



Chronic illnesses in travelers to developing countries^{☆,☆☆}



Shmuel Stienlauf^{a,b,e,*}, Bianca Streltsin^{c,e}, Eyal Meltzer^{a,b,e},
Eran Kopel^b, Eyal Leshem^{a,b,e}, Gad Segal^{d,e}, Shaye Kivity^{b,e},
Eli Schwartz^{a,b,e}

^a The Center of Geographic Medicine, The Chaim Sheba Medical Center, Tel Hashomer 52621, Israel

^b The Department of Internal Medicine "C", Sheba Medical Center, Tel Hashomer 52621, Israel

^c The Arrow Project, Sheba Medical Center, Tel Hashomer 52621, Israel

^d Department of Internal Medicine "T", Sheba Medical Center, Tel Hashomer 52621, Israel

^e Tel Aviv University, the Sackler School of Medicine, Tel-Aviv 69978, Israel

Received 28 February 2014; received in revised form 5 October 2014; accepted 7 October 2014

Available online 16 October 2014

KEYWORDS

Travel;
Chronic disease;
Chronic use of
prescription drugs;
Israel;
Developing countries

Summary *Background:* Data regarding travelers with chronic illnesses (TCI) traveling to developing countries is limited.

Methods: A retrospective cohort study of travelers. We analyzed demographics, travel destinations, travel dates and duration, as well as the medical history (chronic illnesses, chronic medications, and allergies) of the travelers.

Results: Of 16,681 travelers evaluated, 3046 (18%) were TCI, of who, 2221 (13%) were taking chronic medications. The percentage of TCI ranged from 4% in the first decade of life to 65% in the 8th decade. The highest number of TCI (1085) was among the 20–30 years age group. The median age (IQR) of TCI was 39.0 (23.1–58.2), compared to 24.2 (22.0–32.1) years, of healthy travelers ($p < 0.001$). The major pre-existing medical conditions among TCI were endocrine/metabolic (38%), cardiovascular (26%) and pulmonary illnesses (16%).

^{*} This work was performed in partial fulfillment of the M.D. thesis requirements of the Sackler Faculty of Medicine, Tel Aviv University of the 2nd author.

^{**} Meetings at which the paper has been presented: 1. Annual Meeting of the Israel Society for Parasitology, Protozoology and Tropical Diseases, Ramat Gan, Israel, December 14–15, 2010 (Oral Presentation, session 4). 2. The 9th Asia Pacific Travel Health Conference, Singapore, May 2–5, 2012 (Oral Presentation, abstract FC01-2). 3. 11th Congress of the European Federation of Internal Medicine and the XXXIII National Congress of the Spanish Society of Internal Medicine, Madrid, Spain, 24th–27th October 2012 (Poster and short oral presentation abstract V-090).

^{*} Corresponding author. The Department of Internal Medicine "C", Sheba Medical Center, Tel Hashomer 52621, Israel. Tel.: +972 52 6666131; fax: +972 3 5535953.

E-mail addresses: sshmuel@netvision.net.il (S. Stienlauf), biana.str@gmail.com (B. Streltsin), meltzere@zahav.net.il (E. Meltzer), eran.kopel@mail.huji.ac.il (E. Kopel), leshem@gmail.com (E. Leshem), Gad.Segal@sheba.health.gov.il (G. Segal), kivitys@gmail.com (S. Kivity), elischwa@post.tau.ac.il (E. Schwartz).

Within age groups, no difference was found in itinerary and other travel characteristics. However, 20–30 years old TCI, who were using chronic medications had significantly shorter travel duration ($P < 0.001$).

Conclusions: TCI form a significant proportion of travelers among all age groups and travel destinations. Chronic illnesses appear to have little impact on travel itinerary and characteristics, but chronic medication use is associated with shorter travel duration to developing countries. © 2014 Elsevier Ltd. All rights reserved.

1. Introduction

Over the past six decades, tourism has shown continued expansion and diversification. In spite of occasional slumps, international tourist arrivals have shown virtually uninterrupted growth, from 25 million in 1950 to 940 million in 2010 [1]. The average annual growth in tourist arrivals between the years 2001–2010, was 3.4%.

The number of tourists traveling to developing countries had grown from 70 million in 1990 to 260 million in 2010, concomitant with a growth in the proportion of tourism to developing countries from 16% to 27% [1].

The diversity of travelers to the developing countries is increasing. We found, in a large cohort of Israeli travelers, that backpackers – young adults in their 20's-30's traveling for recreation, composed only 43% of travelers and travelers older than 60 years of age composed 5% of our cohort of travelers [2], many of them are at risk for developing drug interaction with medications prescribed for travel related illnesses [3]. As the population of travelers diversifies, the number of travelers with chronic illness (TCI) is expected to rise. However, the characteristics of TCI to developing countries are not well studied.

2. Methods

A retrospective cohort study of all travelers that attended the pre-travel clinic at the Chaim Sheba medical center between 1/1/2005 and 31/12/2007. Travelers to developed countries, and travelers who consulted our clinic more than once during the study period, were excluded from analysis. The Chaim Sheba Medical Center human subjects' research review board approved this study.

2.1. Data analysis

The data collected included date of visit, demographics (date of birth, gender and country of birth), travel destinations, purpose of travel, expected date of travel and the planned duration of travel (in days). The traveler was also asked to record the existence and type of chronic illnesses, chronic use of medications and drug allergies. Age (expressed in years) and the interval between the clinic visit and the travel date (expressed in days) were calculated. Travelers in whom date of travel and destination were not recorded were excluded.

Geographic destinations were grouped according to the classification of the United Nation Statistics Division [4].

Travelers were asked to select one of the following purposes for their trip: leisure/tourism, business, governmental or non-governmental organization worker, research/education, returning to region of origin of self or family to visit friends and relatives (VFR).

2.1.1. Chronic illness

Chronic illnesses were grouped according to the following groups: cardiovascular, endocrine and metabolic, otolaryngeal, Gastrointestinal, genitourinary, hematologic, immunological, musculoskeletal, neurological, rheumatologic, cancer, ophthalmological, psychiatric, pulmonary and dermatological disorders.

We defined as immunosuppressed travelers who suffered from malignant diseases, who were receiving anti-neoplastic therapy, currently or within 2 years prior to travel, travelers after bone marrow or solid organ transplantation, travelers infected with HIV, travelers who underwent splenectomy, and travelers suffering from common variable immunodeficiency disease (CVID).

2.2. Statistical analysis

The χ^2 -test was used for analysis of nonparametric data. Proportions and 95% confidence intervals were calculated for variables with binomial distribution. Confidence interval for proportions in binomial distributions was calculated as previously described [5]. Continuous data were described as median with interquartile range (IQR). The Mann–Whitney test was used for the analysis of the difference between medians of the travel planned duration among TCI and healthy travelers. The linear regression model was used in order to analyze correlation between parameters All p values calculations were 2-tailed and were considered statistically significant if their value was ≤ 0.05 . Data were maintained using Microsoft Access® (Microsoft, Redmond, WA, USA). Statistical analysis was conducted by IBM SPSS Statistics version 19 (Chicago, Illinois, USA).

3. Results

Between 1/1/2005 and 31/12/2007, 19,410 travelers consulted our pre-travel clinic, 16,681 of which were included in the study (Fig. 1). The age distribution was three months to 87 years old. As shown in Fig. 1, travelers with chronic illness (TCI) constituted 18% of all cases, and travelers who reported using chronic medication constituted 13% of all cases. The proportion of TCI was stable during all the years of the study.

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