

DEVELOP A TECHNIQUE FOR ASSESSING HOSPITAL PUBLIC HEALTH EMERGENCY READINESS

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Abstract

With the use of extensive interviews "with important expert informants, the authors of this article attempted to uncover concepts and findings concerning hospital public health emergency preparation from the literature. For the purpose of reviewing and synthesizing the findings of the literature, a meta-ethnographic method was utilized. This resulted in a better knowledge of what hospital PHEP is, as well as the development of a conceptual model and a collection of features to support it. In addition, it is hoped to further create a framework" for evaluating hospital PHEP in the near future. This was accomplished through the use of a modified Delphi method, which was backed by a panel of experts drawn from three different fields (administering organizations, technological and academic institutions). It was further examined by the examination of qualitative data obtained through "the distribution of questionnaires to hospitals in the province of Sichuan. The convergence of expert opinion was assessed using Kendall's coefficient of convergence W, which represents the mean value of the expert opinion. Cronbach's alpha and test-retest reliability were used to evaluate the internal and external dependability of the indicator system. Kendall's W and Spearman's correlation were used to demonstrate the content validity and construct validity of the study, respectively. The survey will be conducted in hospitals in rural regions of Sichuan province with the goal of estimating the level of readiness for PHEP in those institutions. A total of 46 hospitals were polled, and the data was analyzed using SPSS 21.0 software. The" descriptive statistics, the t-test, and factor analysis were among the procedures and tests employed in this study to analyze the quantitative data collected.

Keywords: Rural hospitals, Public Health Emergency, Preparedness, Evaluation, Spearman's correlation.

1. Introduction

More than 57 billion RMB has been invested by the Chinese government in the restoration and construction of county level "hospitals since 2009. (FL Lin, 2010). While the amount of money invested is significant, it is impossible to assess the progress made and the gaps in readiness that still exist objectively in light of this expenditure (Institute of Medicine 2008). Furthermore, it is impossible to assess the level of hospital readiness for some of the difficulties that may arise as a result of public health" emergencies. As an illustration:

(1) There are no national criteria for "ideal preparedness," as defined by the Department of Home land Security. Several experts believe that, in order to be practical, jurisdictions of varying sizes and features may require a distinct set of objectives. Although there has been some discussion, no agreement has been achieved on the bare minimum functions that may be anticipated to be implemented at various levels (Pezzino et al. 2006).

(2) There are no "standardized and validated measures for assessing and measuring hospital readiness for public health emergencies at the time of writing. Furthermore, there

is no general agreement on any particular" tool and no tool has been widely accepted (Jenkins et al. 2013, for example).

The research aims to close the "gaps that have been found. It also attempts to define the critical functions or activities for hospital readiness, which would allow for the development of a reliable and valid assessment of the current" state of preparedness in hospitals.

In recent years, China has "made great strides forward in terms of its readiness system. Using the concepts of hierarchical management and graded response, it has, for example, already created a standardized monitoring, early warning, and reporting system for public health emergencies. As of right now, the CDC (Centers for Disease Control and Prevention) and medical aid units serve as the primary components of the country's public health emergency response system at the national level. At the township level, the system has a tendency to rely on the county hospitals in the area. Furthermore, in rural regions, these hospitals play a key part in the three-tiered medical network that "there.

However, evidence from the "literature suggests that, when compared to the capabilities of urban areas, the rural health care infrastructure in China is underprepared for a large-scale public health emergency event. This is primarily due to the limited capabilities and limited health resources available in rural areas. Compared to their urban and suburban equivalents, rural hospitals tend to have fewer resources and less capacity (Zhao Qi, 2009; Ji Xing, 2011; Cheng Qinglin, 2010").

With high population mobility, "a weak economy, and poor health standards, Sichuan, a hilly region in the southwest of China, is a challenging place to live. Nonetheless, the public health emergency system has evolved and improved in recent years; nonetheless, it continues to lack adequate resources for dealing with public health crises, particularly in rural regions (YZ Chen, et al., 2009).

The following is the definition of a rural area: Farming and husbandry are the primary economic activities in China's agricultural region, which includes towns and villages and includes many types of farms (including livestock and aqua farms), tree farms, gardening, and other activities. The majority of the population in the region was comprised of farmers who worked in agricultural production. As a result, there is an urgent need to develop and expand the competence of rural hospitals in order to effectively control or manage public health situations, as well as to promote the health and well-being" of the population.

2. Literature review

The quality of individual "studies was examined in the research using a checklist that was developed based on an existing evaluation scoring system for quantitative study quality assessment (Critical Appraisal Skills Program). When evaluating the quality of a research, the reviewer must first show the range of quality across all of the included studies (Munro et al., 2007). As a result, the research papers' strengths and shortcomings were determined through the use of this methodology. The conclusions of research might

be influenced by the quality grade of the studies that were included in the analysis. In order to account for this, the poorer-quality studies tended to contribute less to the cumulative meta-analyses, and the synthesis, as a result, became "weighted" in favor of the findings of the higher-quality research (Munro et al. 2007; Campbell et al., 2011).

The quality of the study was evaluated by two reviewers who worked separately.

Concepts that are related

A variety of "related terms are covered in the results, including: public health emergency, readiness, and public health emergency preparedness, to mention just a few.

There is a public health emergency.

A public health emergency, according to the World Health Organization, is defined as follows:

occurrence or imminent threat of an illness or health condition caused by bioterrorism, epidemic or pandemic disease, or (a) novel and highly fatal infectious agent or biological toxin, that poses a substantial risk of a significant number of human fatalities or incidents, as well as permanent or long-term disability" (World Health Organization/Department of Disease Control and Prevention, 2001).

However, because it is "confined to infectious agents, this definition is considered to be quite limiting.

Real risks to public health may be defined more broadly to encompass everything that has the potential to have a major and harmful influence on the health and well-being of a community, regardless of how little or insignificant.

Under the National Disaster Medical System Federal Partners Memorandum of Agreement, a public health emergency is defined as "a sudden and unanticipated demand for health care (medical) services in response to a disaster, significant outbreak of an infectious disease, bioterrorist attack, natural disaster, or "other significant or catastrophic event" (NDMS,2005).

The Secretary of the Ministry of Health (MOH) in China defines public health crises as occurrences that occur suddenly and have the ability to create, or have the potential to cause, widespread devastation to the public health system.

There are four categories of such events defined by the Public Health Emergency Response Regulations: (1) serious epidemics; (2) mass diseases with unknown causes; (3) widespread food poisoning; and (4) other events that can have a serious impact on public health, such as the leaking of infectious bacteria from laboratories (State Department of the People's Republic of China, 2003).

The Health Emergency Response Handbook divides PHEP into eight categories, which are as follows: (1)

(1) Serious epidemics and large-scale "diseases with unknown causes; (2) widespread

food and professional poisoning; (3) events in which infectious bacteria are leaked from laboratories; (4) hazards caused by natural disasters; (5) hazards caused by farm chemicals, rats bane, and other toxic chemicals; (6) preventive inoculation" accidents; (7) hospital and laboratory infections; and (8) other events that have the potential to cause significant harm.

Q. Liu et al. (2010)

The following characteristics "were used by Chen et al. (2006) to divide public health emergencies into six categories: (1) natural disasters, (2) infectious disease outbreaks, (3) food poisonings, (4) terrorist incidents, (5) nuclear and radiological accidents, and (6) other mass disturbances that can have a significant impact on public" health.

Preparedness

As a general rule, preparedness is thought to consist of exercises targeted at increasing reaction actions and coping abilities (Melinda Moore, 2012). Furthermore, the word preparation is usually considered to refer to a set of measures that enable diverse units of analysis—individuals, households, organizations, communities, and societies—to respond better and recover more rapidly when natural catastrophes occur (Sutton & Tierney. 2006).

NFPA defines preparation as: actions, programmers, and systems that are planned and executed prior to a disaster/emergency and are utilized to support and enhance the mitigation of, response to, and recovery from disasters/emergencies, according to the National Fire Protection Association (NFPA).

As defined by the FEMA (the Federal "Emergency Management Agency, United States of America, 2012), preparedness is defined as: the provision of leadership, training, readiness and exercise support, as well as technical and financial assistance to strengthen citizens; communities; state; local; tribal governments; and professional emergency workers as they prepare for disasters, mitigate the effects of disasters, and respond to community needs following a disaster.

According to the National Research Council (NRC, USA, 2005), disaster preparedness efforts are aimed at ensuring that the resources necessary for responding effectively in the event of a disaster are in place and that those who will be called upon to respond are aware of how to use those resources when disaster strikes. Planning processes to ensure readiness, putting together disaster plans, stocking up on resources to ensure an effective response, and developing skills and competencies to ensure effective performance of disaster-related tasks are all activities that are commonly associated with disaster" preparedness.

To summarize, Slepski defined emergency "preparedness as follows: "the comprehensive knowledge, skills, abilities, and actions required to prepare for and respond to threats or actual or suspected chemical-biological-radiological-nuclear-or-explosive incidents, man-made disasters, or other related events" based on the term

“emergency preparedness” (Slepski LA, 2005).

The notion of emergency preparation also includes steps that are intended to improve life safety in the event of a disaster, such as protection measures during an earthquake, a hazardous materials leak, or a terrorist attack, among other things. Furthermore, it comprises steps aimed to improve the capacity to respond to disasters and carry out emergency operations to preserve property and minimize disruption, as well as the ability to carry out post-disaster restoration and early recovery activities. 2006) (Jeannette & Sutton, Kathleen Tierney; Jeannette & Sutton, Kathleen" Tierney).

3. Research gap

The experts were chosen by "themselves and were not necessarily representative of the general public. However, because of their extensive knowledge and expertise in this sector, which was the basis for their selection, they are in the greatest position to contribute to a comprehensive understanding of the elements impacting" readiness.

The sample size of "46 hospitals is a small sample size in this case. The limited sample size prevents statistical comparisons of before and after data, and it is possible that the PHEP of all hospitals was not completely represented in this study, limiting the generalizability of the findings. In contrast, the data points mentioned in the questionnaire, as well as the style of the questionnaire, will be useful for future study and will also assist hospitals in determining their present level of preparation. Because some hospitals did not reply or complete the survey, and because other institutions had to be eliminated due to ineligibility for hospital categorization, it is possible that the survey does not accurately" reflect the whole spectrum of hospitals.

It is possible that selection bias "played a role. According to one hypothesis, those who did not complete the questionnaire may have been less engaged and less prepared than hospitals that were ready to set aside time to discuss readiness problems" with the survey participants.

Because the survey was conducted using a "self-report approach, there may have been respondent reporting bias because the Emergency Department Director may have given a favorable image of his or her hospital. It is the respondents' expertise of certain issue areas that limits the validity of their responses. A propensity to overestimate the real PHEP capacity may also exist, and as a result, hospitals" may have been even less prepared than was indicated in this report.

The study was done over a "period of nearly 12 months, during which time there may have been some changes in the PHEP of the hospitals that were assessed. During the research period, several of the participating institutions were in the process of getting government financial assistance to acquire decontamination trucks, supplies, and personal protective equipment. So it's possible that our findings might change" if the experiment were repeated.

After all was said and "done, only quantitative data were obtained to determine the PHEP

capability of hospitals. The majority of questions are constructed with a “yes,” “no,” or “unknown” response option, which may limit the information gathered to these three categories. As a result, in this format, the degree of compliance is not measured.

4. Research Objective & Methodology

The objective of this paper "is to establish an evaluation framework for hospitals that includes a collection of important indicators linked to public health emergency readiness, as well as to analyses the present level of disaster preparedness in rural hospitals in Sichuan province, utilizing the" framework.

There are four primary research objectives that must be met in order to fulfil the study goal:

1. To develop a methodology for evaluating hospital public health emergency readiness in the event of a public health emergency.

5. Data Analysis & Findings

Due to the "exploratory character of the current study, a combination of qualitative and quantitative approaches were employed to answer the research questions and gather information. As defined by Fellow and Liu (2008), explanatory research is study that provides solutions to specific questions or provides explanations for specific issues or phenomena. Exploratory research, on the other hand, analyses a phenomena, identifies the factors, and produces hypotheses that may then be tested further. As part of its investigation into the evaluation framework, the current study analyses the" important indicators and discusses the contributing variables that are essential for hospital preparation.

It is possible to "discover and better comprehend the underlying causes of any phenomena about which little is known through qualitative research, as well as to pinpoint the minute intricacies of any phenomenon (Strauss & Corbin, 1998). As a rule, the quantitative paradigm produces conclusions that are more generalized and have more evident rigour due to the use of bigger sample sizes from a broader range of people (Clark, 2009). According to the National Science Foundation, quantitative" research "[tests] a theory consisting of variables, [is] measured with numbers, [is] analyzed with statistical techniques in order to establish if the predicted generalizations of the theory are true" (Creswell, 1994).

The advantages of "integrating qualitative and quantitative approaches within a research method assist in the development or extension of theory as well as the testing of its application. Additionally, it improves between-method triangulation by supplementing the quantitative output with a large amount of rich qualitative data (see Figure 1). (Strauss & Corbin, 1998). Three methods working together can capture a more comprehensive, holistic, and contextual representation of a research, because the weaknesses of each individual technique are compensated by the counter-balancing" strengths of the other

two methods (Jick, 1983).

Concerns regarding integrating and "balancing qualitative and quantitative approaches in health care research are pragmatic in nature and are dependent on the study's goals and objectives (J.P. Clark, 2000). The goal of this research is to define public health emergency readiness and establish an acceptable assessment framework to evaluate hospital public health emergency preparedness. This will be accomplished via the use of both qualitative and quantitative research methods. For the purposes of this study, the combination of these two methods was done in accordance with the paradigm for multi-method research designs developed by Morgan (1998). The model may be summarized as follows: QUALQUAN (Morgan, 1998").

It entails doing a quantitative "follow-up research to assist in evaluating or interpreting the findings of a qualitative investigation. It is possible to construct hypotheses from qualitative data or develop material for a survey using qualitative data. When it comes to generalizing results to various samples or testing emerging ideas, quantitative data gathering may be quite useful. It is used to quantify problems by creating numerical data or data that can be converted into usable statistics, which can then be analyzed and reported. When researchers think a sample is typical of the overall population, they can use statistics to extrapolate results from the sample to a larger or more representative population at large. Most quantitative research builds on and tests hypotheses that have been developed based on past research and ideas on the subject matter. Findings of research can be provided in the form of statements, facts, tables, and graphs to address each" research question or hypothesis based on the collection and analysis of quantitative data.

The qualitative research "methods used in this study include a literature review, an intense interview, and the Modified Delphi technique. The quantitative method is mostly comprised of a survey questionnaire of hospital capabilities that is used to determine the reliability of the instrument as well as its usefulness. The investigation" was divided into three substudies, which are detailed below:

Study No. 1

Put out a definition of hospital "PHEP and its components based on the literature, which should be supplemented by an exhaustive interview with hospital PHEP" specialists.

Study No. 2

The development and "validation of an assessment framework, as well as the identification of important indicators for evaluation, were accomplished via a modified" Delphi Method.

Study No. 3

On the basis of the "verified framework, an evaluation instrument (questionnaire) was created. After passing through a pilot research, the instrument was refined and evaluated before being administered to a stratified sample of hospitals in the provincial" of Sichuan.

6. Conclusion

Too far, the lack of "consensus on the clarity of understanding and definition of essential terminology has posed a significant barrier to the development of hospital PHEP capability. Work is needed to develop solid conceptual and analytical frameworks, as well as advances in data collecting and methodological methods, to name a few priorities.

To do this, the researchers conducted a doctoral study in which they developed a consensus assessment framework for hospital PHEP and tested its validity and utility by applying it to assess the present condition of hospital PHEP in rural regions of Sichuan Province. The integration of this framework into the disaster life cycle model, as well as the incorporation of different techniques for sustainable health organizations, may aid in the development of a more robust response to public health" catastrophes.

Structure, staff, stuff, "space, and service are the five fundamental areas that have been recommended for the development of a long-term PHEP framework. This framework specifies the reaction steps that must be implemented in the event of an emergency that threatens to overrun the hospital's routine capabilities.

Using qualitative analysis, it was discovered that the processes should include eight functional areas or capabilities related to public health, namely: an emergency plan, disaster surveillance, training and drills, stockpiles, an emergency command system, onsite rescue and medical treatment, a fully staffed workforce, and crisis communication and collaboration. A further discovery was made by using the framework, which was the interconnections between various functions or capacities, indicating that more attention should be paid to these dynamic linkages. As a result, when compared to other frameworks in the literature, this paradigm is clearer in describing how hospitals prepare for and respond to public health emergencies. When defining PHEP, it is extremely beneficial to combine comprehensiveness with specificity as much as possible. Pre-planning, coordination, quality improvement, training and exercises as well as resource prioritization are all made" possible via the use of this framework.

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