



Does the use of alcohol-based hand gel sanitizer reduce travellers' diarrhoea and gastrointestinal upset? : A preliminary survey

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KEYWORDS

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Summary *Introduction:* Use of alcohol-based hand sanitizer is recommended by the CDC to reduce the risk for travellers' diarrhoea, but its effectiveness has not been assessed.

Materials and methods: We investigated the potential protective effect of hand sanitizer use on the occurrence of diarrhoea and/or vomiting in 200 international travellers, who were returning home, at an international airport. We also conducted a knowledge, aptitude and practice survey about hand gel use among international travellers consulting for pre-travel advice at a specialized clinic.

Results: 200 returning travellers were included of which 32.5% declared having used alcohol-based hand sanitizer during travel. Travellers who used hand sanitizer reported diarrhoea and vomiting significantly less frequently than those who did not (17% vs. 30%, OR = 0.47; 95% CI [0.21–0.97], $p = 0.04$).

A total of 257 travellers consulting for pre-travel advice were included. A majority of travellers knew that hand sanitizer may be used for hand hygiene and had already used hand sanitizer; 72% planned to bring hand sanitizer during their next travel.

Conclusions: Use of hand sanitizer is highly acceptable by travellers and is associated with a reduction in the incidence of travellers' diarrhoea and/or vomiting.

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1. Introduction

Travellers' diarrhoea is experienced by 20–50% of international travellers who visit developing tropical areas and is a major cause of morbidity among international travellers who are sick [1]. A study in a cohort of 17,228 European travellers presenting at Eurotravnet–GeoSentinel clinics revealed that 2 out of 10 ill travellers suffer from this disease [2]. Increasing antimicrobial resistance of pathogens responsible for travellers' diarrhoea is of concern [3]. Chemoprophylaxis using rifamixin, bismuth subsalicylates or fluoroquinolones are not unanimously recommended because of poor efficacy and or potential toxicity [3]. Further research to evaluate the value of immunoprophylaxis is needed before any recommendation can be made [4].

Numerous studies have been conducted to evaluate the potential effect of food or water consumption patterns on the prevalence of diarrhoea in travellers, with negative results [5–10]. Hand hygiene; by contrast has not been addressed in these studies. Use of alcohol-based hand sanitizer is recommended by the CDC to reduce the risk for travellers' diarrhoea. (<http://wwwnc.cdc.gov/travel/yellowbook/2014/chapter-2-the-pre-travel-consultation/travellers-diarrhea>). However, this recommendation is empirical, since the effectiveness of hand sanitizer use against travellers' diarrhoea has not been assessed to the best of our knowledge [11].

In this preliminary study we investigated the potential protective effect of hand sanitizer use on the occurrence of diarrhoea and/or vomiting in 200 international travellers returning home who were included at an international airport. We also conducted a knowledge aptitude and practice survey about hand gel use among international travellers consulting for pre-travel advice at a specialized clinic.

2. Materials and methods

2.1. Airport survey

Travellers aged >18 years, living in metropolitan France more than 6 months per year and returning from developing or emerging countries were included at the Marseille international airport (Southern France). A standardized questionnaire addressing demographics, travel characteristics, occurrence of diarrhoea and preventive measures was administered orally by a single investigator while travellers were waiting for a shuttle. Developing or emerging countries were selected according to the Inequality-adjusted Human Development Index (<http://hdr.undp.org/en/statistics/ihdi>). Interviews were conducted anonymously between January and April 2012.

2.2. Travel clinic survey

Travellers presenting to our travel clinic for pre-travel advice were invited to self-answer anonymously a standardized written questionnaire, before their consultation. The questionnaire addressed demographics, travel

characteristics and knowledge aptitude and practice about alcohol-based hand sanitizer use. Questionnaires were collected between November 2012 and January 2013.

2.3. Statistics

Data were analysed using EpiInfo 6.0. Chi-square, Yates and Fischer's tests were used to compare variables. A p value <0.05 was considered significant. Odd ratio (OR) with 95% confidence interval (CI) was calculated for univariate analysis.

3. Results

3.1. Airport survey

A total of 404 travellers were approached. 200 did not fulfill the inclusion criteria and four refused to participate. So, 200 travellers were included in the study (Table 1). The female to male ratio was 2.3 with a mean age of 50 years (range 18–82). Most travellers were French-born and for the majority, this was not the first travel to a developing or emerging country. Africa, Asia and the Caribbean were the prominent travelled areas. Tourism was stated as the main reason for travel followed by visiting friends and relatives (VFR). A proportion of 56.7% of VFRs were foreign-born immigrants travelling back temporarily to their country of birth. The mean travel duration was 21 days (median: 15 days; range 4–170). Pre-travel advice was reported by a majority of travellers. Most of them took advice from their general practitioner or from media. The great majority declared as having acceptable preventive dietary and hygienic practices. Alcohol-based hand sanitizer was used by 32.5% of travellers. One third of travellers declared having received vaccination against hepatitis A (or to present protective antibody level) and less than one traveller out of ten declared having received vaccination against typhoid fever during the last three years. One fourth of travellers reported diarrhoea and/or vomiting during travel (Table 2). None of the demographic and travel characteristics had any significant influence on the occurrence of diarrhoea and/or vomiting (data not shown). Practice of preventive dietary-hygienic measures did not influence the prevalence of diarrhoea. By contrast, travellers who used hand sanitizer reported diarrhoea and vomiting significantly less frequently than those who did not (17% vs. 30%, OR = 0.47; 95% CI [0.21–0.97], $p = 0.04$). Immunization against hepatitis A and typhoid fever had no significant effect on the occurrence of diarrhoea and/or vomiting.

3.2. Travel clinic survey

Among 855 travellers consulting during the study period, a total of 272 (31.8%) answered the questionnaire, of which 257 (94.5%) answered to all questions and were included in the analysis (Table 3). The female to male ratio was 0.9 with a mean age of 42 years (range 11–83). Africa, Asia and South and Central America were prominent travel destinations. Tourism was the main reason for travel followed by

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