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Disaster Preparedness among Rapid Response Teams of Teaching District Hospitals Linked to BPKIHS, Koshi Province, Nepal

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Abstract

Introduction: In the occurrence of disaster, awareness on disaster preparedness is the equipment of healthcare professionals, which they can use to manage the disaster.

Objective: This study aims to assess the knowledge of disaster preparedness and find out the association between disaster preparedness with socio-demographic factors among Rapid Response Teams (RRT) of teaching district hospitals linked to BPKIHS, Koshi Province, Nepal.

Method: A descriptive cross-sectional study was conducted among RRT of all teaching district hospitals of BPKIHS in Koshi Province, Nepal. Data was collected by total enumerative sampling survey after obtaining ethical clearance from IRC BPKIHS (Ref. No.151/076/077 Code No: 1561/019) with 80 samples. The data was collected in four weeks through a modified structured questionnaire based on Global Assessment of National Health Sector Emergency Preparedness and Response developed by WHO. Mann- Whitney and Kruskal Wallis H Test was used to find out association.

Result: Total knowledge score on disaster preparedness among RRT members was 65.86±23.24. One-fourth of RRT (25%) had poor knowledge on disaster preparedness. There was significant association of knowledge score on disaster preparedness with working district and organization of RRT members, emergency preparedness & response background of RRT.

Conclusion: This study concludes that only minimum (15%) of respondents had good knowledge on disaster preparedness.

Keywords: Disaster; Disaster preparedness; Rapid response team members

Introduction

Disasters are global concerns, which may lead to destruction.[1] Vulnerable people and assets are located in exposed areas so there is always increase in disaster risk.[2] Due to versatile geographical distribution Nepal is a threat of multiple natural hazards. In an average, there are two deaths per disaster and one disaster per day.[3,4]. Disaster preparedness is an important act to increase readiness, knowledge among the various stakeholders regarding disaster management.[5,6,7] Disaster preparedness has become national priority, and country is working progressively to advance the Nepal's disaster resiliency.[7,8,9] Due to the small populations and low-income level around the rural hospitals and their communities, the support resources for disaster preparedness might be limited.[10,11] Rural hospitals especially need to continue to improve their ability to respond to a major public health threat and capacity to an adequate emergency response.[11] This study looked at the disaster preparedness of District Hospitals of Koshi province, Nepal. This study contributes to the knowledge base on disaster preparedness in Koshi province, Nepal. The results of the study provides better understanding of the disaster preparedness in the health sector in order to strengthen the capacities and capabilities of hospitals in Nepal. The aims of the study is to assess the knowledge of disaster preparedness and find out the association between disaster preparedness with socio-demographic factors among Rapid Response Teams of teaching district hospitals linked to BPKIHS, Koshi Province, Nepal.

Method

A quantitative study with descriptive cross sectional design was used to conduct study. The duration for the study was eighteen months {the duration of data collection was four weeks (2020-02-01-2020-02-30). RRT responsible for the emergency preparedness and response from the district hospitals of Koshi province were the sample. Total enumerative sampling method was used and 80 samples meeting the eligibility criteria were selected for the study. All the technical and administrative staffs (doctors, nurses, paramedics, and administrative officers) working in district hospitals who were assigned as Rapid response team were included in this study whereas who refused to participate and were not available during the data collection period were excluded from the study.

After validating, pretesting and reliability testing of the tool, data were collected through modified structured questionnaire based on Global Assessment of National Health Sector Emergency Preparedness and Response developed by WHO. Self-administered questionnaire included the following three sections: Section A (Personal information), Section B (Emergency preparedness & response background: It included personal or professional experience of RRT), Section C (Assessment of emergency preparedness and response preparedness: There were total 51 knowledge questions on disaster preparedness and emergency response. The maximum score for each segment were policy and legislation 4, Institutional arrangements 14, Vulnerability assessment 5, Health sector plan 8, Training and education 3, Monitoring and evaluation 2, International cooperation and partnerships 3, Non-government organization 9 and Human resources 3) Each correct response was provided 1 score and wrong response were provided 0 score. These scores for 51 questions were summed. Minimum sum score was zero and maximum sum score was 51.

Ethical clearance was received from the IRC board of BPKIHS Dharan (Ref. No.151/076/077 Code No: 1561/019). Permission was taken from Superintendents and administrative officers of district hospitals (Dhankuta, Illam, Gaighat, Rangeli, and Inaurwa). The purpose of the study was explained and an informed consent was obtained from the participants and confidentiality of the participants was maintained.

Data were analyzed by using SPSS version 11.5. For descriptive statistics frequency, median, mean, Standard Deviation, percentage, minimum and maximum etc. were calculated where as in inferential statistics Mann-Whitney U Test and Kruskal–Wallis H Test were applied to find out the association on factors associated on knowledge of disaster preparedness. The sum knowledge scores were categorized on the basis of quartiles i.e. first quartile (Q_1) and third quartile (Q_3).Poor refers to first quartile (Q_1), fair refers to Q_1 to Q_3 and good refers to above Q_3 whose values were <46.57, 46.57-88.24 and >88.24 respectively. Analyzed data and results were presented through tables.

Result

Five district hospitals of Koshi Province was surveyed (100% teaching district hospitals linked to

BPKIHS), 80 responded meeting inclusive criteria were included in analysis.

Table 1: Socio-demographic Variables of the Respondents (n=80)

Personal information of RRT	Category	Frequency (n)	Percentage (%)
Gender of RRT	Female	40	50
	Male	40	50
Designation of RRT	Medical officer	21	26.3
	Nursing officers	3	3.8
	Administration officers	10	12.5
	Staff Nurse	25	31.3
	Health Assistance	8	10
	CMA	6	7.5
	ANM	7	8.6
Working organizations of RRT	District hospital Dhankuta	15	18.8
	District hospital Illam	14	17.5
	District hospital Inaurwa	16	20
	Rangeli hospital	17	21.2
	District hospital Udaypur	18	22.5
Role of RRT during disaster	Technical role	72	90
	Managerial role	8	10
Working region of RRT	Terai region	36	45
	Hilly region	44	55

Table 1 depicts the socio-demographic variables of RRT. There was equal percentage in gender distribution of RRT. Maximum (31.3%) of respondent were staff nurse. Almost all (90%) of the respondents perform their functions as a technical. More than half (55%) RRT were working in Hilly region. Majority of respondents (78.8%) had direct personal or professional experience of an emergency or disaster. Similarly, more the half (57.5%) had recently experienced an emergency or disaster in last 5 years. Major hazard causing emergencies as experienced by RRT members in their district includes road traffic accidents (RTA), flood, and landslide where majority (67.4%) had experience for the response of RTA, 43.8% flood and 20.4% landslide.

Table 2: Total knowledge score among RRT on Disaster Preparedness (n=80)

Descriptive analysis		Value
Mean		65.9
Median		68.6
Standard Deviation		23.2
Maximum		100
Minimum		13.7
Percentiles	25	46.6
	50	68.6
	75	88.2
Knowledge category	Good	15.0%
	Fair	60.0%
	Poor	25.0%

The total knowledge score on disaster preparedness among RRT is shown in Table 2. The sum knowledge scores were categorized on the basis of quartiles i.e. first quartile (Q_1) and third quartile (Q_3). Poor refers to first quartile (Q_1), fair refers to Q_1 to Q_3 and good refers to above Q_3 whose values were <46.57, 46.57-88.24 and >88.24 respectively. More than half of respondent (60%) had fair knowledge on disaster preparedness.

Table 3: Association between Knowledge Score on Disaster Preparedness and Socio-demographic Variables of the Respondents (n=80)

Characteristics	Categories	N	Mean ± Standard deviation	Median	Q1-Q3	Mean rank	P-value
Gender	Female	40	66.27±20.38	68.63	48.04-84.32	39.68	p= 0.750
	Male	40	65.44±26.05	73.53	43.63-86.77	41.33	
	Total	80	65.86±23.24	68.63	41.18-84.32		
Designation	Medical officer	21	60.60±27.42	60.78	37.25-80.39	36.52	p= 0.345
	Nursing officers	3	72.55±18.91	64.71	61.76-79.41	42.83	
	Administration officers	10	73.73±31.25	85.29	51.47-90.68	53.50	
	Staff Nurse	25	61.41±21.36	68.65	48.05-84.33	34.72	
	Health Assistance	8	73.53±19.69	81.37	62.25-84.81	48.63	
	CMA	6	68.63±9.11	62.75	62.75-71.57	38.50	
	ANM	7	72.27±15.42	72.55	61.76-82.35	45.93	
	Total	80	65.86±23.24	68.63	41.18-84.32		
Hospitals	District hospital Dhankuta	16	82.72±14.54	82.35	66.66-91.18	58.41	p= 0.009**
	District hospital Illam	12	71.08±10.07	72.55	64.71-80.39	43.08	
	District hospital Inaurwa	15	62.88±22.39	68.63	43.14- 78.44	36.83	
	Rangeli hospital	21	58.36±28.72	62.75	38.24-79.42	34.45	
	District hospital Udaypur	16	57.72±22.56	48.04	40.69-72.06	32.03	
	Total	80	65.86±23.24	68.63	41.18-84.32		
Roles of RRT on disaster	Technical Management	72	65.01±21.68	68.63	41.18-84.32	39.01	p= 0.086
	Managerial Management	8	73.53±35.43	96.08	56.86-96.08	53.88	
	Total	80	65.86±23.24	68.63	41.18-84.32		
Working region of RRT	Hilly	44	70.45±19.84	72.55	52.94-86.27	44.64	p= 0.078
	Terai	36	60.24±26.02	68.63	41.18-82.35	35.44	
	Total	80	65.86±23.24	68.63	41.18-84.32		

(Note **'Mann-Whitney U Test' and 'Kruskal Walli's H Test'** was applied to find the association between the variables.)

Table 3 depicts the association between total knowledge score on disaster preparedness and socio-demographic variables among respondents. There was statically significant association

between total knowledge scores disaster preparedness and organization.

Table 4: Association between total knowledge score on Disaster Preparedness and Response background among RRT (n=80)

Emergency preparedness & response background	Categories	N	Mean ± SD	Median	Range	Mean rank	p-Value
Direct personal or professional experience of an emergency or disaster	No	17	51.79± 21.37	58.82	17.65-74.51	26.62	
	Yes	63	69.65± 22.40	70.59	13.73-100	44.25	p= 0.005**
	Total	80	65.86± 23.24	68.63	13.73-100		
RRT's district recently experience to an emergency or disaster last 5 years	No	34	58.88± 22.83	62.75	17.65-100	33.87	
	Yes	46	71.01± 22.41	70.59	13.73-100	45.40	p= 0.028*
	Total	80	65.86± 23.24	68.63	13.73-100		

(Note = 'Mann-Whitney U Test' was applied to find the association between the variables.)

The association is illustrated in Table 4 between total knowledge score on disaster preparedness and response background among RRT. There was significantly association between emergency preparedness & response background total knowledge score on disaster preparedness among RRT.

Discussion

In the present study, the population combination of male and female was equal, which slightly differs from the findings of the study conducted by Wen-Chii Tzeng,[12] and Tabiee S, Nakhaei M[13] and Berhanu N, Abrha H, Ejigu Y, Woldemichael K.[14] with higher population composition of female (89.4%) and (71.1%) respectively.

The maximum of RRT members (35.1%) were designated as nurses (staff nurses and nursing officers) in this study finding which was similar by the study done by Adenekan BA, Balogun MR, Inem V[15] and Naser WN[16] where there was 52.7% and 50% nurses respectively.

In the present study majority (78.8%) of respondent had direct personal or professional experience to an emergency or disaster which was similar with the study conducted by Malyana N[17] and Desai SC.[18] More than half (57.5%) of RRT's district had recently (5years) experience to an emergency and disaster which was similar with the study conducted by Desai SC.[18] The disasters listed by most of the respondents included road traffic accident that was also was similar with the study conducted by Desai SC.[18]

The total knowledge score on disaster preparedness among RRT was 65.86±23.24 which finding was differ in the study conducted by Ezhilarasi MN, Jothy k[19] (72.24±6.78) and Nofal A, Alfayyad I, Khan A, Aseri Z Al, Abu-shaheen A.[20] (6.2±2.5). Similarly, In the present study, only 15% had good knowledge. This finding was contradicted with the study conducted by Rahman AB, Chaklader MA, Muhamad F.[21] with the finding as minimum respondents (15.1%) had poor knowledge. Nearly about one third (30.0%) of the study participants had good level of knowledge. Another study finding by Ashenafi Habte, Adamu Addisie AA.[22] was differed with this study having finding as half of (50.8%) health care workers had good knowledge about hospital disaster preparedness and its plan respectively.

There was no statistically significant association between total knowledge scores and gender of RRT members which was supported by the study of Tuladhar G, Yatabe R, Dahal RK, Prakash N[23]. There was no statistically significant association (p=0.345) between total knowledge scores and designation of RRT members which contradict with the finding of the study by Adenekan BA, Balogun MR, Inem V[15]

Limitation of the study is due to an adjustment after federalization; the health care professionals were transferred and replaced so the exact information by trained personnel could not be assesse This study could serve as a reference for further researcher to conduct similar study in different large-scale setting. This finding may be instrumental for the health care provider and policy makers in developing disaster preparedness plans.

Conclusion

Only minority (15%) of respondents had good knowledge on disaster preparedness. There was statistically significant association of knowledge score on disaster preparedness with working district and organization. Similarly, there was also statistically significant association of knowledge score on disaster preparedness with direct personal or professional experience of an emergency or disaster and recently experience of RRT member's district to an emergency or disaster in last 5 years with knowledge.

Recommendation

This study findings emphasize the direct personal or professional experience of an emergency or disaster enhances the knowledge of RRT. So regular disaster management training program is recommended to provide knowledge and an experience in disaster management for the RRT.

Conflict of interest

The authors declare no any conflict of interest.

Financial disclosure

Non-financial interest to disclose.

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References

1. WHO. Definitions: Emergencies. 2015. https://www.who.int/hac/about/definitions/en/ retrieved on 2019/03/26.
2. Tom Mitchell, Debarati Guha.2014. Setting, measuring and monitoring targets for reducing disaster risk Recommendations for post-2015 international policy frameworks, Overseas Development Institute Publication, UK. DOI: 10.13140/RG.2.2.29421.38881
3. Khanal BN. Nepal: A brief Country Profile : Nepal Disaster Management Institution and System in Nepal. Nepal: Ministry of home affairs; Jan 2020 https://www.adrc.asia/countryreport/NPL/2019/Nepal_CR2019B.pdf
4. MoHA. Disaster Risk Reduction in Nepal: Achievements, Challenges and Ways Forward. National Position Paper for the AMCDRR. Scientific Research.2016, 2-5 November. New Delhi, India. Kathmandu: Ministry of home affairs. https://dpnet.org.np/uploads/files/National%20Paper%20AMCDRR%202016%20Book_Final%202019-05-13%2009-13-28.pdf
5. C Wattegama. ICT for Disaster Management. United Nations Development Programme. (2007). Asia-Pacific Development Information Programme (UNDP-APDIP) and Asian and Pacific Training Centre for Information and Communication Technology for Development (APCICT). ISBN: 978-974-8283-94-4 https://wiki.sahanafoundation.org/_media/apdip-case-study-2007.pdf
6. Disaster Preparedness in Malaysia : An Exploratory Study Multimedia University Faculty of Administrative Science & Policy Studies. ISSN: 1790-2769, ISBN: 978-960-474-168-7
7. MOHA. Global Facility for Disaster reduction and recovery (GFDRR). 2017. Nepal. https://www.gfdrr.org/nepal retrieved on 2019/03/26
8. Schur CL, Berk ML, Mueller CD. Perspectives of rural hospitals on bioterrorism preparedness planning. Policy Analysis Brief. WSeries. 2004;4:1- 6. PMID: 15295832
9. Fung OWM, Loke AY, Lai CKY. Disaster preparedness among Hong Kong nurses. 2008;(February). DOI: 10.1111/j.1365-2648.2008.04655.x
10. Brown LM, Hickling EJ, Frahm K. Emergencies, Disasters, and Catastrophic Events: The Role of Rehabilitation Nurses in Preparedness, Response and Recovery .Rehabilitation Nursing.2010; 35(6):236-41. DOI: 10.1002/j.2048-7940.2010.tb00053.x
11. Centers for Disease Control and Prevention. Biological and Chemical terrorism: strategic plan for preparedness and response: recommendations of the CDC strategic planning workshop. Morbidity and Mortality Weekly report .2000;49(RR-4):1-14 https://www.cdc.gov/mmwr/preview/mmwrhtml/rr4904a1.htm retrieved on 2019/03/26.
12. Tzeng W, Feng H, Cheng W, Lin C, Chiang L, Pai L, et al. Nurse Education Today Readiness of hospital nurses for disaster responses in Taiwan : A cross-sectional study. YNEDT [Internet]. 2016;47:37–42. DOI: http://dx.doi.org/10.1016/j.nedt.2016.02.025
13. Tabiee S, Nakhaei M. Nurses' Preparedness for Disaster in South Khorasan Province, Iran. Heal Emergencies Disasters Q. 2017;2(1):13–8. DOI: 10.18869/nrip.hdq.2.1.13
14. Berhanu N, Abrha H, Ejigu Y, Woldemichael K. Knowledge. Experiences and Training Needs of Health Professionals about Disaster Preparedness and Response in Southwest Ethiopia : a cross sectional study. DOI: 10.4314/ejhs.v26i5.3
15. Adenekan BA, Balogun MR, Inem V. Knowledge , attitude , and practices of emergency health workers toward emergency preparedness and management in two hospitals in Lagos. 2016;23–8. DOI: 10.4103/1595-9587.175483
16. Naser WN. Emergency and disaster management training ; Knowledge and Attitude of Yemeni health professionals- a cross-sectional study. 2018;1–12. DOI :10.1186/s12873-018-0174-5
17. Malyana N, Takim R, Hadi A, Aina SN. Disaster Preparedness Attributes and Hospital ' s Resilience in Malaysia. 2018;00(2017):1–8. DOI: 10.1016/j.proeng.2018.01.048
18. Desai SC, Doke P,Mohanty NC. Role of Health Care Workers during Emergency Preparedness in selected hospital of Navi Mumbai. International Journal of Scientific Study. 2017;5(3). DOI: 10.17354/ijss/2017/271
19. Ezhilarasi MN, Jothy K. Knowledge of Disaster Preparedness and Management among Nurses in the Disaster Prone Areas of Kerala. 2018;4931(November):61–70. CorpusID:222566922
20. Nofal A, Alfayyad I, Khan A, Al Aseri Z, Abu-Shaheen A. Knowledge, attitudes, and practices of emergency department staff towards disaster and emergency preparedness at tertiary health care hospital in central Saudi Arabia. Saudi Med J. 2018 Nov;39(11):1123-1129. doi: 10.15537/smj.2018.11.23026. PMID: 30397712; PMCID: PMC6274652.
21. Rahman AB, Chaklader MA, Muhamad F. Knowledge and awareness on disaster management among medical professionals of a selected public and private medical college hospital. 2018;5(6):1342–6. DOI:10.18203/2349-3933.ijam20184225

22. Ashenafi Habte, Adamu Addisie, Aklilu Azazh. Assessment of Knowledge, Attitude and Practice of Disaster Preparedness among TikurAnbessa Specialized Hospital Health Care Workers, Addis Ababa, Ethiopia. American Journal of Nursing Science.Vol. 7, No. 1, 2018, pp. 39-48. DOI: 10.11648/j.ajns.20180701.15

23. Tuladhar G, Yatabe R, Dahal RK, Prakash N. Knowledge of disaster risk reduction among school students in Nepal. Geomatics, Nat Hazards Risk [Internet]. 2014;5(3):190–207. DOI:10.1080/19475705.2013.809556