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Evaluation of community and household level needs assessment and the association between displacement status and food and water availability in a post-conflict setting – Jaffna, Sri Lanka, 2009

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Evaluation of community and household level needs assessment and the association between displacement status and food and water availability in a post-conflict setting – Jaffna, Sri Lanka, 2009

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An abstract of
A thesis submitted to the Faculty of the
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Abstract

Evaluation of community and household level needs assessment and the association between displacement status and food and water availability in a post-conflict setting – Jaffna, Sri Lanka, 2009

By Vidisha Singh

May 2009 marked the end of the 26-year long Sri Lankan civil war that led to the displacement of more than 800,000 persons, especially in northern districts of the country. The objectives of this study were to validate community-level survey data with that of the household and to determine if there was an association between household displacement and food/water availability among residents of Jaffna District, Sri Lanka. Data were obtained from a 2009 general health and injury survey conducted by CDC. Level of agreement scores between community and household level needs assessment were calculated for six overlapping questions (socio-demographics/basic community characteristics) between 35 community leader (CL) responses and 1356 households. Scores were compared overall, then by individual questions. Data from 1410 households were then used to explore the association between displacement level (currently displaced, recently displaced, and long-term resident) and food availability, as well as displacement level with water availability. The level of agreement score range was 1-6, and 37% of all CLs scored the median of 4 [IQR: 3-5]. Highest agreement was found with ethnicity (83%) and religion (74%). Lowest agreement was found for primary water source (29%). Currently displaced compared with long-term residents (OR=0.5, 95% CI: 0.3, 0.8) and household size of 6 ≥ compared with 1—3 members (OR=1.7, 95% CI: 1.2, 2.5) were significantly associated with inconsistent food availability, controlling for sex and religion. Female heads of household compared with males (OR=1.8, 95% CI: 1.2, 2.8) and Non-Hindus compared with Hindus (OR=2.6, 95% CI: 1.3, 5.1) were significantly associated with inconsistent water availability, controlling for displacement level. While agreement scores suggested the majority of CLs had relatively high knowledge of household needs and demographics, few had knowledge of primary water source. The association between displacement status and food availability suggested that those living in IDP camps had better food availability compared to long-term residents. Although classified as having reintegration into the community, long-term residents may not have achieved truly sustainable access to food. Valid community level data will better reflect household level needs, thus providing useful data for key stakeholders to respond appropriately during acute emergencies.

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CHAPTER I

INTRODUCTION

Complex Humanitarian Emergencies

The result of deep social crises or political conflict, complex humanitarian emergencies (CHEs) are multifaceted disasters marked by intense violence, public health and safety consequences, structural and socioeconomic breakdown, and increased displacement (1, 2). The discerning factor of CHEs compared with natural disasters is that they are manmade. Because the root causes of CHEs are socially, politically, or economically driven they require a multidimensional response (3, 4). In addition, the duration of the emergency and subsequent response vary greatly among the two types of disasters; natural disasters tend to be short-term and self-limiting with national response participation, while CHE duration is a function of unresolved conflict persistence and the response is largely dependent on external organizations and agencies due to the breakdown in order (5). The public health impact of CHEs poses an especially large threat to those affected due to disruption of routine health services, adequate nutrition, disease control, and reproductive health services (6).

Internally Displaced Persons

Of the staggering 59.5 million forcibly displaced world-wide in 2014, 38 million were displaced due to conflict-driven causes, with children representing more than half of all those displaced (7, 8). Internally displaced persons (IDP) are those forced to leave their homes due to complex emergencies or natural disasters that endangered their lives, but remain within their nation's borders (7, 9, 10). Refugees are those who leave their country of nationality and are no longer under their native country's protection (11).

While many refugees and IDPs flee to seek safety for the same life-threatening reasons, refugees are provided legal protection by the UNHCR mandate (as established by the 1951 Convention and the 1967 Protocol Relating to the Status of Refugees) whereas IDPs are afforded no such protection (12). The protection of IDPs is the legal responsibility of the national government, although often times the government authority has collapsed or is itself the root of conflict (10). Furthermore, the magnitude of total IDPs worldwide outnumbers that of refugees by more than two-fold, and has reached record numbers since 2012 (7, 10). This disproportionate number of IDPs owes to the often treacherous commutes involved in crossing borders, neighboring countries limiting the number of refugees they will accept, and the desire to reside in one's home country. Compared with refugees, IDPs may face additional barriers – little to no protection from violence and limited aid access due to the nature of conflict arising from the country in which they live (13, 14).

Precise estimates of IDPs are difficult to track because the vast majority does not reside in camps, but rather in a host of other settlements including with family or friends, rental properties, or unoccupied buildings/tents in empty lots. While those who live in camps receive assistance and temporary shelter, many non-camp IDPs do not receive such assistance because they are not easily identified. Living alongside migrants or other non-displaced people, many IDPs are drawn to live in urban areas for work opportunities or physical security, but at the cost of being undetected and receiving sustained aid. The sheer magnitude and inability to locate the largest proportion of IDPs make providing assistance even more challenging for governments and aid organizations (15).

Important Consequences of Displacement

Perhaps the most prominent public health effect of being displaced is increased mortality and morbidity, with the highest rates occurring during the acute phase of an emergency. Factors contributing to high mortality include increased transmission of communicable diseases due to disruption of immunization programs, overcrowding, inadequate nutrition, lack of water/sanitation/hygiene (WASH), and insufficient security and protection (14). Within the acute phase of an emergency, the greatest burden of disease is due to diarrheal diseases, acute respiratory infections, measles, and malaria where endemic (16). Communicable diseases and malnutrition together account for the greatest number of deaths in CHEs.

Among those displaced, the groups at highest risk for mortality may include those wounded, chronically ill, infants and children, pregnant women, and the elderly. For this reason, these groups are often primary targets for CHE intervention. However, different groups are affected by varying exposures and thus varying risks. Thus, it is important to identify levels of risk among all age groups before implementing a strategy in order to minimize poor health outcomes (17).

Beyond mere survival, other important consequences of displacement include the impacts on livelihood due to lack of official documents for identification, and thus inability to access public health services and/or enroll children in school (7, 13). What is more, being forced to leave behind livelihood assets (e.g., farming equipment) and/or more portable assets (e.g., bikes, vehicles) may further hinder work opportunities (18). When nearly every aspect of their lives is dependent on external aid yet they lack the means to access such aid, IDPs face continual hurdles to rebuilding their lives.

Response to CHE: Rapid Needs Assessments

While the long-term goal during such CHEs is to establish stability among government or other parties involved, the primary goal of humanitarian aid is to provide immediate assistance to civilians in need of basic health services, food, water, and shelter. Humanitarian response has the power to greatly diminish mortality and morbidity at the onset of such crises if implemented quickly and effectively. Rapid community-level needs assessments are widely used tools which assess the magnitude and impact of damage in terms of needs and vulnerable populations in the early days of a disaster (19). These assessments are intended to provide necessary information in a short amount of time in order to guide specific interventions. The initial stage of assessment involves examining existing data (known as secondary data). Examples include baseline population statistics, access to health services, infrastructure, vulnerable populations, response capacities, and national policies relevant to response efforts (18).

Secondary data are sourced from local governments working with the United States Agency for International Development (USAID) administered Demographic Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS) supported by United Nations Children's Fund (UNICEF), census data, government or international development institutions (i.e., World Bank), or other partners working in the region. Relying on such information alone is not sufficient to understand the entire situation that is ever-changing (20-23). For this reason, specific tools have been designed to gather key information at the community level after secondary data collection and assessment. This second stage of needs assessment (known as primary data collection) involves gathering information through interviews with key informants at the community or household

level. Together, stakeholders use these data to determine public health priorities, measure the extent of damage, identify the affected populations, assess current response capacities, and guide intervention planning (18, 24, 25).

Case of Jaffna, Sri Lanka

May 2009 marked the end of the 26-year long civil war in Sri Lanka, fought between the Sri Lankan Army (SLA) and the Liberation Tamil Tigers of Eelam (LTTE) opposition group. The rising ethnic tensions between the Tamil minority and Sinhalese majority date back to the early 19th century when under British rule, Tamil laborers from India were brought to work on plantations. Tamils represented the minority ethnic group and Sinhalese nationalism rose in the time leading up to Sri Lanka's independence in 1948. As a means to marginalize Tamils, the Sinhalese government passed a series of laws disqualifying Tamils from citizenship and voting rights. Tamil protests to the laws spurred subsequent violent riots on both sides. The LTTE formed in 1976 with the goal of establishing a separate Tamil state in northern and eastern districts of Sri Lanka. While numerous fatalities began decades before, 1983 marked the start of the civil war, with the LTTE declaring it the "First Eelam War" of what would become four total (26-28).

Intense patterns of military activity throughout the war led to the displacement of more than 800,000 persons (29). Much of the conflict impacted civilians living in and around LTTE-occupied areas. Rebel stronghold districts in the Northern and Eastern Provinces (most notably Jaffna, Mannar, Vavuniya, Kilinochchi, and Mullaitivu) resulted in significant numbers of landmine injuries, displacement, and property loss (Figure 1) (30). By the end of the war in 2009, many IDPs still had not reached durable resettlement solutions or local integration. For this reason, many of the IDPs still

residing in the districts of Jaffna, Puttalam, and Mannar have been displaced for almost the entirety of the prolonged civil war (31). Of particular concern recently, the northernmost district of Jaffna alone holds an estimated 42,201 IDPs. This represents more than half of the 73,700 IDPs in Sri Lanka, as of June 2015 (31). While nearly 90% of these IDPs were living with friends and relatives at the time, the remaining proportion of IDPs were living in welfare centers (or camps) (32, 33). Welfare centers are government or international agency-run IDP facilities where IDPs may be faced with security and protection issues, inadequate access to basic health needs, and unsanitary living conditions (34).

Several assessments have since been conducted at the community and individual level in Sri Lanka to assess important areas such as physical health, mental health, and health systems among affected groups (35-38). In an effort to rapidly collect information, these assessments rely in-part on key informants at the community to relay certain needs at the individual level. One particular general health and injury survey was conducted in Jaffna, Sri Lanka just two months after the war ended and consisted of both a community and household level survey (35). The community component administered interviews to different community leaders, known as Grama Sevaka (GS) or Grama Niladhari officers. GS officials are administrators at the lowest level of government, with one officer representing each of the 14,022 GS Divisions in Sri Lanka (39). The main responsibility of these GS officials is the application of government regulations at the village level, consisting of up to 1,600 households per GS division. Their duties include: meeting with 100 or more residents daily to maintain birth, death, and voter registries; knowing statistics on community demographics; being aware of basic needs issues of community; making recommendations for public aid/electricity/water accordingly (40, 41).

Assessment of issues facing the war-affected district of Jaffna at the GS-level is important for understanding household level needs and subsequent guidance of humanitarian aid. Due to logistics and time limitations, governments and humanitarian agencies often rely on community level data in rapid needs assessments for directing aid and funding decisions (23). Community data are only as representative of household needs as the community leader reporting the information; therefore, it is imperative that GS knowledge is a valid reflection of the needs at the household level.

Furthermore, while there is copious data on IDP magnitude by district and city, there is less data on needs by specific displacement levels (42-44). That is, the levels such as current IDP, recently resettled into the community, and displaced long ago often become over simplified into just two groups: current IDP and recently resettled. 'Resettlement' in Sri Lanka is defined as movement from camps or temporary stays to original residence or difference parts (45). The inherent problem with categorizing displacement into currently displaced and recently resettled occurs in the ambiguity of 'resettled', as the term is often used to represent 'having achieved a durable solution'. It is not necessarily true that IDPs living in camps are the most vulnerable group overall, as aid and assistance may be disproportionately allocated to those in camps and leave others in host communities with less government assistance (46). Due to the nature of the protracted civil war, the needs of residents in previously rebel-controlled districts may be less of a function of current IDP versus non-IDP and more dependent upon on time since displacement. Needs assessments that consider these displacement levels may reveal crucial data on equally vulnerable groups beyond current IDPs.

Study Objectives

Objective 1: Validity of Community-leader Knowledge

The first objective of this study was to determine the validity of community-level data. Of the comprehensive set of questions asked at both the community and household level, a subset of questions overlapped and is comparable. GS officer responses to community needs were not reviewed with those from the household level for accuracy. There was a need to validate the GS responses from the community-level survey with those of the household to understand if the community leaders' knowledge represented the true underlying household situation. Valid data are crucial to inform strategic public health priorities immediately following an emergency.

- **Aim 1**: Assess the overall level of agreement between community leader and household response for six survey questions
- **Aim 2**: Assess the level of agreement between community leader and household by individual question

Objective 2: Association of displacement status on food and water availability

The population affected by the nearly three-decade civil war in Jaffna is comprised of long-time residents, recently resettled, and currently displaced. Currently displaced was defined as currently living in an IDP camp. Recently resettled were those displaced after April 2000. Long-term residents were those displaced before April 2000. Relocation and disruption of livelihood due to displacement have been shown to hinder access to and availability of basic needs such as water and food. The second objective of this study

was to determine if there was an association between household level of displacement and consistent food and water availability.

- **Aim 1**: Explore the association between household displacement level and consistent food availability.

- **Aim 2**: Explore the association between household displacement level and consistent water availability.

LITERATURE REVIEW

Evolution of Rapid Needs Assessments

Prior to the 21st century, many emergency relief efforts following massive disasters relied less on gathering information of needs and more on mobilizing readily available aid resources. In a 1991 review of past rapid needs assessment concepts and methods, Guha-Sapir criticizes the inefficiency of many relief efforts, stating, "Health response in emergencies has been typically *ad hoc* action, that is, generally inappropriate and usually late... The neglect of proper assessment of needs [produced] health relief founded more on rumor than on fact" (47, 48). He also cites that use of early modified epidemiologic approaches during CHEs were not necessarily standardized, and major sources of bias included exclusive focus on the putatively most affected areas which may be non-representative samples. While it would be ideal for needs assessments to measure the impact of disaster across the entire population with larger sampling methods, he highlights the "trade-off between timeliness and accuracy" during CHEs. Cost and time constraints are the main driving factors of choosing a non-probability sampling method (in which each person or unit does not have the same chance of being selected) for preliminary needs assessments. This type of sampling method is referred to as convenience sampling because selection of participants is based on ease of accessibility

(49). Issues of bias may result due to non-probability sampling which may exclude certain groups of people; however, throughout the data collection process in emergencies, assessments gradually employ more representative (probability-based) sampling techniques (Appendix 1)(50).

Commonly employed epidemiologic methods involve cluster sampling or systematic sampling of a population in order to obtain a representative sample in a relatively short amount of time (49). Cluster sampling involves the grouping of a population into clusters, followed by random selection of clusters, and finally selection of individuals or members within each selected cluster. This method may be more complex and consist of several more sampling stages. Systematic sampling is another widely used epidemiologic method, which involves identifying a list of all members (or households) in a population, choosing a sampling interval, randomly selecting an initial member, and choosing remaining members based on that sampling interval. Both of these methods use probability sampling and yield representative samples of the population. Modification of such methods (based on the emergency) provided an initial platform from which better rapid assessment tools for emergencies began to emerge.

As early as the 1960s, rapid survey tools utilized epidemiologic methods to assess immunization, communicable disease, and other health needs (51). The World Health Organization's Expanded Programme of Immunization (EPI), designed in 1974 to quickly monitor and improve immunization coverage, uses a 30 x 7 (two-stage) cluster sampling with Probability Proportion to Size (PPS) in order to capture more clusters with higher populations (52, 53). Shortly after the EPI development and because of its success, it was found that this sampling methodology could be applied to assessments of other health needs.

An early example of using epidemiologic sampling techniques was the rapid assessment of health status and preventative-medicine needs conducted in 1979 by the International Committee of the Red Cross (ICRC) and the Centers for Disease Control and Prevention (CDC) during the first weeks of war-displaced Cambodian refugee arrival in Thailand (48, 54). Designed to serve as a prospective surveillance system and direct medical interventions based on need, certain assessment components utilized the widely employed epidemiological technique of systematic sampling of the population. Employment of these sampling techniques early-on in the disaster produced data on the need for specific health interventions. Notable findings included a large portion of mortality was due to not seeking medical care, which lead to the triage of ill refugees upon camp entry; identification of good water quality and thus cholera/typhoid were non-issues; and initial major priorities were malaria, malnutrition, pneumonia. Subsequent development of preventative health measures and significant decline in mortality among the refugee population demonstrated the success of this assessment using epidemiologic techniques.

Commonly Used Assessment Tools

In 1999, the World Health Organization (WHO) published a handbook in which 10 response-specific tools were defined for emergency response (24). Created as a means to provide standardized assessment protocols and thus improve intervention planning for agencies and governments during CHE response, this handbook includes extensive field-tested and expert reviewed protocols that draw from previously utilized nutrition assessments and epidemiologic investigations. The WHO Collaborating Centers recognized the need for multifaceted response, particularly during a CHE, therefore,

within the CHE protocol are recommendations to conduct displacement and nutritional emergency assessments simultaneously. The recommended areas of assessment broadly include: health outcomes (mortality and causes, malnutrition), violence and security, displacement, food supply and purchasing power, health services, infrastructure and utilities, local response capacity, and humanitarian assistance. Although it does not detail at length the various available sampling methodologies, the handbook strongly recommends use of representative (versus non-probability) sampling techniques of random and cluster sampling.

Additional guidelines for emergency needs assessments were created throughout the decade and beyond, which covered these same assessment areas. In 1997, the Sphere Project was created by non-governmental organizations (NGOs) and the International Red Cross and Red Crescent Movement (IFRC) in order to create quality standards for humanitarian action in the sectors of water supply, sanitation and hygiene promotion, food security and nutrition, shelter, and health action during disaster response (55). Currently in wide use among responders worldwide, the identified universal minimum standards have undergone much scrutiny and several revisions by agencies (including the United Nations) and have been published in the Sphere Handbook as a guidance to achieving survival and stable recovery of affected populations. The Handbook details the role and approach for needs assessments in each response sector, emphasizing the idea that assessments are an ongoing process that begin with initial, rapid surveys which provide direction for subsequent in-depth assessments.

Around the same time, the IFRC developed guidelines for rapid field assessments, which drew from the Sphere Project minimum standards as well as a team of disaster management specialist reviewers, to be conducted in the initial phase of a disaster (25,

56). This assessment strategy outlines a similar approach to that of the Sphere Handbook, identifying the same priority sectors and using a rapid assessment to determine if a more detailed one is needed. IFRC recommends random or purposive sample (non-probability method based on selection of specific, priority groups) depending on homogeneity of locations and households under study. In addition, the IFRC guidelines provide sample field assessment forms for administration at the community level among key informants.

Another prominent tool called the Multi-sector/cluster Initial Rapid Assessment (MIRA, also known as IRA) was designed for use in sudden onset emergencies as a precursor to the sector-specific assessments. MIRA was developed by the Inter-Agency Standing Committee Needs Assessment Task Force (IASC NATF) with expert input from the United Nations (UN) in 2006-2009. This tool serves with the aim of standardizing the methods for collecting information about the emergency situation, identifying gaps in priorities of those affected, and determining existing capacities of the government and aid agencies at the onset of crises (1, 18, 57). As with other tools, the MIRA has been updated twice since its initial development to reflect new information from use in recent emergencies (23, 58).

The methods for assessment and subsequent reporting recommend the use of accepted terms and standards (such as those in Sphere) to increase clarity and comparability of findings over time. At emergency onset, the first phase (planning phase) involves reviewing secondary data to estimate the scope of an emergency in terms of high-risk populations/geographic extent and determine the need to modify the tool (i.e., sampling methods and interview materials). The next phase is primary data collection, during which community level health and needs assessments are carried out through interviews

with key informants/community groups/households and observation techniques. The MIRA tool encourages purposive sampling during this phase, stating that this sampling technique has a focus on affected groups and thus is not intended to result in a representative sample. Primary and secondary data analyses are then used to generate multiple reports and provide decision-makers with an overview of the problem areas. The third phase, if there is a need, is comprised of sector-specific assessments conducted to obtain more detailed, precise data. In the final phase, sectoral assessments continue to monitor the situation and information is used for recovery planning.

While initial rapid needs assessments are intended to provide quick data on the disaster situations, sector-specific assessments are in-depth surveys which focus on individual areas of need (i.e., nutrition, health services, WASH, and security). Some examples of the more widely used sectoral assessments are: the Emergency Food Security Assessment (EFSA) created by the World Food Program (WFP) (59); WHO's Health Resources Availability Mapping System (HeRAMS) which collects information on availability of health facilities, personnel, and services (60, 61); the Global WASH Cluster Toolkit which aims to provide equal access to WASH services (62); and UNHCR's Rapid Protection Assessment (RPA) which identifies key protection concerns and information gaps (63).

Previous Assessments: Displacement and Food/Water Supply

The critical resources of food and water availability are included in initial rapid needs assessments following CHEs. Initial data on access to and supply of food and water are able to provide a quick picture of needs among affected populations. Displaced persons are comprised of those who may have had to resettle in an entirely new district or reside

in an IDP camp. While those residing in IDP camps receive both of food and water resources more consistently due to direct humanitarian aid by the government or NGO, IDPs living outside of camps have no such guarantee. For this reason, reports from multi-sector needs assessments are vital for informing key stakeholders of vulnerable populations lacking basic sustenance.

One such assessment was conducted in 2014, four years into the Syrian civil conflict which began in 2011, considered the largest and worst humanitarian crisis of our time. (64-66). Originating in response to President Bashar al-Assad pro-democracy protests, the crisis rapidly evolved into widespread violence when the government-backed security forces brutally attempted to squelch the opposition. At that time, there were over 6.5 million IDPs in Syria, with over a quarter million living in camps or camp-like settings. Initial needs assessments revealed that while food aid was a top priority among both camps and informal settlements (defined as ad hoc settlements of IDPs), 67% of IDPs in informal settlements did not receive constant food aid compared with only 9% of IDPs in camps not receiving food aid. This highlights the idea that all IDPs do not necessarily experience the same magnitude of vulnerability and thus require different needs.

Anti-government protests in 2013 in the capital of Ukraine spurred by the faltering economic trade agreement with the European Union led the government to order aggressive action towards protestors. Following the Ukranian President's flee to Russia, the Russian government began to send troops to Ukraine to try and pacify protestors and by 2014 Russia had annexed the Crimean peninsula. Parts of eastern Ukraine were heavily affected by violence and have resulted in displacement of over one million people. A Multi-sector Needs Assessment (MSNA) conducted in 2015 examined the IDP

situation in three areas: those unaffected by fighting, government controlled areas of Donetsk and Luhansk, and non-government controlled areas (67). Reports indicated that food support was a priority across all three regions, although the greatest need (determined by food severity scores) was among IDPs in non-government controlled areas. Both community data (from key informants) and household level data in this assessment agreed upon the severity of food security. It was also found that the primary source of food insecurity was lack of financial means to purchase food. Interruption of pension or other benefits during the crisis may have contributed to some of the overall diminished income. Despite food assistance reported by 59% of all households, this does not necessarily represent consistent aid and the food security still remains an issue overall. The implications of this assessment highlight the need for increased and sustained food aid to IDPs in all areas.

Needs Assessments in Sri Lanka

Since the end of the civil war in 2009, Sri Lanka has seen numerous needs assessments in the areas of maternal and child health, infectious disease, immunization, nutrition, mental health, IDPs, and health systems (36). Efforts by the WFP, UNICEF, and the Government of Sri Lanka (GOSL) in a 2009 food security survey found that 20% of the households did not have adequate food, and this was especially apparent among IDPs (68). A joint initiative by the GOSL and the Humanitarian Country Team (HCT) began in 2011 to assist IDPs in the return process by identifying priorities in various sectors among current IDPs and returnees (38). Three years later, in 2014, a joint needs assessment (JNA) was conducted to measure the progress of those humanitarian effort in the Northern and Eastern provinces. The survey was developed by consultants and senior government officials and comprised of returnee and IDP questionnaires. The

sampling method included GS Divisions as primary sampling units (selected by PPS) and families as secondary sampling units (chosen by systematic random sampling). The summary of the JNA findings revealed that IDPs welfare centers had relatively lower access to sufficient quantities of food and access to/supply of clean water compared to returnees. This assessment's coverage of multiple districts and different groups of affected families in Sri Lanka (IDPs and returnees) provided a view of the needs and settlement issues that remain as well as their possible sources.

CHAPTER II: MANUSCRIPT

Evaluation of community and household level needs assessment and the association between displacement status and food and water availability in a post-conflict setting – Jaffna, Sri Lanka, 2009

May 2009 marked the end of the 26-year long Sri Lankan civil war that led to the displacement of more than 800,000 persons, especially in northern districts of the country. The objectives of this study were to validate community-level survey data with that of the household and to determine if there was an association between household displacement and food/water availability among residents of Jaffna District, Sri Lanka. Data were obtained from a 2009 general health and injury survey conducted by CDC. Level of agreement scores between community and household level needs assessment were calculated for six overlapping questions (socio-demographics/basic community characteristics) between 35 community leader (CL) responses and 1356 households. Scores were compared overall, then by individual questions. Data from 1410 households were then used to explore the association between displacement level (currently displaced, recently displaced, and long-term resident) and food availability, as well as displacement level with water availability. The level of agreement score range was 1-6, and 37% of all CLs scored the median of 4 [IQR: 3-5]. Highest agreement was found with ethnicity (83%) and religion (74%). Lowest agreement was found for primary water source (29%). Currently displaced compared with long-term residents (OR=0.5, 95% CI: 0.3, 0.8) and household size of 6 ≥ compared with 1—3 members (OR=1.7, 95% CI: 1.2, 2.5) were significantly associated with inconsistent food availability, controlling for sex and religion. Female heads of household compared with males (OR=1.8, 95% CI: 1.2, 2.8) and Non-Hindus compared with Hindus (OR=2.6, 95% CI: 1.3, 5.1) were significantly associated with inconsistent water availability, controlling for displacement level. While agreement scores suggested the majority of CLs had relatively high knowledge of household needs and demographics, few had knowledge of primary water source. The association between displacement status and food availability suggested that those living in IDP camps had better food availability compared to long-term residents. Although classified as having reintegration into the community, long-term residents may not have achieved truly sustainable access to food. Valid community level data will better reflect household level needs, thus providing useful data for key stakeholders to respond appropriately during acute emergencies.

A.   Introduction

The Liberation Tamil Tigers of Eelam (LTTE) formed in 1976 with the goal of establishing a separate Tamil state in Northern and Eastern districts of Sri Lanka (26-28). 1983 marked the start of what would become a 26 year long civil war fought between the Sri Lankan army (SLA) and the LTTE opposition group. Intense patterns of military activity throughout the war led to the displacement of more than 800,000 persons before the end of the war in May 2009 (29). Much of the conflict impacted civilians living in and around LTTE-occupied areas. Rebel stronghold districts resulted in significant numbers of landmine injuries, displacement, and property loss (Figure 1) (30). Of particular concern recently, the northernmost district of Jaffna alone holds an estimated 42,201 IDPs, representing more than half of all internally displaced persons (IDPs) in Sri Lanka, as of June 2015 (31).

Assessment of issues facing the war-affected district of Jaffna at the community level is important for understanding household level needs and subsequent guidance of humanitarian aid. Grama Sevaka (GS) or Grama Niladhari officers are administrators at the lowest level of government, with one officer representing each of the 14,022 GS Divisions in Sri Lanka (39). The main responsibility of these GS officials is the application of government regulations at the village or community level, consisting of up to 1,600 households per GS division. Their duties include: meeting with 100 or more residents daily to maintain birth, death, and voter registries; knowing statistics on community demographics; being aware of basic needs issues of community; making recommendations for public aid/electricity/water accordingly (40, 41).

Due to logistics and time limitations, governments and humanitarian agencies often rely on community level data in rapid needs assessments; therefore, collection of *accurate*

GS-level information is important for aid and funding decisions (23). Community data are only as representative of household needs as the community leader reporting the information; therefore, it is imperative that the latter accurately reflects the true needs at the household level. The first objective of this study was to validate the GS responses from the community-level survey with those of the household in order to understand if the community leaders' knowledge represented the true underlying household situation. Valid data are crucial to inform strategic public health priorities immediately following an emergency.

Relocation and disruption of livelihood due to displacement have been shown to hinder access to and availability of basic needs such as water and food. Due to the nature of the protracted civil war, the needs of residents in previously rebel-controlled districts may be less of a function of current IDP versus non-IDP and more dependent upon on time since displacement. Needs assessments that consider displacement levels of current, recently resettled, and displaced more than ten years ago may reveal crucial data on equally vulnerable groups beyond current IDPs. The second objective of this study was to determine if there was an association between household level of displacement and consistent food and water availability.

B. Methods

Data Source & Purpose

Data for this secondary analysis were obtained from the Emergency Response and Recovery Branch (ERRB) at CDC (35). In partnership with UNICEF Sri Lanka and Sri Lanka Ministry of Health, Nutrition & Indigenous Medicine (MoH), the CDC conducted

a retrospective community and household survey of general health and injury among residents in Jaffna District, Sri Lanka from July to September 2009. The purpose of the original study was to measure the health status (particularly mental health) of residents living in Jaffna, Sri Lanka, a region heavily affected by Sri Lanka's 26-year civil war.

Study Population

The study population were residents of Jaffna, Sri Lanka in 2009.The sampling frame was based on the Sri Lanka 2007 Special Enumeration Report as well as a list of camps provided by the United Nations High Commissioner for Refugees (UNHCR) in Jaffna (69). The Enumeration Report provided information on total population, proportion displaced, and basic population demographics (i.e. sex, age) within each of the 435 enumeration areas (EAs).

Survey Design and Sample Size Determination

The survey was based on a multi-stage 40 x 40 cluster sample design. In the first stage, the enumeration areas (or clusters) were divided into 4 strata based on proportion of IDPs and those with higher proportions were oversampled in order to capture more data on displaced individuals. During the second stage, 40 clusters were selected from the 435 total with probability proportional to size (PPS). A GS Officer was selected from each of the clusters (for a total of 40 community leaders) to be interviewed for the Community Assessment tool. In the third stage, each cluster was divided into segments of 200 to 250 households, and one segment per cluster was selected using PPS. In the fourth stage, a systematic random sample of 40 households was chosen from each selected segment to conduct the household survey.

Because the original study aim was to explore the association between mental health and displacement, the sample size was based on an estimated prevalence of mental health conditions of 50% (the true prevalence among the population in Jaffna was not available). Based on a design effect (correlation factor that accounts for relatedness of observations within a cluster) of 2, an 80% response rate, and other indicators it was determined that a sample size of 1280 individuals (1 per household) would achieve the most conservative estimate (70).

Inclusion/Exclusion Criteria

Inclusion criteria included community leaders in each selected cluster, and heads of household ≥ 15 years. Exclusion criteria included those who did not give consent, could not speak Tamil or English, or were not in the house at the time of the survey.

Survey Tools and Procedures

The survey was comprised of multiple components designed to identify and estimate the prevalence of community characteristics, mortality, and general physical health and injury. Of the three components, only overlapping variables within the Community Assessment component (CA) and the Household component (HH) of the survey were used for the first study objective (to assess community leader and household level of agreement). For the second study objective of exploring the association between displacement and basic need availability, only variables in the HH survey were examined.

The survey questionnaires were adapted from standardized and previously tested survey tools with input from experts in the ERRB at CDC. The CA was administered at the first stage of the sampled communities, and the HH was administered at the household level. The survey questionnaires were translated into Tamil and back-translated into English to test for accuracy. Enumerators were female, fluent in Tamil, recent university graduates or public health midwives (PHMs). Staff training was held to ensure proper data collection, handling of sensitive topics, and confidentiality procedures. A subsequent pilot test took place using two randomly selected clusters that were excluded from the final study sample. Subsequent debriefing of the pilot test addressed any issues and question clarification.

Data were entered into Epi Info™ (Version 3.5.1) database by local field staff under CDC supervision (71). Double data entry was conducted for the HH data to identify and correct discrepancies. Data cleaning was done in Atlanta using SPSS and SAS. Sample weight calculation (inverse of the selection probability) was done by an expert statistician in ERRB at CDC to account for cluster sampling.

Confidentiality and Consent

Interviews were conducted in private and informed consent was obtained from all participants prior to beginning each section. No identifying information was recorded in any of the survey tools and lists of household codes used to keep track of selected households were destroyed upon cluster visit completion. It was determined from Emory

Institutional Review Board (IRB) that IRB Review would not be needed for this secondary analysis.

Data Analyses

The primary study objective was to determine the level of agreement between community leaders (CL) and their respective households based on general demographics and basic need information. Aim 1 of this objective was to calculate the level of agreement between each CL and the respective households to represent how well each CL knows his community overall. This was done by identifying questions in common between the household and community assessments. Six questions were found to overlap in both surveys regarding ethnicity, religion, primary water source, consistent water availability, consistent food availability, and school attendance. Consistent water and food availability were defined as percent of the time these were available in sufficient quantities. School attendance was defined as all school-aged children attending school or not.

Each of the six questions was assigned a match criterion based on the question response type (Table 1). Household responses to each question were recorded for each community and these represented the gold standard to which the CL response was compared. For the ethnicity and religion variables, the CL must have identified all of the household responses reported. For the primary water source, water availability, and food availability variables, the CL must have identified the most commonly reported household response overall. Finally, the CL must have correctly identified the school attendance status (all or not all) overall among households.

Table 1. Match Criteria for Assessing Level of Agreement between Community Leader and Household Level Data in Jaffna, Sri Lanka 2009

Variable	Survey Question	Response Type for Agreement	Match criterion
Ethnicity	What is your ethnicity?	All that apply: Sri Lankan Tamil, Sri Lankan Moor, Sinhalese, Indian Tamil, Burgher, Malay, Vedda, Kaffir	Community leader must capture all ethnicities present
Religion	What is your religion?	All that apply: Hinduism, Islam, Buddhism, Christianity, Other	Community leader must capture all religions practiced
Primary water source	What is your primary source of drinking water?	Categorical: Tap in home, Tap in yard, Bore hole with hand pump, Protected well/spring, Unprotected well/spring, Rain water, Water bowser, Other	Community leader must identify most commonly reported household response
Water Availability	How frequently is drinking water available from this source?	Categorical: 0%, 25%, 50%, 75%, or 100% of the time	Community leader must identify most commonly reported household response
Food Availability	How often does your household get enough to eat?	Categorical: 0%, 25%, 50%, 75%, or 100% of the time	Community leader must identify most common household response
School Attendance	Do all school-aged children (4-18 yrs) attend school?	Binary: All attend, All do not attend	Community leader must identify exactly 'all attendance' status

Initial data were obtained for 1517 households corresponding to 39 communities, but 4 communities were missing data (corresponding to 161 households), thus analysis was limited to 35 communities and 1356 households (Figure 2). A level of agreement was calculated for each community leader based on the match criteria. Each question was weighted equally with a value of one per question, resulting in a highest possible level of agreement score of 6. An overall mean and standard deviation was calculated for the 35 CLs, which represented the overall Jaffna District community.

Aim 2 of the primary study objective was to understand how well CLs knew specific characteristics of their communities by assessing level of agreement by individual variable. This was done by obtaining the level of agreement percentages across variables and graphing their frequencies.

The secondary study objective was to determine if there was an association at the household level between displacement level and basic need availability. Aim 1 was to assess the association of displacement level and food availability, and Aim 2 was to assess the association of displacement and water availability. The exposure variable of displacement status was comprised of three groups: currently displaced, recently resettled, and long-term resident. Each outcome variable was initially measured with ordinal response (availability 0%, 25%, 50%, 75%, or 100% of the time). Due to wording of the question (non-exhaustive answer choices), both food and water availability were dichotomized into '100% of the time' versus 'Less than 100% of the time'. Socio-demographic covariates measured at the household level were sex and religion of head of household as well as number of household members. Religion was categorized as Hindu or non-Hindu (Muslim, Buddhist, Christian, or Other). Household size consisted of 1—3, 4—5, and 6 or more members.

The outcome variable for Model 1 was food availability at the household level, measured as how often food was reported to be available in sufficient quantities in local markets (100% of the time or less than 100% of the time). The outcome variable for Model 2 was water availability at the household level and measured how often drinking water was reported to be available (measured on a similar scale). From the initial data on 1517 households, a total of 103 households were omitted from analysis due to lack of information on displacement status. Complete data on the exposure and each outcome were available for 1410 households (Figure 2).

Descriptive statistics and Chi-square tests of proportions were conducted on each of the covariates across the three exposure levels. P-values were obtained where cells were greater than 0. Bivariate logistic regression was done for each of the two outcomes and each covariate in order to obtain unadjusted odds ratios (OR) and 95% confidence intervals (CI). Using significance inclusion criterion of p-value ≤ 0.2, certain variables were considered for further analysis in the multivariable model. Collinearity diagnostics were calculated from the variance-covariance matrix of each full logistic regression model (considering all covariates together for each outcome) (72). Using variance decomposition proportions (VDPs) cutoffs of < 0.5 for pairs of variables and condition indexes (CNIs) << 30 (variables exceeding these standards suggesting collinearity), it was determined that there were no collinearity issues with the main exposure variables and set of three covariates in either model. Multivariable regression was then conducted for each outcome using variables which met the preset consideration cutoff from bivariate analysis, and an adjusted OR and 95% CI were obtained.

Data analyses were conducted in SAS™ (Version 9.4) and accounted for appropriate sample weights previously calculated due to multi-stage cluster sample design.

Study Approval

The CDC Institutional Review Board (IRB) approved the study prior to conducting the original survey. This secondary analysis does not meet criteria for Title 45 of Code of Federal Regulations Section 46.102 (f)(2) for human subjects research.

C.   Results

Study Objective 1

The total sample size used for the level of agreement analysis consisted of 35 communities and 1356 households (Figure 3). The level of agreement score had a possible range from 0-6. The distribution of the 35 scores was non-normal (left skewed). Majority of the community leaders scored between 3 (20%) and 5 (29%), with the median level of agreement score of 4 (37%). Extreme scores of 1 and 6 were quite infrequent, with only 3% of all community leaders attaining the minimum score and 3% attaining the maximum score. Only 9% of all community leaders obtained a level of agreement score of 2.

The distribution of level of agreement by individual variable revealed that greater than 50% of community leaders correctly identified the household responses for all variables except water source (Figure 4). Regarding demographic community characteristics, 83% of all community leaders correctly identified all ethnicities present in their communities, and 74% correctly identified religions practiced. Only 29% of all leaders were able to identify the most commonly reported primary water source. The most common response for primary water source among all community leaders was 'Unprotected well or spring', while that of households was 'Protected well or spring'. There was a lower level of agreement for food availability compared with water availability (66% versus 83%). Responses by each of the 35 community clusters revealed that community leaders quite often under-reported frequency of food availability (less than 'All of the time'), whereas households reported relatively high food availability ('All of the time'). Community leaders correctly identified children's school attendance to an even lesser degree, with only 54% agreement between community leader and household. Overall,

community leaders over-reported all school attendance of children in their communities: 23 community leaders reported 'All attend', while the household level data revealed that in only 11 communities do all school-aged children attend school.

Study Objective 2

There were 1410 households in the initial regression analysis sample (Table 2). The long-term residents comprised the largest proportion of all residents (n=791), while those living in IDP camps represented the smallest (n=80). Nearly 100% of residents were Tamil across all displacement levels. Females comprised 43.8% of all currently displaced residents, but nearly a third of all recently resettled (34.7%) and long-term residents (36.3%). The greatest proportion of Hindus were among long-term residents compared with that of recently resettled and currently displaced (88.5%). Among those currently displaced, the largest proportion of household size was 1—3 members (53.8%), whereas the largest proportion of household size was 4—5 members among recently resettled and long-term residents (40.1% and 37.1%, respectively).

Currently displaced had more food availability all of the time (78.7%), but less water availability all of the time (66.3%), compared with recently resettled and long-term residents. Within the recently resettled group, 52.7% of households reported food availability 100% of the time, and a slightly higher proportion of long-term residents reported food availability 100% of the time (63.2%). Recently resettled and long-term residents reported higher proportions of water availability 100% of the time (80.8% and 81.3%, respectively) compared with currently displaced.

Bivariate Analysis

The significance of the association between each covariate (level of displacement, sex of head of household, religion, and household size) and the outcome was assessed for each model using bivariate logistic regression. In both models, the probability was modeled for the outcome of food or water availability less than 100% of the time.

Bivariate analysis for the food availability model found that the exposure and all covariates were significantly associated with the outcome at the $p \leq 0.20$ significance level (Table 3a). Currently displaced were 0.5 times as likely to have food availability less than 100% of the time compared with long-term residents that had food availability less than 100% of the time (odds ratio [OR]=0.5, 95% CI: 0.29, 0.75). Recently resettled were 1.5 times as likely to have food availability less than 100% of the time compared with long-term residents (OR=1.5, 95% CI: 1.00, 2.36).

The water availability model assessed the significance of the outcome with exposure and each covariate (Table 3b). Both sex and religion were significantly associated with the outcome ($p<0.01$). Displacement level and household size were not found to be significantly associated with water availability 100% of the time (p-value 0.34 and 0.39, respectively).

Multivariable Analysis

Logistic regression was conducted for each of the two models, controlling for only those variables that met consideration criteria. Food availability was modeled with level of displacement while controlling for all covariates of sex, religion, and household size

(Table 4a). The currently displaced group and household size of 6 ≥ were both found to be statistically significant in the model, when controlling for all other variables (both p<0.01). Those currently displaced were 0.5 times as likely to have food availability less than 100% of the time compared with long-term residents that had food availability less than 100% of the time (OR=0.5, 95% CI: 0.3, 0.8). Households with ≥ 6 members were 1.7 times as likely to have food availability less than 100% of the time compared with households of 1—3 members (OR=1.7, 95% CI: 1.2, 2.5). Recently resettled, household size of 4—5 members, sex, and religion were not found to be significant while controlling for all other variables (p-values > 0.05).

Water availability was modeled with level of displacement while controlling for sex and religion (Table 4b). Because household size did not meet the significance criterion from the bivariate analysis, this variable was not considered in the multivariable model. Neither level of displacement was found to be significant (p-value 0.40), but sex and religion were significantly associated with the water availability while controlling for the all other variables (p<0.01). Female heads of household were 1.8 times as likely to have water availability less than 100% of the time compared with males that had water availability less than 100% of the time, controlling for level of displacement and religion (OR=1.8, 95% CI: 1.2, 2.8). Non-Hindus were 2.6 times as likely to have water availability less than 100% of the time compared with Hindus, controlling for level of displacement and sex (OR=2.6, 95% CI: 1.3, 5.1).

D.   Discussion

The level of agreement scores between community leaders and households represented GS knowledge of community characteristics. Overall, these suggested that the majority of GS officers held relatively high knowledge of household needs and demographics. The proportion of GS officers with a low level of agreement, albeit small, suggested that certain GS officers held very little knowledge of the six community characteristics. Because each GS officer may be responsible for populations of up to several hundred people, low awareness of community issues may have a notable impact on households. The six questions used to evaluate level of agreement were among the most basic of community characteristics, thus GS knowledge of these areas may serve as indicators for validating community level data for more complex needs assessments.

Further examination of individual characteristics revealed that less than a third of all GS officers were able to correctly identify the primary water source, only half were aware of children school attendance status, and two-thirds knew of food availability at the household level. Misinformation at the community level during assessments may exclude vulnerable groups from receiving much needed humanitarian aid and important social interventions such as education. Ideally, community leader knowledge should be high overall to ensure that community-level assessments as rapid and effective survey tools for appropriately directing aid during CHEs.

Implications of low community leader knowledge scores reveal areas that require improvement, achievable through active community engagement of government officials to increase understanding of issues at the household level. Low knowledge scores may also indicate the utility and/or misinterpretation of certain survey questions, suggesting a need to modify questions in community level assessments. While community level data

validation is not routinely conducted, this type of agreement analyses can provide insight into the quality of data collected during rapid needs assessments.

The findings from the association between displacement status and food availability suggest that those living in IDP camps had better food availability compared to those who were long-term residents. Although classified as having reintegrated into the community, the long-term residents may not have achieved truly sustainable access to food. Furthermore, larger household sizes were less likely to have consistent food availability, suggesting that households with more family members decrease the availability of food for all members. Potential causes for this include financial instability or poor market availability, both of which may impact larger families compared to smaller ones.

Having consistent food availability requires restoration of livelihood and purchasing power, sufficient market availability, or a consistent source of aid. Unfortunately, some government-led initiatives to reduce the numbers of IDPs in-country may overlook the underlying economic conditions within a household (45). The JNA conducted in 2014 by the GOSL, depicted a shift in water and food needs among displaced and recently resettled. While the 2009 general health survey found those in IDP camps to have better food overall, the JNA found this same group to have less food security and safe water access compared to returnees (38).

Regarding water needs, both being female head of household and non-Hindu were associated with less water availability. Given that females are more often the primary caretakers in the family and may hold more accurate knowledge of family needs, it is possible that male heads of household were less aware of needs and thus more likely to

over-report high water availability than were females. Non-Hindus were also more likely to have lower water availability, perhaps explained by their minority representation in this study (as well as in Jaffna overall) and thus suggesting this disparity having deeper socio-contextual factors (73).

Limitations in the level of agreement analysis included the small subset of questions from the survey tool used to calculate the community leader knowledge score. A more comprehensive set of overlapping questions at the household and community level would have created a more robust scoring system and perhaps altered the GS officer distribution of knowledge. Regarding the association between displacement and basic needs, having more household level questions would have enabled consideration of other covariates such as level of income, age of head of household, length of time living in current residence. While there was not a significant association found between level of displacement and consistent water, future studies may wish to evaluate a larger sample of currently displaced individuals to confirm this finding.

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73. Census of Population and Housing - 2012. 2012; Available from: http://www.statistics.gov.lk/PopHouSat/CPH2012Visualization/htdocs/index.php?usecase=indicator&action=DSMap&indId=10&district=Jaffna&Legend=3.

F. Figures

Figure 1. Map of Sri Lanka Districts, by IDP Population Density, April 2015
(Source: Internal Displacement Monitoring Center)
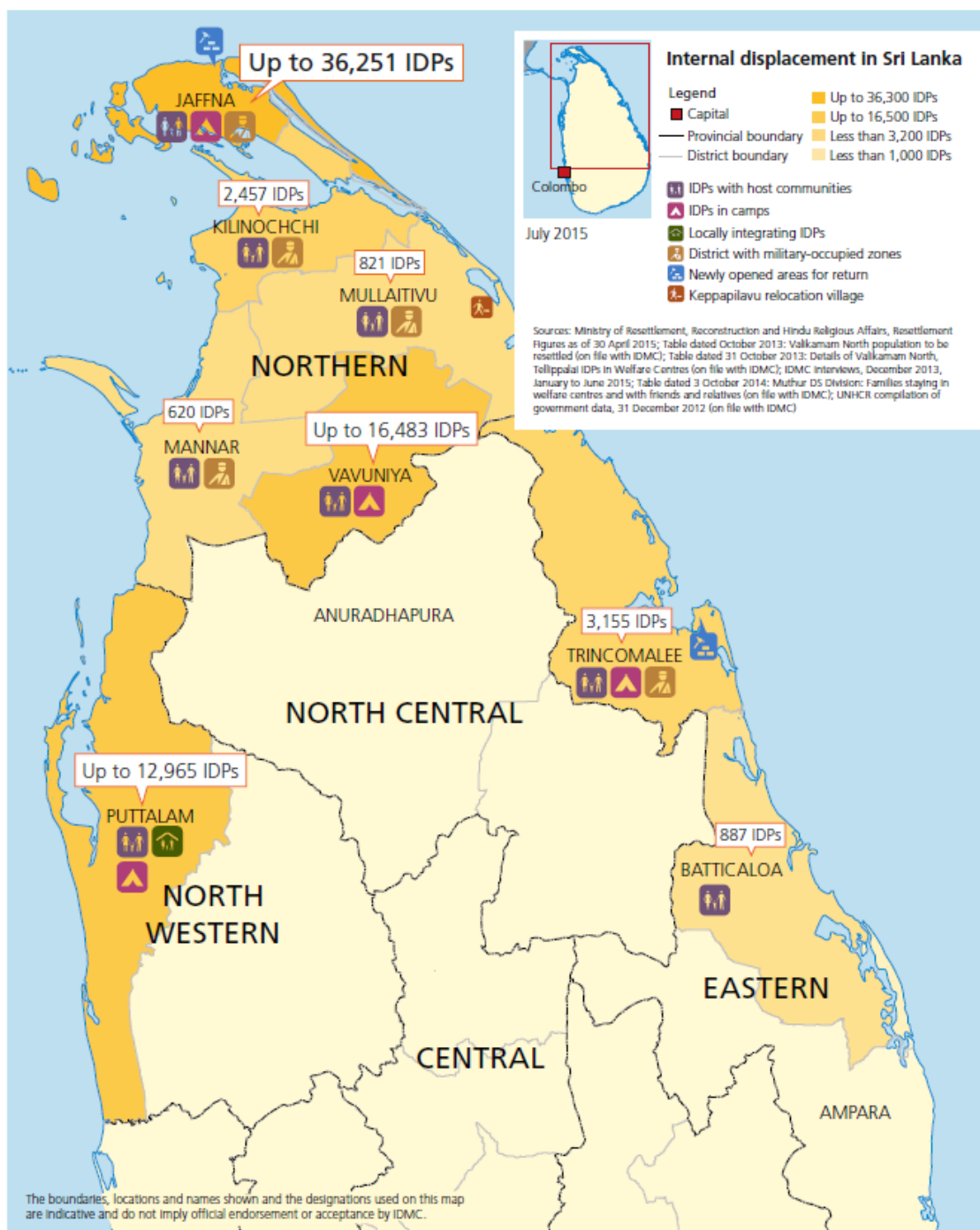
Figure 2. Sampling Scheme for Level of Agreement Analysis between Community and Household and Multivariate Models of Basic Need Availability and Displacement among Households in Jaffna, Sri Lanka, 2009
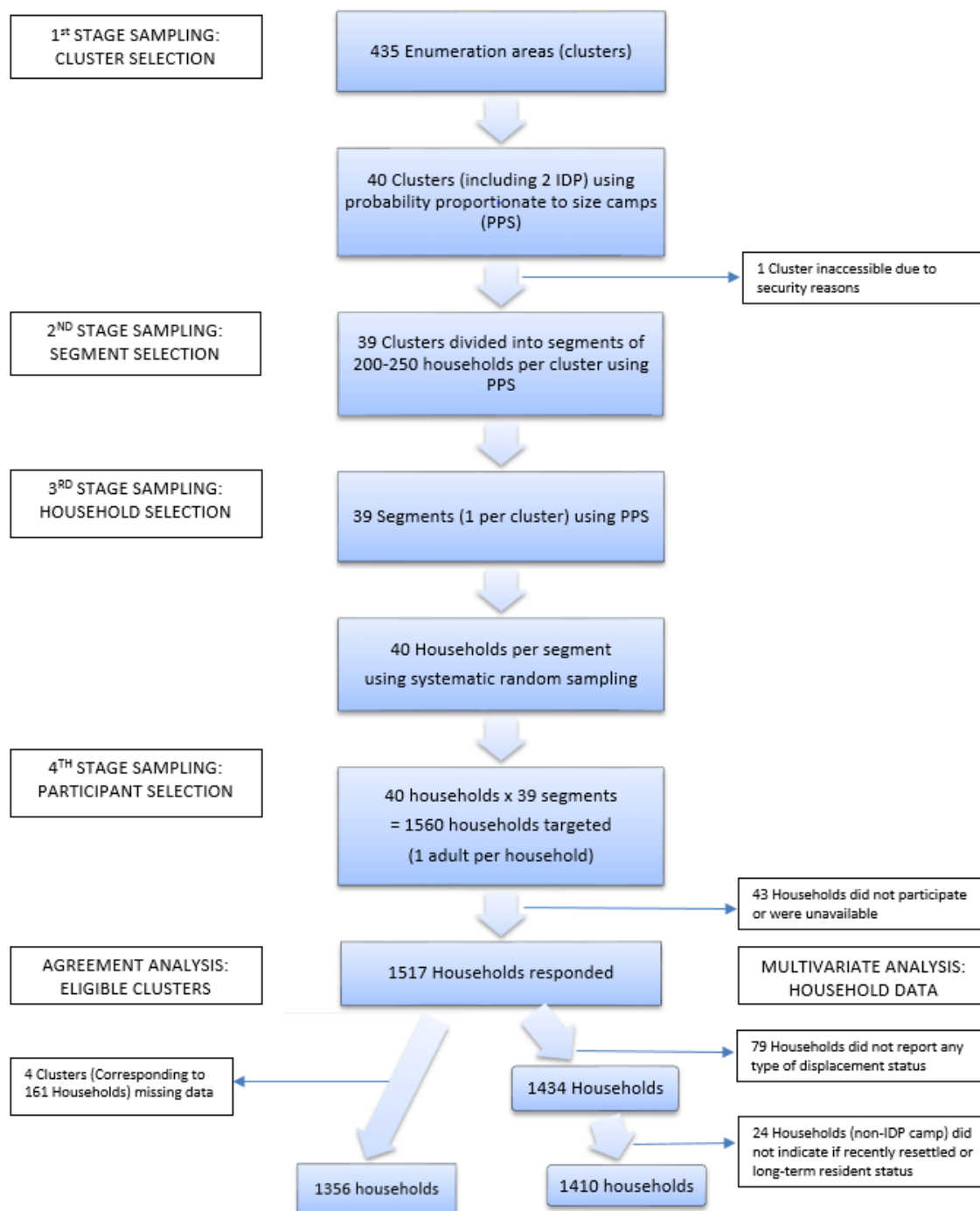
Figure 3. Distribution of Overall Level of Agreement Scores between Community Leader and Household Response among Communities in Jaffna, Sri Lanka, 2009 (n=35 communities)
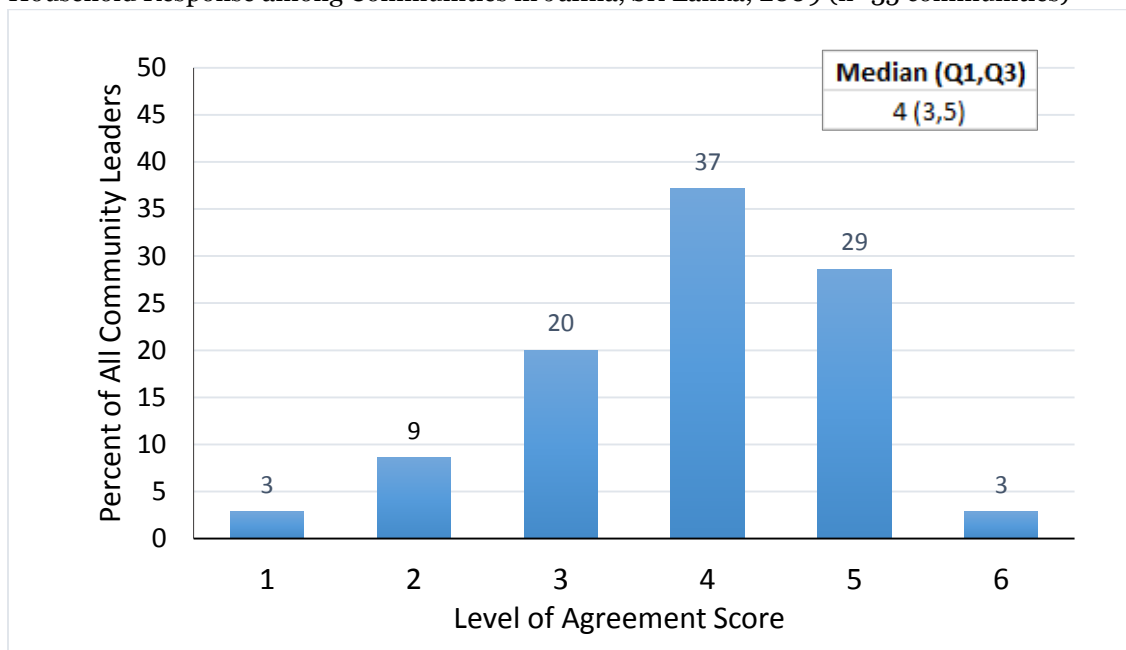
Figure 4. Level of Agreement between Community Leader (CL) and Household Response by Individual Community Characteristic among Communities in Jaffna, Sri Lanka, 2009 (n=35 communities)

G. Tables

Table 2. Socio-demographic Characteristics of Households by Displacement Status in Jaffna District, Sri Lanka, 2009 (n=1410)[a]

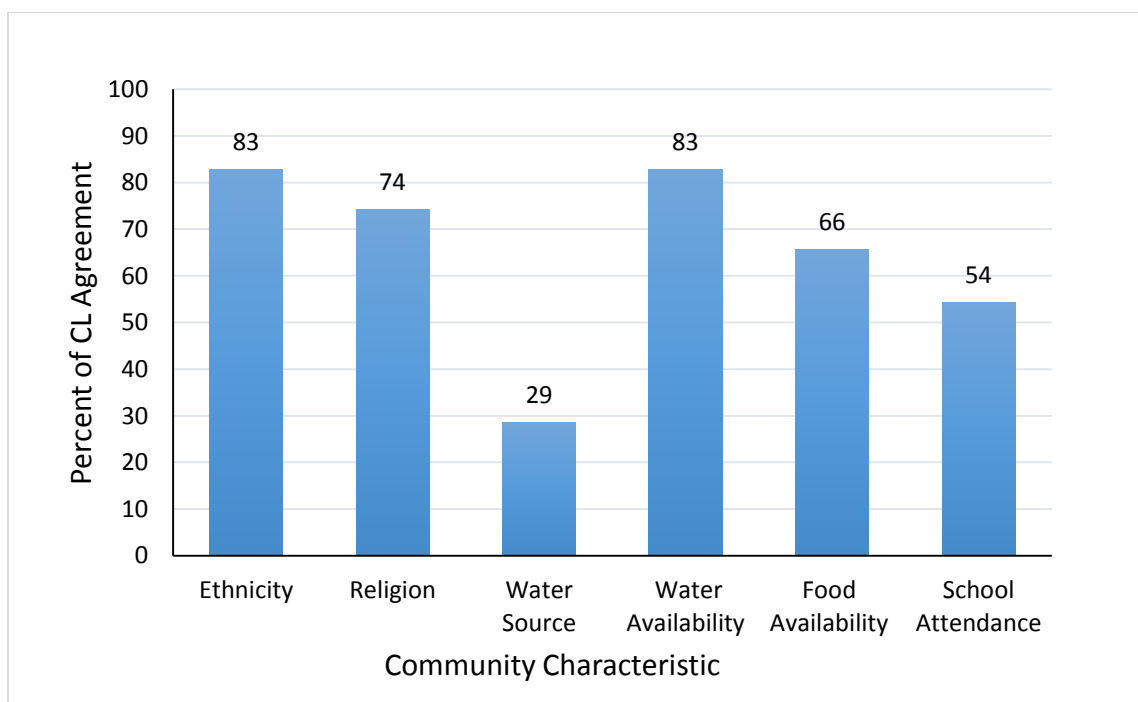| Household Characteristics	Currently Displaced (n=80)		Recently Resettled (n=539)		Long-term Resident (n=791)		p-value
	No.	(%)	No.	(%)	No.	(%)	
Ethnicity (n=1409)							
Tamil	80	(100.0)	537	(99.9)	791	(100.0)	
Moor	0	(0.0)	1	(0.1)	0	(0.0)	[b]
Sex (n=1409)							
Male	35	(43.8)	195	(34.7)	291	(36.3)	
Female	45	(56.3)	344	(65.3)	499	(63.7)	0.51
Religion (n=1409)							
Hindu	45	(56.3)	446	(79.4)	691	(88.5)	<0.01*
non-Hindu	35	(43.8)	93	(20.6)	100	(11.8)	
Household Size (n=1402)							
1—3	43	(53.8)	155	(27.6)	271	(34.6)	
4—5	27	(33.8)	218	(40.1)	298	(37.1)	<0.01*
6 ≥	10	(12.5)	162	(32.3)	218	(28.4)	
Food Availability (n=1405)							
100% of the Time	63	(78.8)	299	(52.7)	492	(63.2)	
Less Than 100% of the Time	17	(21.3)	239	(47.3)	295	(36.9)	<0.01*
Water Availability (n=1408)							
100% of the Time	53	(66.3)	431	(80.8)	645	(81.3)	
Less Than 100% of the Time	27	(33.8)	108	(19.2)	144	(18.7)	0.07

[a]Values expressed as counts and weighted percentages (adjusted for sampling)
[b]Test of significance not conducted for cells with counts less than 5
*Indicates statistically significant (p-value≤ 0.05)

Table 3a. Unadjusted Odds Ratio between Food Availability Less Than 100% of the Time and Household Characteristics among Residents in Jaffna District, Sri Lanka in 2009 (n=1410)[a]

Household Characteristics	Food Availability Less Than 100% of the Time			
	n	OR	95% CI	p-value
Displacement Level	1405			
Long-term resident	787	*ref*		
Recently resettled	538	1.5	(1.0, 2.4)	
Currently displaced	80	0.5	(0.3, 0.8)	<0.01*
Sex	1404			
Male	520	*ref*		
Female	884	1.2	(0.9, 1.7)	0.20*
Religion	1405			
Hindu	1178	*ref*		
Non-Hindu	227	1.2	(0.9, 1.7)	0.19*
Household Size	1397			
1—3	468	*ref*		
4—5	540	1.3	(1.0, 1.8)	<0.01*
6 ≥	389	1.8	(1.2, 2.6)	

[a]Odds ratios account for weighting due to cluster sampling
*Indicates statistical significance (p-value ≤0.20)

Table 3b. The Unadjusted Odds Ratio between Water Availability Less Than 100% of the Time and Household Characteristics among Residents in Jaffna District, Sri Lanka in 2009 (n=1410)[a]

Household Characteristics	Water Availability Less Than 100% of the Time			
	n	OR	95% CI	p-value
Displacement Level	1408			
Long-term resident	789	*ref*		
Recently resettled	539	1.0	(0.6, 1.8)	0.34
Currently displaced	80	2.2	(0.8, 6.4)	
Sex	1407			
Male	520	*ref*		
Female	887	1.8	(1.2, 2.7)	<0.01*
Religion	1408			
Hindu	1180	*ref*		
Non-Hindu	228	2.6	(1.3, 5.0)	<0.01*
Household Size	1400			
1—3	469	*ref*		
4—5	541	1.1	(0.8, 1.6)	0.39
6 ≥	390	1.3	(0.9, 1.8)	

[a]Odds ratios account for weighting due to cluster sampling
*Indicates statistical significance (p-value ≤0.20)

Table 4a. Adjusted Association between Food Availability Less Than 100% of the Time with Level of Displacement and Household Characteristics among Residents in Jaffna District, Sri Lanka in 2009 (n=1396)[ab]

Household Characteristics	Food Availability Less Than 100% of the Time			
	n	OR	95% CI	p-value
Displacement Level				
Long-term resident	782	*ref*		
Recently resettled	534	1.5	(0.9, 2.3)	0.09
Currently displaced	80	0.5	(0.3, 0.8)	<0.01*
Sex				
Male	516	*ref*		
Female	880	1.2	(0.9, 1.7)	0.19
Religion				
Hindu	1171	*ref*		
non-Hindu	225	1.2	(0.9, 1.6)	0.31
Household Size				
1—3	468	*ref*		
4—5	540	1.3	(0.9, 1.8)	0.16
6 ≥	338	1.7	(1.2, 2.5)	<0.01*

[a]Odds ratios account for weighting due to cluster sampling
[b]14 observations missing from initial 1410 households
*Indicates statistical significance (p-value ≤0.05)

Table 4b. Adjusted Association between Water Availability Less Than 100% of the Time with Level of Displacement and Household Characteristics among Residents in Jaffna District, Sri Lanka in 2009 (n=1407)[ab]

Household Characteristics	Water Availability Less Than 100% of the Time			
	n	OR	95% CI	p-value
Displacement Level				
Long-term resident	788	*ref*		
Recently resettled	539	0.9	(0.5, 1.6)	0.76
Currently displaced	80	1.7	(0.4, 6.7)	0.44
Sex				
Male	520	*ref*		
Female	887	1.8	(1.2, 2.8)	<0.01*
Religion				
Hindu	1180	*ref*		
non-Hindu	227	2.6	(1.3, 5.1)	<0.01*

[a]Odds ratios account for weighting due to cluster sampling
[b]3 observations missing from initial 1410 households
*Indicates statistical significance (p-value ≤0.05)

Chapter III: Conclusion

The level of agreement scores, which represented GS knowledge of community characteristics, suggested that the majority of GS officers held relatively high knowledge of household needs and demographics. Because each GS officer may be responsible for populations of several hundred people, low awareness of individual community issues may have a notable impact on households. Misinformation at the community level during assessments may exclude vulnerable groups from receiving much needed humanitarian aid and important social interventions such as education. Ideally, community leaders should be well informed of household issues in order to ensure that community-level assessments are rapid and effective survey tools for appropriately directing aid during CHEs. Areas of low community leader knowledge may be improved through active community engagement of government officials to increase understanding of issues at the household level. Low knowledge scores may also indicate misinterpretation of certain survey questions, suggesting a need to modify questions that are asked in community level assessments. While community level data validation is not routinely conducted, this step may improve data quality during rapid needs assessments, further indicating the utility of such primary data collection methods.

Investigating the association between displacement status and food availability just months after the war end indicated long-term residents and larger families had greater food needs than those living in IDP camps. This highlights the need for increased monitoring of returnee needs through the reintegration process and beyond, as well as evaluating the financial needs and market availability of food to allow equal food availability among small and large households alike.
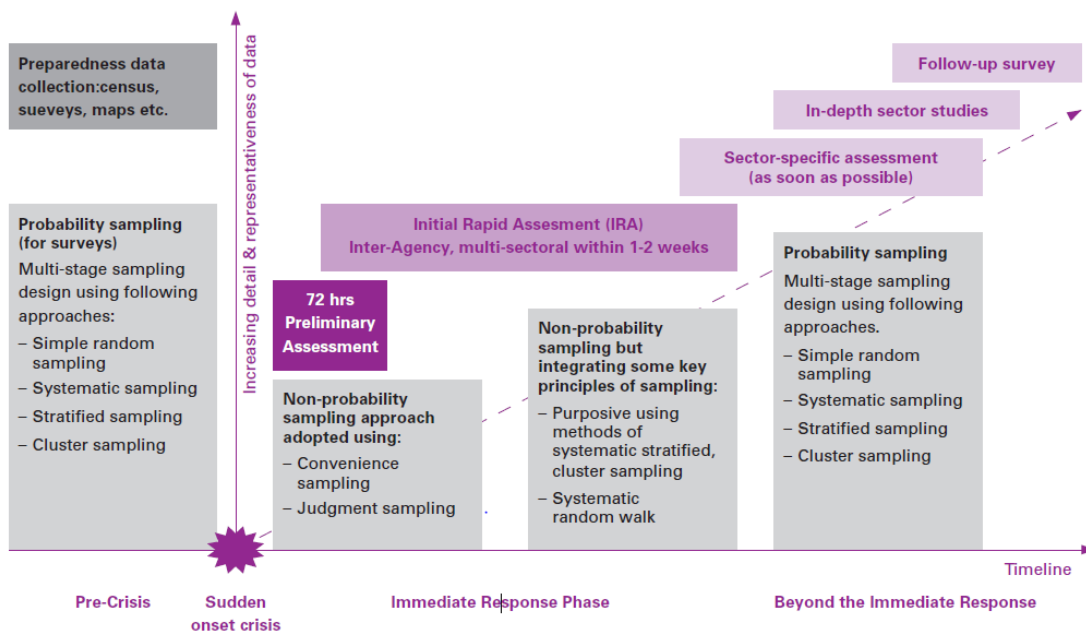
While some government interventions aim to reintegrate IDPs, many times this results in simply reducing IDP numbers without truly finding sustainable solutions (45). Follow up needs assessments in Sri Lanka have reached similar findings, with returnees in greater need of basic resources such as food and water compared with IDPs. This demonstrates the importance of continual assessment in order to understand if recovery encompasses all major aspects of life (livelihood, education, health, etc).

Regarding water needs, the finding that female heads of household were at greater odds of having water needs suggested their increased knowledge of family needs, and thus may be preferred respondents in household surveys to accurately represent needs. The discrepancy in water needs found between religious groups may present an area of further study to determine if the non-Hindu minority may be a vulnerable group for other needs.

The utility of accurate community level assessments is their ability to effectively guide humanitarian aid to those in greatest need. Valid community level data will better reflect household level needs, thus providing useful data for key stakeholders to respond appropriately during acute emergencies. Additional studies that measure the validity of community level data may add to the evidence for the utility of community level assessments in emergency response. Furthermore, routine assessment of both IDPs and returnees is imperative beyond the immediate acute phase of a disaster. Progress of integration must be continually measured to truly determine if civilians have reached sustainable needs in their recovery.

Appendices

Appendix 1. Sampling Methods for Data Collection in Emergencies (Source: UNICEF)

Preparedness data collection:census, sueveys, maps etc.

Follow-up survey

In-depth sector studies

Sector-specific assessment (as soon as possible)

Initial Rapid Assesment (IRA) Inter-Agency, multi-sectoral within 1-2 weeks

Probability sampling (for surveys)
Multi-stage sampling design using following approaches:
– Simple random sampling
– Systematic sampling
– Stratified sampling
– Cluster sampling

72 hrs Preliminary Assessment

Non-probability sampling approach adopted using:
– Convenience sampling
– Judgment sampling

Non-probability sampling but integrating some key principles of sampling:
– Purposive using methods of systematic stratified, cluster sampling
– Systematic random walk

Probability sampling
Multi-stage sampling design using following approaches.
– Simple random sampling
– Systematic sampling
– Stratified sampling
– Cluster sampling

Increasing detail & representativeness of data

Timeline

Pre-Crisis   **Sudden onset crisis**   **Immediate Response Phase**   **Beyond the Immediate Response**

Source: UNICEF – APSSC