Chapter 3.3
Designing a research intervention for Health EDRM

Carol K.P. Wong
Emily Y.Y. Chan

Learning objectives

To understand important factors to consider when designing an intervention for health emergency and disaster risk management (Health EDRM), including:

- Key social and behavioural science theories, models and frameworks that could be used for designing interventions for the management of health risk arising from an emergency or disaster and related evaluative research.
- Theory-derived intervention methods.
- Methods to use for planning and developing an intervention to achieve behavioural change.

Introduction

Health intervention: an act or set of actions performed for, with or on behalf of a person or population with the objective of assessing, improving, maintaining, promoting or modifying health functioning or health conditions.

Health EDRM emphasizes applying interventions throughout the disaster management cycle.

Needs and resources assessment

- Needs and resources assessment is done to understand the targeted populations, the risks they face and any available resources.
- Assessments involve collecting epidemiological, social, environmental and health service information that could describe the existing situation.
- It is important to identify the prevalence and incidence of the problem and the target group for the intervention.

Understanding theory and approach (1)

- Behavioural change is required to improve the implementation of Health EDRM.
- Behavioural change must be implemented at the individual, interpersonal and community levels to mitigate the health impacts of disasters.
- To change health behaviours, an individual's attitude and motivation must be altered (which is influenced by people and settings).

Understanding theory and approach (2)

Behaviour change interventions:

- Try to change behaviours associated with mortality and morbidity
- Are designed based on behaviour change theories and models
- Guide an understanding of people's behaviours as individuals or groups
- Lead to positive effects
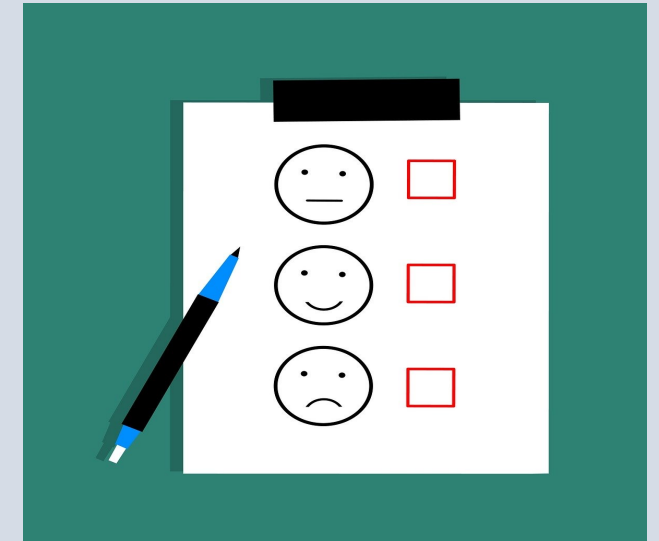
The health belief model

The health belief model:

- Provides a guide to frame interventions to change health behaviour
- Is commonly used for prevention and detection.
- Has limited efficacy, effectiveness and impact
- Often includes other variables to enhance its predictive capacity
- Is most effective when integrated with other models that include environmental context and strategies for change.

Theory of planned behaviour

Theory of Planned Behaviour:

- Emphasizes that behaviour intention is determined by conceptually independent elements, subjective norms, and perceived behaviour control
- Provides a useful, multi-factorial and actionable model
- Provides modest prediction for actual behaviours
- Is useful for articulating cognitive factors with social pressure and the enabling environment

Reasoned action approach

Reasoned Action Approach:
- Includes subcomponents of attitude (experiential/instrumental), perceived norm (injunctive/descriptive) and perceived behavioural control (capacity/autonomy), as well as environmental constraints to predict intention and behaviour.

Stage theories: the transtheoretical or stages of change model

The transtheoretical model (stages of change model):

- Describes behaviour change as unfolding through a series of stages
- Focuses on the decision-making of the individual
- Emphasizes that change happens continuously, not quickly and decisively
- Has five stages for behavioural change: pre-contemplation, contemplation, preparation, action and maintenance
- Describes behavioural change as being achieved when the individual moves from stage to stage until reaching the maintenance stage
- Has limitations: negligence of independent variables, lack of longer-lasting interventions

Precaution adoption process model

Precaution adoption process model:

- Identifies seven stages between lack of awareness and action
- Designs individual and organizational-level interventions throughout this process
- Raises consciousness among individuals and the community
- Provides information and consequences of risks

Social cognitive theory

Social cognitive theory:

- Asserts that learning occurs in dynamic contexts and with reciprocal interaction of the person, environment and behaviour
- Describes people's behaviours as being influenced by their experiences and by observing those around them
- Describes how people exert influence on their surroundings
- Has six constructs: reciprocal determinism, behaviour capability, observational learning, reinforcements, expectations or anticipated outcomes of the behaviour and self-efficacy

The setting approach

Setting approach:
- Used to develop intervention-based initiatives and enhance the effectiveness of interventions
- Focuses on health promotion through community participation, inter-sectoral partnerships and participant equity

Supersetting approach (revitalized setting approach):
- Integrates various stakeholders to optimize health promotion intervention
- Is used to develop and implement complex multi-component health promotion interventions

Techniques used in intervention design

Techniques used in intervention design include:

- **Chunking:** uses thought units to enhance performance, comprehension, and fluency
- **Cues:** reminders used to retrieve information
- **Elaboration:** rehearsals and drills; intended for audiences that are able and motivated to process information
- **Fear:** raises awareness of risk behaviour and promotes change
- **Nudging**: rearranging a choice context to gently suggest a specific choice.
- **Social marketing:** commercial marketing techniques used to achieve specific behavioural goals

Effectiveness and feasibility of an intervention

Effectiveness of an intervention depends on:
- How well it reduces the burden of disease
- Efficacy and cost (cost-effective and within budget)
- Cultural and social beliefs of the audience

Feasibility of an intervention depends on:
- Organization factors
- Gender, cultural and political factors

Case Study: *Non-pharmaceutical interventions for the prevention of pandemic influenza (1)*

- Non-pharmaceutical interventions, or community mitigation strategies, are an ecological approach to health promotion.
- They are used as a defence against transmission and spread of influenza.
- They include: hand washing, face masks and covering mouth when coughing

Case Study: *Non-pharmaceutical interventions for the prevention of pandemic influenza (2)*

- **Community-level** interventions are used by public health professionals, school administrators, in workplaces and at mass gatherings.
- **Non-pharmaceutical** interventions have been incorporated into national pandemic influenza preparedness plans in many countries.
- **Policymakers** must be educated on the importance of promoting effective national influenza prevention and control strategies.

Conclusions

- Several theories, models and settings can be used to understand or review health problems and design effective interventions and evaluations.
- It can be challenging to conduct translational research in which the knowledge gained from research is applied in the implementation of interventions that address critical needs and risks.
- This would help improve the identification, evaluation and implementation of Health EDRM interventions, and improve long-term outcomes.

Key messages (1)

- Developing effective interventions in Health EDRM requires review of the most relevant and applicable theories or models, as well as an understanding of relevant approaches.
- The theories that will be used to inform the design of the intervention should be chosen on the basis of the health risk or problem as well as an understanding of the targeted populations and their health risk factors.

Key messages (2)

- Changeable factors and the mechanism for change should be identified.
- Translational research is needed to show sufficient evidence of effectiveness to justify implementing the intervention.

Further readings (1)

Bartholomew Eldredge LK, et al. Planning health promotion programs: An intervention mapping approach (4th edition). San Francisco, CA: Jossey-Bass Public Health. 2016.
Introduction to the creation of evidence-based health promotion programs using "intervention mapping".

Chan EYY. Building Bottom-up Health and Disaster Risk Reduction Programmes. Oxford, United Kingdom: Oxford University Press. 2018.
Introduces how health, emergency and disaster preparedness education could be organized in remote rural Asia.

Further readings (2)

Laverack G. Health Promotion in Disease Outbreaks and Health Emergencies. CRC Press Taylor and Francis Group. 2018.
Guidance on health promotion interventions during public health emergencies.

Glanz K, Rimer BK, Viswanath K, editors. Health Behaviour and Health Education Theory, Research and Practice (4th edition). San Francisco, CA: Jossey-Bass. 2008.
Introduces health behavior theory and how it can be utilized in health education interventions.

Further readings (3)

Glanz K, Rimer BK, Viswanath K, editors. Health Behaviour and Health Education Theory, Research and Practice (4th edition). San Francisco, CA: Jossey-Bass. 2008.
Introduces health behavior theory and how it can be utilized in health education interventions.

References

This chapter: Wong CKP., Chan EY.Y. Chapter 3.3: Designing a research intervention for Health EDRM.
Theory of planned behavior. Organizational Behavior and Human Decision Processes. 1991:50:179-211.
Predicting and changing behavior: reasoned action approach. New York, NY: Psychology Press. 2010.
Transtheoretical model of health behavior change American Journal of Health Promotion 1997:12:38–48.
Health Behavior and Health Education (4th edition). San Francisco, CA: Jossey-Bass. 2008. pp. 123–47.
Social Foundations of Thought and Action: A Social Cognitive Theory. Englewood Cliffs, NJ: Prentice-Hall. 1986.
'Settings' based health promotion. Health Promotion International. 2001: 16(4) 339–53.
Case study: non-pharmacological interventions for the prevention of pandemic influenza. Epidemiology and Infection. 2014:142(5):922–32.

Contact information

Health EDRM Research Network Secretariat
WHO Centre for Health Development (WHO Kobe Centre)
Email: wkc_tprn@who.int