A Survey of Water, Sanitation and Hygiene in Schools in the Caribbean Coast of Nicaragua: Findings, Lessons Learned, and Recommendations for Future Studies

Tania Jordanova¹, Ryan Cronk¹, Octavio Zeledon Medina², Rinko Kinoshita²
¹University of North Carolina-Chapel Hill, ²UNICEF Nicaragua

Background

- Schools in rural areas of developing countries lack the resources to build, operate, and maintain water, sanitation, and hygiene (WaSH) infrastructure.
- Lack of adequate WaSH facilities in schools can:
  - Increase health risks and spread of disease
  - Decrease a child's ability to learn due to increased absence from class
  - Contribute to inequality in education of girls and boys
- Nicaragua lacks basic, disaggregated data at the local level on WaSH in schools
- To understand where investment is most needed to support WaSH in Schools, UNICEF Nicaragua worked with government agencies to conduct a survey (Nov-Dec 2012)

Methods and Data

**LOCATION:** Northern and Southern Atlantic Autonomous Regions (RAAN and RAAS), Nicaragua

**TOOL:** A semi-structured survey with 102 questions was pretested and administered to the directors of primary/secondary schools.

**OBJECTIVE:** (1) assess WaSH conditions in schools to identify areas of greatest need and (2) analyze associations between variables to determine possible interventions and future studies.

**RESPONSE RATE:** 842 of 1,229 targeted schools (68.8%) responded to the questionnaire. Individual questions had lower response rates.

**SCHOOL CONTEXT AND TYPE:** dispersed rural (53.4%), concentrated rural (29.2%), urban (17.4%). Primary and/or preschool (64.6%), secondary only (7.1%), all school levels (8.3%).

**ANALYSIS:** The majority of variables were categorical. Differences in proportions were analyzed with Chi-square tests, using R Version 2.15.2.

| Percent of Schools with a Dedicated Budget for Supplies, Maintenance and Operations: |
| Water: 36% | Sanitation: 22% | Hygiene: 8% |

**Water**

- Of schools that don’t have water infrastructure (n= 405)
- Of schools that have water infrastructure (n= 494)
- Of schools that have water infrastructure (n= 463)
- Of schools that have water infrastructure (n= 455)

**Sanitation**

- Of schools that don’t have sanitary infrastructure (n= 411)
- Of schools that have sanitary infrastructure (n= 425)
- Of schools that have sanitary infrastructure (n= 388)
- Of schools that have sanitary infrastructure (n= 368)
- Of schools that have sanitary infrastructure (n= 363)
- Of schools that have sanitary infrastructure (n= 362)

**Hygiene**

- Of schools that don’t have personal hygiene training (n= 375)
- Of schools that have personal hygiene training (n= 382)

**Likelihood of Frequency of Bathroom Cleaning**

- Percentage of children in extreme poverty in study area

Urban and Rural Discrepancies

### Statistical Analysis Results

#### Association Between:

- **Existence of Teachers’ Association and Teacher Involvement in Water System Planning and Maintenance**
  - **[In Non-Urban Areas]**
  - **Teachers Involved**
  - **Not Involved**
  - **Total**
  - **Proportion Involved***
  - **No Water Infrastructure**
  - **Water Infra**

- **Frequency of Latrine Cleaning**
  - **[In Non-Urban Areas]**
  - **Daily**
  - **Weekly**
  - **Over a Week**

- **Proportion of Children in Extreme Poverty**

**Recommendations**

- **Recommendations for Interventions**
  - Prioritize assistance to help schools meet the minimum national WaSH standards.
  - Address urban vs. rural inequalities in WaSH, through concentrated focus on aid and projects for rural areas.
  - Increase financial investment in maintenance and cleanliness of existing facilities. (gov. budget or school-level funding).
  - Require environmental health training for teachers and mobilize teachers with training to lead WaSH improvement projects.
  - Organize parents in areas which lack water infrastructure to fundraise, advocate for and participate in building a water system.

- **Recommendations for Future Studies**
  - To avoid response or reporting bias, future studies can take the following approaches:
    - Carefully define the questions and responses to eliminate any subjective or political bias.
    - Verify responses through third-party observation (such as observation of hand washing practices).
    - Have trained and objective employees or volunteers collect data based on specific guidelines.
    - Collect quantitative data (such as water quality sampling).
    - Standardize Data Reporting: Require schools to track and regularly report standardized data. E.g. each school should keep accurate records of student absence and report numbers to the ministry of education monthly.
    - Deploy Rapid Surveys: Surveys with fewer questions and a smaller sample size are an alternative to long-form surveys and can be used to study a specific research question in a smaller geographic area.
    - Use innovative data collection techniques for geographically remote areas such as SMS/Text messaging.

- **Limitations**
  - Cost and logistical constraints in remote rural areas.
  - Based on a convenience sample (not random).
  - Missing values can mislead interpretation of proportions.
  - Lack of buy-in from some communities.
  - Use of self-reporting instead of trained interviewers.
  - Potential bias from school principals due to:
    - Lack of knowledge and willingness
    - Misunderstanding of the question
    - Desire to give a good impression
    - Other unconscious personal biases

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