during an earthquake?

10.53% (8 people) of the subjects participating in the study said they were putting the animals out to pasture during the earthquake and they sat on the ground waiting for the shaking to finish. 30.26% (23 people) of them said they kept calm and waited for a while. 23.68% (18 people) of the subjects said they couldn't remember what they had done. 2.63% (2 people) of the people expressed that they cried and they were in sorrow during the earthquake. 17.11% (13 people) of the subjects said they escaped from their houses in a rush. 14.47% (11 people) of the participants stated that they had fear of death at that moment. 1.32% (1 person) said he didn't have any harm, but he rushed to the other room to rescue his nephew.

Question 14: Which precautions have people who survived the 1971 earthquake taken against the probability of an earthquake?

92.11% (70 people) of the people interviewed in Yazıköy and Yarıköy stated that they hadn't taken any special precautions. They said "I didn't take any precautions because I think the house is strong; my financial situation is an obstacle for this; I would take precautions if the certain time of it was known". 7.89% of them said they had taken precautions against the possibility of an earthquake. They said, "Yes, I've taken precautions; I have strengthened the house; I fixed the big cupboards to the wall". To the subjects in the research it was asked whether there were any measurements taken against an earthquake

in their village. 94.74% (70 people) of them expressed that there were no measurements; 5.26% (4 people) of them said some measurements were taken. As a precaution, they showed the earthquake houses which were built after the 1971 earthquake.

Question 15: What aids do people living in the research area think to supply for the people harmed by an earthquake?

100% (76 people) of the subjects in the research stated that they could do whatever necessary during an earthquake whether psychologically or physically. Some of the participants stated that they could join the rescuing activities to save people's lives trapped under the collapsed buildings.

Question 16: What are the opinions of the people who survived the 1971 earthquake about whether the earthquake could have been predicted or not?

96.05% (73 people) of the people from Yazıköy and Yarıköy stated that it was impossible to predict an earthquake beforehand. 3.95% (3 people) of them said it could be predicted with unscientific methods. They expressed that some animals could feel the earthquake a while before an earthquake. For instance, one said, "I saw the ants leave their nest and assembled on the garden wall, and 8-10 hours later, an earthquake happened. In other stories, same day earthquakes in different magnitudes happened".

Question 17: What were the things that people from Yazıköy and Yarıköy who experienced the 1971 Burdur Earthquake saw, lived, and felt during it?

In this part, the testimonies of the people having lived the earthquake are given without any changes.

" I was 11 years old. It was 22nd May, 1971 and around 8:25. I was putting the animals out to graze. I suddenly saw the ground coming towards me rising like a sea wave and with a loud noise. For 3-5 years after the earthquake I jumped out of my bed at a slight noise while sleeping in fear of earthquakes".

" I saw people dying. We were off the ground. We lost our control."

" I saw a village which was totally destroyed"

" It rained a lot. We had a very gloomy mood with the pain of the earthquake"

" Fear, pain, griefI felt our future would finish"

" I was terrified"

" I saw trees collapse; the dead; ground's waving; the dust and the smoke".

Discussion and Conclusion

Yazıköy, where the 12th May, 1971 earthquake was felt intensely, is divided into two parts as a result of the "earthquake houses" in two different places which were built by the state after the disaster. The old residences of Yazıköy were left as they were, and in the northeast of it was built new Yazıköy and in the southwest Yarıköy was established.

It is determined that in their understanding of earthquakes those people who survived the earthquake in old Yazıköy and living in Yazıköy and Yarıköy now, there are differences. It's observed that people who were interviewed were sensitive about the precautions to be taken in case of an earthquake for several years after the disaster, but in the following years this sensitivity has lessened gradually. According to the evidence which we obtained, 32.89% (25 people) of the subjects associated the earthquake with unnatural powers. The reasons such as ignorance of moral values caused by social and religious reasons, and lack of belief and worship were shown.

Amongst the preparations that people had made for disaster were: keeping emergency supplies at hand (e.g. food, torches, etc.) and knowing what to do in the immediate event of an earthquake for self-protection. However, what people did note was that, as a general rule, they had "forgotten how to live with earthquakes" in any long-term way (Homan, 2004).

It's determined that individuals don't have adequate knowledge on earthquakes; they only know the earthquake they have lived and its effects, and also they haven't been

informed in this subject. That 46.05% of the individuals have got the information from various media sources shows that no activity has been done in their village.

90.79% of the participants stated that their houses which they were living in were strong against an earthquake. They based their idea in this subject on the "one-storey earthquake houses" built by the state in Yazıköy and Yarıköy after the 1971 earthquake.

69.74% of the people who joined this research stated that the economic condition they were in prevented them from taking necessary precautions against an earthquake. Local people's living is based on stock raising, sheep raising, and wheat. In the village, due to the irrigation water scarcity, vegetable and fruit cultivation cannot be done. Because, from the wells dug on the plain, instead of water, alluvium comes out after 20 meters. This lessens the efficiency of the wells.

Interviews would therefore indicate that people have short-term awareness regarding earthquakes in this region. The long-term adaptation to the threat from earthquakes, that could be considered to be a 'seismic culture', appears to be languishing amongst the more elderly members of the communities (Homan, 2004).

86.8% of the individuals living in Yazıköy and Yarıköy think that the hazards from the earthquake can be lessened by taking necessary measurements. It's weird that individuals have adequate knowledge on the topic, yet they don't take any precautions against the damage of a probable earthquake. These individuals have a tendency such that only if they knew the exact time of the earthquake, would they take the precautions. This situation indicates that local people don't have the necessary understanding about earthquake sensitivity and consciousness.

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