

Assessing the readiness of health facilities to cope with the risks of natural disasters

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ABSTRACT

Introduction: Study the disasters threat in health network is one of the principal and fundamental acts for active facing with disasters through collecting information about facing threats, vulnerability and capacity of health service centers. Present study was conducted with the aim of study the non-structural vulnerability in health services centers according to PHC system in order to improving readiness of health system to facing with disasters.

Material and Methods: in the present study which was descriptive-cross sectional type, non-structural safety status in 387 health center and facility was evaluated on winter, 2013. Codified national checklists completed by 14 evaluation team. Collected information analyzed using Excel 2010 software.

Results: results of evaluation of natural threats recognition showed that earthquake, dust, flood and land slide had highest frequency, respectively. In section for evaluation of functional readiness of health system, highest readiness obtained in country health centers staff (58%) and lowest readiness was related to insurance cover (without readiness). In non-structural vulnerability section, health houses and health centers staff had highest and lowest vulnerability, respectively.

Conclusion: considering to natural disasters in the province, low functional readiness percent and high non-structural vulnerability of health facilities, paying attention to non-structural safety of health centers and insurance cover of these centers against disasters, according priority, is essential so that in case of crisis, providing health services to damaged people would not be affected by the event.

KEY WORDS: disasters, Dangers, health facilities, Kermanshah.

1. INTRODUCTION

Natural disasters were considered as out of control events which result in mortality and various damages and obviously affect people's health status (Emami, 2005). In fact, natural disasters represent acute events with high occurring rate and with deep impacts. Disasters process cycle include a continuum which composed of three steps as prior to occurring, during the occurring and after the occurring (Speziale, 2011). Nowadays, life and economic damages resulted from natural and artificial events leave prominent and undeniable impacts of people's life style and health so that its destructive impact disturbs community ability to supplying essential and primary requirements and causes dying or damaging of so many people all around the world (Nivolianitou and Synodinou, 2011). Unpredicted event and disaster is a position and circumstance in which facilities and tools required for usual life were not able to have ordinary function due to occurring a sudden natural and artificial disasters and destructive impact of the event, removes ability to supplying needs and health care demands (Chapman and Arbon, 2008). Iran has 6th rank in terms of occurring natural disasters (Kianpoor, 2004). When an event occurred, hospitals and health centers are among the first units which providing appropriate treatments and health cares could have determinative and crucial role in reducing death and saving the injured persons (Arab, 2009). Also, applying efficient management in hospitals and health care centers during a crisis have great impact on optimum and favorable function of these organs (Maleki, 2008). Lack of planning and organization for repelling the events could cause irrecoverable damages in country health and treatment system (Ojaghi, 2009). Health care centers have to be ready prior to disaster as possible as. Having regard to importance of readiness of health care systems for repelling disasters and unpredicted events, readiness of health care centers in Kermanshah province was evaluated for obtaining required information for better planning by managers.

2. MATERIAL AND METHODS

Present study was descriptive-sectional type which include 14 center staffs and health care center, 67 urban health care center, 61 rural health care center, 29 health base and 652 rural health house which totally include 837 health facility and center. Information collecting tools were a checklist include center-threatening risks, operational

preparedness of health systems and structural and non-structural vulnerability of organizations under supervision of Kermanshah University of Medical Sciences. Checklists contents achieved from library and internet sources. Checklists completed through direct observation, interview and use of documents and evidences at 14 cities. Checklists validity approved by professionals in the field. In order to determination of the stability of checklist, initially questionnaire completed by interview and direct observation in some part of under supervision centers of Kermanshah University of Medical Sciences and after 10 days, again competed by center's managers and α -Kornbach coefficient obtained as 0.83. Data analyzed using descriptive statistics indices and Excel 2010 software utilized for results presentation.

3. RESULTS

According to results of recognition of natural risks, annual earthquake occurring possibility (75%), dust (68%) and flooding (42%), by 42 probability had highest frequency (Table.1).

At functional preparedness of sub-units of health system, fire extinguishing part by 68 percent, environmental health by 58 percent and training and maneuver by 54 percent had highest preparedness percent, and safety by 5 percent and risk reducing actions by 3 percent and insurance cover of health facilities against natural risk without any readiness had lowest preparedness as shown in Table.2.

At total functional preparedness part, system centers staff and health centers by 25 percent and health houses by 11.5 percent had highest and lowest functional preparedness, respectively, according to Table.3.

At non-structural vulnerability section which causes functional distortion in servicing at crisis time, health facilities drug stores by 48 and wound dressing by 15 percent, respectively had highest and lowest percent as shown in Table.4.

In terms of non-structural vulnerability, health care houses and system staff and health centers had highest and lowest vulnerability by 48 and 35 percent, respectively (Table.5).

Table.1. Frequency of natural risks in the area

No	Risk type	Annual occurring probability
1	Earthquake	75 percent
2	Dust	68 percent
3	Flooding	42 percent
4	Thunderbolt	27 percent
5	Land slide	20 percent

Table.2. Units' functional preparedness and various section in health care centers at health centers staff and health care centers in the province

No.	Unit type	Preparedness
1	Fire extinguishing	68
2	Environmental health	58
3	Training and Maneuver	54
4	Rapid respond team	52
5	Action leading	48
6	Individual protection equipment and tools storage	46
7	Technical equipment and tools storage	46
8	Structure and organization	45
9	Disasters and emergency readiness	45
10	Risk assessment	43
11	Transport	42
12	Productivity health	42
13	Infectious and non-infectious diseases	42
14	Information	41
15	Communication and alarming	40
16	Intra- and inter-organization cooperation	32
17	Discharge	30
18	Information safety	23
19	Aids and volunteers management	22
20	Education	20
21	Continuing services of human sources	18
22	Food and water storage	17
23	Evaluating damages and requirements of center and damaged population	16
24	Feeding	15

25	Recovery	14
26	Gas, power and water safety	14
27	Financial issues	13
28	Social and psychological health	13
29	Psychological health of staffs and their family	10
30	Safety and security	7
31	Important visitors management	5
32	Risk reducing actions	3
33	Insurance cover of health centers and facilities	0

Table.3. Total functional preparedness of health centers and facilities against natural disasters

No.	Health center type	Preparedness percent
1	Towns health centers staff	25
2	Urban health care centers	18.7
3	Rural health care centers	15
4	Health bases	13.2
5	Health houses	11.5

Table.4. Non-structural vulnerability of various health units in staff and health care centers

No.	Unit type	Non-structural vulnerability percent
1	Drug store	48
2	Center supervisor office	37
3	Doctor's room	36
4	Fighting with diseases	35
5	Family health	33
6	Pantry	31
7	Vaccination	30
8	Environmental health	28
9	Dentistry	28
10	Archive	25
11	Reception	23
12	warehouse	22
13	Waiting space	19
14	Laboratory	18
15	Wound dressing	15

Table.5. Total non-structural vulnerability of health facilities

No.	Health care center type	Non-structural vulnerability percent
1	Towns health centers staff	35
2	Urban health care centers	37
3	Rural health care centers	40
4	Health bases	38
5	Health houses	48

DISCUSSION

Improper quality and quantity of health services during disasters, non-sufficiency of facilities and required equipment for serving health services, inappropriate management and lack of coordination prevents proper, on time, quality and accessible health services to people who are in damaged areas (Schneiderbauer and Ehrlich, 2004). Providing services with suitable quality and quantity, supplying educated human sources and sufficiency of equipment provide serving proper health services. Results of present study showed that mean functional preparedness of health care facilities and centers during disasters was 18.3 percent and mean non-structural vulnerability of health care centers and facilities during this time was 41.5 percent. Arab, (2006) studied hospitals in Tehran and found that these hospitals had average 51 percent functional preparedness against disasters (Arab, 2009) which is more than results of present study. However, in another study, Ojaghi, (2008) which was conducted in Kermanshah province, Iran, preparedness rate of educational hospitals against crisis estimated as poor (Ojaghi, 2009). Hosseini Shokoooh (2008) classified preparedness rate of hospitals in Tehran as following: 9.5 percent as good, 28.6 as poor and 61.9 percent as average level.

Mahboobi, (2008) reported mean preparedness of three studied hospitals in Kermanshah as 74.6 percent in terms of equipment and facilities, which was more than our results. Keshvari, (2012) studied functional readiness of educational hospitals in Sanandaj, West Iran, against disasters and found that 83.4 percent of studied hospitals had

optimal status and 16.6 percent was developing (Keshvari, 2013). Preparedness of studied centers in the present study was lower than Keshvari, (2012) results. According to results, it is appeared that the low rating of insurance coverage in the event of a disaster is notable in the study centers which causes numerous social and psychological problems in damaged people. Crisis resulted from disasters occur through internal and external factors. But in all cases, success and failure of an organization in risk management could be effective (John, 2003). Mallson, (2009) study in Manchester, England, showed that hospitals have good statue in facing with disasters and crisis (Mallson, 2009). Khalaileh, (2012) found that Jordan hospitals have poor preparedness against disasters.

Sokhanvar, (2015) estimated mean risk rate for Tehran South treatment centers as 98 percent. Highest preparedness rate against disasters was related to fire stations and lowest was related to insurance cover and administrative parts (Sokhanvar, 2015) which is in consistent with present study. It seems that presence of risk management manager in fire stations and environmental health units was the reason for their better status compared to other units. Education has key role during natural disasters. On the other hand, presence of unskilled and amateur persons during crisis will extend secondary impacts of the crisis. According to Dublose opinion, in risk management educational courses, attention to alarming symbols, responsiveness and recovery of initial state have great importance (Ojaghi, 2009). Highest risk in the present study was associated to earthquake and air pollution which is in consistent with results of Sokhnvar, (2015). Sternberg et al studied 275 reports related to natural disasters during 1971-1999 and found that the earthquake is the fifth largest disaster in terms of repeatability and constituted only 9% of reports (Sternberg, 2004) which is in contrast with our findings in the present study. In terms of preparedness rate of studied centers for facing with crisis and according to conducted maneuvers, it was recognized that maneuvers conducted very well and had percentage. Management of health care centers must plans a strategic plans for resolving the crisis according to standard action trends (Tseng, 2005). Findings of Mastaneh (2013) show that functional preparedness rate in relation to maneuvers in Hormozgan hospitals are very poor compared to present study. Constant education and annual maneuvers could be very effective in in evaluation and improvement the crisis management quality if education was not limited to just holding conferences and workshops and health care centers must simulate crisis circumstances and train how to face with crisis in situation like to real conditions (Malekshahi, 2007).

4. CONCLUSION

Having regard to this point that Iran is at risk of natural and artificial hazards which constantly resulted to harmful economic, functional and humanistic consequences for community and health system. Therefore there is need to continuously being ready for quick response to these events. Also, considering to available potential for natural hazards in Kermanshah province, low functional preparedness percent, high structural and non-structural vulnerability of health facilities, it is required that following actions will be followed by more serious:

- Improving health human source capacity by running educational courses and field maneuvers
- Improving intersectional and intra-sectional cooperation
- Monitoring functional preparedness and structural and non-structural safety of health facilities against disasters
- Attention to retrofitting of structural and non-structural safety of health facilities against disasters
- Actions about insurance cover of health care centers against disasters
- Improving technical equipment capacity of risk reducing teams

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