The Relation between Social Structure of Cities and Earthquake Vulnerability; Case Study: Tehran City's Neighborhoods

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Extended Abstract
1- Introduction
A review on theoretical changes shows that from 1970s on, the research on "vulnerability" and "disaster" pays attention to the reasons and explanation of socio-spatial differences of the vulnerability degree, in addition to concentrate on spatial distribution of damages and disasters, and they haven't contained themselves with natural forces, damages estimate and emergency response. However, the conducted researches in Iran merely focus on either physical-technical aspect or on different influences and consequences of hazard happenings. In fact, concentration on "hazard Intensity and resulted disaster" and also prevalence of "loss ideas and physical solution" is the feature of most vulnerability measurement and analysis of earthquake in Iran, including metropolis Tehran city.

While for the reduction of cities vulnerability to earthquake and making appropriate policies and strategies, first we should know why and how vulnerability in specific city spaces and among specific groups and people is concentrated. What formed the main question of this research as: what are the effective factors of changes? and what are the socio-spatial differences of Tehran city vulnerability to earthquake hazard?

In the search for explanatory theory, the review of theoretical literature shows three views: bio-physical, social structure and synthetic. From among, social structure theory focused on the relationship between socio-economical status of people and society groups, and their vulnerability degree to natural hazards. While in reverse, bio-physical theory with the focus on physical-technical aspects, ignores socio- economical aspects of vulnerability, and has no idea about which groups of people and why are more vulnerable. But according to

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social structure, it is unequal distribution of social and spatial resources, properties and chances in society that forms these socio-spatial differences of vulnerability. Accordingly, to explain the research problem theoretically, main concepts were concluded based on the social structure view. Includes: 1) Socio-Economic Status; 2) Neighborhood; 3) Socio-Spatial Segregation. Then, the conceptual-theoretical model was presented and base on that, 4 hypotheses offered.

2- Methodology

To do experimental judgment, via "relational research method" first, sample volume of households calculated by Cochran's method. With classifying of Tehran metropolises neighborhoods in 4 classes and random choice of one neighborhood from each class; then sample households selected within sample neighborhoods systematically. Needed data gathered by household and expert questionnaires, and analyzed by descriptive and inferential statistics. Operational Definition of the main Concepts made such: 1) vulnerability Degree defined on the basis of "households risk taking potentiality against earthquake Hazard". With 9 components and 22 indicators then defined in scale measure; 2) socio-economical status defined in scale measure and by 4 components. Then, gathered data were analyzed by statistic test, include: One-way ANOVAs and Tukey-test at first hypotheses; and correlations methods, lineal regression and path analysis at other 3 hypotheses. Descriptive analysis was done by drawing suitable charts and figure.

3– Discussion

One-way analysis of variance with confirmation of the first hypotheses showed that the average of socio-economical status and the average of vulnerability in 4 neighborhoods differ significantly. This result shows more vulnerability concentration in those neighbors with lower socio-economical status average. So it proves the role of socio-spatial segregation and the influence of neighbor and status parameters in creates socio-spatial differences of vulnerability degree. Also, according to multiple regressions, 88 percent of differences of household vulnerability explained by linear combination of socio-economical status and neighborhood factors. The result, also, with confirmation of the second and third hypotheses showed that the neighborhood and status factors in turn by turns with coefficients of 0/878 and – 0/067 have more share in explanation of vulnerability degree in comparison with risk perception factor. Also, occupation, literacy and income factors in turn by turns with coefficients of 0/521, 0/205 and 0/201 have more shares in explanation in comparison with age, social capacity and migration situation. So, forth hypotheses confirmed also.

4– Conclusion

According to the findings of the research, vulnerability at society scale, including urban society, has socio-economical aspect, in addition to biophysical aspect. So, analysis and vulnerability reduction of natural hazards at society scale needs systematic and integrated consideration in a holistic view. Ignoring socio-economical vulnerability aspects and status, and mere concentration on hazards and their effects can ruin
vulnerability reduction policies due to ignoring half of the reality.

Thus vulnerability reduction and sustainable development are not merely social or spatial matters. They are, in fact, socio-spatial ones. So vulnerability reduction and planning management and achieving sustainable development requires considering both aspects.

In other words, disaster mitigation is a complicated process. And most of its parts can't be considered as disaster only, since they are related to development too. Thus, Failing in managing key roots of poverty and underdevelopment means more vulnerability and failure in disaster management.

It necessary to be mentioned that since the city conditions are reflex of the condition of broader society like regional and national; so stated guidelines and frames should be followed at different national, regional and local levels simultaneously and reciprocally.

**Keywords:** Tehran city, Earthquake, Vulnerability, Socio-Spatial differences

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