



EARTHQUAKE THREAT: HOW SECURE AND PREPARED ARE CHILDREN AT SCHOOL

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The result of preventive measures within school buildings not only lies in safer environment for school children, but also raises awareness among them. One of the tasks of the UPStrat-MAFA members was to evaluate the informal education by measuring the information on risk reduction (both preventive measures and preparedness) provided by local responsible authorities, used and elaborated in schools. A questionnaire was developed by task members and then tested in Hveragerdi, an Icelandic town included in the UPStrat-MAFA study area. After finalizing the questions, the survey was run online. School directors were contacted by email; they were asked to participate and to click a link at the end of the message to open up the questionnaire. Each participant country ran the survey in its native language. In total, the questions were ten, four of which were the so called filter questions, i.e. dichotomous questions asked to determine if it is relevant for responders to answer the subsequent question. The analysis of the survey data provides valuable information about the state of informal education on risk reduction and awareness programs in schools and health institutions. In particular, the paper illustrates the results collected in Iceland, Italy and Portugal and discusses them taking into account some of the basic questions.

The survey covered both pre- and elementary school. The responders were e.g. asked whether: i) local authorities had provided them information on seismic risk prevention and how such information was processed; ii) loose objects were securely attached to walls in order to prevent them from falling, giving insights into how risk averse the institutions are.

Results show that the local authorities in Iceland had disseminated information on preventive measures to 43% of the institutions. The test survey in Hveragerdi displayed that it more often depends on the institutions' management than the local authorities whether or not such information is accessible within the institutions. Printed material is the most common source. 33% of the institutions had received guidelines printed by the Icelandic Civil Defence Department that display how to behave in case of earthquakes. 20% had accessed the information on the web. The family emergency plan provided by the department and made accessible on the web could be made better use of as an educational tool. 57% of the Icelandic institutions had made an effort to prevent objects to fall within the buildings in case of earthquakes (see Figure 1).

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In Italy, local authorities on risk prevention had informed 37% of the institutions. Information is disseminated through guidelines, lectures, CDs or training courses from National Civil Protection. Moreover, the information given to schools mostly explains how to behave in case of an earthquake. 41% of the Italian institutions had made an effort to prevent objects to fall within the buildings in case of earthquakes (see Figure 2).

In Portugal, Lisbon municipality distributed to schools about 30% of information concerning seismic risk prevention measures. This information was disseminated through guidelines, lectures, CDs or training courses from National Civil Protection. 29% of the Portuguese institutions had made efforts to prevent objects to fall within the buildings in case of earthquakes(see Figure 3).



Figure 1. Iceland: distribution of answers to the question whether loose objects had been securely attached as a part of preventive measures

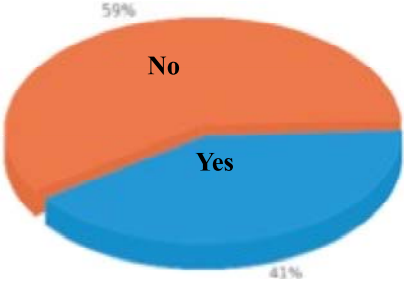


Figure 2. Italy: distribution of answers to the question whether loose objects had been securely attached as a part of preventive measures

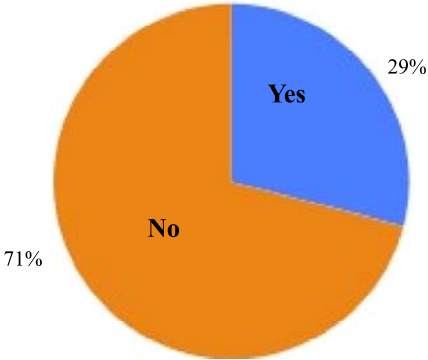


Figure 3. Portugal: distribution of answers to the question whether loose objects had been securely attached as a part of preventive measures

The comparison of the results obtained shows that the emphasis on having Emergency Plans to rely on in case of disaster is almost equal within the three countries. In Italy 70% of schools have emergency plans compared to 69% in Portugal and 68% in Iceland.

Differences between Icelandic and Italian schools become salient with regard to Earthquake Drills offered and whether special actions were taken toward children education on the topic.

In Italy, 70% of school had offered drills compared to 24% in Iceland; in addition, 67% of Italian schools had taken actions towards education on the topic compared to 23% in Iceland. Portugal is closer to Italy with regard to drills offered in 66% of the schools, and 49% of them had taken special action towards children education on the topic. It is important to emphasize that in Portugal fire drills are much more common than earthquake drills, reflecting a “low safety culture” due to insufficient level of awareness of seismic risk.

Iceland is slightly better prepared (than in previous mentioned measures) with regard to how many schools had received “Information from Local Responsible Authorities” about preventive measure related with seismic risk. 47% of Icelandic schools had received such information compared to 37% in Italy and 31% in Portugal.

Schools’ earthquake preparedness aiming at reducing “Non-structural Hazard” differs between the countries, especially between Iceland and Portugal. 57% of Icelandic schools had attached loose objects to prevent them from falling in case of an earthquake, compared to 29% in Portugal and 41% in Italy.

The greatest difference becomes salient in the answer to the question whether the schools had “Available Equipment” to use in case of earthquakes. None of the Italian schools reported available equipment; only 10% of the Icelandic schools got it, while 86% of Portuguese schools had such equipment. The dominant type of available equipment reported on in Portugal was fire extinguishers (answers “others”). Supposing that in the other two countries fire extinguishers were not perceived as useful in case of earthquake, we might conclude that awareness of the threat of fire is much stronger in Portugal than in Italy and Iceland.

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REFERENCES

- Bernhardsdóttir, A.E., Musacchio, G., Ferreira, M.A., Carvalho, A., Sousa, M.L., Raposo, S. (2013) Surveys on Risk Reduction. UPStrat-MAFA conference in Catania, December 2013
<http://www.kannanir.is/>
UPStrat-MAFA European project (2013) <http://upstrat-mafa.ov.ingv.it/UPStrat/>