

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Household Preparedness for Emergency Events: a cross-sectional survey on residents in four regions of China
AUTHORS	Chen, Chao yi; Xu, Wei; Dai, Yajun; Xu, Weilan; Liu, Chaojie; Wu, Qunhong; Gao, Lijun; Kang, Zheng; Hao, Yanhua; Ning, Ning

VERSION 1 – REVIEW

REVIEWER	Steven D. Stellman Department of Epidemiology Mailman School of Public Health Columbia University USA
REVIEW RETURNED	11-Jul-2019

GENERAL COMMENTS	<p>Review of “Household Emergency Preparedness in China: a cross-sectional survey,” by Y Dai, Wei Xu, Weilan Xu, N Ning, C Liu, Y Chen, L Liang, L Gao, Z Kang, M Jiao, H Sun, T Song, W Sun, R Cao, Y Hao [corresponding author], and Q Wu [corresponding author]. For BMJ Open, July 11, 2019.</p> <p>Summary. The authors carried out a multistage stratified survey of 3,541 households representative of the population in four regions of China. They classified households as being “well prepared” for an emergency based on possession or affirmation of nine of fourteen “indicators” in a standard checklist. Fewer than 10% of households were considered “well prepared,” while many professed ignorance or lack of interest in preparedness. Preparedness was associated with participation in emergency training and knowledge, and was negatively associated with reliance on external rescuers as well as a fatalistic outlook.</p> <p>Comments. Overall this is a well-designed and informative study. The text is well-written and unfolds logically, and the data support the overall conclusions. Considering the size and importance of China as the world’s most populous country, with several regions especially prone to natural disasters such as floods and earthquakes, the study makes an important contribution to the literature on disaster preparedness, and could have a considerable public health impact in China.</p> <p>Nevertheless, there are a number of details that are somewhat sketchy, for which additional information and analysis would be helpful.</p> <p>1. The paper has 16 authors. This is an unusually large number of authors for a routine analysis of a survey of this type. Ten of the authors are said (p. 15) to have “participated in the design of the</p>
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research and conducted the survey.” Elsewhere in the manuscript, however (p. 2), an unspecified number of graduate students are said to have “input these data into computer software Epidata ...” The division of labor is not clear. While data processing is obviously an indispensable part of the overall effort, in the US and most European countries data entry is considered a clerical task that does not automatically merit authorship of a manuscript. From the authorship page (page 1) it appears that nine of the authors are academics of associate or higher professorial rank. This is an unusually large number, such as one might encounter in a study that required multi-disciplinary collaboration (e.g., a single study which involved experts in environmental science, GIS technology, analytical biochemistry, PCR or other genetic assays, “big data,” biostatistics, etc.). Having done many very large scale studies, I fully appreciate the quantity of effort involved, but I also know that much of the effort in the type of survey on which this paper is based is at the level of field management and data preparation, which is typically acknowledged in a sentence or two. The corresponding authors need to provide a more substantial description of the respective roles of their numerous co-authors in the intellectual design, analysis, and interpretation.

2. The end-point construct of being “well-prepared” is based on reduction of multitude of preparedness activities or items to a single binary variable: “well-prepared” or not “well-prepared.” This lends itself to statistical analysis via logistic regression, yielding simple odds ratios presented in Table 3 that are easy to understand and explain, but at the same time it loses a considerable amount of useful information. One would like to know, at the very least, the distribution of the number of checklist items reported; for example, what proportion had no items at all, how many had a single item, how many had two, etc. It would be especially useful if the 9 or 14 checklist items could be ranked by “importance” in disaster situations. Is absence of an “escape rope” or “gas mask” as important, say, as having food, water, and a first-aid kit?

3. The individual checklist items are well described, but the source of the list is not completely clear. The text merely refers (p. 5) to a US FEMA publication, ref. 20. This source, however, is a single web page titled “Are You Ready!” that lists thirty different items or pieces of information (several of which are relevant to families with pets). These include most of the 14 in the Chinese survey, but also many others that are not included. Competing lists available in the literature or on-line are similar to but not identical to the list used in this survey. One widely cited source is a “General Preparedness Module” of the CDC Behavioral Risk Factor Surveillance System (BRFSS), as presented in DeBastiani et al., *MMWR* 2012; 61(36):713-719; some of those data were published later as DeBastiani et al., *Health Security* 2015; 13(5):317-326, cited in this paper as ref. 18.

4. It is stated (p. 5) that “verbal informed consent was obtained prior to the survey.” However, there is no mention of approval of the study or the questionnaire by a competent Institutional Review Board. I don’t know about BMJ Open, but many journals routinely require this assurance. My own institution would not permit me to take a study into the field without advance IRB approval of the entire protocol and all questionnaires and consent documents.

REVIEWER	Claudia Der-Martirosian VEMEC
REVIEW RETURNED	17-Jul-2019

GENERAL COMMENTS	<p>This manuscript discusses a very important topic - household preparedness in developing countries such as China. A lot of work and effort has gone into this manuscript. However, there are major methodological issues that need to be addressed.</p> <p>The definition of household preparedness is too narrow and dichotomizing the dependent variable is problematic. Given that the results are dependent on how HH preparedness is defined, and as noted by the authors that "This study also failed to confirm the significant effects of age, gender, education, prior experience and risk awareness as revealed in previous studies," the data needs to be re-analyzed using different, more appropriate multivariate analytical approaches. One possible approach, create a composite HH pre score, examine the distribution of the newly created dependent variable and use appropriate statistical methods. According to the new findings, the discussion and the conclusion need to be rewritten.</p> <p>The authors also need to check all citation numbering. For example, in the discussion the authors state, "A study in the US revealed that 12.3% of American households possessed a three-day supply of water and nonperishable food, an evacuation plan, a working flashlight and radio.²⁵" Citation #25 is about Australia not the US!</p> <p>Another example, citation #17 is incomplete. There are other citation errors that need to be checked.</p>
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VERSION 1 – AUTHOR RESPONSE

Reviewer 1: Steven D. Stellman

Que.1 The paper has 16 authors. This is an unusually large number of authors for a routine analysis of a survey of this type. Ten of the authors are said (p. 15) to have “participated in the design of the research and conducted the survey.” Elsewhere in the manuscript, however (p. 2), an unspecified number of graduate students are said to have “input these data into computer software Epidata ...” The division of labor is not clear. While data processing is obviously an indispensable part of the overall effort, in the US and most European countries data entry is considered a clerical task that does not automatically merit authorship of a manuscript. From the authorship page (page 1) it appears that nine of the authors are academics of associate or higher professorial rank. This is an unusually large number, such as one might encounter in a study that required multi-disciplinary collaboration (e.g., a single study which involved experts in environmental science, GIS technology, analytical biochemistry, PCR or other genetic assays, “big data,” biostatistics, etc.). Having done many very large scale studies, I fully appreciate the quantity of effort involved, but I also know that much of the effort in the type of survey on which this paper is based is at the level of field management and data preparation, which is typically acknowledged in a sentence or two. The corresponding authors need to provide a more substantial description of the respective roles of their numerous co-authors in the intellectual design, analysis, and interpretation.

Reply 1.

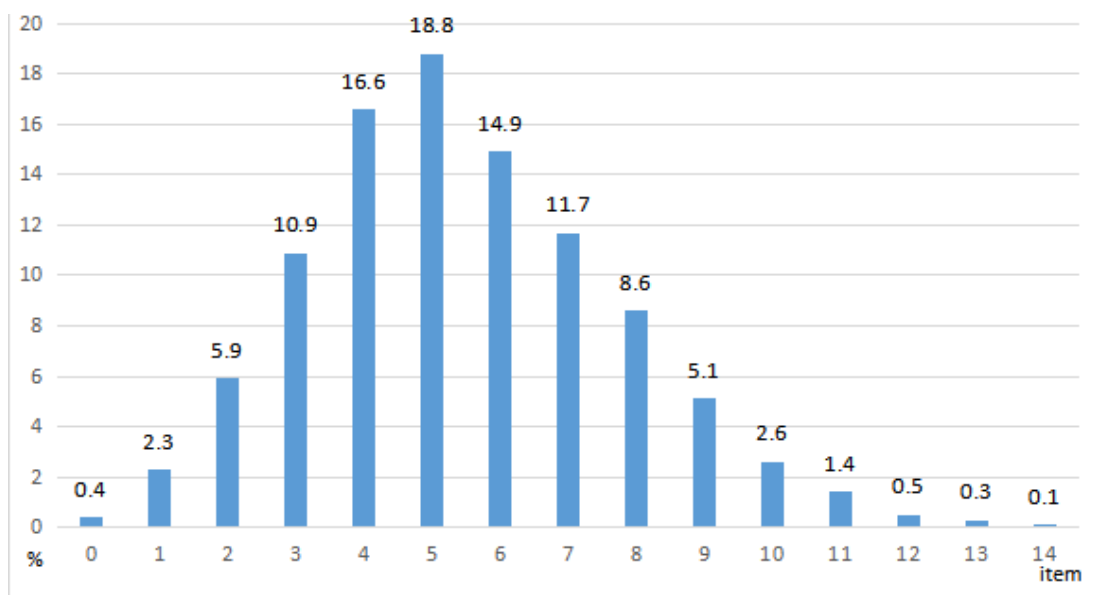
We have examined the contributions of each author listed in the original manuscript and reduced the number of authors. Six authors, including Libo Liang, Mingli Jiao, Hong Sun, Tie Song, Wei Sun and Ruoxiang Cao are removed from the authors list. Their contributions are acknowledged in the acknowledgement section. This study is part of a large project. We have several senior researchers leading the investigation in different parts of China. More details about their contributions in this study are provided in the authors' contribution section.

Que.2 The end-point construct of being “well-prepared” is based on reduction of multitude of preparedness activities or items to a single binary variable: “well-prepared” or not “well-prepared.” This lends itself to statistical analysis via logistic regression, yielding simple odds ratios presented in Table 3 that are easy to understand and explain, but at the same time it loses a considerable amount of useful information. One would like to know, at the very least, the distribution of the number of checklist items reported; for example, **what proportion had no items at all, how many had a single item, how many had two**, etc. It would be especially useful if the 9 or 14 checklist items could be ranked by “importance” in disaster situations. Is absence of an “escape rope” or “gas mask” as important, say, as having food, water, and a first-aid kit?

Reply 2.

Thanks. We have modified the manuscript in line with the advice. A figure was added describing the percentage of households preparing the 14 essential emergency items (Figure 1). The majority of households owned 5 emergency items. About 10% owned over 9 emergency items. Although the 14 items are not equally important, their importance varies with different emergency events. This makes it difficult to attach a fixed weight to each item in terms of their importance. For example, in a fire emergency, “escape rope” and “gas mask” are more important than having food and water. But this is not necessarily the case in an event when the survivors are isolated from the outside world. Therefore, we did not differentiate the importance of the emergency items. This has been discussed in the limitation section.

Figure 1. Distribution (%) of households being prepared with the 14 emergency items



Qes.3. The individual checklist items are well described, but the source of the list is not completely clear. The text merely refers (p. 5) to a US FEMA publication, ref. 20. This source, however, is a single web page titled "Are You Ready!" that lists thirty different items or pieces of information (several of which are relevant to families with pets). These include most of the 14 in the Chinese survey, but also many others that are not included. Competing lists available in the literature or on-line are similar to but not identical to the list used in this survey. One widely cited source is the "General Preparedness Module" of the CDC Behavioral Risk Factor Surveillance System (BRFSS), as presented in DeBastiani et al., MMWR 2012; 61(36):713-719; some of those data were published later as DeBastiani et al., Health Security 2015; 13(5):317-326, cited in this paper as ref. 18.

Reply 3.

We have reviewed, corrected and re-arranged the references and citations in line with the advice. We also added further explanations about how we selected the 14 emergency items in this study.

A list of emergency items was generated through literature review. The selection of the emergency items in this study considered the relevance of the emergency items to the common disastrous events in China. The relevant emergency items were prioritized in accordance with the National Disaster Prevention Manual published by the Ministry of Civil Affairs of China and the CDC Behavioral Risk Factor Surveillance System.

Qes.4. It is stated (p. 5) that "verbal informed consent was obtained prior to the survey." However, there is no mention of approval of the study or the questionnaire by a competent Institutional Review Board. I don't know about BMJ Open, but many journals routinely require this assurance. My own institution would not permit me to take a study into the field without advance IRB approval of the entire protocol and all questionnaires and consent documents.

Reply 4.

Sorry for the lack of clarity. Ethics approval for the study protocol was obtained from the Ethics Committee of Harbin Medical University.

Reviewer 2: Claudia Der-Martirosian

Qes.1. The definition of household preparedness is too narrow and dichotomizing the dependent variable is problematic.

Reply 1.

Thanks. We really appreciated the comment. We re-defined the concept of preparedness. However, due to difficulties to express the practical implications of the quantified measurement (numbers of emergency items), we dichotomized the dependent variable (which is encouraged by reviewer 1). We have discussed the limitations of such an approach. Meanwhile, we performed a linear regression analysis using the "number of emergency items" as a dependent variable. The results are attached as a supplementary file.

Qes.2. This study also failed to confirm the significant effects of age, gender, education, prior experience and risk awareness as revealed in previous studies," the data needs to be re-analyzed using different, more appropriate multivariate analytical approaches.

Reply 2.

Thanks. We performance a linear regression analysis using the "number of emergency items" as a dependent variable. The results remained largely unchanged compared with the logistic regression model (Supplementary file). Similar to the results of this study, gender and age were not found to be associated with disaster preparedness in several previous studies.^{32,33}

Qes.3. The authors also need to check all citation numbering. For example, in the discussion the authors state, "A study in the US revealed that 12.3% of American households possessed a three-day supply of water and nonperishable food, an evacuation plan, a working flashlight and radio.²⁵" Citation #25 is about Australia not the US!

Reply3:

Sorry for the error. We have carefully reviewed and corrected citations in the manuscript. Four additional references are added to the manuscript.

VERSION 2 – REVIEW

REVIEWER	Steven D. Stellman Department of Epidemiology Mailman School of Public Health Columbia University, USA
REVIEW RETURNED	26-Sep-2019

GENERAL COMMENTS	In my opinion the authors have adequately addressed the reviewers' comments and the paper is ready for publication.
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REVIEWER	Claudia Der-Martirosian VEMEC, U.S.
REVIEW RETURNED	23-Sep-2019

GENERAL COMMENTS	The authors have done a great job addressing the reviewer's concerns. Thank you.
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