Long Term Health Consequences of The Great Hanshin-Awaji Earthquake and Strategies for Mitigating Them

by
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ABSTRACT

The writer had a rare experience as medical doctor to become victim and observer of a major disaster. His office at the Kobe University Medical School was located at the center of the Hanshin-Awaji Earthquake. The writer experienced the Great Hanshin-Awaji Earthquake on January 17,1995 in Kobe. He analyzed the physical and psychological consequence of the earthquake based on his experience. Stress related physical symptoms and psychological symptoms have greatly changed like time factor after the earthquake. Long term health consequences are influenced mostly by socio-environmental conditions of victims. Solitary death, depression, alcohol abuse are reported as major and continuing health problems. These problems are sometimes attributed to inappropriate building structure of temporary houses where more than 40 000 victims live even after two years from the earthquake. The importance of long term and wide range programs for the victims including housing, employment and financial support is stressed.

KEY WORDS: Hanshin-Awaji earthquake, Long term health consequences, Temporary housing, Kobe, PTSD.

1. INTRODUCTION

The earthquake took place at 5 am 46 minutes,January 17.1995.. Many people considered its timing was rather fortunate.
If it had happened in the mid-night,rescue works by neighbors might have been impossible. If the earthquake was one or two hours later.transportations systems would have started.This might surely had caused the death of many more peoples due to traffic accidents. The Japanese scale for the damage was reported at first as 6, but it was revised to 7 afterwards. Richter scale was 7.2.

The earthquake hit just below the major city areas of Hanshin which include Kobe city of approximately 1.5 million population. One year after the earthquake,Kobe city lost almost 100.000 population due to migration to non-damaged areas[1].
The number of the population affected by the earthquake was estimated as 2.4 million. City gas supply was cut to 857 400 households. Every household will have 3 family members in average. This enabled a very rough estimation of the population affected by the earthquake.

The number of the people who lost their housing and had to stay at shelters was over 320 000. In April 1995, the number of the dead was reported 5502. But it was revised in July to 6048 as some of the victims died at private hospitals were not included in the initial counts.

The official number of the dead due to the Earthquake was once again revised to more than 6.500 in August 1995 as some of the delayed death cases , such as pneumonia and suicide,were certified resulting from the Earthquake. [1]

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Three quarters of the immediate death was due to asphyxia by house furnitures and roof materials. Other major causes were due to burn, multiple fractures including cervical area, and traumatic shock[1].

Many people were unable to understand what had happened soon after the earthquake. This period is sometimes called as " 6 hour vacuum". When the earthquake struck, the writer was unable to realize that it was the earthquake. He thought that it was some kind of an explosion under his house. Also, it took long time for many people in Kobe to realize that the epicenter of the earthquake was near Kobe. Nobody expected the earthquake in Kobe area. Kobe University was a center of the hard hit area. Many victims in Kobe area could realize the magnitude of the earthquake only after watching the burning scene of Nagata district by television .It is important to know that population affected by the disaster is sometimes the least informed on the magnitude and nature of the disaster.

2.HEALTH PROBLEMS BY TIME

2.1.By Day-soon After the Earthquake

Immediate medical needs were emergency medicine. At Kobe University Medical school.a considerable number of victims brought to emergency services were found as DOA, Dead on Arrival. For medical services, many were for orthopedic surgery. Several cases of crash syndrome were also reported. Forensic department of our medical school was extremely busy for administrative autopsy and certification of death.

Soon after the earthquake, most of victims experienced emotional numbness. A writer's friend who lost his parents told that he felt out of touch with the reality. He said that he could not feel sadness. Shaking feeling of the body continued due to frequent after—shocks. The writer experienced a kind of depersonalization (feeling that everything is unreal). Depersonalization could be a psychological protection from the disaster.

Two or three days after the earthquake, majority of the victim became talkative and joyful. Some people even became hypomaniac and showed signs of psychomotor excitements. These symptoms might be caused from the joy of survival.

Major medical problems at the early stage were recurrence of chronic disease , such as diabetes , hypertension, mental diseases due to the suspension of habitual medication. Loss of memory and disorientation were reported, particularly among the elderly.

2.2. By week

For the first week. everybody was tense to secure food, water and information. Kind of a battle field friendship existed for a certain period. This resulted in the sustainment of mental excitement and friendship among victims. However. fear of aftershock and general anxiety were experienced at the same time.

Survivor's guilt was strong for those who lost family members[2].

The writer had an abnormal sense of time. One day was felt as eternal. But he could not remember the event of the previous day.

After one week, the focus of the health care was shifted from emergency medical care to care for chronic patients. Treatment of the chronic patients including hypertension, diabetes mellitus and mental diseases were resumed. Care for senile demented and mentally handicapped in shelters posed difficult problems for manager of shelters. Insomnia was common at crowded shelters. Acute stress responses such as nightmare were reported. Psychiatric emergency care were established at some shelters[3].

Volunteer including medical professionals flooded Kobe and damaged areas. It is reported that almost 1.5 million volunteers from all over Japan, and some from abroad,came to Hanshin area for assistance after the Earthquake[4].

After 10 days,the life in shelters became very stressful for many victims. Increase of acute stress response including serious stress ulcer was reported. Department of Internal Medicine of Kobe University Medical School was busy for the treatment of many cases of extremely serious stress ulcer. Anxiety reaction and sleep disorder was common.

Increase of pneumonia and bronchitis was reported among the elderly. The earthquake took place in January which was winter in Japan.

After two weeks,victims start facing the reality and the loss including family members,housing and job. Depression became manifest among victims. A few suicide cases were reported. Acute symptoms of Post traumatic symptoms (PTSD) such as flash back continued among victims.

2.3. By Month

After one month,a considerable number of the aged people became unable to meet with the continued stressful events of their lives. Among elderly victims, dementia.disorientation incontinence were often reported. The consumption of alcohol was increased among victims which led to the epidemic of alcohol-related problems in some shelters. Alcohol related violence are sometimes reported. Children showed regression. Burnout syndrome of volunteers become commonplace.

After two months, most of victims were transferred from shelter to temporary housing by lot. Later, this arrangement was criticized. In shelter, neighborhood could stay together.At one time,more than 320,000 people stayed at shelters such as school and public buildings. Government started the building of temporary housing which were similar to military barrack. For victims at temporary housing allocated by lot,neighbors were foreigners. Community was destroyed. Many victims faced the degradation of social status and economic difficulty which , in turn, caused depression. The above psychological consequence is similar to the experiences of victims of other disaster[2].

3. LONG TERM HEALTH CONSEQUENCES

The recovery work from the earthquake has been rapid. Major transportation such as Shinkannsen resumed after three months. However,long term heath and mental health problems among victims continued even after one or two years from the earthquake.

These long term effects will include the following areas.

- psychological effects
- stress related physical symptoms such as hypertension
- lowering of immunity and its effect.allergy.cancer etc..
- effects of nutritional unbalance
- long term effects to children

3.1. Vulnerable Population Group

Among the victims,the most disadvantaged population groups included the followings,

- the elderly who lost kin
- a family of mother and children
- physically and mentally disadvantaged
- foreigners from developing countries

Victims with money, relatives , job, supportive friends were able to leave temporary houses at the early stage. Only the very disadvantaged population was obliged , and still is obliged ,to stay at temporary houses. These population group has high rate of physical and psychological health problems.

3.2.Long Term Psychological Effects

Major problems affecting the victims are psychological difficulties resulting from isolated life at temporary housing. Burnout, apathy and passive attitude,loss of hope are common among victims. Alcohol problems has been reported on the increase among those living

in temporary housings. This isolation and the loss of community sometime have lead many tragedies such as suicides and so called " solitary death". Lack of local health manpower is cited as one of the major contributing factor for this tragedy.

It is well known that strong life threatening experiences cause long-term physical and psychological effects. Some of well known examples of these syndromes are inmates of Nazi concentration camp and Vietnam veterans. Those who experienced disastrous life events suffer from post traumatic stress syndromes(PTSD)characterized by nightmare, insomnia, flash back of the event , various neurotic and depressive symptoms. Victimes of the Hanshin earthquake are no exception. According to our study on school children, psychological effects were high among girls, younger age, those who lost families and friend. Neurotic symptoms reduced after 6 months but depressive symptoms and physical complaints continued even after 12 months. Many reports relatively low frequency of PTSD among victims comparing the data in other countries.

3.3.Long Term Physical Effects

The risk factors of physical impacts of the disaster is not only the experience of the disaster. There are many factors.

The biggest one is housing and nutritional condition of victims. Isolated life style induces alcohol use cigarette smoking thus increasing the risk of hypertension and coronary heart diseases. In addition, lack of intake of fresh vegetable and usual intake of fast food facilitate high cholesterol increasing the risk of coronary heart disease.

Cold temperature and insufficient air conditioning tend to cause common cold, bronchitis and emphysema. Some experts suggest the lowering of immunity among victims and predict the higher prevalence of cancer.

However, the scientific and large scale epidemiologic studies have yet to be completed for the victims of the Great Hanshin Awaji Earthquake. Long term physical and mental consequences of life at shelter and temporary housing should be studied further.

There are relatively few study on the long term physical consequences among victims of the disaster. A four year follow up study about victims of Armenia earthquake in 1988, showed a higher rate of coronary heart diseases. Risk factors were old age, male sex, trapped inside the house, who lost family members and close friends.

4. StTRATEGIES TO PREVENT LONG TERM HEALTH PROBLEMS

For health professional living in Hyogo Prefecture, the most important concern is how to promote health among victims of the disaster and especially how to prevent the so-called solitary death at temporary houses. Temporary houses built after the earthquake are now resided mostly by the elderly and socially disadvantaged population. There may exist several strategies to prevent long term health problems among victims of the Hanshin-Awaji Earthquake.

4.1. Building of Housing and Environmental Conditions Favoring Human Contacts and Supports

From psychological points of view, it was a mistake to allocate the victims by lot to temporary houses. At shelter, peoples from the same communities could gather together. This prevented for victims to feel lonely. At temporary houses, neighbor are foreigners gathering from many communities. In the Philippines, I was impressed to find that victims of Pinatubo Mountain eruption was relocated as a community to new resettlement area. At the relocation of victims after the disaster, it would be useful to make efforts to keep community as long and as complete as possible. This arrangement would reduce stress and loneliness among victims.

At the temporary houses in Hyogo, several attempts have been undertaken to increase human contacts among victims. Community centers were open at each temporary house group for resident to come and to chat.

Both private and communal spaces are necessary for temporary houses. Four of five houses could share corridor and gardens. Group home for victims has been discussed as a possible solution for elderly victims needing physical and psychological care.

4.2.Establishment of Human Network Preventing Long Term Health Consequences

Immediately after the earthquake, there was a flooding of volunteers to Kobe area to take care of victims. It is reported that almost 1.5 million volunteers came to Kobe and vicinities after the earthquake. Some groups of house wives in Kobe area were visiting regularly temporary houses just to talk with elderly resident. Local governments mobilized public health nurses to visit temporary houses, However, the number of public health nurse is very limited. In each temporary house communities, autonomous committee have been set up to foster self help among victim residents. These mechanisms have been working to prevent solitary death and long term health problems .

4.3. Giving the Meaning and Hope to Their Life

VIctor Frankle wrote in his famous book based on his experience of Nazi Concentration camp " Those who could find the meaning in life and kept hope could survive."
It is very difficult for those who lost their housing, money, friend and partner at old age to find the meaning and hope .
Surely, human network is important to assist victims to find the meaning of life and to hope for future.

However, the minimum amount of compensation to build the house and to start a small scale business will be indispensable for victims to find the meaning of life. Personal compensation of the amount 30 000 to 40 000 U.S.D to the victims is a hot political issue at present. According to recent news, there may be some possibility for the Government to provide a seed money as long term loan as compensation to the victims of the Great Hanshin Awaji Earthquake.

CONCLUSION

World Health Organization defines health as " Physical, mental, social well being and not merely the lack of diseases or infirmity".
It is important to know that good physical health depend much on good mental health and good mental health depend on sound social environment including housing and community.

Human being is forgetful. However, it is important to remember that a considerable number of victims of the Hanshin Awaji Earthquake are still suffering from variety of psychological and physical problems. We have to continue to promote the awareness of the public on long term health consequences from the disaster and effective measures to reduce these problems. Long term health consequences could not be solved only by health sectors.

Dialogue should be held between health professionals and architect ,city planners, economists and concerned specialists to develop comprehensive and long term programs for victims which include housing,schooling,employment and community activation[6]. Multi-sector cooperation is a prerequisite to reduce long term health problems of victims of disaster.

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