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Systems and strategies for identifying and enumerating children outside of family care☆

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ABSTRACT

Methodologies to identify and enumerate children outside of family care vary as do the vulnerability categories of the children themselves. Children outside of family care is a broad term encompassing children absent of permanent family care, e.g., institutionalized children, children on/of the street, child-headed households, separated or unaccompanied children, trafficked children, children working in exploitive labor situations, etc. This paper reviews the various methodologies applied to identify and enumerate these often hidden and/or mobile populations. Methodologies that identify and enumerate children outside of family strive to meet two objectives: (1) to estimate the number and characteristics of a specific vulnerability category and (2) to determine eligibility to receive services. The paper reviews eight methodologies; six are categorized as survey sample methods (time-location sampling, capture recapture sampling, respondent driven sampling, the neighborhood method, household surveys, and establishment surveys) while two were labeled as data management systems (child labor management system, and databases of institutions). Each review includes a concise description of the methodology, its strengths and limitations, the most appropriate population it is suited to identify and/or enumerate, and any necessary conditions. Conclusions from these reviews advocate for tailoring a methodology (or a combination of methodologies) to the specific circumstances under which it is meant to identify or enumerate children outside of family care. In addition, further research and validation studies are needed to identify the conditions under which the strategies described here can be used and to develop appropriate protocols for utilization

Introduction

This paper will review a range of approaches to the challenge of identifying and enumerating children outside of family care. In part, it serves to introduce the later papers in this special issue, which focus on the kinds of programs and interventions that can be directed toward such children.

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Children outside of family care (COFC) are a highly vulnerable group with a generally elevated risk of negative outcomes. They include children in institutions and detention; street associated children; children heading households; children who are separated or unaccompanied as a result of conflict or disaster; children associated with armed forces and groups; children who work as live-in domestic servants; and children who are trafficked for forced labor and/or sexual exploitation. Throughout this issue, "institutions," "residential institutions" and "residential care" are used synonymously to refer to residential facilities in which groups of children are cared for by paid personnel. More description of these vulnerable groups is provided in paper X.

In a narrow sense, "identifying and enumerating" refers to the task of listing and counting, for example within a geographical area, the children who are eligible for some kind of intervention. The terms suggest that criteria for eligibility have been met and each child's name has been recorded. In the present context, however, the children are hard to reach. Children outside of family care usually do not live in households and are not included in any kind of registration system with unique identifiers. Attempts to identify and enumerate such children must generally be selective and incomplete.

The methods described in this paper have two principal objectives. The first is to estimate the number and characteristics of a category of COFC who are in a country, city, or other sub-national geographic entity. For example, in order to assess the level of need for interventions, it could be useful to have an estimate of the number of child-headed households in Kenya and the regions where they tend to be located. This estimate could be derived from a national survey of households, and because Kenya regularly conducts such surveys for many different purposes, the re-analysis of existing data files could be sufficient.

As another example, it could be desirable to estimate the number of street associated children in Nairobi. For this purpose, a household survey would be inadequate, but a capture/recapture sampling strategy could be used. If, instead, the goal were to describe children of the streets, in terms of their age, sex, nutritional status, etc., rather than to estimate their number, then time-location sampling would be a more appropriate choice. Time-location sampling would not be suitable for estimating the size of this population, and capture/recapture sampling would be an inefficient approach for describing the characteristics of the population.

A second possible objective is to identify specific children who are eligible to receive assistance under some program or intervention. A household survey is not generally appropriate for this purpose. Interview teams have very specialized training, and responses are treated with strict confidentiality. Regardless of the level of deprivation, the data are collected for statistical purposes only. Any departure from this rule could increase refusal rates or bias the responses, undermining the quality of the data being collected. By contrast, methodologies such as respondent driven sampling, the neighborhood method, and methods specifically for child laborers are appropriate to identify specific children for assistance.

Most of the methods presented here relate to the first objective, to estimate the numbers and characteristics of children who need assistance or interventions. Such approaches are important for assessing needs, targeting programs, and developing criteria for assistance. Fewer methods can be used for the more difficult second objective, to identify specific beneficiaries for specific interventions.

While significant progress has been made to develop new approaches, identifying children outside of family care and assessing their living conditions raises serious methodological and practical challenges. These populations often reside in isolated and hard to reach locations, or live in conditions of illegality and secrecy that may hinder the process of data collection. Official records and administrative sources commonly underestimate the true magnitude of the affected populations. Reporting mechanisms are often nonexistent and their reliability may be compromised by high levels of inefficiency, corruption or stigma. Even the existence of records can lead to criminalization and increased vulnerability for the affected children. As will be discussed in paper 2, the collection of data on these populations can raise ethical challenges.

As discussed in Higgs and Balster (paper X), the evidence review process led to a variety of methods for identifying and enumerating children outside of family care. The paper will review eight methods serving one or both of the objectives described above. They will be presented in two groups, survey sampling designs and data management systems or databases, that roughly correspond to the two objectives.

This inventory is certainly not exhaustive, but the methods described here are believed to be the most appropriate ones available for the vulnerability groups discussed in this special issue. The presentation of most methods will follow the same format, with a description of the method, specification of the most applicable populations, and a discussion of the method's strengths and limitations. The format will be abbreviated for some methods that have been used almost exclusively in the context of child labor.

Survey sample methods

Time-location sampling

Time-location sampling or TLS (also known as time-space or venue sampling) is a probabilistic sampling strategy used to recruit members of a target population known to congregate at specific times in set venues (Gayet & Fernández-Cerdeño, 2009). As explained by Muhib et al. (2001), TLS "will produce a systematic sample of members of a targeted population who attend specific venues in a community" (p. 221).

The sampling frame is comprised of venue-day-time units (VDTs), or time-location units which represent the universe of possible venues, days and times at which the target population is known to gather (e.g., a specific bar, Friday, midnight

to 6 am). The first step in creating the sampling frame typically involves an ethnographic mapping exercise to identify the range of venues or sites, days, and times often derived from key informant interviews with service providers, social service workers, law enforcement officials, non-governmental organization (NGO) staff and even members of the target population themselves. Field staff then visit all of the venues listed to assess whether the identified VDTs are attended by individuals from the target population (Semaan, 2010) and to conduct a primary enumeration of eligible VDTs to estimate population size of each VDT and the number of persons belonging to the target population eligible for sampling (Gayet & Fernández-Cerdeño, 2009).

The sample of participants is then selected in a two-stage sampling process. First, a simple or stratified sample of all the VDTs listed in the sampling frame is selected (preferably with probability proportional to the number of eligible participants at each VDT; Gayet & Fernández-Cerdeño, 2009; Semaan, 2010). All identified VDTs may also be included, especially if only a small number are included in the sampling frame (see UNICEF, 2006, as an example). The second stage involves screening all prospective participants and then using random or systematic sampling to select potential respondents (Semaan, 2010). The researcher may choose to include either all or just a subsample of members of the target population found at the site during the specified time interval (Magnani, Sabin, Saidel, & Heckathorn, 2005).

Time-location sampling is commonly used to produce estimates of hard-to-reach, vulnerable, stigmatized, or hidden populations that may not frequent typical public places (Semaan, 2010). The sampling methodology has most traditionally been used in HIV/AIDS and other public health-related projects with, for example, men who have sex with men; lesbian, bisexual and transgender individuals; female sex workers, and injection-drug users. The sampling strategy has also been applied to surveys of homeless persons, including homeless and street associated children and youth. The methodology may also be useful with migrant or very mobile populations.

Time-location sampling has several strengths. First, the methodology can produce a large and diverse sample of the target population and can generate findings that are generalizable to the target population (Semaan, 2010; Muhib et al., 2001). Appropriate weights should be calculated and applied to account for unequal selection probabilities (see Karon, 2005, for an example of a weighted analysis where time-location sampling was used). Second, the creation of the sampling frame allows for the identification of venues where the target population could be directed to receive services (Semaan, 2010). Third, the random selection of venues from the larger universe yields more representativeness than a simple convenience sample (Muhib et al., 2001; Nada & Suliman, 2010; Raymond, Ick, Grasso, Vaudrey, & McFarland, 2007). Fourth, the method can reduce the chances of arbitrary selection of participants by interviewers (Gayet & Fernández-Cerdeño, 2009; Muhib et al., 2001). Finally, TLS is efficient for hard to reach and hidden populations (Muhib et al., 2001) and may in fact be one of the only available and viable options for sampling when researching these groups (Raymond et al., 2007). For these reasons, such sampling method can be used to gather information on two major categories of COFC, i.e., children living on/of the street and children who are trafficked for forced labor and/or sexual exploitation.

A significant challenge includes the difficulties in constructing an accurate, complete and current sampling frame; this may create what has been termed an "intelligence gap" (UNICEF, 2006, p. 38). In a UNICEF survey in Blantyre, Malawi, for example, there was a time lag of over a month between the listing of sleep/activity sites and the fieldwork. Because that study involved homeless children, a population that is known to be very mobile and fluid, information on where they slept changes and is unstable and may therefore be unreliable or outdated by the time fieldwork begins (UNICEF, 2006).

A further limitation noted with time-location sampling is related to access to the venues or sites (Semaan, 2010). In one example, the refusal of owners or managers to allow access to establishments utilized by female sex workers that had been included in the sampling frame likely created a significant bias in the sample (Gayet & Fernández-Cerdeño, 2009). Non-response will likely be linked to sites where targeted populations are met and could create selection bias (e.g., sex workers may refuse because they do not want to miss potential clients; Magnani et al., 2005).

One of the most serious limitations is potential bias in creating the sampling frame if all potential gathering sites/venues are not included or if significant proportions of the target population is hidden, and never or rarely frequent the selected sites (Magnani et al., 2005; Muhib et al., 2001; Raymond et al., 2007; Semaan, 2010). Under such circumstances, the findings would be limited to the target population who attended the selected sites, unless appropriate weights are utilized to estimate the probability of attendance across all sites and the target population (MacKellar, Valleroy, Karon, Lemp, & Janssen, 1996; Semaan, 2010).

Capture/recapture sampling

Capture/recapture is a methodology originally developed for animal populations that has been adapted to estimate the size of human populations or groups that are mobile or have limited access to or contact with services. The aim is to estimate the size of a population for which there exists no sampling frame. The method uses the overlap in independent samples of the population to estimate its size. If applied to a population such as street associated children, it requires a thorough knowledge of their daily habits, especially with regard to where to find them.

There are several methodological assumptions to capture/recapture: (1) The population under study must be closed – of fixed size and composition, and the study area complete; (2) being "captured" (that is, identified in such a way that it will be known whether the case appears in a later sample) does not change the likelihood of being captured in future samples; (3) it is possible to accurately identify which individuals have been interviewed previously; (4) the population is

homogeneous and the sources used are independent, allowing every individual the same chance of inclusion in the lists; and (5) all individuals have a chance of appearing in each sample.

There is not enough evidence to show that the methodology generates the same results every time it is used, but the literature demonstrates success in enumerating and identifying COFC, particularly street associated children. In Gurgel, da Fonseca, Neyra-Castaneda, Gill, and Cuevas (2004), the estimated number of street associated children in Aracaju, Brazil was 1,456, which was almost three times what local non-governmental organizations (NGOs) estimated previously. The fact that the methodology does not rely on just one list or just one source of data may reduce its vulnerability to external manipulation and increase its validity. As demonstrated in the studies mentioned, the methodology could be used to estimate the number of street associated children and trafficked children, but only in cities where street prostitution is the main venue (as opposed to brothels, strip clubs, and other in-door venues).

There are several important considerations prior to employing capture/recapture with a COFC population. Having access to large number of trained researchers and interviewers is crucial so that the methodology can be implemented and completed in a short period of time (24–48 h). Otherwise, there is a risk of population mobility both within and outside of the targeted the city. Also, weather is a factor in when this methodology should be used. The rainy season should be avoided since it will limit the capture/recapture aspects of the methodology since children will seek shelter in various locations, making them difficult to count.

There are a number of limitations to using capture/recapture with a street-based mobile population. The overlap in samples may be small because of a tendency to avoid re-capture (i.e., inclusion in a later sample), leading to a potential over-estimation of the population size. The model assumes a closed population, which is often not the case with mobile and dynamic populations (e.g., street associated children). There are ethical concerns of interviewing children who are in harmful/dangerous situations (e.g., trafficked, forced labor, involved in armed conflict) and not providing them with immediate assistance or intervention. By using lists from NGOs (as many researchers do), only children who have sought assistance or were approached by NGO workers would be included, leading to an underestimate of the size of the population.

Many vulnerable children avoid contact with government officials or NGOs; thus, it is difficult to ascertain their numbers. This technique estimates the population in a way that is standardized and reproducible. Capture-recapture is less vulnerable to external manipulation. The methodology is often implemented and completed in a very short period of time (24 h–one week). It is an effective approach to accessing children who have never come in contact with law enforcement or service providers. Thus, given the right circumstances, capture/recapture could be an effective method to enumerate certain children outside of family care.

Respondent driven sampling

Respondent driven sampling (RDS) is a type of snowball sampling that overcomes the potential biases associated with traditional snowball sampling methods. RDS is used to recruit statistically representative samples of hard-to-reach groups by taking advantage of intragroup social connections to build a sample pool (Abdul-Quader et al., 2006; Heckathorn, 1997, 2002; Heckathorn, 2002; Robinson et al., 2006). RDS is much like the well-known recruitment strategies of "snowball sampling" (Goodman, 1961) and "chain-referral sampling" (Erickson, 1979), but unlike these methods, whose primary utility is generating a large number of research subjects, RDS provides statistical tools for creating estimates comparable in quality to those generated through more common probabilistic statistics (Heckathorn, 2002; Salganik & Heckathorn, 2004). The method has proved useful in quickly recruiting large numbers of people from hidden populations, and also allows researchers to describe the salient characteristics of the population and, in some instances, make population estimates. RDS includes a method for making indirect estimates by way of the social networks connecting the population (Salganik & Heckathorn, 2004).

Because of its advantages over other recruitment strategies, RDS has been increasingly used nationally and internationally in studies of hard-to-reach groups, including injection drug users, commercial sex workers, and men who have sex with men (Abdul-Quader et al., 2006; Johnston, Sabin, Hien, & Huong, 2006; Simic et al., 2006). RDS has successfully identified street associated children in Ghana (Hatley & Huser, 2005), street associated children in Albania (Johnston, Thurman, Mock, Nano, & Carcani, 2010), homeless youth in New York City (Gwadz et al., 2010) and commercially sexually exploited children in New York City (Curtis, Terry, Dank, Khan, & Dombrowski, 2008). The method is used to provide a probability based inferential structure for populations that are uncommon and/or socially stigmatized (including undocumented residents) in a well-defined geographical location, such as a city. RDS can begin recruitment anywhere within a pool of eligible subjects, and it can reliably produce a representative sample of the population regardless of the starting points. As Heckathorn (1997, p. 176) notes, "RDS produces samples that are independent of the initial subjects from which sampling begins. As a result, it does not matter whether the initial sample is drawn randomly." RDS is based on a dual incentive structure, in which respondents are rewarded for being interviewed and for recruiting new respondents. The method essentially relies on study participation by exploiting social ties within the study participants' social networks. The sample is used to make indirect estimates about the social network connecting the population. This information is then used to derive the proportion of the population in different groups. In order to do this, interviewers must ask the respondents to describe the relationship to the person who recruited him or her and how many other people they know in the population.

The sampling begins with a set of initial participants who serve as "seeds," and expands in waves. Thus, each recruited participant is a link in a recruitment chain. RDS assumes that the recruitment will ultimately provide an unbiased sample

because respondents' preferences will weaken over successive waves. When all methodological and theoretical requirements are fulfilled, RDS yields representative estimates of population parameters upon which inferences can be made about the characteristics and behaviors of the sampled population.

As potential advantages, RDS (1) can produce a random and representative sample; (2) may be an effective approach to accessing children who have never come in contact with law enforcement and/or service providers; (3) allows for deeper access into diverse and isolated sectors of the population; (4) through recruitment quotas, reduces the tendency for individuals with larger social networks to recruit more people than those with smaller social networks; (5) can limit homophily, the tendency for within-group recruitment vs. random recruitment; and (6) provides information about the potential biases associated with the non-random selection of seeds by examining whether recruitment chains are long enough to achieve equilibrium with respect to key sample characteristics.

Despite the benefits to using respondent driven sampling, there are a number of assumptions and pre-conditions that must be made about the sampling process in order for the methodology to be successfully employed. One assumption is that all sub-groups of the population can be reached through the chain-referral process. Another assumption is that all individuals in a respondent's social network have the same probability of being recruited in the next step. Because it is unlikely, in practice, that the assumption of non-preferential recruitment of participants is satisfied, representativeness of the sample cannot be ensured (Goel & Salganik, 2010).

The assumptions and pre-conditions of RDS lead to a number of limitations to the methodology. These include: (1) difficulty in accessing isolated population sub-groups; (2) the need for adequate training of the data collectors and sufficient supervision; (3) ethical concerns of interviewing children who are in harmful/dangerous situations (e.g., trafficked, forced labor, involved in armed forces) and not providing them with immediate assistance or intervention; (4) the possibility of interviewing a respondent more than once without knowing it; (5) difficulty in conceptualizing and defining the vulnerable group to a child respondent (e.g., street associated children) so that they recruit the appropriate population; (6) the possibility of excessive homophily, especially within a large population; and (7) reliance on self-reporting, particularly on the how many members of the target population the study subject knows.

Neighborhood method

The neighborhood method measures sensitive events, including association of children with armed forces and groups and in situations of humanitarian concern where security, logistical, and financial constraints can make large samples difficult to obtain. In this method, interviewers conduct one-on-one, in-depth, household-based interviews, asking about respondents' experiences as well as the experiences of all members of their household, and members of the households of their three closest neighbors.

This method is appropriate for estimating the numbers of children who have been separated from their families for reasons that are known to family members, such as recruitment or association with armed forces and groups, but the children themselves are not accessible. This method may also be appropriate for estimating numbers of children who have left home to live on the streets, are in residential care institutions, placed in detention, or were trafficked.

The neighborhood method serves as a valuable complement to the case-based monitoring and reporting mechanism used most frequently to capture data mandated by United Nations Security Resolution:1612 (SR:1612). Adopted unanimously on July 26, 2005, SR:1612 condemned the use and recruitment of child soldiers and established a monitoring and reporting mechanism on the use of child soldiers. The survey instrument was sensitive enough to capture data that could be used to estimate the rate of most of the violations required under SR:1612, including association with armed forces and groups. A study in Liberia indicated that the method can detect far more incidents than those documented by a case-based monitoring and reporting mechanism process (Warner, 2007). The use of a semi-structured, open-ended questionnaire allowed respondents to discuss difficult topics, including rape and sexual abuse (Rogers, Anderson, Stark, & Roberts, 2009). Close supervision of the survey team can minimize the effect of interviewer bias on results.

Interviews should be limited to respondents who are old enough to give informed consent (and have provided their consent) and should take place in a private space. Information on health and social services must be available in order to refer respondents to services if needed, including transportation services for persons in dire need of immediate assistance.

Several potential biases may affect the survey's results. If the sampling frame used to identify clusters is not complete, or if some groups are systematically not included in the sampling frame – such as those living outside of the country during the census and experiencing violations at a rate different than the rest of the population – this could result in estimates being biased either toward or away from the baseline. The method assumes that surveyor can reach sampling cluster. However, this may not be the case in conflict prone areas. This method also assumes that respondents are available in selected households or one of the three neighbor households. If neighbors can report successfully on their neighbors, then the missing respondents will not create a potential bias. However, a potential source of bias could exist if neighbors consistently report incompletely about other neighbors and those not at home differed from their neighbors. Time constraints, logistics and a difference in interviewers' language abilities may compromise supervision and consistency of data. As a result, an accurate assessment of inter-rater reliability is sometimes difficult to obtain. As with any survey, results are affected by respondents' knowledge, willingness to report, and ability to recall which events truly happened within the period under study. The method also assumes that respondents have the ability to report on events within their own households and in all neighboring households with equal consistency and that any hostile or difficult relationships between households or household members would not

bias accurate reporting. While this method may be sensitive enough to detect incidents, rates of violations may be too low to be detected precisely with a household survey.

Household surveys

A household survey is a data collection procedure that gathers information from a sample of households that are typically selected at random from an existing listing. Household surveys are important sources of data, particularly in developing countries where these procedures often supplement and replace other data collection mechanisms, such as civil registration systems (UNDESA, 2005). However, because they are meant to cover populations living in households, these data collection mechanisms are generally not well suited for gathering information on certain categories of COFC, including children who live in illegal conditions, in institutions or are associated with the streets.

There are different types of surveys with different contents and structures. This discussion refers to generic household surveys such as the MEASURE Demographic and Health Surveys (DHS), funded primarily by USAID, and the Multiple Cluster Indicator Surveys (MICS), supported by UNICEF. These surveys have been developed to cover a wide range of socio-demographic topics. Sometimes a specific survey or survey module can be developed to collect data on the living conditions of a specific category of vulnerable children. An example of such efforts is represented by the module on child trafficking that was developed by International Labour Organization (ILO) for inclusion in standard labor surveys. The methodology is based on an operational definition of the UN Convention against transnational organized crime (2000) and in particular its supplementary protocol to prevent, suppress and punish trafficking in persons, especially women and children (the Palermo Protocol). The core elements of this operational definition of child trafficking are: (1) a child is a person under the age of 18 years and (2) recruitment, transportation, transfer, harboring or receipt, whether by force or not, by a third person or group; and the third person or group organizes the recruitment and/or other acts for exploitative purposes. This kind of survey can identify children who are potential trafficking victims and need to be complemented with qualitative surveys on employers and intermediaries to identify actual trafficking victims.

The DHS and MICS survey programs include almost exactly the same questions and their methodology is fully harmonized. In a typical survey, about 400 clusters (census enumeration areas) are selected with probability proportional to size, and about 20 households are selected randomly from each cluster. All persons in these households are listed, with many questions about individuals and the household as a whole. Women age 15–49 are interviewed separately and adult men are often interviewed as well. For children under five, the surveys collect information about survival, immunization status, nutritional outcomes, birth registration, and recent illness and treatment for illness. For ages 5–17, school attendance and child labor status are described. For ages 0–17, information about survivorship of parents and household composition is included. The listing of household members includes the specification of a household head, and there are codes for how each member of the household is related to the household head.

Generic household surveys such as MICS and DHS can identify two categories of children living outside of family care. First, if the household head is age 15–17, the household can be described as child-headed. (Some researchers count ages 18 and 19 as possible ages for child heads of households.) Household heads under age 15 will be missed because age 15 is the minimum age for legal consent to participate in a survey and a household will be skipped entirely if it includes no one age 15 or above. These households are identified in a data file and their characteristics are easily described. It can happen that the nominal household head is an adult, who is seriously ill or disabled, and a child is effectively the household head, providing care to the adult(s) rather than the other way around, but such structures are harder to identify reliably.

Second, the code for relationship to head makes it possible to identify children in a household who are unrelated to the household head. (In addition to the usual categories, including in-laws, these surveys usually include “other relative”, “adopted/foster child”, and “not related.”) Such children may be vulnerable to exploitation for their labor. It is known that some children who are exploited in this way (e.g., *restaveks* in Haiti) are often in a distant biological relationship to the household head, rather than being unrelated. However, household surveys have some weaknesses in their ability to identify unrelated children in a household. A child may be related to another adult, even if not related to the household head. Also, domestic workers, of any age, may be considered not to be household members, and therefore may be omitted in the household listing.

Household surveys are useful for estimating the numbers of children in the general household population who have various deprivations or for identifying risk factors, such as orphanhood, or low socio-economic conditions. Most countries have implemented multiple surveys at regular intervals, using a standardized methodology that make cross-country comparison and trend analyses possible. Data files from DHS and MICS surveys are publicly available and can be used for further analyses. New approaches to estimating the size of a sub-population using such surveys have been applied in Rwanda (Rwanda Biomedical Center/Institute of HIV/AIDS, Disease Prevention and Control Department (RBC/IHDPC), School of Public Health (SPH), UNAIDS, & ICF International, 2012).

These surveys cannot be used to identify specific children who could benefit from services and interventions, because the requirement of confidentiality does not allow any kind of follow-up or return visits to the households after the data have been collected. The data can inform the targeting of interventions by identifying regions or sub-groups with a higher prevalence of deprivations.

Establishment surveys

Establishment surveys are data collection strategies in which the primary units of sampling and analysis are businesses or institutions rather than households or individuals (Phipps, Butani, & Chun, 1995). These methods are often used to gather relevant information for national planning and economic development, but have recently been used to collect data on working children as well as on children living in institutional settings such as residential care facilities or juvenile justice centers.

An example of this type of survey is the establishment-based survey that was developed and pilot tested by ILO in Bangladesh to collect data on commercial sexual exploitation of children (CSEC). This survey applied a two-stage stratified sampling design. The strata established were brothels, major metropolitan cities, large cities, district headquarters, and "upazila headquarters" (areas in urban periphery). A mix of sampling designs, depending on the strata, was applied to select the primary stage units (PSUs). In the second stage, child sex workers were sampled. The household based survey used a stratified, three-stage cluster sampling design (selection of sample primary sampling units, selection of sample enumeration areas and selection of housing units). From the listing, households with persons 5–25 years old were identified. If a household had members in the age group 5–25 years who were working, such children were probed as a being a probable case of commercially sexually exploited children. Thus, a first set of questions was posed to validate if the respondent is a probable case of commercially sexually exploited children, then once validated, another set of questions were applied to identify if they are really a case of commercial sexual exploitation. In the referral system, households interviewed were asked to refer another household within the sample PSU which they knew to have a case of CSEC. The referred households were interviewed, and the process was repeated until there were no more referrals.

This survey methodology was developed with the specific purpose of providing an estimation of commercial sexual exploitation of children. The establishment based approach is suited best to orthodox societies, where a country's social norms prevent former sexually exploited children from being reintegrated back into their families, thus making them even more vulnerable. The method is capable of generating estimates on a particularly hard-to-reach population for which other sources of data are unavailable or difficult to obtain. The main difficulties are in selection of the primary sampling units, in approaching the respondent for interview, and in extracting correct replies when the work engaged in is illegal.

Data management systems

Databases of institutions

Institutional databases compile information on the number of children in formal care in each facility as well as rates of children entering and leaving care. While not generally designed to provide a thorough assessment of the quality of care in an institution or the associated child welfare outcomes, they can and do include indicators related to case management of children in care and other factors that reflect quality. The databases are commonly and most preferably then used to assist local and national planners to make informed decisions related to care standards and care provision (Greenwell, 2000). The overarching goal of maintaining basic information databases is to make available statistical indicators that enumerate individual children as well as capture basic information that can be readily aggregated and summarized into statistical indicators that portray characteristics of children at a local and/or national level (Browne, 2009). These endeavors also enhance understanding around the facilities providing care to them. Enumeration strategies can be stand-alone data collection initiatives tabulating the number of children in an institution(s) or can be imbedded within larger databases of care institutions that qualitatively assess the provision of care in addition to enumerating facilities and the children residing in them.

These strategies are relevant to children in care institutions and other types of formal care, but distinct from children in juvenile justice facilities. They are relevant to all populations of children in formal care, most notably institutional care, across all age groups, and can be inclusive of all children (e.g., children with disabilities in institutional care).

Ideally, enumeration of children in institutions takes place as a national level initiative with support from government entities to ensure that adequate representation of the context is collected and that access to a full range of subjects and venues is made available. Coupled with that national leadership, would ideally be the collaboration of all organizations and actors, public and private, involved in the formal care system. The most effective way to collect is using existing administrative registry-based records. Where such systems do not exist, collection efforts can build capacity by supporting the development of such systems (Better Care Network & UNICEF, 2009). For many country contexts, this is a challenging goal, particularly in contexts lacking political will to support such endeavors or in contexts without registration system to identify all care institutions. Experiences in Burundi, Ethiopia, Guatemala, and Rwanda reflect the gains achieved with this type of investment by national level leadership (Family Health International, 2010; Government of Burundi, International Rescue Committee, & UNICEF, 2011).

Enumeration should not be an end goal in and of itself but rather a tool to further understand needs, link communities with services, inform policy and practice, and gather broader information on the causal factors of family separation and entry into care and the characteristics of the children in question. Beyond just enumeration, these mechanisms can and should include indicators for existence of legal and policy frameworks for formal care and systems for registration and regulation, generally the biggest challenges to enumeration efforts.

A notable strength in strategies enumerating children based within institutions is that unlike other street associated children or in child-headed households, children attached to these institutional care centers can be more accessible, assuming those institutions are registered or monitored and therefore able to identified (Greenwell, 2000). In these instances the children therein can be accurately enumerated and statistics can be collected on their life history, contacts in the community, health and education status.

The aim of maintaining basic information on each child is so that it can be readily aggregated and summarized into statistical indicators that portray characteristics of children at a local and/or national level. The ability to disaggregate characteristics of children, which many institution based surveys provide, gives an opportunity to track patterns in formal care in order to understand the type of accommodations most frequently used, for example comparing reliance on institutional care as opposed to formal family based care. Disaggregation methods can highlight disparities in where reunification is pursued or made available, raising awareness of characteristics of young people most likely to be separated from their family or placed in care due to sex, ethnicity, disability status or other characteristics (Better Care Network & UNICEF, 2009). By elucidating causal factors to family separation and entry into care, it enhances ability of policy and programs to more aptly direct prevention efforts.

The common measurement approach available through such efforts can monitor progress over time at regional, national and global levels in preventing separation, reducing unnecessary entry of children into care, and transitioning children where appropriate from institutional care to family-based care. The data, particularly if made available to public, can support advocacy to improve systems and services for children at risk or in alternative care and to guide program development and budgeting, particularly in a context of growing momentum for deinstitutionalization of children (Better Care Network & UNICEF, 2009).

Limitations. In many low- and middle-income countries, the majority of institutions caring for children are privately funded and operated, frequently unregistered, and largely unmonitored. In order to comprehensively assess the rates of institutional care at a national level with assurance that all institutions have been captured, strategies and methodologies require government investment and backing (Family Health International, 2010).

Where evidence exists, it comes from contexts in which the institutions are registered and likely monitored, which is an incomplete picture of the actual breadth of care facilities housing children. In some of the evidence evaluated for this review, institutions had the opportunity to exclude themselves from enumeration efforts, potentially creating an opportunity for care facilities to fall below the radar (Save the Children UK, UNICEF, & the Government of Indonesia, 2008). Enumeration efforts are seen to be most useful and effective when coupled with national-level databases that capture all institutions, as seen in Guatemala (Office of Social Welfare of Guatemala, Holt International, & UNICEF, 2008).

An important limitation is the inability of such mechanisms to assess the psychosocial and emotional wellbeing of children in care. While some databases include indicators related to access to case management, permanency planning, child and family engagement and other indicators of rights based care planning, they are generally unable to fully assess the wellbeing of the children being enumerated, highlighting a need to couple enumeration with planning and management that meets the best interests of the individual child in question.

Conclusion

This paper has given a brief overview of methods to identify and enumerate children outside of family care. Each approach has potential applications beyond the examples provided here.

In specific contexts, innovative approaches falling outside the strategies described here may be possible. For example, some children who are exploited for their labor in factories, repair shops, construction sites, mines, etc., can be identified in an establishment survey. Some places of work are formally registered or can be captured through means such as export licenses and suppliers. Child laborers can sometimes be identified in places where they spend their leisure; where they receive services, refuge or care; or where they transit or are transported from one place to another. Strategies to find and identify children in these circumstances have been developed by organizations such as ILO.

As noted in "Introduction" section, the main objectives of these methods are to estimate the numbers and characteristics of such children or to identify specific children for interventions. In a typical, for a population that is believed to include seriously deprived and vulnerable children, the first step would be to assess the level of need with some kind of a survey. Again, for children who can be detected with a household survey, that may be the most convenient method. For children outside of households, capture/recapture, time-location sampling, respondent driven sampling, etc., will be more appropriate. Analysis of the data would lead to prioritization of targets, expressed by type of vulnerability and spatial location, for example. The second step would be to identify specific children with the greatest need for support. This is more difficult to accomplish with a sampling strategy, although some sampling methods, such as RDS, and some database approaches, have the potential to incorporate hard-to-reach and highly vulnerable children.

The first and second steps should be separate, in order to maintain the objectivity of the first step, but as mentioned, an ethical dilemma arises when children in desperate situations are identified during the needs assessment. Databases that include children pose other kinds of difficulties in the absence of unique identifiers or biomarkers, such as fingerprints. Obtaining and maintaining such identifiers on minors, no matter how innocent the intent, can raise ethical and political issues that may undermine both the intervention and the welfare of the children.

Finally, while our evidence review focused on specific vulnerability groups of children outside of family care, it should be noted that there are children who live in family contexts but are at high risk of not having adequate support and care. In these situations, the boundary between COFC and children in families or households is permeable. Children living in inadequate households are at risk of becoming homeless or being trafficked. Children who do not receive adequate care due to poor health or economic circumstances affecting the adult family members in the household may put them in jeopardy of living outside of family care.

Further research and validation studies are needed to identify the conditions under which the strategies described here can be used most effectively.

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