

INTERVENTION STRATEGIES FOR IMPROVEMENT OF DISASTERS RISK PERCEPTION: FAMILY-CENTERED APPROACH

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Journal of Education and Health Promotion | Volume 8 | March
2019

INTRODUCTION

- ❖ The risk and impact of disasters have continued to increase in the past decades. Evidence shows that the exposure of individuals to disaster risks is growing much faster than the ability to reduce vulnerabilities to them.
- ❖ Effective disaster management and reduction of disasters risk are cost-effective approaches to prevent future damages, contributing to the sustainable development and capacity-building of countries.
- ❖ One of the important conceptual frameworks in the sustainable development approach is the disaster management framework.
- ❖ This framework a comprehensive plan dealing with protection of people in a society, their properties, and their environment.

INTRODUCTION

- ❖ Today, disaster manager tend toward community-preparedness approach for disaster management.
- ❖ This approach emphasizes the important roles and responsibilities of the members of the community in establishing disaster management programs and systems, ensuring self-sufficiency, and reducing vulnerability in times of disaster.
- ❖ Understanding the risk is the first priority for disaster risk reduction global planning.
- ❖ Perceiving the risk of disasters is mainly of universal and theoretical nature and is a means of achieving risk understanding.
- ❖ perception plays a key role in motivating individuals to avoid, accept, reduce, and transfer risk.

INTRODUCTION

- ❖ Risk perception interventions must be integrated at different levels of management and can have a positive effect on community participatory in disaster risk reduction program.
- ❖ proper risk perception interventions can raise community participatory in reducing risk programs, reduce the damages induced by the disasters, and reinforce preventive behaviors at the community level.

MATERIALS AND METHODS

SYSTEMATIC SEARCH

This systematic review included previous studies on risk perception, especially those focused on natural disasters, human-made disasters, and multiple disaster events. Articles published during January 2000 to June 2017 were considered. International databases such as Web of Science, Scopus, and PubMed were searched using the keywords of disaster, perception, strategy, and risk reduction.

The search was restricted to title, abstract, and key words. The search themes were combined using the Boolean operator “AND” and “OR.” In the following, an example of search strategy is presented:

(Disasters OR crises OR crisis OR emergency OR emergencies) AND (Risk OR Hazard OR Danger) AND (perception OR understand * OR Aware * OR cognition OR insight OR intention) AND (Strategy * OR Deal * with OR promotion OR manage * OR cop * with).

Identification

Screening

Eligibility

Included

Records identified
through WOS
database
searching
($n = 478$)

Records identified
through Scopus
database
searching
($n = 485$)

Records identified
through PubMed
database
searching
($n = 67$)

Records after duplicates removed ($n = 941$)

Records screened
($n = 149$)

Records excluded,
nonfocus directly
disaster risk
perception ($n = 792$)

Full-text articles
assessed for
eligibility ($n = 32$)

Full-text articles
excluded, nonfocus
directly general
population ($n = 117$)

Studies included in
qualitative
synthesis ($n = 16$)

Nonfocus directly
risk perception
strategies ($n = 16$)

RESULTS

This section presents the results of the literature review with a special focus on factors that affected risk perception and strategies for the improvement of risk perception. The preliminary findings with the above key words included 1030 studies.

Out of 941 retrieved references, 925 references were excluded because they did not meet the objectives of this review or did not focus directly on the general population. Finally, 16 articles were selected for further investigation .

Seven studies out of 16 studies (43.75%) were conducted in Europe, 4 (25%) in America, 3 (18.75%) in Asia, and 2 (12.5%) in Oceania.

The selected studies were screened for the main factors responsible for determining risk perception and categorized into four groups, including **personal factors, psychological factors, socioeconomic factors, and cultural factors.**

DRP STRATEGIES: FINDINGS OF THIS STUDY

1. Educational strategies
2. Participatory strategies
3. Incentive strategies
4. Confidence building strategies
5. Supportive strategies
6. Managerial strategies
7. Cultural strategies

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Birkholz et al.**

- 6: Understandings the relationship between risk perception and flood management
- 5: Political system of society, marginalization problems
- 1: Knowing that all facets of society, not just those “at risk,” have a role in shaping how risk is understood and ultimately dealt with
- 6: Considering a research agenda for flood risk perceptions that is comprehensively underpinned by constructivist understandings

- **Armaş and Avram**

- :1 Increasing the degree of internal control
- 6: Having a better educational level
- 4, 5: If social support and the trust in authorities increase, the perceived or unconscious level of stress these people experience would drop. Lowering the stress levels would lead to an emotional balance
- 5: The lack of resources, implying low resilience, strengthens unadaptive behavior
- 3: Faith in support, strengthens adaptive behavior

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Alshehri et al.**
 - 1: Awareness raising
 - 1: Training
 - 1, 6: Access to timely and relevant information and knowledge
 - 1,3: Willingness
 - 6: Building on cooperation between official organizations
 - 1, 5: Developing its website
 - 7, 3: Taking into account the use of faith, knowledge, and Islamic teachings to create a stronger incentive
 - 1, 7: Religious leadership partnership
- **Wachinger et al.**
 - 4: Trust in authorities is necessary to build up a social climate in which advice from authorities will be taken into account in a crisis situation
 - 5, 1: Empowering the individual to imagine the effects of a disaster
 - 3: Encouraging citizens to take more personal responsibility for protection and disaster preparedness

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **jones et al.**
 - 5: Welfare (social and economic)
 - 5: Received social support (emotional, material, and informational)
 - 5, 6: A wealthier personal network
 - 6: The level of people's proximity to one another
 - 7: Religious affiliation
 - 7, 1: Psychometric and cultural approaches toward risk perception
- **Shenk et al.**
 - 1: Elderly women role in education
 - 1: Strengths of older adults within the context of their gendered roles can be utilized to develop focused planning and educational efforts
 - 1: Drawing on older adults' skills and strengths in adjusting to changes caused by their experiences of disaster

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **McIvor and Paton**
- 3: Using incentive strategies
- 5, 6: Protective measures for target communities, groups, families, and friends
- 5, 6: Attention to change and facilitating social behavior
- **Egbelakin et al.**
- 4: The provision of extrinsic interventions is likely to annul the dilemma of procrastination with respect to adopting long-term risk reduction measures
- 6: Effective policy adoption and implementation constitutes a central element in the overall framework for improving
- 1: Creating critical awareness motivators such as reiterating past earthquake experiences
- 7: Intensifying coping strategies among community members

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Botzen et al.**
 - 5: Communicating adaptation measures potential to eliminate risks is likely to increase their attractiveness to individuals
 - 1: Having dread feelings toward flood risk
 - 2: Adopting a participatory approach toward flood risk management involving governments and citizens
- **Gaillard et al.**
 - 6: Disaster reduction strategies and increased adaptability of people should be part of the agenda of development programs
 - 5: Coping with hazards is rooted in people's ability to adjust their daily life to the strength of their livelihoods and social network
 - 5: Social networking is critical in providing alternative support in times of crisis

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Zagonari**

- 1: A campaign to inform the general public about evacuation and trauma management
- 1: An information campaign focused on young women
- 1: A campaign to inform the general public about flood
- 6: A risk management program that meets individual rationality and overall feasibility conditions

- **Harries**

- 1, 3: Policy-makers and the designers of protection products should pay more attention to the emotional barriers and incentives against adaptation
- 7: Seek to establish a more complete understanding of the relationship between protective behavior and the beliefs

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Parsizadeh et al.**
 - 7: Positive effects of the spirit and sense of place
 - I: More attention should be paid to women's role and their contributions in terms of earthquake risk perception
 - I: Earthquake education need to be recognized and incorporated
 - I: Earthquake disaster awareness and education needs to take into account the specificity of the place as well as the impact of cultural landscape and cultural beliefs on earthquake risk perception of local communities
- **Liu et al.**
 - 6: Role of information seeking in publics' disaster decision-making
 - I: Maps increase understanding and potential compliance
 - I: High information richness message components
 - I, 7: Perceived proximity to a mapped hazard influences people's beliefs about risks associated with hazards
 - I: Conceptual explanation

STRATEGY FOR THE IMPROVEMENT OF DRP IN LITERATURE REVIEW

- **Cutchin et al.**
 - 1: Strengthening a clearer understanding of the concerns
 - 1: Developing stress management strategy
- **Kellens et al.**
 - 5: Hazard visibility
 - 1: Governmental risk awareness programs should be content specific and tuned to the specific target group to be affected
 - 1: Insights about the psychological processes of different target groups influencing risk perception is therefore of vital importance

PERSONAL FACTORS

- ❖ Personal factors comprised age, sex, marital status married, level of education, personal knowledge, and personal disaster experience.
- ❖ Some studies have shown that age is effective in risk perception. whereas, others reported no or little effect of age on risk perception.
- ❖ There is controversy about the importance of this factor, and in one study, lower risk perceptions of young people than older people were reported.
- ❖ According to the aforementioned study, humans with rational growth are able to understand risky situations and young people perceive risk less than older ones and they are mostly risk-takers.

PERSONAL FACTORS

- ❖ Zagonari revealed that older people had less perception of risk due to lower level of awareness.] It seems that the factor of age is mediated by other intervening factors. Although a mediating or reinforcing role was reported for sex in selected studies, difference in risk perception of males and females was frequently reported.
- ❖ Men tend to focus on the concrete effects of disasters, while women pay attention to emotional concerns
- ❖ According to literature, women are more concerned and more anxious, thus less risk-taking. Catechin *et al.* described sex as an effective factor in perception and concluded that women had a higher risk perception.
- ❖ Arma (2009) believes that the more orientation of women toward a foreign location makes them less able to control themselves and lessens their ability to stand during an event. Men tended to have internal control of events and show a low level of vulnerability.

PERSONAL FACTORS

- ❖ Jones considers “marital status” as a buffer for the past injuries. A study by Zagonari highlights the positive role of marriage in postdisaster period.
- ❖ In addition, the economic ownership of women in Burningham’s study plays an effective role in perceived risk.
- ❖ It seems that women’s perception is less than their male counterparts in spite of women’s greater concern for risk.
- ❖ Knowledge can also raise awareness and perception about risks, vulnerability, and exposure. Based on various studies, it is believed that the public disclosure method has the maximum impact on public understanding.
- ❖ According to Liu, Brook Fisher, Bernknopf *et al.*, people’s feelings must be engaged and their knowledge must be enhanced in order to increase the public understanding.

PSYCHOLOGICAL FACTORS

- ❖ Psychological characteristics are emotions (fear and insecurity), mental images (beliefs and attitudes), as well as internal and external control.
- ❖ In various studies, worries, anxiety, and concern are reported as major effective variables for disaster risk perception and protective measures
- ❖ The concerns of groups were associated with a greater vulnerability to hazardous physical and mental harm.
- ❖ Harris concluded that anxiety had a negative correlation with experience; that is, those who experienced disasters were much more worried and took more protective measures.

PSYCHOLOGICAL FACTORS

- ❖ Due to local experience of previous flood events, people had not considered their own property to be at significant risk according to findings revealed by Burningham. That is, risk is ignored not because of lack of awareness, but due to tendency to ignore the risk.
- ❖ According to Arma and Arven, those who have more internal control have lower levels of anxiety and are more resilient in dealing with disasters, and request less help. Conversely, those who rely on foreign control are more in need of support and security and more distrust and noncompliance

CULTURE FACTORS

- ❖ A culture-based approach to public research in disaster considers the perceived risk of a threat as a process of implementing the norms, values, and cultural performances of a group of people.
- ❖ According to Wachinger *et al.*, culture, as a demographic characteristic, have a mediating and reinforcing function.
- ❖ Some studies concluded that faith may be more important than experience in general perception. Local and regional beliefs such as “the protective spirit of the place” and religious symbols such as “palm trees,” “Qantas” could increase resiliency in residents of Bam.
- ❖ In the same vein, Botzen pointed out that the belief in the value of the place and the sense of belonging to the place were significant factors for the willingness to pay for Expenditure.

SOCIOECONOMIC FACTORS

- ❖ Some studies indicated that income and livelihood were effective in understanding the risk of by people.
- ❖ The economic consequences of disasters depend on their destruction. Insurance payments are always considered as a means of transferring disaster damages.
- ❖ Policy-makers tend to consider financial motives as the major cause for the reduction of insurance coverage for flood damage, while the perception of flood rate, perception of vulnerability, and tendency to feel secure are more important for purchasing or the willingness to pay for insurance.
- ❖ Trust is an important factor, affecting the compliance with regulations and guidelines for risk reduction, protection, or prevention. Trust is a two-way street, namely, the trust of people in the authorities and the trust of authorities in people.

SOCIOECONOMIC FACTORS

- ❖ According to studies conducted in this regard, officials and people differ in attitudes and views. Experts see the general public as unaware and quite sensational, while ordinary people regard professionals as those who know less than they claim and believe that they work for governments.
- ❖ Experts focus more on probabilities, while people concentrate on outcomes and consequences.
- ❖ The difference between the opinions' of officials and the people poses an obstacle against implementation of strategies for improving risk perception. In his study, Zagonari concluded that the majority of people believed that disaster risk reduction was the duty of the state.
- ❖ in the event of a disaster, governments will not be capable of meeting all their needs. Consequently, the government must take measures to reduce disaster risk., the government should try to reduce risk and vulnerability while providing fair access to land and resources.

DISCUSSION

STRATEGIES THAT CAN IMPROVE DISASTERS RISK PERCEPTION

The strategies to improve public risk perception comprised seven categories: educational, participatory, incentive, confidence building, supportive, managerial, and cultural. The most frequent strategy presented in the studies was the educational strategy. This strategy is investigated in terms of content, methods, tool, audience, educators, educational barriers, and educational planning

EDUCATIONAL STRATEGIES

One of best strategies for the improvement of DRP is education that can be in the form of education content, educational method, education goals, education tools, and education audience

Educational method: The importance of using different educational methods has been addressed in some articles, including consideration of training, internship, or practice

Education content: In several studies, educational content has been emphasized such as content specific (e.g., trauma, evacuation, or stress management) materials or poetry, story, and folktales about the past seismic events and disasters, high richness message components, maps, and conceptual explanation.

EDUCATIONAL STRATEGIES

Education goals: In most studies, education in emotional domain of the risk perception was investigated. The variables studied in the field of emotional goals such as willingness, dread feeling, emotional extremes, conscious and unconscious attitudes, concern, psychometric approach, and ability of the individual to imagine the effect, could increase the degree of internal control. In some studies, investigating cognitive domain; the focus was on increasing awareness and information about risk and reiterating past disaster experiences.

Educational tools: Educational tools mentioned in chosen studies include mass media, information campaigns, social networks, websites,, and myths

Educational audiences: In the case of audiences, there are two different approaches toward program learning. Some studies have a general approach toward addressing the entire society (not just those “at risk”), but others have focused on specific groups and audiences and they adopted local programs.

MANAGERIAL STRATEGIES

Several studies have been carried out on the role of management in promoting risk perception and each has addressed different aspects of risk management to achieve disaster risk reduction.

These studies have recommended considering the component of risk perception in developing programs, conducting comprehensive research to fully understand the socioeconomic status and facilitate and prevent social behaviors, performing community analysis on the degree of people's proximity to their social network, collaborative effort between different organizations, and a better and more professional attention to the issue of risk perception, and finally adoption and implementation of effective policies.

SUPPORTIVE STRATEGIES

Throughout the included studies, founded supportive strategies, including emotional and material ones. Emotional supportive strategies comprised stress reduction programs, facilitation of social behaviors, and informing people to meet their material needs in the potential event of disasters. Material supportive strategies include policies for creating economic and social well-being, fair distribution of resources, the importance of access to resources, addressing the problem of marginalized people, and more attention to vulnerable groups

CULTURAL STRATEGIES

- ❖ In some studies, culture has been specifically devised in terms of special hazard; for example, the “culture of flood or earthquake” but other studies have broadened the role of community culture and considered it as a set of values, religious beliefs, or religious, historical, and spatial beliefs, suggesting individuals to have a full understanding of the risks and protective behaviors.
- ❖ Cultural, national, and religious beliefs may have positive or negative effects in creating the perception of disasters impact. Therefore, the identification and development of positive beliefs and the neutralization and suppression of negative beliefs require analysis, planning, and implementing strategies.

INCENTIVE STRATEGIES

Incentive policies were mentioned in chosen studies in terms of financial and spiritual domains. Financial policies by giving interest-free or low-interest loans and spiritual policies through Islamic methods motivate citizens to have a stronger impact on risk perception and protection behavior. Incentive policies do not necessarily mean financial aid, but more attention to the perceived risk and value of avoided risk behaviors as a behavioral change.

CONFIDENCE BUILDING STRATEGIES

- ❖ In the studies on confidence building strategies, the aim was to promote the implementation of risk reduction guidelines and compliance with disaster warnings.
- ❖ The lack of trust in authorities and information sources has also been mentioned in studies on the reasons for doubt about disaster risk reduction measures.
- ❖ According to these studies, trust in authorities increases through social support and can reduce stress and improve people's perceptions. External interventions abandon the likelihood of doubt over adopting long-term risk mitigation measures

PARTICIPATORY STRATEGIES

Investigated studies elaborated on the role of participatory strategy in engaging citizens, in addition to governance, to effectively disaster risk reduction, and recommends the design of suitable risk communication with stakeholder participation. In addition, the need for understanding of the attitudes and values toward risk reduction measures is essential to achieve better protection against risks.

CONCLUSION

- ❖ In this study, the strategies and factors affecting the risk perception were identified, which can provide executive plans and managers useful information.
- ❖ These strategies were presented in seven areas of educational, participatory, managerial, supportive, cultural, trust building, and incentive, expressing the broad scope of risk perception and acknowledging the need for a comprehensive and collaborative plan.
- ❖ the implementation of the above-mentioned strategies with the family-center approach can help improve the risk perception of society. Particularly, the educational and participatory strategy is recommended to be developed with family focus

STRENGTHS AND WEAKNESSES OF THIS STUDY

The novelty of this study was the introduction of intervention strategies for natural disaster risk perception that is the first priority of Sendai framework for DRR, 2015-2030. A wide range of keywords were used for search of articles in this regard. Difficulty to access to the full text of some papers was the limitation of this study, and we acknowledge that the studied articles were not the only articles available



Thanks for your attention