



Self-reported hand hygiene practices, and feasibility and acceptability of alcohol-based hand rubs among village healthcare workers in Inner Mongolia, China

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SUMMARY

Background: Good hand hygiene is critical to reduce the risk of healthcare-associated infections. Limited data are available on hand hygiene practices from rural healthcare systems in China.

Aim: To assess the feasibility and acceptability of sanitizing hands with alcohol-based hand rubs (ABHRs) among Chinese village healthcare workers, and to assess their hand hygiene practice.

Methods: Five hundred bottles of ABHR were given to village healthcare workers in Inner Mongolia, China. Standardized questionnaires collected information on their work load, availability, and usage of hand hygiene facilities, and knowledge, attitudes, and practices of hand hygiene.

Findings: In all, 369 (64.2%) participants completed the questionnaire. Although 84.5% of the ABHR recipients believed that receiving the ABHR improved their hand hygiene practice, 78.8% of recipients would pay no more than US\$1.5 out of their own pocket (actual cost US\$4). The majority (77.2%) who provided medical care at patients' homes never carried hand rubs with them outside their clinics. In general, self-reported hand hygiene compliance was suboptimal, and the lowest compliance was 'before touching a patient'. Reported top three complaints with using ABHR were skin irritation, splashing, and unpleasant residual. Village doctors with less experience practised less hand hygiene.

Conclusion: The overall acceptance of ABHR among the village healthcare workers is high as long as it is provided to them for free/low cost, but their overall hand hygiene practice is suboptimal. Hand hygiene education and training is needed in settings outside of traditional healthcare facilities.

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Introduction

Healthcare-associated infections (HCIs) result in substantial morbidity and mortality worldwide.¹ Standard precautions,

including hand hygiene, are minimum infection control practices that apply to all patient care.² Good hand hygiene is critical to reduce the risk of spreading infections. Using alcohol-based hand rubs (ABHRs) in healthcare settings is recommended by the US Centers for Disease Control and Prevention (CDC) and the World Health Organization (WHO) because of their activity against a broad spectrum of epidemiologically important pathogens, including multidrug-resistant pathogens (e.g. methicillin-resistant *Staphylococcus aureus* and vancomycin-resistant enterococcus), and various fungi.^{3,4}

Data on hand hygiene practice from China are limited. A tertiary hospital (>500 beds) in Beijing reported 30% hand hygiene compliance similar to WHO (<40%) and CDC (5–90%, with an average of 40%) reported compliance.^{3–5} Two multicentre studies of urban mid-sized hospitals showed 17–62% hand hygiene compliance among healthcare workers (HCWs).^{6,7} A small cross-sectional survey of rural HCWs in Anhui province showed non-compliance with glove use (61%) and hand hygiene (40%).⁸

The Chinese national rural healthcare network is composed of village clinics, township health centres/hospitals, and county health centres/hospitals, serving 50.32% of the 1.37 billion Chinese population.⁹ Village doctors provide primary medical and public health services. In 2010, ~1.1 million registered village doctors provided 1.7 billion occurrences of patient care, accounting for 45.9% of total patient visits in all primary healthcare facilities.¹⁰ Working conditions of Chinese village doctors are usually poor. Many village doctors do not have access to running water and soap.

In this study, we assessed the feasibility and acceptability of using ABHRs to perform hand hygiene among Chinese village doctors and other village HCWs, and assessed their self-reported hand hygiene practice.

Methods

Study population

In November 2011, 670 out of 880 village HCWs participated in a public health programme in two counties of Bayan Nur, Inner Mongolia Autonomous Region, China. Village HCWs were defined as those who received payment for working in a community health centre, village clinic or community centre in rural areas; a village doctor is a village HCW who is registered and licensed as a doctor. We randomly distributed bottles (250 mL) of ABHR to 500 village HCWs at the time of enrolment into the public health programme. About one year later, we administered a follow-up questionnaire to the village HCWs who participated in the public health programme, regardless of whether they had received a bottle of ABHR.

Questionnaire administration

The standardized questionnaire included questions on demographics, personal characteristics, work load, the availability and use of hand hygiene facilities, and hand hygiene knowledge, attitudes, and practices. The hand hygiene practice questions were based on WHO's 'My five moments for hand hygiene'.⁴ The questionnaire required ~12 min to complete. Trained interviewers called the village HCWs to introduce the study, obtain participants' verbal consent, and administer the questionnaire. Village HCWs who were too busy to complete

the telephone interview were recruited in person and completed a self-administered questionnaire. Questionnaire answers were entered into Epidata 3.1 during telephone interview; self-administered questionnaires were double-entered.

Data analysis

The eight knowledge questions were each scored 1 if answered correctly, and 0 if answered incorrectly, and the scores were summed (range: 0–8). Knowledge questions where <60% participants answered correctly were further analysed. Practice questions were scaled as 'never', 'seldom', 'sometimes', 'often', and 'always'. 'Not applicable' was selected for those who reported that they did not perform the procedure and therefore did not encounter that moment; participants who reported no patient contacts were excluded. Hand hygiene practice response was dichotomized by grouping 'always' and 'often', and grouping 'never', 'seldom', and 'sometimes'. Cochran Mantel Haenszel (CMH) tests based on rank scores were employed when comparing two groups on their hand hygiene knowledge and practice; one-way analysis of variance (ANOVA) or Cochran Armitage Trend (CAT) test was used to compare factors with multiple groups. $P < 0.05$ was considered significant. Data analysis was performed using SAS 9.3 (SAS Institute, Cary, NC, USA).

Ethics statement

This project was approved by the US CDC Human Subject Office as a public health programme activity.

Results

Population characteristics and their work load

Accurate contact information was available for 575 (85.8%) out of 670 eligible village HCWs. Of the 575 village HCWs

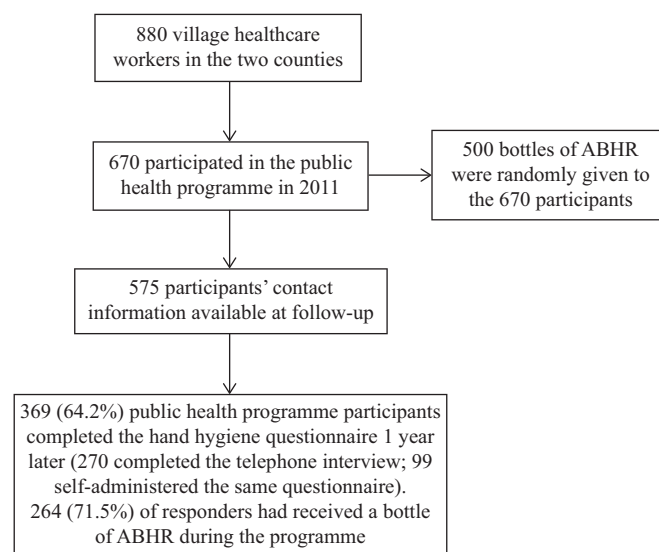


Figure 1. Flow chart of hand hygiene survey enrolment: 369 (64.2%, 369/575) public health programme participants completed the hand hygiene questionnaire. ABHR, alcohol-based hand rub.

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