EVALUATION OF HAND HYGIENE RESOURCES AND THEIR USE IN GUATEMALAN HEALTH FACILITIES

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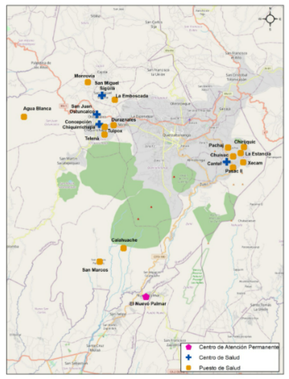
INTRODUCTION

Poor hand hygiene (HH) practices in health care facilities (HCFs) pose substantial health risks to patients and health care workers (HCWs), particularly in low- and middle-income countries. This has been of particular concern during the COVID-19 pandemic. One potential evidence-based approach to overcoming barriers to HH is through improved access to alcohol-based hand rub (ABHR).

METHODS

Study design and objectives: Baseline assessment of water and ABHR supply and access to determine the availability of HH resources and infrastructure. Direct observations to determine HH compliance before and after patient care and identify factors that influence this behavior.

Location & timeline: Patient care areas in 19 HCFs located in the department of Quetzaltenango, GUA, from May–June 2021.



Map of Quetzaltenango and praticipating HCFs

Sampling strategy: Convenience sampling of HCFs with limited access to basic water service. Time-location sampling of all HCWs in direct contact with patients present on the day of the visits.

Instruments: Survey about the water infrastructure and HH resources for head nurse or director of each HCF. Observation assessment tool adapted from the WHO Guidelines on Hand Hygiene in Health Care (World Health Organization & WHO Patient Safety, 2009).

Observation methodology: HCWs were observed during five independent patient interactions or 1 hour, whichever happened first. They were made aware of our interest in observing their interactions with patients but HH was not mentioned. Correct HH was defined by the use of ABHR applied to the skin or handwashing with soap and water. Characteristics of patient interaction observed (independent variables) included (1) the type of contact performed (invasive vs. noninvasive), (2) the level of health care (primary vs. secondary level), (3) the time of the HH action (before vs. after patient contact), and (4) the type of HCW (nurses vs. physicians).

METHODS

Analysis: Descriptive analysis of survey data was conducted. Bivariate analysis explored associations between the performance of correct HH and four independent variables (Chi-Square Test of Independence, P<0.05 considered significant). Multivariate analysis was considered for all four independent variables, accounting for the within subject correlation, or multiple observations conducted on the same HCW, using multilevel mixed-effect logistic regression.

RESULTS

Water infrastructure and HH resources assessment:
One permanent attention health center, four health centers, and fourteen health posts were included in the survey. Most facilities (94.7%, n=18) reported periodic interruptions in water supply with some interruptions (61.1%, n=11) due to general water shortages in the community. All HCFs received ABHR from Health Area, but 52.6% (n=10) reported an insufficient supply, and 31.6% (n=6) reported periodic interruptions of ABHR supply. Of 80 patient care areas, 71 (88.8%) had ABHR readily available, 31 (38.8%) had functional handwashing stations with water and soap, and 9 (11.3%) had no HH resources.

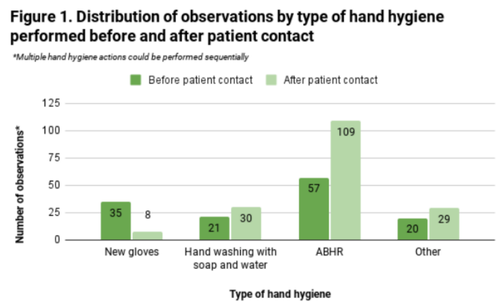
Bathroom in a HCF without functional water system

Observations:
Participants data:
We observed 67 HCWs, with an average of three observations per HCW (SD=1). Observations (n=243) were collected from primary (65.4%) and secondary (34.6%) HCFs (70.1% nurses, 22.8% physicians, and 7.1% other workers). Both invasive (29.2%) and non-invasive (70.8%) interactions were observed.

Hand hygiene behavior:
HCWs performed HH (including types considered incorrect) for 41.7% (n=101) of the observations made before patient contact and for 64.2% (n=154) of the observations made after contact Figure 1).

RESULTS

Figure 1. Distribution of observations by type of hand hygiene performed before and after patient contact



HCWs performed HH in less than half of the total identified opportunities (n=192, 39.8%). Table 1 and 2 describe the association between the performance of correct HH and the independent variables. HCW identity accounted for 50.0% of the variance in the performance of correct HH (intraclass correlation = 0.5).

Table 1. Characteristics of observations with correct hand hygiene adherence

Variables	[N=192] n (%)
Health care level	
Primary level	114 (59.4)*
Secondary level	78 (40.6)*
Professional category**	
Nurse	122 (73.5)
Physician	44 (26.5)
Type of patient contact	
Invasive	83 (43.2)*
Non-invasive	109 (56.8)*
Time of hand hygiene performance	
Before patient contact	67 (34.9)*
After patient contact	125 (65.1)*

* P<0.05, Chi-Square Test of Independence
** N=166 as only the two biggest professional categories were included in analysis

Table 2. Adjusted estimates for compliance with correct hand hygiene by health care level, time of HH action, and type of patient contact

Covariate	Odds Ratio (95% CI)	*P*-value
Health care level		
Primary level	Ref	
Secondary level	3.55 (1.70-7.41)	0.001
Type of contact		
Non-invasive	Ref	
Invasive	2.21 (0.70-6.94)	0.176
Time of hand hygiene action		
Before patient contact	Ref	
After patient contact	5.72 (3.34-9.81)	0.000

DISCUSSION

ABHR is an important HH resource in Guatemalan HCFs given the periodicity of interruptions in water supply. Adherence to correct HH during patient care was low and needs to improve to ensure patient and HCW safety. The level of HCF may play a role in the performance of correct HH, which may be addressed by implementing a training program that targets each group. HCWs have better HH adherence after patient contact. Educational programs should emphasize the importance of HH, both before and after patient contact.

HCW administering a vaccine

CONCLUSIONS AND NEXT STEPS

To address noted adherence gaps, HCWs may benefit from improved access to HH resources, and from support via HH education and communication materials. Since the baseline evaluation, UVG and WSU, with the support of the CDC, have been donating and disseminating ABHR to the participating HCFs. Additionally, capacity-building events will take place to address gaps in HH adherence.

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