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Objective: This cross-sectional descriptive study was conducted in District Srinagar 45 days after floods. It was a rapid need assessment done for assessing the health and safety needs of the population.

Methods: 30 x 7 cluster sampling based on the Community Assessment for Public Health Emergency Response (CASPER) methodology was used to select seven households from 30 census blocks using two-stage sampling. Data collection was done on demographics, damage, prepare- dness and needs.

Results: Total of 210 households were surveyed. Vulnerable population was present in about 48% (CI: 41% - 55%) of households, 82 % (CI: 76%-86%) had a member who was on prescribed medication especially for non-communicable diseases and 9% (CI: 4%-13%) lacked weeks supply, 59% (CI: 46%-72%) had evacuated the house, 3% houses were destroyed (-0.06-5.8%) and most common need expressed was financial help by 42% (CI: 30%-55%).

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RAPIDNEEDASSESSMENTOFDISTRICTSRINAGARPOSTSEPTEMBER2014FLOODS

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Rapid Need Assessment of District Srinagar, Post September 2014 Floods

Sheema Samreen [α], Muzamil Hassan [σ] & S. M. Salim Khan [ρ]

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Conclusion: Rapid need assessment helped in data collection in a short period of time during disaster and can help authorities to plan for future and risk mitigation.

I. Introduction

Natural disasters are common worldwide and threaten the life of people. Globally, flood is the most frequent and exorbitant disasters (1) (2) (3). Assessment of needs of affected people following disasters is a first line public health response for designing and prioritization of emergency policy. (4) (5) Rapid need assessments (RNAs) are first tool of survey following disasters which steer response efforts to emergencies especially in the recovery phase. (4) (5) The Centers for Disease Control and Prevention (CDC), Atlanta developed a toolkit known as Community Assessment for Public Health Emergency Response (CASPER) for RNAs in 2009 so that on time, valid and economic position of current household-based public health needs could be ascertained during disasters. (4) (6)

Kashmir Valley is prone to floods because of its geographical location and topographical features as has been witnessed in past. (7) The state of Jammu and Kashmir witnessed one of the devastating floods of history in the September 2014 which affected about million people directly. (8) (9) The relentless rainfall for five days caused by the combined wrath of western disturbances and monsoon in the state of Jammu and Kashmir led to flooding of Jhelum River. (4) (7) (8) The flood affected both urban and rural areas, submerging about 2600 villages, completely or partially, and larger part of the capital city Srinagar city. The flood caused massive damage not only to infrastructure, roads, and communication but even to some of major tertiary hospitals. (4) (9) In some parts of Srinagar which were low-lying the water receded after a month. (7)

So keeping above facts into mind this study was undertaken 45 days after floods using CASPER toolkit with the main aim of assessing the impact of floods on health, needs of population besides assessing public health response after floods.

II. Methodology

This was a cross-sectional study done after 45 days of floods from 20 October, 2014 to 25, October 2014 in the city of Srinagar. As per census 2011 the population of Srinagar city consists of 1,236,829 people and 188,645 households. The study was done as per the protocol given by CASPER toolkit which uses 30 x7 two – stage cluster sampling methodology with design effect "2" for collection of relevant data on the health status and basic needs at household level.

In order to select the desired 210 households for the study the methodology as described by CASPER toolkit was followed. In first stage, line listing of all housing units within 2011 census blocks of Srinagar was done and then 30 clusters were randomly selected by probability proportional to size. In second stage, household was selected for interview by going to center of the selected cluster and then moving in a random direction which was decided by spinning a pen. The direction of the pen was followed to interview every 10th household until the required seven households were selected for the study.

The data was collected by five teams with two members each in the team who had received training on data collection. A modified questionnaire used for data collection was prepared from the CASPER question bank.

The questionnaire captured information regarding domains such as demographics, functional

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needs, post-flood damage and repair, supply needs, emergency preparedness, concerns about injuries and illnesses, communication and needs.

After entering the household, explaining the objectives of the study and obtaining verbal consent from head /family member (>18 years) a detail interview was done for data collection.

The data was entered and analyzed in Epi – Info 7 software. The data analysis was done using households as units of analysis. Then weighted proportions were calculated using mathematical weight for probability of selection of each interviewed household using formula:

"weight" ="total number of housing units in sampling frame"/number of housing units interviewed within clusters x number of cluster selected

Using the weighted proportions, estimated projections and confidence intervals (CI) were calculated after taking in account the differences within and between the clusters.

Furthermore, contact rate and completion rate of interviews were also calculated by dividing the completed interviews by the total number of households where contact was attempted, and by dividing the number of completed interviews by the number of interviews conducted.

III. Results

Table 1: Demographic Characteristics and Health Needs of Households

Vulnerable Population in Household	Projected Frequencies	Projected Percentages	Confidence Interval	Design Effect
Pregnant Women	8984	4.76%	1-8.524	1.572
Lactating Mother	36830	19.52%	13.26-25.783	1.256
Children < 5 Years	76357	41%	34.35% - 47.65%	1.2
Elderly > 65 Years	89831	48%	41.24% - 54.76%	1.67
Locomotor Disability	6289	3.33%	1.060-5.607	0.808
Blind	2694.9	1.43%	-0.705-3.562	1.629
Deaf	8085	4.29%	0.828-7.743	1.468
On Regular Prescribed Medicines	153611	81.43%	75.899-86.958	1.019
Hypertension	113187	60.00%	32.380-67.620	1.219
Hypothyroidism	46712	24.76%	17.091-32.433	1.591
Diabetes Mellitus	58391	30.95%	25.003-36.902	0.834
Asthma	6289	3.33%	1.06 – 5.60	0.808

Table 2: Functional Needs, Damage and Repair during Floods

Variables		Projected Frequencies	Projected Percentages	Confidence Interval	Design Effect
Evacuated house during/before floods		111391	59.05%	45.720-72.375	3.7
Place of evacuation during floods	Friends/relatives	79052	70.97%	59.680-82.255	2.354
	Others	18865	16.94%	7.590-26.281	2.354
	Shelter	13475	12.10%	2.856-21.337	2.354
Damage to home	Minimal/none	91628	48.57%	35.904-61.239	3.236
	Damaged but habitable	73662	39.05%	28.179-49.916	3.236
	Damaged and inhabitable	17967	9.52%	4.636-14.42	3.236
	Destroyed	5390	2.86%	-0.069-5.784	3.236
Feel that house is NOT safe for living		42221	22.38%	14.733-30.025	1.696
Insurance of house		10780	5.71%	1.167-10.261	1.933
House surveyed for damage assessment		7187	3.81%	0.700-6.919	0.996
Compensation paid for damage to house		1797	0.95%	-0.399-2.304	0.996
Moldy musty odor		101509	53.81%	42.129-65.490	2.767
In need of any assistance for house	Cleaning up the House	66475	35.24%	24.409-46.067	2.58
	Repair of house	97916	51.90%	39.022-64.788	3.349

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Table 3: General Utilities, Supplies and Relief

Variables	Projected Frequencies	Projected Percentages	Confidence Interval	Design Effect
No Electricity	4492	2.38%	-0.070-4.832	1.302
No Tap Water	899	0.48%	-0.492-1.444	0.996
No Food For Next Three Days	4492	2.38%	0.364-4.398	0.882
No Accessible Toilet	13475	7.14%	3.010-11.275	1.76
Received Relief Water	60187	31.90%	19.487-44.323	3.575
Received Relief Food	1068989	56.67%	43.125-70.209	3.762
Weeks Supply Of Prescribed Medicine	17069	9.05%	3.773-14.322	1.094

Table 4: Emergency, Preparedness, Communication and Needs

Variables		Projected Frequencies	Projected Percentages	Confidence Interval	Design Effect
First Aid Kit At Home		17967	9.52%	4.005-15.042	1.780
Emergency Preparedness Kit		29643	15.71%	7.109-24.320	2.816
Chlorine Tablets No		140137	74.29%	65.39-83.192	2.087
Message To Boil Water		161696.	85.71%	79.678-91.750	1.49
No Working Mobile Phones		2695	1.43%	-0.384-6.098	1.907
Sought Medical Care		106001	56.19%	44.944-67.437	2.588
Experienced Anxiety		76357	40.48%	30.169-50.784	2.221
Immediate Needs	Financial Help	79950	42.38%	30.256-54.504	1.476
	No Need	39526	20.95%	12.361-29.544	
	Basic Commodities	14373	7.62%	3.078-12.161	
	Ration	17967	9.52%	4.098-14.949	

In this study 213 households were contacted and 210 interviews were completed giving contact rate of 98.5% and completion rate of 100%.

In this study demographics revealed that there was vulnerable population in the households such as elderly, children less than 5 years, lactating mothers, pregnant women and persons with serious difficulty in hearing, blindness and locomotor disability. Regarding health status about 81.43% (153611) households were found to have at least one member who was on regular prescription medications for non-communicable diseases Emergency, Preparedness, Communication and Needs. Majority (60%) were taking prescription medicines for hypertension followed by diabetes mellitus 30.95%, 24.76% for hypothyroidism and 3.33% for asthma. (Table 1)

Table 2 reveals that about 59.03 % (111391) had evacuated there house during or before floods and majority (71%) had moved to friends or relatives home. About 12% of houses were significantly damaged and 22.38% felt that it was not safe to live in their houses. About 6.1% were not residing in their homes at the time of survey. Only 5.7% of households were insured and compensation was paid to less than 1% of households.

This study also showed that more than 50% of houses had musty or moldy odor while as about 75% of households which had evacuated house during floods required assistance for repair .(OR: 9.3; CI4.9-17.7).

The table 3 shows that that even after 45 days of flood basic amenities like food, water and electricity were lacking in some households and about 4492 households lacked food for next three days and just 17068 households had weekly supply of prescribed medicines.

Table 4 shows although almost 75% of households didn't have chlorine tablets but 100% of the households in the region consumed boiled water as a routine practice in the region. Communication services of mobile network were restored in most of the areas but was lacking in about 1.5 % of households. 51% of the households had sought medical treatment during floods. The majority of the households had visited local health camps mostly for the ailments of cough, fever and diarrhea. About 41% of households reported increased anxiety among at least one family member. Anxiety was more among those who had evacuated the house (OR=1.75, p =0.5)

While assessing the immediate need at the time of study overall, 43% (79950) households expressed need of financial help followed by no need (21%) and need for basic commodities -including ration (17%). While comparing the immediate needs of evacuated households with that of non evacuated, 53.26% had a need of financial help, 17.2% had need for and 11.29 % had no need vis –a vis 26.4%, 17.56 and 26.74% of latter households.

IV. Discussion and Conclusion

The cross-sectional study was done after 45 days of Kashmir floods in September 2014, in order to assess the immediate needs of the households of district Srinagar. Rapid need assessment surveys are useful to collect timely data in a short period of time. The CASPER methodology by CDC was used in India for the first time during Kashmir floods by rapid assessment

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team from National Center for Disease Control, New Delhi three weeks after the floods (4).

This study found that vulnerable population was present in most of the household's. The vulnerable population has special needs and during disaster care ought to be taken for protection of health and prevention of malnutrition after floods. It was also seen that 80% of the population was on prescribed medicines especially for the non-communicable diseases. Chronic diseases get exacerbated during disasters and can contribute to mortality (10). Non-communicable diseases (NCD) are leading cause of mortality worldwide so disaster preparedness and response needs to have a provision for management and treatment of NCDs. (11) (12)

The study revealed that more than half of the population had evacuated their households and about similar number of households were damaged, though most of these were habitable. In this study it was found that majority of houses had a moldy or musty odor which is common after floods and have been reported in studies done in America after Hurricane like Katrina but can be dangerous to the inmates and cause serious health effects if not taken care off on time.(13)

In this study it was revealed that even after one and a half month post floods households lacked basic commodities like food, water and electricity. Although reports reveal that huge supplies and commodities were procured by the government and non-government agencies, the study shows that supplies were not distributed in a proper way and post flood measures were not up to mark (14). There was also shortage of prescribed medicines in the households which is similar to findings of other studies and signifies the importance of disaster preparedness as stressed by United Nations in the Sendai Framework for Disaster Risk Reduction 2015-2030 (4) (15).

As documented by other rapid need assessment studies done after disasters worldwide, this study also revealed that there was increase in the mental health symptoms such as anxiety, nightmares ,agitation or depression among household member after floods (4) (16) (17) (18).

Lastly this CASPER tool helped to assess the immediate needs of the households at the time of study. The data can help in further planning and future disaster management strategy of the state for risk mitigation and post flood rehabilitation.

The strength of this study lies in the fact that useful and large set of data was collected in short period of time, which will help the state for framing future policy for disaster management.

Limitation of the study is that most of the questions of this study were self – reported and verification couldn't be done. Also sampling and analysis was done on the basis of households and not on individual level.

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