EVALUATION OF AN INTERNATIONAL DISASTER RESPONSE TEAM'S PERSPECTIVE POST 2011 JAPAN MULTIPLE DISASTERS: PIVOTAL LEARNINGS IN HUMAN RESOURCE MANAGEMENT

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Abstract *The Great East Japan Earthquake that forms the focus of this study inflicted unprecedented damage to infrastructure, lives, livelihood, and economy (estimated damage: US $ 235 billion). The disaster necessitated colossal human resource deployment with 163 countries and 43 international organisations offering assistance. The present study focuses on the importance of human resource management in disaster management and presents perspectives of the International Disaster Response Team from India deployed in Japan post-disaster. Responses on the following dimensions: rescue, relief and recovery (R^3) assignment, specialised training and equipment, on-ground situation assessment, psychosocial parameters, and mission accomplishment led to several revelations. Data were analysed using a one-way ANOVA, followed by post-hoc Tukey's HSD test. The present study presents key lessons for R^3 personnel deployed on international missions in the wake of mega disasters. Our findings underscore the necessity to develop and implement responder-friendly policies and practices that can facilitate international R^3 missions.*

Keywords: *Great East Japan Earthquake, Tsunami, human resource, International Disaster Responder Team*

INTRODUCTION

Skilled Human Capital: Imperative for Emergency Management

In recent years, human capital has been the focus of attention from a disaster management perspective in view of realization of the fact that management of disasters entails a proactive approach rather than retroactive management philosophy. Drucker (1974) defines management as: "making people capable of joint performance by giving them common goals, common values, the right structure, and the ongoing training and development they need in order to perform and to respond to change." He further elaborates that "it is not technology, but the art of human- and humane-management" that is the continuing challenge in the 21st century (Drucker, Dyson, Handy, Saffo P., & Senge, 1997). It is a well-recognised fact that it is the human capital, which is the most important in the prevention and effective management of disasters (Arora & Arora, 2013). However, despite its immense importance, few studies have focused on the role of human resources in disaster management (Goodman & Mann, 2008; Walker, Nilakant, van Heugten, & Rochford, 2013; Nilakant, Walker, & Rochford, 2013a). Both pre- and post-disaster management of human resource (HR) has been emphasized to avoid heavy costs to human lives, infrastructure and economy resulting due to disasters (Arora, Arora, Chawla, Gunaseelan, & Bhardwaj, 2013a; Arora, Arora, Gunaseelan, Chawla, & Bhardwaj, 2013b; Arora, Gunaseelan, & Arora, 2013c; Arora, Gunaseelan, & Arora, 2013d; Walker *et al*., 2013). Apart from human capital preparedness, participation of responder teams is critical to response, rescue and relief in the aftermath of any disaster. For management of emergencies arising during disaster events and mass casualties, if the human resource is not properly planned and trained the consequences on community can be catastrophic. There is a definite need to

conduct research on human resources involved in disaster management, especially disaster responders, medical responders, disaster managers, employees, the community participants and volunteers (Nilakant *et al*., 2013a; Nilakant, Walker, Rochford, & vanHeugten, 2013b; NIDM, 2013; Jannat, Aradalan, Gholamreza, Dastejerdi, & Alipour, 2014).

While natural disasters can't be prevented, preparedness can change the face of disasters by reducing the damage to a large extent. In a post-disaster scenario- either during, immediately after or later on, the rescue, relief and recovery (R^3) operations can be effectively conducted or managed by skilled human resource, only if it is appropriately trained. Humanitarian crises due to mega disasters are usually of longer duration and quite complex. With increased cooperation between various countries and reduction in global travel times, it has now become common to send humanitarian assistance and responder teams to sites that have been affected by a mega disaster as the resources of the countries affected are often severely overwhelmed. This was evident during the 2004 Indian Ocean Tsunami and also the 2011 Great East Japan Earthquake and Tsunami that ensued.

The present study focuses on the management of human resource in the aftermath of the Great East Japan Earthquake. Specifically, the study relates to R^3 operation of the International Disaster Management Team from India that was deployed in Japan post-Great East Japan Earthquake and evaluation of their perceptions.

Case Study: The 2011 Great East Japan Earthquake

The Great East Japan Earthquake that forms the focus of this paper occurred in Tōhoku region of Japan on 11 March, 2011 (Lay & Kanamori, 2011).The 2011Great East Japan earthquake (9 Richter on the scale) was larger than anyone had expected or even dreamt of and is considered as the largest earthquake ever recorded in the history of Japan. The estimated economic damage due to the disaster was US$235 billion, making it the costliest natural disaster in world history (World Bank, 2012).

Japan has one of the highest levels of risk of natural disaster in the world since all the three values determining the risk viz., hazard, vulnerability, and exposed value are very high. Japan lies on the 'Ring of Fire", which makes it susceptible to frequent earthquakes and the vast coastline increases its vulnerability to tsunamis. Nearly 20% of earthquakes measuring 6.0 or more on the Richter scale occur in Japan (Cabinet Office of Japan, 2007). The Japanese society has struggled against natural disasters throughout history and consequently has evolved as a fairly disaster resilient community. The Japanese disaster management system is considered one of the best globally and has evolved through years of struggle in the aftermath of the natural disasters, mainly earthquakes and tsunamis that have caused huge losses to human lives, infrastructure, economy, health etc. Despite facing mega disasters occasionally, the number of deaths and missing persons due to disasters in Japan has been reducing in view of efficient human resource management practices that form an integral part of the disaster management system.

The devastation caused by the 2011 Great East Japan Earthquake was on an unprecedented scale. The Tōhoku earthquake resulted in multiple disasters (tsunami, fires, and damage to the nuclear reactors resulting in release of large amounts of radioactivity in the environment), wide spread destruction, misery, suffering, loss of lives, livelihood, infrastructure, economic and human resource loss. The damage was more due to tsunami than due to the earthquake per se. The earthquake and the tsunami devastated the Tōhoku and the other regions. The Iwate, Miyagi, Fukushima prefectures in Tōhoku region were the worst hit by the tsunami (Nanto, Cooper, & Donnelly, 2011). The Government of Japan issued a tsunami warning within 3 minutes after the occurrence of the earthquake and immediately initiated a response. The northern part of Japan was engulfed by the gigantic waves of the tsunami sweeping everything that came in its way. The tsunami affected the eastern, central western part of pacific coast of Hokkaido, Pacific coast of Aomori, Iwate, Miyagi, Fukushima, Ibaraki, Chiba prefectures, Kujukuri, and Sotobo area and Izuislands (Parashar, Uy, Fernandez, Nguyen, Mulyasari, Jonas, & Shaw, 2011). The maximum tsunami height reported was approximately 40 m at the Omoeaneyoshi district of Miyako, in Iwate prefecture. Inundation caused by the tsunami was 561 square km throughout Japan. Surprisingly, much wider areas were inundated, as compared to the predictions made on the basis of the Hazard maps (White Paper on Disaster Management, Japan, November 2011). According to the Japan White Paper, this disaster caused greatest number of causalities, since World War II. Approximately 154,486 people were evacuated from the disaster site (Fire and Disaster Management Agency-June 2, 2011). The damage was huge and on 11 March 2015, the Japanese National Police Agency report confirmed 15,891 deaths, 6,152 injured, and 2,584 people missing across twenty prefectures, as well as 228,863 people living away from their home in either temporary housing or due to permanent relocation (National Police Agency of Japan, 2015). There were 127,290 buildings totally collapsed, with a further 275,791 buildings half collapsed, and another 748,918 buildings partially damaged in addition to 57,920 non-dwelling houses (National Police Agency of Japan Report, 2015). The earthquake and tsunami also caused extensive and severe structural damage in north-eastern Japan, including heavy damage to 4,198 roads, 116 bridges, 45 break of dikes, 207 landslides and 29 damaged railways. Around 4.4 million households in northeastern

Japan were left without electricity and 1.5 million without water.

The unparalleled scale of the disaster necessitated colossal deployment of human resource and in the process efficient human resource management practices were employed). An emergency response team was immediately established under the leadership of the Japanese Prime Minister. Large numbers of human resource were deployed for rescue, relief and recovery post-disaster (307,500 National Police Force personnel; 27,373 Fire and Disaster Management Agency workers; 110,000 troops of the Japan Self Defence Forces (White Paper on Disaster Management, 2011).

International Assistance: Rescue, Relief and Recovery Missions in Japan

Notwithstanding the heavy deployment of the locally available human resources involved in relief and rescue operations, it was insufficient to carry out the work in the immediate aftermath. The magnitude of the 2011 disaster overwhelmed the system and Japan specifically requested teams from Australia, Canada, Philippines, South Korea, United Kingdom, and United States to help in disaster management. In all, a total of 163 countries and 43 international organisations assisted Japan (Ministry of Foreign Affairs of Japan, 2011). With local, national and international participation in rescue, relief and recovery mission, this mega disaster has left a number of lessons to be learnt (Arora, 2011; Arora *et al*., 2012; Arora *et al*., 2013a,b,c,d,e; Lay & Kanamori, 2011; Yamazaki, Minami, Sasaki, & Sumi, 2011; Yasumura, Goto, Yamazaki, & Reich, 2012).

International Disaster Response Team (NDRF) from India in Japan

The Government of Japan requested India also for assistance and an International Disaster Response Team from India was immediately deployed for search, rescue, and relief mission in earthquake and tsunami-hit Japan. The International Disaster Response Team comprising of 46 members was carefully picked up from India's elite National Disaster Response Force (NDRF) and dispatched to Japan on March 28, 2011 for rescue, relief and recovery (R^3) assistance in the disaster-hit region. The team was assigned a base in Rifucho, Miyagi Prefecture and the operating region allotted to them was Onagawacho, Miyagi Prefecture of Japan (Fig. 1& 2).The team operated in sub-zero temperatures to carry out the mission during the period 28 March, 2011 to 06 April, 2011.

During mega disasters, there is every likelihood of extraordinarily conditions being encountered e.g., unpredictable, fast-changing and ambiguous environment. The skills and the level of training of human resource, including responder teams, are tested to their utmost potential. It is, therefore, imperative to document the experiences/perceptions of international rescue, relief and recovery (R^3) teams so that future mobilisation of human resource can be effectively regulated, managed and the missions accomplished without any constraints. Keeping this in view, the present study was undertaken to evaluate the perception of a highly skilled and trained international disaster response team from India that participated in R^3 mission in Japan in the aftermath of the 2011 Japan mega disasters.

Fig. 1: Map of Japan Showing the Area of Operation (Arrow) of the International Disaster Response Team from India [Tsunami-hit Onagawa, Miyagi Prefecture was only 123 km Away from the Epicenter of the 2011 Great East Japan Earthquake

METHODOLOGY

Data Collection

Fig. 2:. The International Disaster Response Team from India (NDRF) Participating in the Rescue, Relief and Recovery (R^3) Operations in the Tsunami-Hit Devastated Onagawa Town, Japan.

Primary data collection for this study involved two main methods: (i) semi-structured direct interview method and questionnaire method. Personal discussions with response team directly involved in disaster planning and implementation was an integral part of the study. Visits to various institutions in Japan following the disaster between 2011 and 2013 and meetings with senior officials and discussions (during the former author's visit to the disaster-affected regions of Japan between October 2011 and June 2013 under sponsorship from the Japanese Government) with the local community, on-ground responders, health care professionals, human resource professionals and disaster management expert groups, volunteer organisations, NGOs, International organisations and several other employees and members of the society, including foreign people living in Japan at the time of the disasters, highlighted the extreme nature of the earthquake and tsunami, which resulted in emergency rescues, displacement of thousands of residents from their homes for several months, employment issues, an unstable economy, and stress and health problems, including an impending radiation threat. In addition, published information sources including websites of important Japanese and International agencies like United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), Relief Web, Prevention web, International Red Cross, The United States Agency for International Development (USAID), Japan Cabinet, World Health Organization (WHO), International Atomic Energy Agency (IAEA) newsletters, and magazines etc. were routinely consulted.

Geographical Setting

The International Disaster Response Team from India was based in Rifucho, Miyagi Prefecture and the operating region allotted to them by the Japanese authorities was Onagawacho (38°26′17″N 141°27′00″E), Miyagi Prefecture (Japan). This area was one of the most severely affected by the tsunami. Onagawa is located on the rugged rias Pacific coast of north-central Miyagi Prefecture. Onagawa is a port town, and right at the intersection of two major ocean currents making it very important. It is also the location of a nuclear power plant, the Onagawa Nuclear Power Plant. Onagawa was profoundly damaged during the 2011 Great East Japan earthquake and tsunami as it was just 123 km away from the epicenter, however, the Onagawa nuclear power plant remained unaffected mainly due to the 14.8m tsunami wall. The tsunami run up height reached 18.40 metres and swept nearly one kilometer inland, destroying the town centre and leaving approximately 1,000 people missing, with over 300 confirmed dead (National Oceanic and Atmospheric Administration (NOAA) National Geophysical Data Center, USA).At least 12 of the town's 25 designated evacuation sites were inundated by the tsunami. The International Disaster Response Team from India operated in the town of Onagawaat sub-zero temperatures to carry out the R^3 mission between 28 March 2011 and 06 April 2011.

Target Respondents

The target groups selected for the study were the highly trained and skilled disaster responders. The International Disaster Response Team from India comprised of members picked up from India's National Disaster Response Force (NDRF). The team was sent to Japan by the Government of India for the rescue, relief and recovery (R^3) mission, following the Great East Japan Earthquake and ensuing tsunami. The International Disaster Response Team from India had both direct and indirect exposure to the disaster in Japan i) witnessing disaster damage on-site (direct exposure) and ii) personal contact with disaster victims (indirect exposure). Pilot interviews with key personnel of the team were conducted shortly after their return from the Japan mission. The entire team members- a total of 46 personnel, comprising a team leader, deputy commander, assistant commander, inspectors, and other responders were administered structured interviews.

Procedure

The members of the International Disaster Response Team from India (n=46) deployed during the period 28 March, 2011 to 06 April, 2011 in Japan were approached and requested to fill in a pack of questionnaire containing the measures explained above. Participants were first informed about the purpose and procedure of the study. It was clearly emphasized that participation was completely voluntary and the data would be collected anonymously and analyzed at group level. A questionnaire consisting of a sequence of relevant questions pertaining to the perception of the International Disaster Response Team from India that participated in R^3 mission in Japan following the 2011 Tōhoku (Great East Japan) earthquake was prepared to elicit information from the responders. The team members were administered the questionnaire and were asked to return the duly filled-in questionnaire within a period of three months. The responders filled in the pack of questionnaires at their work place and returned them anonymously. In order to ensure anonymity, the collected questionnaires were not linked to the participant's names or other identifying information. A small element of open-ended partially structured question was deliberately introduced at the end of the questionnaire in an attempt to allow the respondents to discuss general topics/ areas and reveal attitudes about the multiple disasters. This was done to provide the respondents with an opportunity to air their views from on-ground situation analysis. Important information could be obtained in this manner that might not have been possible otherwise or previously considered in the questionnaire.

Pretesting, Validity and Reliability Testing of Questionnaire

Questionnaire readability was assessed using the Flesch Reading Ease Score. Before validity and reliability testing commenced, experts working in the Defence Institute of Psychological Research (DIPR), New Delhi checked the questionnaire for both content and clarity. The necessity for pre-testing the questionnaire was felt so that time, resources and energy would not be lost on irrelevant questions. The initial questionnaire prepared was, therefore, pre-tested with the help of the team leader and select members of the team and their suggestions were incorporated. In order to evaluate the effectiveness of the questionnaire, suitable changes were made subsequently, taking into consideration the suggestions made by the team members and evaluation by experts. This helped in evolving a proper questionnaire in order to elicit relevant information from the team members. Most respondents responded with in the frame/set time, and found it easy since it did not impinge on their busy schedule. The telephonic interview method also was useful in eliciting the information.

Scale of Measurement

The survey instrument was designed with a 5-point Likert-type scale consisting of statements that measure the opinion level of respondents *vis-a-vis* the disaster on the following scale: **5**-Strongly Agree (SA); **4**-Agree (A); **3**-Neutral/ No response (N); **2**-Disagree (D) and **1**-Strongly Disagree (SD).

Sampling Methods

The personnel included in the research study, which constituted the sample, were not selected based on any bias or convenience, rather the perception of almost the entire International Disaster Response Team from India-the NDRF was evaluated. India's NDRF has a strength of 10 battalions and each battalion consists of over 1000 personnel.Therefore, the representative sample population size was approximately 10,000 highly trained and skilled human resource for R^3 missions. Stratified sampling, which is one of the types of probability sampling was used, while sampling units were selected from each group, thereby ensuring representation to all relevant segments. The basis of using stratified sampling is the existence of strata/segment, such that each stratum is more homogeneous within and markedly different from another stratum. The stratification method significantly increases the statistical efficiency of the sampling (Särndal, Swennson, & Wretman, 2003; Suresh, 2011). In the present study, a stratified sample was chosen since it provides greater

precision than a simple random sample of the same size.

In the current study, the different strata considered were according to their position in the rescue, response and relief team that actually participated in the rescue, relief and recovery (R^3) mission in Japan. The respondents were divided into three major categories:

- Disaster Team Officers (DTO)
- Disaster Team Supervisory-Level Officers (DTSO)
- Disaster Team Personnel (DTP)

Key Informants

Key informants were those who were domicile residents of Japan or non-residents who had resided in Japan during the 2011 disaster and immediately after for a minimum period of one year. These key informants provided valuable data regarding the position on ground since they had closely seen the disasters, the immediate rescue and relief operations from close quarters.

Statistical Analysis

Statistical analysis was performed using SPSS statistical software (version 19.0; SPSS Inc., Chicago, IL, USA). Questionnaire data analysis used descriptive statistics. A one-way analysis of variance (ANOVA) was used, followed by post-hoc Tukey's HSD test.

Guiding Principles and Ethical Considerations

All possible efforts were made to collect the data ethically and with authenticity, avoiding any kind of bias. Prior to the interviews, the aims and objective of the study were explained clearly and simply by the interviewer using written materials. Returning of the questionnaire was taken as implied informed consent. The first questionnaire was forwarded shortly upon the return of the International Disaster Response Team from Japan to their home country (India). Some of the responders in the cadre were not comfortable with filling the forms in English and help had to be taken from their comrades/buddies to get the form filled, taking care to avoid any bias of the person filling the form. The process of filling the form was clearly explained to all the participants in this study. All precautions were taken to ensure that the feelings of the participants was not affected / hurt as a result of administration of the questionnaire or the interviews. Information during personal interview had to be elicited in such a manner that best possible information was obtained. The individuals were, therefore, interviewed with great care to elicit correct response. Disaster data are needed to test theories, to develop empirical studies and for policy development (Etkin, 2016). However, data must be collected carefully and used with caution, in order to avoid biases or errors.

Care was taken to assure the interviewees that this was a study aimed at assessing the perception of the R^3 team, documenting their experience, identifying the shortcomings in the response, rescue and relief efforts and suggest ways to overcome them for future disasters, and therefore, their cooperation was being solicited. Through a warm and friendly approach, the psychological barrier for eliciting accurate response was broken, and the study was possible.

Results

The purpose of the present study was to evaluate the post-mission perception of the International Disaster Response Team of India that was deployed in Onagawa, Japan in the aftermath of the Japan 2011 disaster. Responses were sought vis-a-vis 15 questions, categorised under the following dimensions: R^3 assignment, Specialised Training and Equipment, On-Ground Situation Assessment, Psychosocial parameters and Mission Accomplishment. The survey data, obtained on a sample of forty-two members of the International Disaster Response Team, were analysed descriptively (Table-1 & Table-2) and data obtained on the subcategories of the team was analysed using one-way analysis of variance (ANOVA; Table-3). Since this was the first international operation of the International Disaster Response Team of India outside the country, it was anticipated that the responses would present experience that would certainly be novel in nature and could be useful for future international R^3 missions.

The questionnaire when tested for content validity and all questions scored highly for importance, appropriateness and phrasing with mean scores above 8.0 for each question. Overall means for importance, appropriateness and phrasing were 8.65(SD ± 1.27), 8.78 (SD ± 1.34) and 8.28 (SD ± 1.20) respectively. Readability of questionnaire was evaluated online using the Flesch Reading Ease Score and the questionnaire scored a Flesch Reading Ease Score of 63.53, indicating that the questionnaire was of a standard readability level (Flesch, 1948). Face validity indicated that the questionnaire was quick to complete (8-10 min), easy to follow and comprehensible. Cronbach's alpha scores (internal reliability) for questions ranged from 0.78 to 0.90, indicating good internal consistency.

The primary data collected were analysed separately for each stratum. It is essential to analyse the data separately for each segment/strata since the level, aspirations, expectations, views and problems of each group are widely different from that of the other group. In view of this, strata-wise analysis, inter-strata analysis as well as collective analysis was done

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	**42**	**28.00**	**44.00**	**35.0000**	**5.21723**
R3 Assignment	42	5	10	6.45	.772
Specialized Training & Equipment	42	16	18	16.67	.570
On-Ground situation assessment	42	10	15	13.24	1.394
Psychosocial parameters	42	9	33	17.43	4.988
Mission Accomplishment	42	9	10	9.81	.397
Valid N (list-wise)	42				

Table 2: Descriptive Statistics for Various Evaluated Dimensions and the Stratified International Disaster Response Team

		N	Mean	S.D.	S.E.	Min.	Max.
R3 Assignment	DTO	9	7.33	1.000	.333	7	10
	DTSO	9	5.89	.333	.111	5	6
	DTP	24	6.33	.482	.098	6	7
	Total	42	6.45	.772	.119	5	10
Specialized Training & Equipment	DTO	9	16.22	.667	.222	16	18
	DTSO	9	17.11	.333	.111	17	18
	DTP	24	16.67	.482	.098	16	17
	Total	42	16.67	.570	.088	16	18
On-Ground Situation Assessment	DTO	9	14.78	.667	.222	13	15
	DTSO	9	13.11	.928	.309	12	14
	DTP	24	12.71	1.334	.272	10	14
	Total	42	13.24	1.394	.215	10	15
Psychosocial parameters	DTO	9	9.22	.667	.222	9	11
	DTSO	9	19.89	4.936	1.645	18	33
	DTP	24	19.58	1.472	.300	16	22
	Total	42	17.43	4.988	.770	9	33
Mission Accomplishment	DTO	9	10.00	.000	.000	10	10
	DTSO	9	10.00	.000	.000	10	10
	DTP	24	9.67	.482	.098	9	10
	Total	42	9.81	.397	.061	9	10

Table 3: One-way ANOVA calculated for R^3 Assignment, Specialized Training and Equipment, On-Ground Situation Assessment, Psychosocial Parameters and Mission Accomplishment

		Sum of Squares	Df	Mean Square	F	Sig.
R^3 Assignment	Between Groups	10.183	2	5.091	13.961	.000
	Within Groups	14.222	39	.365		
	Total	24.405	41			
Specialized Training & Equipment	Between Groups	3.556	2	1.778	7.091	.002
	Within Groups	9.778	39	.251		
	Total	13.333	41			

On-Ground Situation Assessment	Between Groups	28.216	2	14.108	10.704	.000
	Within Groups	51.403	39	1.318		
	Total	79.619	41			
Psychosocial parameters	Between Groups	772.008	2	386.004	60.634	.000
	Within Groups	248.278	39	6.366		
	Total	1020.286	41			
Mission Accomplish-ment	Between Groups	1.143	2	.571	4.179	.023
	Within Groups	5.333	39	.137		
	Total	6.476	41			

in order to reach the conclusion. Analysis was also done by taking the mean ratings for different parameters in the questionnaire.

Analysis of data was done to statistically determine the differences between the means of Disaster Team Officers (DTO), Disaster Team Supervisory-Level Officers (DTSO), Disaster Team Personnel (DTP) by using ANOVA. A one-way between subjects ANOVA was conducted to compare the type and the difference of this R^3 Assignment from the previous assignments of the International Disaster Response Team (DTO, DTSO and DTP), effectiveness of specialised training and provision of equipment on task accomplishment, on-ground situation assessment, psychosocial variables, and mission accomplishment. There was significant difference ($p<0.05$) in response for the three groups (DTO, DTSO and DTP) in terms of the variables: the type of R^3 assignment [$F (2, 39) =13.96$, $p=0.00$]; effectiveness of specialised training and provision of equipment on task accomplishment [$F(2,39)= 7.09$,$p=0.02$]; on-ground situation assessment [$F (2,39)=10.70$, $p=0.00$]; psychosocial parameters [$F (2,39) = 60.63$, $p=0.00$]; mission accomplishment [$F (2,39) = 4.17$, $p=0.02$] (Table-2).

Since the ANOVA led to the conclusion that there is evidence that the group means differ, we were interested in investigating which of the means were different and, therefore, the Tukey multiple comparison test was employed. The test compares the difference between each pair of means with appropriate adjustment for the multiple testing (Altman, 1991; Bland & Altman, 1995). The Tukey multiple comparison test, like both the t-test and ANOVA, assumes that the data from the different groups come from populations where the observations have a normal distribution and the standard deviation is the same for each group.

Post-hoc comparisons using the Tukey HSD test for the various dimensions indicated the following: [R^3 Accomplishment: mean score for DTO ($M = 7.33$, $SD = 1.00$) was significantly ($p<0.05$) different from the DTP ($M=6.33$, $SD=0.48$) and DTSO ($M = 5.89$, $SD = 0.33$). However, there was no significant difference between the mean score of DTSO and DTP]; [Specialised training and equipment: mean score for DTO ($M = 7.33$, $SD = 1.00$) was significantly ($p<0.05$) different from the DTSO ($M = 5.89$, $SD = 0.33$). On the other hand, DTP ($M=6.33$, $SD=0.48$) did not significantly differ from the DTO and DTSO in terms

Table 4: Tukey's HSD Multiple Comparisons

Dependent Variable		(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig.
Mission	Tukey HSD	DTO	DTSO	1.444*	.285	.000
			DTP	1.000*	.236	.000
		DTSO	DTO	-1.444*	.285	.000
			DTP	-.444	.236	.157
		DTP	DTO	-1.000*	.236	.000
			DTSO	.444	.236	.157
Specialized Training & Equipment	Tukey HSD	DTO	DTSO	-.889*	.236	.002
			DTP	-.444	.196	.072
		DTSO	DTO	.889*	.236	.002
			DTP	.444	.196	.072
		DTP	DTO	.444	.196	.072
			DTSO	-.444	.196	.072

On-Ground Situtation Assessment	Tukey HSD	DTO	DTSO	1.667*	.541	.010
			DTP	2.069*	.449	.000
		DTSO	DTO	-1.667*	.541	.010
			DTP	.403	.449	.645
		DTP	DTO	-2.069*	.449	.000
			DTSO	-.403	.449	.645
Psychosocial parameters	Tukey HSD	DTO	DTSO	-10.667*	1.189	.000
			DTP	-10.361*	.986	.000
		DTSO	DTO	10.667*	1.189	.000
			DTP	.306	.986	.949
		DTP	DTO	10.361*	.986	.000
			DTSO	-.306	.986	.949
Mission Accomplish-ment	Tukey HSD	DTO	DTSO	.000	.174	1.000
			DTP	.333	.145	.067
		DTSO	DTO	.000	.174	1.000
			DTP	.333	.145	.067
		DTP	DTO	-.333	.145	.067
			DTSO	-.333	.145	.067
* Mean difference significant at 0.05 level.						

of their responses]; On-Ground situation assessment: mean score for DTO (M = 14.78, SD = 0.66) was significantly ($p<0.05$) different from the DTP (M = 12.71, SD = 1.33). Conversely, DTSO (M=13.11, SD=0.92) did not significantly differ from the DTO and DTP in terms of their responses]; [Psychosocial variables: mean score for DTO (M = 9.22, SD = 0.66) was significantly ($p<0.05$) different from the DTSO (M= 19.89, SD = 4.9) and DTP (M = 19.58, SD = 1.4). However, DTSO (M=19.89, SD=4.9) did not significantly differ from the DTP in terms of their responses]; Mission Accomplishment: mean score for DTO (M = 10.00, SD = 0.00) did not significantly differ from the DTSO (M = 10.00, SD = 0.00) and DTP (M=9.67, SD=0.48) in terms of their responses] (Table4).

Discussion

The human resource management policies and practices are eventually concerned with the effective management of human capital in such a manner that organisations and teams can achieve their objectives and goals (Edgar & Geared, 2005). Training is the systematic acquisition of knowledge and skills with the goal of developing competencies necessary for effective performance in work environments. Efficient human resource training and development contributes to an organisation's overall crisis management capacity, as well as effective crisis communication (Thomas & Zhou, 2013).A disaster can be overwhelming for the affected community and the whole country. It is not just the disaster-affected community, but the disaster responders also who often suffer the consequences of being a part of the post-disaster rescue, relief and response operations (Raphael, 1986; Paton, 1989, 1990, 1994; Mitchell, 1990; Katz et al., 2002; Ehring, Razik, & Emmelkamp, 2011). Disasters consign intense environmental demands on the responders such that their own adaptive abilities and basic needs to fulfill the mission might be compromised. Surveys are essential to document the experiences for future mission. Previous studies have pointed out the importance of conducting surveys at the individual institution level rather than adopting only statewide or countrywide approaches, particularly for health care workers engaged in disaster management work (Ogedegbe, Nyirenda, DelMoro, Yamin, & Feldman, 2012). Some perspectives that emerged from the International Disaster Management Team of India are discussed below.

Specialised Training facilitates International R^3 Missions

Gauging the effectiveness of the International Disaster Response Team on-ground was one of the purposes of evaluation in this study. The survey on the International Disaster Response Team from India revealed that though the team experienced the disaster as a shocking event perceived that nothing could have prepared them for such a kind of unprecedented disaster, they were suitably trained for handling the mission. There is a need for disaster management agencies to continually test the ability of their teams to work together efficiently, and also to communicate

and operate in mock drills and joint exercises nationally and internationally in order to make the responder teams more effective (Jones, 2005; Hosie, 2006; Reilly, 2008; Crandall, Parnell, & Spillan, 2014).

Disaster management training is aimed at building the technical skills and competencies of the disaster response and relief workers (including health care workers) and volunteers. A variety of organisations conduct programs of training and serve as a resource for potential responders interested in capability-building training prior to deployment (Jacquet, Obi, Chang, & Bayram, 2014). However, there is a need for programmes to be customised by the respective organisations. Through the training, disaster responders also have the opportunity to interact, communicate and share ideas, experience and knowledge with other skilled human resource. Specialised training of responders results in improved preparedness at all levels and short and efficient response time (Paton, 1994; Ogedegbe *et al*., 2012; NIDM, 2013; Nazli, Sipon, & Radzic, 2014). In the present study also, the responder team opined that the specialised training received was very helpfulas it increased their confidence level and motivation.Training needs analysis is a systematic process conducted prior to designing a training program and involves determining the training needs at organisational, operational or individual level, identifying what kind of training is needed, and finally identifying who are the individuals that need to be trained or retrained (Nazli *et al.*, 2014). Training need analysis is routinely carried out by the National Disaster Response Force, while in India and the team is accordingly trained for gaining specific skills and competencies to operate unconstrained by the circumstances. The present study showed that the training received by the team was effective and came in handy during their first international R^3 mission.

Protective Gears and Equipment: Force Multipliers in R^3 Missions

The responses of the disaster response team showed that the team felt that equipment for R^3 operations are necessary. International responder teams must carry their own equipment with them, wherever possible, so that response time can be reduced to the minimum. Several workers have shown the importance of equipment in disaster management relief and rescue operations (Arora & Arora, 2013; Arora *et al*., 2013d). The disaster responder force while it is in India, practices and maintains preparedness for operation 24x7 and as a part of proactive preparedness acquires and continually upgrades its training and skills. In addition, it also imparts basic and operational level training to other disaster response forces e.g., State Response Forces viz., Police, Civil Defence and Home Guards, performs liaison, assists in community training and preparedness, reconnaissance operations and mock drills. During imminent disasters, the team is proactively deployed and during disasters it carries out specialised response.

The International Disaster Response Team from India was equipped with all the paraphernalia considered essential for the mission. They carried with them the latest gadgetry for autonomous communication via satellite phones and other electronic and communication systems for the purpose of independent troop-to-troop communication during their operation in Japan. They also carried with them several utility items so that they could operate independently in the disaster region assigned to them in Japan. The team was also equipped with the state-of-the art radiation monitoring and personal safety equipment and was self-contained in terms of emergency rations and critical medicines. The responder team also carried collapsed structure search and rescue equipment and relief material like portable shelters, tents, blankets, water bottles etc. The responder team, therefore, was self-sufficient in terms of equipment.

Suitable Placement of International Responders: Crucial to mission goals

The optimal deployment of urban search and rescue teams to disaster sites in post-disaster circumstances is a necessity to suitably manage the already constrained skilled human resource trained in disaster management operations. The team opined that the problem of optimal deployment of the responder teams was faced post-Tōhoku disaster in Japan. Limited-stage stochastic programs can help identify sites needing assistance dynamically over the decision horizon, and this can maximize the total expected number of people that can be saved by attending to all or a subset of disaster sites within the disaster region (Chen & Miller-Hooks, 2012). Development of such programmes can help save immense number of lives and, in future, attention needs to be paid in this direction.

HR Coordination: Key to Successful International R^3 Missions

Interactions with the coordinating team overseas where the disaster has occurred are absolutely essential. In fact, the coordination activities should begin beforehand. The International Disaster Response Team from India worked independently in Onagawa, but they had immense close interactions with the Japanese workers. This raised their morale and also helped them assess their individual preparedness vis-à-vis other international responder teams and the local disaster management response team. The concept of collaborations is gaining ground in almost all fields involving human resources. However, collaborative

governance in disaster management has not picked up so far. In recent times, cross-boundary decision making and management, cross-sector collaboration and collaborative networks are the talk of the day (Aoki, 2015). Collaborative processes in disaster management require mutual trust, shared visions, values, and effective leadership. Coordination problems with respect to human resource management are frequent in disaster situations, and were faced during the Hurricane Katrina (Leonard & Howitt, 2006) and during the Great East Japan Earthquake to some extent (Sato, Imamura, & Hayashi, 2013). There is a need for better collaborative policies in place, particularly to enable international responder teams to operate unhindered during a disaster in a boundary-less manner. This would help ease the load of the local disaster management teams when they are overwhelmed with tremendous workload.

Despite the best efforts, certain coordination issues were observed in the aftermath of the Great East Japan Earthquake. Although facilitation of the arriving international disaster response teams was done prior to their arrival in Japan, in view of the enormity of the disaster and the disruption of communication systems, it was virtually impossible to match the offered supports with actual local needs in the disaster-affected areas. Assessment of the requirements at local level is usually difficult during the first few days after the disaster. Guidelines for need-based deployment International Disaster Response Teams at the local level in the affected area should be developed. Post-disaster, the entry of the International Disaster Response Teams to Japan was facilitated by the Ministry of Foreign Affairs. The Japanese Government Disaster Management Headquarters provided several services in order to facilitate the International Disaster Response Teams for search and rescue operations: i) they reviewed the disaster management team's capacities prior to their arrival in Japan; ii) designated cooperating agencies; iii) facilitated immigration procedures; and iv) arranged suitable transport to the designated site in cooperation with relevant ministries. A number of International Disaster Response Teams were facilitated by the Japanese Government Disaster Management Headquarters: Australia, China, France, Germany, India, Mexico, Mongolia, New Zealand, Republic of Korea, Russia, Singapore, South Africa, Switzerland, Taiwan, Turkey, United Kingdom, and United States. Fire and Disaster Management Agency (FDMA) and National Policy Agency (NPA) were directed to cooperate with the International Disaster Response Teams. It also supported immigration and domestic transport. At the local level, liaison officers from Ministry of Foreign Affairs of Japan (MoFA) coordinated with the International Disaster Response Teams. Allocation and scheduling of rescue units is an important task and can make a great deal of difference in the outcome of the operations during natural disaster management (Wex, Schryen, Feuerriegel, & Neumann, 2014).

It has been felt that it is essential to develop liaisons with the embassies in the country early on to facilitate easy entry on the International Disaster Response Teams. The Japanese Self Defense Forces (SDF) provided transport services to a number of international teams. However, the SDF's own operations grew and this made it difficult to provide transport services. Several international teams had to make their own transport arrangements. During mega disasters as the coordinating agencies are already overwhelmed, it might be realistic to request the international assistance teams to garner support from their own embassies. The International Disaster Response Team from India was provided logistics and fuel by the Indian Embassy in Japan. Translators from the Embassy accompanied the team in Japan. This greatly helped the team in their interactions with the other disaster management headquarters, other responders, and the community. Lessons learnt from the 2011 Tōhokupost-disaster humanitarian logistics response and policy recommendations to enhance the resiliency and efficiency of disaster response efforts have been recently highlighted (Holguín-Verasa, Taniguchib, Jallere, Aros-Veraf, Ferreirac, & Thompson, 2014).

Health & Well-being of International Responders Needs Focus

As an occupational hazard, disaster management teams are at risk of being intentionally or inadvertently exposed to life threatening danger, and often witness extreme destruction. This places intense physical and mental demands due to vagaries of extremes of environment, hunger, sleep deprivation etc. The disaster responders are at an increased risk as they may become "the other unrecognised victims" at the time of disaster (Raphael, Singh, & Bradbury, 1986). Damages due to disasters are known to result in physical as well as significant psychological effects (Wang *et al*., 2000). Responder teams caught up in large numbers in overseas disasters may need health assistance (Robertson, Griffiths, Norton, & Weeramanthri, 2011). Health and safety of disaster management teams is an issue that needs to be given attention (Aitken, Leggat, Robertson, Harley, Speare, & Leclercqu, 2009).

Sanitation conditions and availability of drinking water is a problem post-disaster and it was also an issue post-disaster in Japan. However, the International Disaster Response Team from India perceived that this was not a major problem in Onagawa. This could be attributed to the humanitarian aid reaching the disaster site from various quarters. However, the team themselves could not take a bath or change clothes during the duration of the mission. Most disaster response teams commonly encounter such problems. If the mission is of shorter duration, then this problem can be overcome. However, long-duration missions pose grave problems for

disaster responders.

With a view to taking the on-ground situation, the opinion of International Disaster Response Team from India was sought on the point whether the basic needs and safety of the vulnerable groups (elderly, women and children and differently abled people) were properly met. The International Disaster Response Team from India opined that the basic needs and safety of vulnerable groups were largely taken care of. This is indicative of the efficient disaster management response by Japanese authorities.

Fortifying Psychological Resilience in International Responders is a sine-qua-non

Similar to previous disasters, the Great East Japan Earthquake also resulted in altered mental health and psychological disorders in the affected community and responders in Japan (Kato &Iwai, 2000; Yamazaki et al., 2011; Kato et al., 2012; Arora et al., 2012; Shindo, Kitamura, Tachibana, Honma, & Someya, 2012; Reifels, Pietrantoni, Prati, Kim, Kilpatrick, Dyb, Halpern, Olff, Brewin, & ODonnell, 2013; Kim, 2014; Koerner & Yasui, 2014; Usami, Iwadare, Watanabe, Kodair, Ushijima, Tanaka, Harada, Tanaka, Sasaki, & Saito, 2014; Shigemura, Tanigawa, Nishi, Matsuoka, Nomura, & Yoshino, 2014; Hasegawa, Hidaka, Kuriyama, Obara, Hashimoto, Tateda, Okumura, Kobayashi, & Katori, 2015; Fukasawa, Suzuki, Obara, & Kim, 2015; Shimura, Yamaguchi, Terada, Okuda, Svendsen, & Kunugita, 2015). In the aftermath of the 2011 Great East Japan Earthquake, apart from mental problems even compassion fatigue was encountered among responders and caregivers and discrimination against Fukushima residents, including rescue workers in the nuclear power plant has been reported (Matsuoka, Nishi, Nakaya, Sone, Noguchi, Hamazaki, Hamazaki, & Koido, 2012; Yamashita & Shigemura, 2013). The maximum impact on mental health is reported to occur directly after a disaster and persists for about a week and there is some improvement after one month. However, an unhealthy mental state can persist after six months to a year. The prevalence of posttraumatic stress disorders (PTSD), as manifestations of mental health problems in the aftermath of a disaster usually ranges from 4.4% to 24.2% (Wang et al., 2000). The elderly are quite susceptible to induction of increased levels of subclinical mental health symptoms post-disaster (Suzuki, Atsuro, Fukasawa, Honma, Someya, & Kim, 2011). It is necessary to monitor and identify changes in mental state of the victims and responders and provide appropriate medical/ psychological interventions. The psychosocial problems become quite common in the teams that operate in traumatic environments. Keeping this in mind, the questions on psychosocial problems faced were posed to the team.

It is a well-established fact that disaster relief work puts the responders not only to physical risk, medical health problems, but can also lead to emergence of psychosocial problems. Training and retraining can help build resilience in responder teams. When responder teams are mobilised to work in entirely new disaster-affected countries/terrain that has been overwhelmed by massive disasters, the specialised rescue, relief and recovery (R^3) training and skills imparted to the highly skilled human resources is inevitably tested and validated. It is easier to perform R^3 operations in the responder's own country, rather than working abroad under highly uncertain conditions with innumerable constraints and against all odds. The team members felt that the experience gained was useful for future missions.

Members of the International search and rescue teams often witness severely injured people, dead bodies, have to listen to unending pleas for help, and are under tremendous pressure to take rapid decisions to allocate limited resources at their disposal, which might mean life and death for some of the severely injured. It is often not possible to help all those who seek help and prioritisation is necessary. Operating in such an environment, while most of the disaster rescue workers only experience mild, normal stress reactions, severe stress symptoms are manifested in some of the disaster rescue workers (Armagan, Engindeniz, Devay, Erdur, & Ozcakir, 2006). Some rescue personnel may exhibit severe symptoms, which may lead to lasting PTSD, anxiety disorders or depression. Manifestation of emotional reactions, cognitive reactions, physical or interpersonal reactions is common (Myers, 1994). Emergency workers are also vulnerable to increased incidences of problems arising due to adaptation (Dunning, 1985).

Witnessing dead bodies after a disaster can have adverse consequences even on the well-trained responder teams (Alexander & Wells, 1993; Arora *et al.*, 2013a). The International Disaster Response Team from India during their mission in Onagawa, Japan were able to extricate seven dead bodies from the tsunami rubble two weeks later. A direct impact of the mission on mental health was not reported, which could be attributed to the short duration of the mission. However, previous studies on disaster responders mention that responders should guard themselves against disaster stress as it can revive memories of the past and may intensify preexisting social, economic, medical or psychological problems in the relief and response personnel. For this purpose, carefully designed debriefing sessions after the mission are an absolute necessity. Such sessions were organised after the team's return to India.

In Life and Death: Cross-cultural Human and Humane Issues matter

The team recovered Japanese currency and valuables worth approx. Yen 50 million, which was officially handled over to the Miyagi Prefecture Police Department. The expression of respect towards the dead and offering of prayers as per Indian tradition was something that touched the hearts of the Japanese people and the local relief and rescue teams and local response management officials, other human resource and members of the disaster-affected community. This milieu of genuine empathy, display of real concern for fellow citizens of the world,based on the ancient Indian tradition, by the International Disaster Response Team from India put the disaster response team on a steadfast pedestal. It can be concluded from this inherent behavior of the Indian Disaster Response Team, sent to Japan in the aftermath of the 2011 Great East Japan Earthquake and tsunami, that cultural sensitisation of the responders can go a long way in building trust in the disaster-affected community for International Disaster Response Teams.

Professional Development is Possible through On-Ground Experience and Diverse Perspective

It has been opined by the members of the International Disaster Management Team that on-ground disaster experiences promoted their personal growth in terms of gaining of novel experience that was not possible otherwise, gaining of entirely new perspective and strengthening of mutual relationships amongst the disaster response workers. The present study has demonstrated differences in opinions of the different strata of the International Disaster Response Team viz., DTO, DTSO and DTR vis-à-vis various dimensions evaluated viz., R^3 Assignment, Specialised Training & Equipment, On-Ground Situation Assessment, Psychosocial parameters, and Mission Accomplishment. This could be attributed to a multitude of reasons and factors: individual experience, social and educational background, upbringing and grooming, local culture, diversity of the members of the team, personal factors, peer level interactions and individual's perspective, vision and kaleidoscope, on-ground experience, previous experiences, knowledge, skills, attitudes, behaviors, and various personal characteristics etc. Different responses in terms of perception amongst the different disaster team members were commonly reported. Such responses are quite commonly encountered in surveys related to disasters (Goodwin, Takahashi, Sun, & Gaines, 2012). Despite the diversity in individual perspectives, team cohesiveness helps accomplish the goals and leads to development of the human resource.

The international disaster response team's effectiveness depends on a number of factors: ability to perform the assigned role independently and in a team, remain calm in any condition, adaptability to uncertain milieu, cognitive skills, effective communication, prior disaster training/ experience acquired, interpersonal relations, problem solving and decision-making capability, and teamwork. Striking the right balance between the personal needs of workers and the demands of the organisations is an area that needs attention so that human resource professionals and disaster management professionals can help manage the crisis situations in an efficient manner (Byron & Peterson, 2002; Ferris, Hochwarter, & Matherly, 2007; De Salvo & Hyre, 2007; Goodman & Mann, 2008; Arora *et al*., 2013a, b,c,d,e; Nilakant *et al*., 2013b).

International Disaster Missions don't end with the Mission: The Task Continues

International R^3 missions are usually short and accomplish only select goals. The responsibility for further reconstruction and rehabilitation lies with the local authorities. The International Disaster Response Team returned to India after handing over the responsibilities for further relief and rehabilitation to the local Japanese authorities. This is in consonance with the standard practices post-international operations. Coupet, Nassiri, Aliu, and Coppola (2013) have also pointed out that it is important for international aid organisations to safely and confidently transfer responsibilities back to local providers after acute response to disasters and emergencies. Reconstruction work starts much later, after the disaster, however it is very important to rehabilitate the people and proper proactive HR management plays an important role. Efficient human resource management results in mitigation and prior planning leads to building of disaster-resilient cities (Mann, 2011).

Limitations of the Study

The limitations of the study included the following concerns: i) sampling limitations due to the fixed number of search and rescue personnel who were deputed to Japan, n= (46). Probability sampling method was adopted to ensure that each sample in the population had some non-zero probability of getting included in the sample could not be adopted since a fixed number of personnel had gone to Japan to participate in the rescue and relief mission. This is an inherent limitation over which there is no control; ii) soliciting and collecting data from International Disaster Response Team from India members on a large number of questions was not feasible; iii) the team members after the accomplishment of the mission have since been transferred to a new place making future data collection difficult for follow-up. Manifestation

of post-traumatic stress disorder (PTSD) in long-term could not be monitored due to this reason; iv) only the International Disaster Response Team from India could be considered and not the several other international teams that participated in the search, rescue and relief mission in the aftermath of the Great East Japan Earthquake and tsunami due to ease of access and paucity of the requisite funds and resources.

CONCLUSIONS

The perspective of the International Disaster Response Team from India revealed that though this was their first international R^3 mission, it led to gaining of once in a lifetime experience. As a team, a sense of immense intrinsic satisfaction was derived by the members. The team realised they did immense service to society and humanity for a noble cause. In other words, post-mission, the team felt the following: that they became more resilient, their preparedness level was enhanced, cross-cultural experience was achieved, on-ground experience was gained. In addition, the team became more aware of their weaknesses as a result of self-appraisal, learnt from peer responder teams from other countries, a sense of morale boosting and confidence prevailed, and they got an opportunity of testing the performance of equipment and protective gear. Overall, the international mission has made the NDRF team more resilient and better prepared for future missions. The team perceived that the experience gained on-ground would help in effective and efficient disaster response in future through development, strengthening and enhancement of the disaster management skills.

The success of any disaster response team is eventually gauged from the fact that how the country that has been helped during the disaster feels. The international disaster response team (National Disaster Response Force (NDRF) from India received accolades for their work from almost everyone in Japan and back in their home country. The citizens of Onagawa and the Japanese Government expressed their gratitude and appreciation for their dedicated efforts. The local media also appreciated the International Disaster Response Team's dedication, sincerity and commitment.

"I imagine how hard it was for NDRF members, coming from India to work under the bitter chill of Tōhoku's blustery winds in late March. Despite such harsh conditions in Onagawa, severely damaged by the tsunami, they listened to the needs of local residents and worked painstakingly with their hands to search for victims' bodies and their belongings from piles of rubble more than 10 meters deep. Their dedication, whole heartedness and warm smiles touched the hearts of those who were grieved at the disaster and gave them immeasurable hope. "

(Excerpts from the Speech of Hon'ble Prime Minister of Japan at Indian Council of World Affairs, Delhi, India on 28th December, 2011)

The Mayor of Onagawa Mr. Yoshiaki Suda has recently termed the Indian National Disaster Response Force as an "empowering force" (Business Standard. March, 2015).

The International Disaster Response Team from India (National Disaster Response Force; NDRF) successfully accomplished its mission in Japan. The current study has established that evaluation of opinions of the NDRF team vis-à-vis various dimensions viz., R^3 Assignment, Specialised Training & Equipment, On-Ground Situation Assessment, Psychosocial parameters revealed accomplishment of mission goals in a cross-cultural setting. It is anticipated that experience sharing in respect of the International Disaster Response Team from India will be useful for the entire South Asian region and the world at large. It is also hoped that the lessons learnt would help design and develop better and efficient human resource policies and practices that might be useful in the management of emergencies, especially arising in the aftermath of mega disasters.

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DISCLAIMER

The views contained in the article are personal to the authors and do not reflect the views of the Government of India or the respective departments/institutions in India or Japan. The interpretation of the results represents entirely the personal views of the authors and should not be construed as official in any form.

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