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Title: **Barriers to evidence-based disaster management in Nepal: a qualitative study**

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Barriers to evidence-based disaster management in Nepal: a qualitative study

Abstract

Objectives

Globally, the incidence of natural disasters is increasing with developing countries tending to be worst affected. Implementing best practices in disaster management that are evidence-based is essential in order to improve disaster resilience and response. This study explores the barriers to evidence-based disaster management encountered in Nepal.

Study design

A qualitative study was conducted in Nepal involving interviews with key informants in the disaster management field.

Methods

Government officials, academics, programme managers, disaster management practitioners and policymakers involved in disaster management were purposively sampled and invited to interview. 11 agreed to participate and were interviewed. The face-to-face interviews were recorded, transcribed and analysed using thematic analysis.

Results

The interviews uncovered population-level barriers such as contextual factors (e.g. poverty), local custom and culture, as well as community-level issues (e.g. level of engagement and understanding). System-level barriers included limited demand for, availability and accessibility of the evidence-base. The implementation of evidence was influenced by the configuration of the disaster management system and system processes. Political ownership and leadership is an essential determinant of practice.

Conclusions

Several barriers to evidence-based practice in disaster management exist in Nepal. The relative influence of the different barriers varies with political determinants likely to have greater importance in countries such as Nepal where system governance and leadership is insufficiently developed. These issues affect a country's vulnerability to disasters and need to be addressed.

Barriers to evidence-based disaster management in Nepal: a qualitative study

INTRODUCTION

The 1990s was declared by the United Nations General Assembly as the International Decade for Natural Disaster Reduction in recognition of the need for coordinated efforts internationally to mitigate the human and economic consequences of natural disasters. Since then, the frequency of disasters has not lessened, but paradoxically increased over the past 2 decades.[1, 2] Globally, in 2012 there were 357 reported natural disasters affecting 123 million people and resulting in US$157 billion in economic damage.[3] This estimate of the human toll of disasters is probably a gross underestimate due to considerable under-reporting that occurs.[4]

Most disasters afflict poorer nations that lack the resilience and means to respond to disasters. In addition to the human toll, disasters damage property and infrastructure, heighten risk of infectious disease outbreaks, threaten food security, cause social and economic disruption, and lead to population displacement.[5, 6] Disasters also delay or even reverse the development of these nations.[7] These countries require effective disaster management including appropriate disaster risk reduction action to be undertaken to mitigate their vulnerability as well as effective emergency responses when disasters occur in order to minimize the adverse consequences of disasters.[1]

Key to this is the implementation of evidence-based "best practices" in disaster management.[8, 9] Evidence-based practice in this context borrows from the 'Evidence-based medicine' (EBM) movement whereby professional practice is based upon sound research evidence about the effectiveness of each intervention, and is seen as the gold standard doctrine for decision-making.[10] However, the implementation of "best practice" in disaster management particularly in low- and middle-income country (LMIC) settings is hampered by the paucity of the evidence-base.[8, 11] There are also considerable uncertainties with regards to how evidence-based practice is best achieved. Reviews from high-income countries have identified various determinants and barriers to developing evidence-based practice in disaster management such as knowledge management issues, system configuration issues and behavioural aspects.[12, 13] However, it is unclear whether these determinants are identical in developing countries. This study seeks to uncover the barriers to implementing evidence-based practice for disaster management in a LMIC setting using Nepal as a case study.

METHODS

A qualitative study was carried out involving key informant interviews with academics, programme managers, disaster management practitioners and policymakers involved in disaster management in Nepal.

In choosing a case study site, we sought a LMIC that was vulnerable to and had experience of disasters. Nepal is one of the poorest countries in the world with an estimated GDP per capita of US$735 in 2011/12. Each year, Nepal experiences on average nearly 300 natural disasters such as lightning strikes, floods, earthquakes and landslides.[14] Between 1971-2012, there were over 28,000 casualties from these natural disasters. Nepal's vulnerability to major disasters is evident by the recent earthquake in 2015 in the Kathmandu Valley that killed more than 8,600 persons and injured a further18,500.[2, 15]

An additional critical selection criterion used was access to senior policymakers and programme managers in the government, UN agencies and non-governmental organisations involved in this field. We were able access to this target group of individuals with the assistance of 2 non-governmental organisations, Disaster Prevention Network Nepal (DPNet-Nepal) and PHASE Nepal, with whom we had good research links with who had the relevant professional networks locally.

These individuals were identified and purposively selected on the basis of their expertise, senior role, knowledge and/or experience in this field. A degree of snowballing was also used to identify other key informants to invite to interview. Participation was entirely voluntary and not remunerated. Signed informed consent was obtained and their responses were anonymised to protect their identity. Interviews were conducted in English by the researcher.

In total, 11 participants were recruited from diverse backgrounds (Table 1): 5 senior government officials/politician, 2 senior programme managers from UN agencies, and 4 from non-governmental organisations. 2 participants were academics in this field as well. All the participants were Nepalese.

Table 1. Background of key informants

Background of key informants	Government Official or Member of Parliament	Academic/ Researcher	Inter-governmental organisation (e.g. UN agency)	Non-governmental organisation
Participant 1	√	√		
Participant 2	√	√		
Participant 3	√			
Participant 4	√			
Participant 5	√			
Participant 6			√	
Participant 7			√	
Participant 8				√
Participant 9				√
Participant 10				√
Participant 11				√

An interview schedule was devised based on a schedule used in another similar study to explore barriers to evidence-based emergency planning practice in the UK.(13) The set of interview questions was pre-tested to ensure clarity. The questions explored: how disaster plans and policies were devised and implemented; practitioners' adherence to disaster plans in disasters; sources of information, evidence, guidance or advice used on which to base disaster management decisions; interviewees' perceptions of the reliability of these information sources and the extent to which they relied on them. Interviewees were asked to reflect on possible knowledge gaps and research priorities in this field, and we explored deficiencies, difficulties and issues encountered in disaster management.
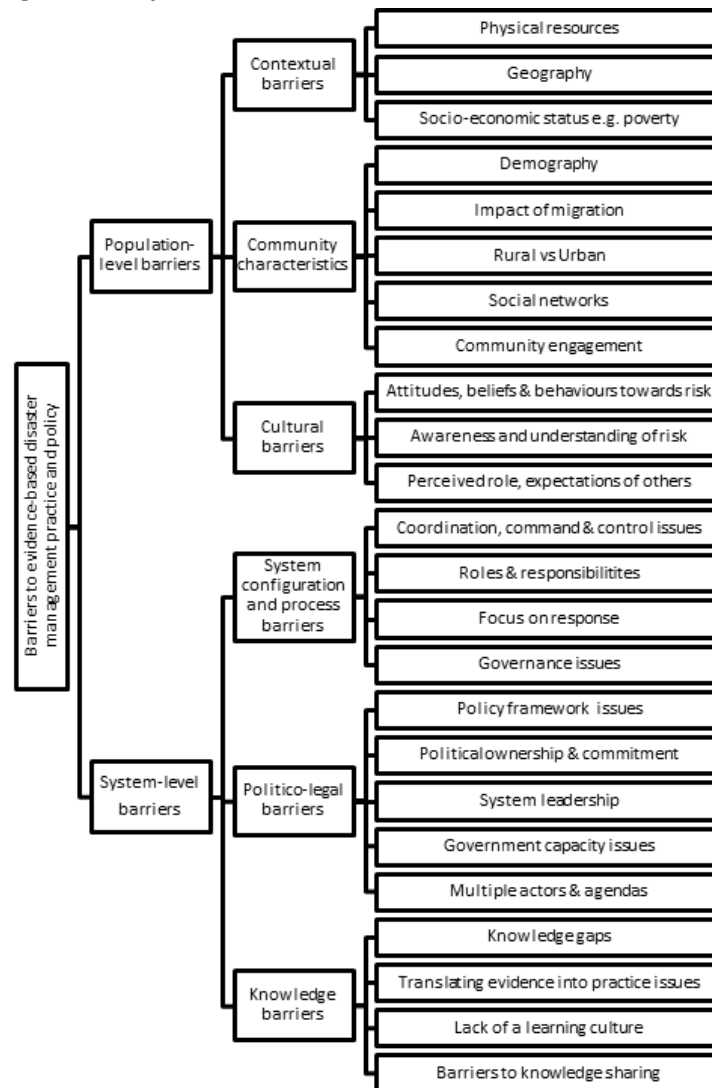
Hour-long interviews were conducted face-to-face with participants and took place between December 2013 and October 2014. Interviews were audio recorded and subsequently transcribed.

Interview data were then analysed using standard qualitative methodology using framework analysis. This involved initial coding of the data, followed by subsequent development of a hierarchical framework of themes in order to categorise interview data into key themes and concepts, with successive levels of sub-themes as they emerge from the analysis.(16) The thematic framework were then organised into a mindmap from which patterns and linkages were identified. Analysis was carried out concurrently with the interviews which allowed some questions in the later interviews to be iteratively adapted to explore emergent themes. Thematic saturation was likely to have been achieved as by the penultimate 2-3 interviews no new themes emerged.

RESULTS

The themes and subthemes from the interviews are summated into 2 categories: population-level and system-level barriers. System-level barriers included the following subcategories: disaster management system issues, knowledge management issues, and political/legal factors. Population-level barriers included culture, context and community factors. (Figure 1) These are described further below:

Figure 1. Map of themes and subthemes from the interviews

Context, culture and community-level barriers

The context in which a community is situated influences their vulnerability in terms of what local hazards are present. It also determines what physical resources are available to that community. These in turn depend on the physical geography of the region and climatic conditions. Similarly, the community's socioeconomic profile dictates the availability of financial resources locally. For example, respondents described a *"poverty trap"* situation that prevented vulnerable persons relocating to safer areas even when they knew they were living in a disaster-prone area:

Even if you go there and tell (the community), "It is hazardous, it is dangerous - don't live here, go somewhere else!", they ask how can they earn a living as the government does not pay them an unemployment allowance … and the NGOs/INGOs does not provide them any money or food … So they go back there. They know the consequence but still they are forced to … They know the risks but they take the risk for their livelihoods, their survival … If they have a better option certainly they will not go back there.

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Government official 1/Academic

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Respondents repeatedly identified the importance of context and stressed the necessity for evidence and practice to be contextualised to the local setting, needs and understanding of the community. This adaptation was seen as essential in order to facilitate the ease of implementation of interventions by agencies and its adoption by the community:

"Research should be focused on giving solutions for the local context … For example, if you are talking about Nepal, you have to know the actual problems, disaster risk related problems in Nepal like the source of the hazards first … How are they living with those hazards? How are they tackling the risks of those hazards? You have to analyse that so that from those experiences and analysis you can give solutions. Otherwise if you don't understand the real source of the hazard … then may be your (intervention) will not work … That (analysis of the local situation) will give different results, different ways of response, ways of mitigation, and ways of assessing the vulnerabilities … If you don't consult the local people and community, people who are really affected, if you don't consult them … that doesn't work."

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NGO manager 1

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Disaster management is also influenced by a multitude of community-level determinants including its demographic make-up, the impact of migration and the degree of urbanisation. It is influenced by the extent and quality of social networks that acts as a safety net. Community involvement and engagement is important, particularly for building trust and to aid their understanding. As one NGO manager observed, *"Unless the community understands what this project is about they do not have that trust. In order to build that trust we need to have social mobilisation in those communities that are at risk."*

Community engagement is also crucial for boosting community ownership for disaster risk reduction activities:
"At the end of the day (disaster risk reduction) will only be successful if they (the community) own it … So when knowledge is transferred to them, then coping capacity has been enhanced, coping

capacity strengthened, then the result is right there - losses can be minimized ... Preparedness can make a lot of sense when the community themselves are involved."

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UN agency manager 1

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Whilst community engagement was universally agreed to be essential, issues were also identified such as low levels of community understanding that limit community involvement in disaster management planning and policy:
"(The community) are involved in the local level planning and implementation and sometimes they are also invited to give feedback on policy. But these were not very effective because of the community's (lack of) understanding..."

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UN agency manager 2

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The degree of community engagement is influenced by prevailing attitudes, beliefs and behaviours, degree of public awareness and understanding. There is a culture of *"living with risk"* partly due to socioeconomic circumstances that meant some communities could not relocate. This is associated with lessened risk perception as well as considerable fatalism. Fatalism could be pervasive, affecting the community as well as practitioners and policymakers, and can be a barrier to engagement in disaster preparedness and mitigation activities:
"The mind-set of our whole planning system and perception towards disaster is that it is natural, God-given. Whatever will happen is because of bad deeds that our ancestors did in the past or our mistakes in the present life … We have to change the people's perception, to think about disaster risk issues because if you think it is God's will, then people will wait for God to act and they won't make any preparations."

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NGO Manager 2

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Other challenges to community engagement include pre-existing perceptions of their own role, expectations of other actors (particularly the government), as well as whether they felt any personal relevance and ownership of the agenda. As one NGO manager put it, there is a need *"to change people's mindset"*.

System configuration and process barriers
How the disaster management system operates and behaves is determined by existing processes (i.e. how things are done), and how the system is set up. Issues with coordination, clarity of roles and responsibilities, and fragmentation of the system were cited as problems:
"Somehow (the system) is working but it still needs to be improved because it is fragmented, not coordinated, not a clearly defined technical area or administrative roles of any institutions. So this is (the cause of) some of the confusion and the gaps which we are facing … (There is) fragmentation at the working level, policy level and institutional level, and a blurring of the administrative and the technical sectors."

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Government official 2

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In addition, much of the focus seemed to be short term and on "disaster response" with less attention paid to disaster mitigation and recovery: *"The government's priority is always for rescue and response when the disaster happens" (NGO Manager)* The governance of the system was also cited as a problem as well as the lack of effective system leadership. One senior government official

voiced the need for a *"single separate powerful entity with resources to coordinate all these (different agencies)"*. There was also a reported lack of clarity as to which agency provides oversight and how governance is practised in reality. This has important ramifications in terms of clarity of roles and responsibilities, lines of communication, hierarchy of authority, and how the various agencies co-ordinate their actions with one another.

Political/legal barriers

The prevailing disaster management policy framework for the country was highlighted as a key weakness. One UN manager described the existing disaster management act as *"old"* and not fit for purpose: *"It doesn't work. That Act is rescue and relief focused only … Preparedness, mitigation, adaptation - these are not addressed by the Act."*

This policy weakness manifests itself through a lack of harmonisation of institutional agendas and coordination of activities. There is also reportedly insufficient political ownership, commitment and policy direction. This need for system leadership was stressed by various respondents as a key priority. Indeed, the lesser priority given to disaster management was attributed to the lack of political stability and political priority as much of the political focus has been on constitutional matters:

"Unfortunately there is no concrete disaster management policy approved by the government right now. We are only working under the legal basis of the Disaster Act 1982 … There are so many fragmented institutions not coordinated but trying to be coordinated… (There are) many cross discipline issues, so the main challenge is how to mainstream these cross disciplinary issues. It is still fragmented and not supported by the high level authorities … Yeah right now there is little progress … We are still in a political transition phase in Nepal - the main priority is the constitutional build-up rather than these minor things."

Government Official 3

In order to mainstream disaster management into the work of the line ministries political ownership of the agenda is crucial. Without ownership, disaster management is not prioritised or acted on. As one UN manager observed: *"The activities that we do at the lower level will have an effect at the lower level. But unless we influence the policy (level) there will be very little of what we can (achieve) at the community level…"* The lack of political ownership also translates into inadequacies in the legal framework or its enforcement on key aspects such as building regulations and codes. Inadequate government capacity was also cited as another reason why it was difficult to enforce existing legislation.

There are furthermore multiple agencies present in the Nepali disaster management scene Also observed were the many external actors such as intergovernmental organisations (e.g. UN agencies), non-governmental organisations and aid donors, all of whom have different agendas that are not always harmonized with the national agenda or attuned to local needs. This leads to considerable fragmentation in how the system is coordinated and affects its ability to respond:

"Who are the (disaster) response agencies? … What is the coordination mechanism in case of emergencies? Are they able to coordinate? … Yeah they have developed their SOPs (Standard Operating Procedures), but there are (many) different SOPs … How do they match each other? (Are they) compatible with each other in case of a mega disaster? … How are the other stakeholders …

coordinated and how can they help each other? Otherwise (one agency will) do one thing and (another agency will) do another thing in the same area and sometimes duplication occurs … and (some areas) are deprived of (aid) as it is not well managed."

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NGO manager 1

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The plurality of stakeholders present means that the disaster management system is less driven by the "evidence-base" but instead by an amalgamation of different stakeholder agendas, both local and foreign. As one NGO manager summed it up*: "The objectives of different agencies are different".* Whilst the "evidence-base" on its own does not make the case for disaster management to policymakers, it was acknowledged to be important for supporting and justifying decisions.

Knowledge issues

The final category is that of the evidence-base for disaster management. It is perhaps here where deficiencies appear greatest. There are gaps in the knowledge base that hamper the design and implementation of effective disaster reduction measures. Respondents reported difficulties accessing the evidence and challenges acquiring the evidence-base due to an apparent lack of demand for it in the first place. There was a need voiced to create an awareness of the evidence-base and demonstrate its relevance to stakeholders in order to garner interest and demand. Research in this field was reported to be difficult, particularly due to the lack of robust and reliable data, or the means with which to collect data for research purposes.

There were also different interpretations of what is defined as "evidence" and who is considered to be an expert. Expertise and the evidence-base were associated with past experience and technical know-how. Experts were seen as individuals who could provide solutions to local problems and 'knowledge' originating from abroad held greater currency. 'Experts' from high-income countries were held in high regard. At the decision-making level, the "evidence-base" was said to be another competing voice in the political arena where there were conflicting interests and agendas held by different stakeholders. Indeed "evidence" is interpreted differently depending on its purpose – some saw it as information used to support and back up their policies and programmes. Opinions were also sometimes conflated with evidence.

The translation of evidence into practice was also problematic due to differing understanding and capacities of the various stakeholders:

"We have to have an implementing partner in the district in the form of an NGO. So the level of what (our organisation knows), and the level (of understanding) of the NGO that is an implementing partner is different. To have that capacity built into the implementing partner takes time. That is one challenge. The way that we want to implement is not the same way of thinking as the implementing partner. So having that same level of understanding is another challenge ... Even if a lot of funds have been provided, what we can see is that it is not being translated or is not being reflected in the communities. So that is where the (knowledge) is lost between the implementing partner and the international partner."

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NGO manager 3

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The need for practical solutions as well as the need to adapt the evidence so that it is locally relevant was repeatedly highlighted:

"We have to be very flexible in understanding and changing those (programmes) based on the community's need ... We need that (local interpretation). That is why DRR (Disaster Risk Reduction) in many areas is failing ... It is not difficult (to get community involvement in DRR) if you could understand their needs, if you could really understand their culture ... If we use imported ideas, imported thoughts, that does not work."

NGO Manager 2

There is also a lack of learning practice and processes to embed organisational learning in the system. Learning appears to occur in ad hoc manner through "past experiences" of organisations and individuals rather than in a system-wide manner done systematically. As one UN manager noted, *"(The organisations) always try to learn from each disaster. But the problem is the next disaster becomes a brand new disaster. It seems like ... we (have to re-learn) every time and I am very surprised that we haven't any system that starts working from day one. That is the problem."*

In addition to the lack of a learning culture, maintaining organisational memory is also reportedly hampered by staff turnover and shortage of skilled human resources in this field. One UN manager noted how *"people get transferred from one (job) to another; they are moved from one kind of responsibility to others. So it is sometimes a little difficult to institutionalise the learning."* It was reported that many practitioners also come from development backgrounds with little formal training or qualification in disaster management.

Another barrier to disseminating best practice is the degree of willingness of stakeholder organisations to share learning:

"Limitation of sharing of best practice is still there ... There is no government or universal mechanism that can help to spread (this knowledge) ... Whether they (the NGOs) will be really interested or not to share is a question. I realize there should be a national level government body which really makes them share the information on a regular basis. Then they would be bound to do that ..."

UN agency manager 1

There is also a lack of mechanisms for disseminating learning to all stakeholders, including decision-makers. This makes it difficult to convince key policymakers who may lack awareness and understanding of the issues. Where there was some dissemination of knowledge, this tended to occur through professional networks. A further weakness was that whilst lessons were identified after a disaster, they were rarely learnt, i.e. not translated into any meaningful changes in how individuals, organisations and the system would respond to similar disasters in the future.

DISCUSSION

Implementing "best practice" in disaster management in Nepal is clearly challenging and complicated. Central to this is the availability and accessibility of the evidence-base. The evidence-base is known to be patchy(11) and there were difficulties reported acquiring, accessing and disseminating it. The lack of demand for the evidence, and different understanding as to what

constitutes as evidence, further hampers the use of what is available. Local contextual factors such as poverty were frequently cited as a barrier to evidence-based practice. The translation of evidence into practice was also affected by how the disaster management system is configured and operates, but also by disaster management policies and legal frameworks. Indeed the importance of political ownership and leadership of this agenda was oft stressed.

The findings reported support existing understanding of the determinants of population vulnerability and disaster resilience.(17) One conceptual model, the Sustainable Livelihoods Framework,(18) well-describes the 5 types of capital required for resilience, i.e.

- Human capital: e.g. health, education, coping strategies, ability to work
- Natural capital: e.g. the availability and access to land, water, wildlife, animal resources
- Social capital: e.g. the presence and strength of social networks and relationships
- Financial capital: e.g. the dependability of income and availability of savings
- Physical capital: e.g. the availability of transport infrastructure

Interventions that address these 5 dimensions can help reduce vulnerability to crises. However, the population's vulnerability is also affected by governmental and extra-governmental policies and processes. The adverse consequences of disasters can be exacerbated through poor governance and weak coordination between agencies. In Nepal, this manifested as a lack of clarity of roles and responsibilities, resource constraints and suboptimal management. The lack of proactive disaster management policies and other legal instruments may further potentiate the population's disaster vulnerability.(19)

Moreover, from the interviews it also emerged that what is perceived to be "best practice" is a contested term.(9) Best practice in medicine has often been equated with an evidence-based approach to inform medical decision-making.(20, 21) However, this approach is not easily transferable to disaster management due to the heterogeneity of disaster contexts. This suggests evidence has contextual specificity and means best practice in disaster management is not a concrete construct but will vary from situation to situation. Best practice for each local situation may have to be identified and is likely to involve a rationalized marriage of the evidence-base and adaptations required to match local needs and circumstances. Neither is the implementation of "evidence" into the population simple. Evidence exists in a complex socio-political arena influenced by local attitudes, culture, and customs, and has to compete against often conflicting agendas and priorities.(22)

If the purpose of best practice is to realize the best possible outcomes in disaster management, the situation is yet much more complex. In addition to individual and community-level determinants, as well as the institutions and processes that interact with the community, there are other significant determinants of disaster management outcomes.(17) In Nepal, these included the set-up of the disaster management system locally, the presence and efficacy of system leadership, oversight and governance. The fragmented multi-agency nature of the disaster management system often leads to problems of coordination as well as ineffectual and inefficient disaster responses which characterize numerous disasters worldwide.(23-25) The striking finding of this study was the demand echoed by respondents for strong policy direction and leadership, as well as a supportive legislative framework that is implemented and enforced. These politico-legal aspects are key components of the disaster

management system, acting as both catalyst and facilitating agent. The availability of an evidence-base alone would be insufficient for improving either disaster management practice or outcomes.

One limitation of this study was that public representatives were not interviewed. Whilst the community perspective would be invaluable, that said the focus of this study was an examination of the policy and practice of disaster management practitioners which often occurs behind the scenes. Consequently, the general public may neither be aware of what goes on or be best placed to provide insight into the processes. Attempts were made to address this by including 2 key informants with extensive community engagement experience.

Another possible limitation was the small number of participants. However, the interviewees were drawn from a range of organisations involved in this field, and from senior positions. That said thematic saturation was believed to have been achieved, and further interviews were unlikely to yield new insights. It was anticipated that language could be an issue. However, as all of the participants were high-level professionals working with the government, intergovernmental and non-governmental organisations, they all had considerable proficiency in spoken English. There was no evidence of respondent bias during the interviews and participants spoke openly and with candour.

As this study is focused only on Nepal, further studies elsewhere would be invaluable in revealing other insights and would allow triangulation of findings and enable the generalisability of findings to be better established. The study identified difficulties with conducting research in this field but also reiterated the need for research in order to build the limited evidence-base available currently. Indeed, whilst disaster management is increasingly data driven, this does not equate to being evidence-based.(26) There is particularly a demand for research to find "practical" solutions tailored to local contexts. Similarly, there is a need for the empirical evidence in the academic literature to be better collated, disseminated and applied. At the policy level, the need for political advocacy, ownership and leadership was also highlighted, without which the disaster management agenda would not be able to gain traction.

CONCLUSIONS

Currently, there is a lack of demand for the evidence-base in disaster management in LMICs such as Nepal. What is available is meagre and not well applied, and there are significant hurdles to be overcome including contextual and system issues as well as political barriers.(11) It is too simplistic to see evidence-based practice solely in terms of individual interventions without recognition of the contributions made by the wider societal determinants. The relative influence of the different barriers will vary between countries, with political barriers being especially prominent in some countries such as Nepal where the system of governance and leadership is less well developed. The suboptimal development of an evidence-based disaster management system in Nepal previously is likely to have influenced the consequences of the 2015 earthquake. These issues contribute to the country's vulnerability to disaster and they urgently need addressing if better disaster management practice is to be achieved.

ETHICAL APPROVAL

Ethical approval was sought and received from the School of Health and Related Research (ScHARR) Research Ethics Committee, University of Sheffield on 15 October 2013. (Ref: 0690)

CONFLICT OF INTERESTS

The author is an associate editor of the journal.

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