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# Pre-travel advice concerning vector-borne diseases received by travelers prior to visiting Cuzco, Peru



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#### **KEYWORDS**

Pre-travel advice; Vector borne diseases; Travel medicine; Cuzco; Peru Summary Peru is an increasingly popular tourist destination that poses a risk to travelers due to endemic vector-borne diseases (VBDs). The objective of our study was to determine which factors are associated with receiving pre-travel advice (PTA) for VBDs among travelers visiting Cuzco, Peru. A cross-sectional secondary analysis based on data from a survey among travelers departing Cuzco at Alejandro Velazco Astete International Airport during the period January—March 2012 was conducted. From the 1819 travelers included in the original study, 1717 were included in secondary data analysis. Of these participants, 42.2% received PTA and 2.9% were informed about vector-borne diseases, including yellow fever (1.8%), malaria (1.6%) and dengue fever (0.1%). Receiving information on VBDs was associated with visiting areas endemic to yellow fever and dengue fever in Peru. The only disease travelers received specific recommendations for before visiting an endemic area for was yellow fever. Only 1 in 30 tourists received information on VBD prevention; few of

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#### Introduction

Pre-travel advice (PTA) and vaccinations aim to reduce risks associated with travel [1-3]. This is especially important when tourists travel to popular destinations in tropical and subtropical areas with vector-borne diseases (VBDs) endemic to the location of interest [4]. Promotion of tropical destinations is increasing the number of trips to areas where dengue fever, yellow fever, malaria and other vector-borne diseases are endemic. Emerging hot spots of tourism in these areas pose similar risks to travelers, although each location may have unique characteristics. Peru has registered a steady growth in foreign arrivals for more than a decade with [5,6] rates of international tourists reaching approximately three and a half million per year [7,8]. In Peru, travelers may be exposed to a variety of coastal, highland, and jungle environments in just a few hours. The varied conditions and risks associated with these environments make destination-specific health advice important. Both international travelers that come to Peru and domestic tourists may be exposed to VBDs, which can cause major morbidity and mortality [9]. This risk exists in countries such as Peru where the development of travel medicine and PTA is incipient and where the few physicians that are trained in travel medicine and able to provide information about travel risks are concentrated in different major metropolitan regions, such Lima, Cusco, Iguitos and Huaraz.

Most travel medicine studies in Peru have not addressed VBDs [10—13]. Data on the prevention of conditions such as dengue fever, malaria, and yellow fever among travelers in Peru are missing, despite their importance in understanding patterns of morbidity among this population. The objective of the present study is to evaluate the factors that are associated with PTA for the prevention of VBDs among tourists visiting Cuzco.

#### Materials and methods

#### Study design

A cross-sectional study was conducted using information initially collected for a primary study. This

initial study was conducted as part of a thesis that has been approved but not yet published and compares the characteristics of foreign tourists and Peruvians living abroad visiting family and relatives in Cuzco.

Cuzco is a city in southern Peru located at 3400 m above sea level and has been the most important Peruvian destination for travelers around the world since 2007 when Machu Picchu, an Inca sanctuary, was selected as one of the new Seven Wonders of the World [14].

#### Collection and selection of the data

Data were collected through self-administered surveys in the departure lounge of Cuzco's international airport between January and March 2012. After the finalization of the primary study, the data collected were re-analyzed, focusing on VBDs, during the period of January—March 2013 by a group of medicine students under the guidance of the primary study author. Subjects older than 18 years were selected using convenience sampling and invited to participate voluntarily in the study. Travelers staying in Peru longer than 2 weeks were excluded from the study.

#### Surveys

The questionnaire was designed as a self-administered survey with open and closed-ended questions in both English and Spanish. The survey asked about basic demographic information, country of residence, travels in the last six months, pre-travel advice and recommendations given, and food-hygienic risk behaviors during their stay.

Prior to survey administration, questions were evaluated for quality by two experts on the topic and by a biostatistician, and later by a group of students and teachers, all from the unit of instrumental validation from the Master of Epidemiological Research Program of the Universidad Peruana Cayetano Heredia (UPCH), Lima, Peru. The principal investigator surveyed a group of 30 tourists who evaluated the comprehensibility of each question using a numerical scale from 0 to 10 (0=1 can't understand the question, 10=1

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