Implementation Science for Disaster Risk Reduction: An Appraisal

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One of the most critical issues in disaster risk reduction (DRR) research is the gap between what is known about effective disaster reduction strategies and what is provided to and experienced by beneficiaries or end users   in real life settings. While disaster risk reduction studies yield a growing supply of evidence-based preparedness countermeasures, there is little evidence that such countermeasures or preventive actions are either adopted or successfully implemented in social settings in a timely way. Indeed innovative disaster preventive countermeasures are seldom successfully implemented. The implementation gap prevents us to create resilient communities and cities, but damage and death tolls are accelerating both in developed and developing countries. Therefore, because of poor implementation mechanism, the social and economic costs of disaster are increasing, whereas we science and technology innovation offer us to have several new and potentially good disaster preventive technologies and countermeasures. Hence, ensuring that effective and innovative interventions are implemented in diverse settings and populations has been identified as a priority in DRR discourse.

The gap between countermeasures that is known to be effective and prevention that is delivered reflects, in large measure, a paucity of evidence about implementation. Most information about implementation processes relies on anecdotal evidence, case studies, or highly controlled experiments that have limited external validity and yield few practical implications. A true science of implementation is just emerging. Because of the pressing need to accelerate our understanding of successful implementation, concerted efforts are required to advance implementation science in DRR. This study seeks to advance implementation science in DRR by over viewing the emergence of implementation as an issue for research, by addressing key issues of language and conceptualization, by presenting a skeleton framework for the study of implementation processes, and by identifying the implications for research and training in this emerging field.

In public health studies, implementation science has been defined as "the systematic study of how a specific set of activities and designated strategies are used to successfully integrate an evidence-based public health intervention within specific settings". Considerable evidence suggests that active implementation efforts must follow, for creating evidence-based measures does not ensure their use in practice. In addition to an inventory of evidence-based practices, the field needs carefully designed strategies developed through implementation research. Implementation research has begun with a growing number of observational studies to assess barriers and facilitators which are now being followed by a very small number of experimental studies to pilot test, evaluative, and refine specific implementation strategies. This research may lead to further refinement and adoption, yielding implementation "programs" that are often multi-component. These implementation programs are then ready for "spread" to other sites. The diffusion research as the study of factors necessary for successful adoption of evidence-based practices by stakeholders and the

targeted population, resulting in widespread use. Diffusion is the passive spread of innovations, and dissemination, which involves "active and planned efforts to persuade target groups to adopt and innovation". Thus implementation is the final step in a series of events, characterized under the broadest umbrella of translation research that includes a wide range of complex processes (diffusion and dissemination and implementation). Two technologies are required for evidence-based implementation: practice or preventive technology, and a distinct technology for implementing those technologies into cultural or community settings. Implementation is dependent on a supply of treatment strategies. Implementation strategies are specified activities designed to put into practice an activity or program of known dimensions. Although creating practice and systems change is a nonlinear, interconnected process, for the purpose of this article we will discuss these frameworks individually.

Implementation Stages: Conducting stage-appropriate implementation activities is necessary for successful DRR.

Implementation Drivers—developing core implementation components, referred to as Implementation Drivers, results in an implementation infrastructure that supports competent and sustainable DRR.

Policy–Practice Feedback Loops— connecting policy to practice is a key aspect of reducing systems barriers for effective DRR.

Organized, Expert Implementation Support—Implementation support can be provided externally through active purveyors and intermediary organizations or internally through Implementation Teams. There is evidence that creating Implementation Teams that actively work to implement interventions results in quicker, higher-quality implementation.