Rapid Assessment Procedures in Environmental Sanitation Research

A Case Study from the Northern Border of Mexico

Enrique Cifuentes, PhD¹
Urinda Alamo, MSc¹
Tamil Kendall, MSc¹

Joan Brunkard²
Susan Scrimshaw, PhD³

ABSTRACT

Background: There is a need to enhance the quality and sustainability of environmental health programs in Mexico. What socio-cultural factors influenced the adoption or rejection of Clean Water in Homes programs in this population? We applied rapid appraisal procedures (RAP) to evaluate these community-based programs.

Method: Qualitative study conducted in communities along Mexico's northern border. We conducted informal dialogues, semi-structured interviews, field notes and observations. Home visits used a checklist to observe: sources of water, handwashing, as well as human waste and garbage disposal patterns.

Data analysis was conducted using ATLAS.ti, which facilitated comparison and illustration of discrepancies, the elaboration of emerging issues and relationships between them.

Results: Community members perceived that the Clean Water program was a top-down intervention. Water is perceived as a political issue and a matter of corruption. Inequity also limits solidarity activities involved in environmental sanitation. Migration to the United States of America (US) contributes to community fragmentation, which in turn dilutes communal efforts to improve water and sanitation infrastructure. While targeting women as program "recipients", the Clean Water program did not take gendered spheres of decision-making into account. Community members and authorities discussed the main results in "assemblies", particularly addressing the needs of excluded groups.

Conclusion: The oversight of not exploring community members' needs and priorities prior to program implementation resulted in interventions that did not address the structural (economic, infrastructure) and socio-cultural barriers faced by community members to undertake the health-promoting behaviour change, and provoked resentment.

MeSH terms: Water and sanitation; Mexico-US border; qualitative research methods

La traduction du résumé se trouve à la fin de l'article.

1. Instituto Nacional de Salud Pública. Cuernavaca (México)

2. PhD candidate, University of California, Santa Cruz (UCSC), USA

3. School of Public Health, Illinois, Chicago (USA)

Correspondence: Enrique Cifuentes, Instituto Nacional de Salud Pública (CISP), Av Universidad 655, Sta Maria Ahuacatitlan, Cuernavaca, Morelos, Mexico 62508, Tel: (52-777)329.3060, Fax: (52-777)101.2937, E-mail: ecifuent@insp.mx

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In the wake of global environmental health concerns, policy-makers and donors are demanding cost-effective interventions. A common question is: how can we enhance the quality and sustainability of environmental health programs? Improving quality and sustainability implies the involvement of community members, and the challenge arises of how to best involve population groups in these initiatives.^{1,2}

A series of rapid methods for collecting socio-cultural data has been developed for the evaluation of community health programs. Rapid assessment procedures (RAP) combine anthropological techniques to identify specific behavioural variables of relevance to the research questions.³ These procedures may involve decision-makers, researchers and representatives from the community in the whole process, leading to key steps for making interventions more effective, reducing the time spent in the evaluation process, and ensuring timely feedback to the process in an iterative loop of research and action.⁴⁻⁶

Mounting pressure on water resources and sanitary infrastructure in many areas of the world has been at the route of political conflict, and contributes to the ill health of the developing world. This is particularly the case along the Mexico-US border,^{7,8} where the Clean Water in Homes Program (Programa agua limpia en casa, PALC) was implemented to reduce health risks (especially enteric diseases). The initiative involved three main components: safe water, basic hygiene and health education.⁹ The pilot phase of PALC (2003-2004) was implemented and evaluated in two communities, namely El Mezquite (rural, with approximately 500 households and 1,750 inhabitants) and peri-urban compounds from Ojinaga (with approximately 1,200 households and 4,500 inhabitants) along the Mexico-US border. These communities were selected on the basis of water and sanitation infrastructure criteria (50% coverage or below). El Mezquite, located 45 km from the political capital, was selected as the intervention community. The control group involved 5 of the 14 informal settlements surrounding Ojinaga. The staff of public health services and funding agencies encouraged us to use alternative methods of data collection, in order to understand the population perspective and improve

the efficacy of future community-based environmental interventions. RAP was selected as the most appropriate and affordable method of data collection to answer the following question: What socio-cultural factors influenced the adoption or rejection of PALC-related activities in these communities?

POPULATION AND METHODS

Two thirds of adult women from both the intervention community and control group are economically active, since most men between the ages of 15 and 45 years have migrated to the United States. Enteric and respiratory infections are the most frequent cause of disease among children, and official records suggest that up to 50% of residents rely on latrines and septic tanks.¹⁰ Review of the health services records revealed that diarrhea is the most frequent reason for seeking a medical visit.

Five field workers were trained by experienced anthropologists during an intensive workshop. RAP research techniques were adapted from guidelines developed by Scrimshaw and Hurtado,¹¹ the International Water and Sanitation Centre¹² and Almedon et al.,¹³ and tested in the field (Table I). Data collection methods included:

Informal dialogues with five community leaders and three local authorities, identified during the pilot procedures. Dialogues were conducted following an outline of major concerns and information on principal environmental health issues and perceptions with regard to PALC.

Field notes, systematic walk-about, and observation. We recorded village layouts, water infrastructure, sewers and marginal compounds (mapping). Diagrams and field notes were used to illustrate the relationships among different groups and individuals most affected by water and sanitation deficiencies.

Semi-structured interviews. A total of 24 individuals were identified from informal dialogues and interviewed. We gathered testimonies about the main health concerns, as well as attitudes and practices related to water collection, disposal of human waste, and hygiene practices.

Focus group discussions. The objective was to assess community perception of PALC and identify priority concerns. Every group

TABLE I

Major Rapid Assessment Procedures, Mexico-US Border

Data Collection Method	Research Question
Informal dialogues	Major concerns, environmental health issues and overall perception of PALC.
Field notes, observation	Mapping, sewers, litter, wells, streams.
Focus group	Thematic framework, dependability of data.
Domiciliary visits and semi-structured interviews	Human and household waste disposal, handwashing and food preparation habits.
Assemblies	Discussions on emerging issues, major actors and the relationship between them.

discussion (n=5) involved 8-10 individuals aged 15-65 years, mostly females with different education levels.

Home visits (informal dialogues and observation). A total of 50 dwellings were selected from maps and lists of homesteads. Informal dialogues and observations included: handwashing, sanitary conditions, vegetable-disinfecting, source of water, use of drinking water disinfectant and garbage disposal.

Trustworthiness. Cross-checking (e.g., answers versus observation, inter-informant triangulation) was developed to enhance the credibility of our data.

Analysis

Data were transcribed verbatim and coded using a thematic framework process. Analysis was conducted using ATLAS.ti qualitative computer software. Initial data were fed back at community group discussions, during which dependability was rechecked. We used indexed transcripts and charts, sorting information according to key topics resulting from triangulation. Further analysis allowed us to elaborate new connections between emerging issues, major actors and relationships between them.¹⁴

RESULTS

Ojinaga (peri-urban homesteads)

According to official records, the municipal water system provides 96% of the population with potable water; home visits revealed, however, that such coverage is considerably lower (below 50%). Drinking water comes from five deep wells fed by the Rio Conchos and by a tributary of the Rio Bravo (*interviews*). Almost every family has a water tap in their yard. While some individuals consider the tap water safe to drink, most informants boil drinking water, treat it with water disinfection or purchase bottled water (*interviews*).

Flush toilets were observed mostly in clusters of dwellings with sewage. Community records indicate that there is sewage capacity for 90% of the urban area, but only 50% of the population from the outskirts is connected to this service. Physical and economic barriers prevent the other half of the population from using the municipal sewage services. Connecting houses on steep inclines (up to 7 metres) to the sewage system is a costly engineering challenge. Consequently, half of the population uses latrines and septic tanks, some of which are now filled to capacity (*interviews*). Urban wastewater is transported to drying fields, whereas peri-urban sewage is disposed of on the banks of both rivers, i.e., Conchos and Bravo (*community records and observation*).

Garbage is collected daily from the central neighbourhoods and approximately once a week from the peripheral neighbourhoods (*interviews*). Garbage disposal typically consists of individuals burning their own garbage (*interviews and observation*).

El Mezquite (rural)

Drinking water is obtained from a spring using hoses. Water shortages affect more than half of visited homes. There is no public sewage system. Latrines and open pits are used or some people, particularly children, defecate on the ground (*interviews*). Garbage is collected on a weekly basis, but most individuals burn their garbage (*interviews and observation*).

Barriers to implementation of water, sanitation and hygiene programs

Politics, PALC and Community Participation

Water is a political issue along the border, and is perceived as such by community members: "The local authorities should pay attention to these problems, it would be

cheaper...but they always say that there are no resources [but] as you can see, in Ojinaga they are going to build a new water network for the city, forgetting about the families of El Mezquite. There is corruption and the political parties are always fighting each other. They forget about what they should do for the people that vote for them." (Testimony (T)3.1/ El Mezquite). Community members perceived that the Clean Water in Homes program was a top-down intervention and a discouraging approach for community participation. As a key informer said: "No one told us about this program ahead of time. One day some people came to ask a lot of questions and to invite us to meetings...many of us had doubts, and some people were even distrustful." (T1.1/Ojinaga). "It's always the same. Politicians come and go, promising potable water and services; but as you can see...". (T2.1/Ojinaga). They don't take us into account and that is why the people don't trust them...We would like to participate, before they start implementing these programs; we could tell them what we need here.

Infrastructure and Economic Barriers

Explosive growth of colonies and compounds has resulted in overcrowding and poor sanitation. Poor municipal infrastructure and financial constraints limit access to water: "We have water irregularly. During the dry season it doesn't come for up to a week. Before, almost all of the houses had a cistern; now, the rooms that people build hardly ever have a decent bathroom." (T3.2/El Mezquite). The cost of accessing alternative water sources was prohibitive for many participants: "In my house, we have to buy water from the water trucks, but it's very expensive to fill the water tank." (T4.2/ El Mezquite).

The Clean Water in Homes intervention addressed "safe" water shortage by providing disinfectant (i.e., colloidal silver). Women said: "the support that they [PALC] give us is good, while they keep on giving us colloidal silver, we'll use it, but if they don't give it to us, we can't obtain it because of lack of money." (T4.3/El Mezquite). "When this program is over we will forget about it. PALC has not promoted alternatives...". (T5.3/ El Mezquite).

The gap between the conditions assumed by PALC and the living conditions in the communities where the inter-

vention was implemented, and the consequent failure to implement health-promoting behaviours, were summarized by this community member: "It is of no use that they tell you how to live with fewer diseases...Who wouldn't want to live in a better place, with services that take care of the garbage, and not have the hassle of getting water? Who believes we are here because we like it?" (T4.1/Ojinaga). In general, the most serious hygiene problems were identified in the poorest households, most of which were also the most apathetic about the Clean Water in Homes program.

Mobility and Community Fragmentation

As well as being excluded from public health services, this population is highly mobile. In El Mezquite, more than 20% of homes were empty, due to the migration of entire families to the United States. A similar situation was observed in peri-urban compounds from Ojinaga. Walkabouts revealed a series of homesteads that function merely as dormitories without water or toilets. Informal interviews corroborated these observations: "In some neighborhoods, families only stay a short time, and when they leave, the house remains empty until others come...we don't know who lives or lived there...". (T5.2/Ojinaga). Migration contributes to community fragmentation, which in turn dilutes communal efforts to improve infrastructure. One individual who was making efforts to take responsibility for his garbage pointed out a mound of garbage under a lightpost a few metres from his home and stated: "The neighbors bring their waste and leave it there; there is no [garbage] collection. We burn the garbage here [indicating a corner of the backyard] but as you can see...it isn't very useful." (T5.2/El Mezquite). Differential access to economic resources and infrastructure also limited collaboration between neighbours: "Those of us that have drainage don't worry about others. If you walk over there [indicates the outskirts] and look just a little, you will see that the streams are full of garbage and sewage." (T5.3/El Mezquite).

Mobility and the Gendered Division of Labour

A high proportion of women increasingly assume the role of the primary breadwinner, as males migrate to the United States:

"Men go to the other side (US), and sometimes they are slow in coming back. My husband left 6 months ago and we haven't heard anything from him. Sometimes he sends money; we have to organize ourselves to get ahead." (T6.2/Ojinaga). Both daily workload and lack of economic resources are barriers to exploring better options for maintaining hygiene, and accessing and protecting water. During focus groups and interviews, women reported keeping drinking water in protected jars, but on-site observation revealed that water was commonly stored in unprotected containers, which were seldom washed. During interviews, informants pointed out: "We have a lot to do [housework]; we hardly ever wash [buckets and barrels]." (T7.1/ El Mezquite).

Women's overwork emerges in most collected data. Younger females are delegated several household tasks. These girls have limited concepts of hygiene, sanitation and health; thus, additional risk may result if young girls conduct the role of "guardian of the house". On the other hand, as most testimonies revealed, women are often excluded from the consultation, planning and training stages of water-related construction projects – such as the building of sewers – as these are considered to be exclusively part of the men's domain. While targeting women as program recipients, PALC did not take gendered spheres of decision-making into account.

The assembly process promoted during the rapid assessment procedures permitted women to reflect on this gendered division of responsibility and begin to demand a voice in decisions about water and sanitation issues: "Men have also to learn to take joint decisions, although we (women) have had to fight hard and put a lot of pressure in order to be taken into account."

DISCUSSION

This study was conducted to shed light on socio-cultural and structural barriers to the implementation of the behavioural changes involved in environmental health projects. Rapid assessment procedures (RAP), as employed here, revealed that the relationship between PALC implementers and community members was fraught with problems from the outset because of the top-down process – which is reminiscent of one-size-fits-all programs – as well as

political promises that have been of little benefit to these excluded populations. Community members stated that they could have provided important input regarding their priorities and taken a more proactive role in program implementation had they been consulted. The preceding points to the importance of participatory methodologies, not simply for providing a better understanding of the local realities that can impinge on program development, but for the potential of harnessing the energies of the community to reach program goals. Issues addressed in this investigation focussed on the limited demand-driven approach while planning and implementing environmental interventions.

Indeed, RAP techniques revealed emerging socio-economic and cultural conditions that made implementation and sustainability of the PALC initiative difficult in these communities. The focus on health-promoting behaviours, rather than on the structural conditions that facilitate or impede behaviours to limit enteric disease (access to water, time available to carry out domestic tasks), was identified as a central weakness of the program. These observations suggest that earlier participation by the users may help to design more effective environmental interventions.

Rapid identification of major variables (e.g., water insecurity, mobilization, gender roles) during initial procedures helped to open up the debate at *assemblies* to identify and compare perception and opinions. The information collected using RAP thereby entered into a feedback loop which was expected to contribute to improving future environmental health interventions.¹⁵

One of the successes of the Clean Water in Homes program was in increasing the consumption of disinfected drinking water. Unfortunately, RAP identified that many community members had little intention to continue purchasing colloidal silver after the program ended. The economic barriers were quickly identified through the RAP methodology, which revealed that PALC did not achieve positive change regarding human waste disposal or handwashing. The detailed description of living conditions, daily living activities and perceptions of community members suggests that mobility, poverty, and gender inequities were all barriers to adop-

tion of the behaviours promoted by PALC. The methods and results from this investigation provided the opportunity for community members to discuss PALC and share their views about the feasibility of future interventions in public assemblies. By encouraging women's participation in assemblies and planning meetings, RAP increased their abilities to influence future policies.

CONCLUSION

The oversight of not exploring community members' needs and priorities prior to program implementation resulted in interventions that did not address the structural (economic, infrastructure) and socio-cultural barriers faced by community members to undertake the health-promoting behaviour change, and provoked resentment.

This case study represents a window of opportunity for convincing policy-makers and donors of the need for conducting this groundwork before launching large-scale projects. Participatory methods show that individuals and communities, when actively involved in evaluation and planning, can take control of the process and empower themselves to make significant changes.

RÉSUMÉ

Contexte : Il est nécessaire d'améliorer la qualité et la durabilité des programmes de salubrité de l'environnement au Mexique. Pour connaître les facteurs socioculturels ayant influencé l'adoption ou le rejet de programmes d'eau potable à domicile (« *Clean Water in Homes* ») dans cette population, nous avons appliqué une procédure d'évaluation rapide (RAP) de ces programmes communautaires.

Méthode : Étude qualitative menée dans les collectivités longeant la frontière nord du Mexique au moyen de dialogues spontanés, d'entretiens semi-directifs, de notes et d'observations sur le terrain. Des visites à domicile avec un aide-mémoire ont servi à observer les sources d'approvisionnement en eau, le lavage des mains et les schémas d'enlèvement des urines et matières fécales et des ordures.

Nous avons procédé à l'analyse de données à l'aide d'ATLAS.ti, une boîte à outils logicielle qui facilite la comparaison et l'illustration des divergences, ainsi que l'élaboration des nouveaux enjeux et de leurs relations.

Résultats : Les membres des collectivités perçoivent le programme d'eau potable comme une intervention à partir du « sommet de la pyramide ». L'eau est vue comme un enjeu politique et comme un domaine se prêtant à la corruption. Les inégalités limitent aussi l'action solidaire nécessaire à l'assainissement de l'environnement. L'émigration vers les États-Unis favorise la fragmentation communautaire, qui à son tour dilue les efforts pour améliorer les infrastructures d'eau et d'assainissement. Le programme d'eau potable, bien qu'il ait ciblé les femmes en tant que « bénéficiaires », n'a pas tenu compte des inégalités hommes-femmes dans les sphères de décision. Les membres des collectivités et les autorités ont discuté des principaux résultats à la faveur « d'assemblées » où l'on s'est particulièrement penché sur les besoins des groupes exclus.

Conclusion : Le fait qu'on ait oublié d'analyser les besoins et priorités des membres des collectivités avant la mise en œuvre du programme a donné des interventions qui ne tiennent pas compte des obstacles structurels (économiques, d'infrastructures) et socioculturels que ces membres doivent surmonter pour adopter de nouvelles habitudes favorables à la santé – d'où la rancœur observée.

Indeed, more appropriate behaviour-oriented interventions and affordable solutions emerge from the process. The result is a more direct, more sustainable and affordable planning program that heightens its potential impact through iterative re-evaluation and community support. Thus, the core of new pilot projects may consist in supporting achievable behaviour changes and cost-effective environmental health programs.

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