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Changing trends and pretravel preparation of business travelers from Greece during the financial crisis

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SUMMARY

Objectives: Unemployment in Greece has been increasing as a result of the financial crisis. The aim of this study was to assess the changing trends of business travelers and their pretravel preparation.

Study design: Prospective, questionnaire-based study.

Methods: The study was conducted between 2008 and 2016 at all Regional Public Health Departments. All travelers seeking pretravel advice during the study period were invited to participate.

Results: A total of 12,379 travelers completed the questionnaire, 58% of whom were business travelers. Between 2008 and 2016, the proportion of business travelers increased from 33% to 80.7% and those travelling for recreational purposes decreased from 47.9% to 15.5%. Business travelers sought pretravel advice at a mean of 18.5 days before departure; 89.1% were men with a mean age of 34.4 years. The Middle East was the most common destination (47.8%) followed by Sub-Saharan Africa (28.3%). Most business travelers stayed in urban areas (77.6%) and for $\geq$ 1 month (68.6%). Yellow fever vaccine was administered to 75% of business travelers. A total of 76.2%, 26.9%, 15.5%, and 13.9% of those visiting Sub-Saharan Africa received yellow fever, typhoid fever, hepatitis A, and meningococcal vaccines, respectively. Malaria prophylaxis vaccine was administered to 26.8% of business travelers; including 46.5% of those traveling to Sub-Saharan Africa and 53.5% to those traveling to the Indian subcontinent.

Conclusions: There is an increasing trend for business travel from Greece, especially to developing countries. Improving the knowledge of travel health consultants about the risks of business travel and the pretravel preparation of business travelers is crucial.

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The number of international tourists arriving in Greece has increased dramatically in the last decade, with a remarkable growth of 7% in 2017 alone, reaching 1.322 million tourist arrivals annually.[1] Business travel has also been increasing as a result of economic globalization.[2] International travel by Greek business travelers has increased over the last decade as a result of the financial crisis. It is estimated that 6.6% of Greek residents visiting overseas destinations traveled for business purposes.[3] Business travelers may be exposed to different risks than recreational travelers, including occupational exposures, long durations of travel, different areas of stay, and planned activities, as well as increased levels of stress due to their work.[4]

This is a prospective, questionnaire-based study conducted between 1 January 2008 and 31 December 2016 at all 57 Regional Public Health Departments. The following data were collected per traveler: demographic data, travel characteristics, and pretravel services. Consent was requested from all participants.

Business travel was defined as travel for occupational purposes.[2] High-risk areas for malaria were defined according to the GeoSentinel Surveillance network.[4] Travelers at high-risk of malaria were defined according to travel characteristics. Vaccine and malaria prophylaxis were assessed based on the World Health Organization and the United States Centers for Disease Control and Prevention guidelines. Short- and long-term travel were defined as trips of <1 month and ≥1 month duration, respectively. Urban areas were defined as towns with a population of ≥5000 residents, and rural areas as villages with <5000 residents or staying in the countryside. An organized trip was defined as a guided, package trip. Outdoor activities include adventure sport, backpacking, hiking, and remote expedition.

Chi-squared tests and Fisher's exact tests were used for comparison between categorical variables. Stepwise (forward selection) multiple logistic regression was conducted (if P-value <0.15 in univariate analysis) to examine the relation between pretravel preparation and independent factors. Odds ratios (ORs) and their 95% confidence intervals (CIs) were calculated. Significance tests are two-sided. P-values of 0.05 or less were considered statistically significant. A finding was only considered significant if it was deemed so by both the univariate and multivariate analyses. Unanswered items were excluded from the analysis. Analysis was performed using STATA, v12.1 software.

A total of 12,379 travelers participated. Business travelers accounted for 7182 (58%) of all travelers. The number of business travelers increased from 448 (30.4%) in 2008 to 1986 (82.2%) in 2015, and from 1534 (33%) during 2008–2011 to 5648 (80.7%) during 2012–2016 (Fig. 1). The proportion of those travelling for recreational purposes and for visiting friends and relatives decreased from 47.9% to 15.5% and from 4.1% to 2.0% during the study period, respectively (Fig. 1).

Most business travelers were men (6402; 89.1%) with a mean age of 34.4 years ($P < 0.001$). Business travelers sought pretravel advice at a mean of 18.5 days before departure ($P < 0.001$). The Middle East was the most common destination for business travelers (3434; 47.8%), followed by Sub-Saharan Africa (2033; 28.3%) ($P < 0.001$). Most business travelers visited urban areas (2614; 77.6%) and stayed ≥1 month (4928; 68.6%) ($P < 0.001$) Most of business travelers were employees in the shipping industry (67%), traveling to destinations in Africa, South America, and Asia for ≥1 month. Most of those traveling to Sub-Saharan Africa were field workers and engineers; the majority of whom traveled for ≥1 month.

In total, 1550 (76.2%) of all business travelers ($P < 0.001$) received the yellow fever vaccine. Of all those who traveled to Sub-Saharan Africa, hepatitis A, meningococcal, typhoid fever, and rabies vaccines were administered to 315 (15.5%), 283 (14%), 547 (27%), and 13 (0.6%), respectively, and 90 (32.7%), 106 (38.5%), 13 (4.7%), and 6 (2.2%), respectively, for those who traveled to the Indian subcontinent. For long-term business

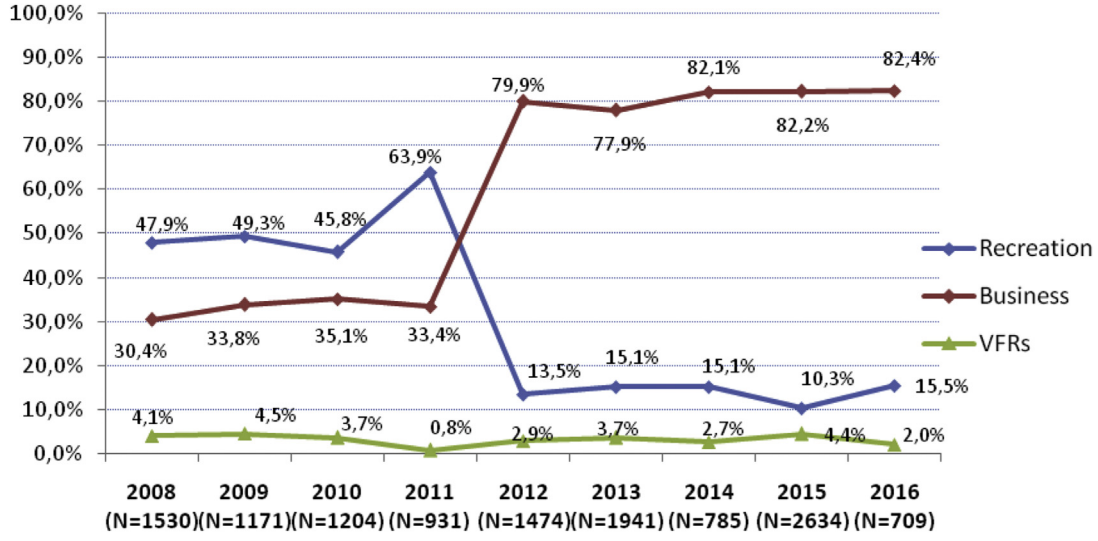

Fig. 1 – Distribution of travelers from Greece by purpose of travel, 2008–2016. VFR, visiting friends and relatives.

travelers visiting Sub-Saharan Africa or the Indian subcontinent, the rabies vaccine was received by three (5.9%) and zero (0%) of those who were engaged in outdoor activities, respectively, and two (4%) and one (9.1%) of those who reported contact with animals, respectively.

Malaria prophylaxis was recommended to 1924 (26.8%) business travelers and to 2094 (46.8%) non-business travelers. Malaria prophylaxis was recommended to 946 (46.5%) and 147 (53.5%) of business travelers visiting Sub-Saharan Africa and the Indian subcontinent, respectively. Atovaquone/proguanile and mefloquine were administered to 1373 (71.4%) and 454 (23.6%) of business travelers who were recommended malaria prophylaxis, respectively. Stand-by emergency treatment was not recommended.

Greece had an exceptional economic growth from the 1950s to 1970s. However, starting in 2009, Greece experienced a huge financial crisis with a negative impact on its economic growth rate, including the gross domestic product. Unemployment rates rose from 7.8% in 2008 to 27.5% in 2013.[5]

The proportion of business travelers from Greece to tropical and subtropical destinations, which have a high burden of serious infections for the traveler, has increased dramatically between 2008 and 2016; this proportion is higher than that seen in other studies.[6,7] Our results show that most business travelers were young men traveling for long durations, which is similar to other studies.[6,7] During the study period, the number of non-business travelers decreased, probably because of the financial crisis. According to the Hellenic Statistics Authority, the number of business travelers who visited destinations in Africa, Asia, Oceania, and Central and South America between 2009 and 2015 was approximately 912,000;[3] of these business travelers, only 0.5% sought pretravel advice at the 57 Regional Departments of Public Health, which are the authorized Yellow Fever Travel Health Centers in Greece. This low rate may be related to poor awareness of travelers about travel risks and pretravel services available.[6]

Travel-related vaccine recommendations for business travelers need to focus on their destination, activities, and preexisting conditions and consider the cumulative risk for those with multiple and frequent trips or long-term travel plans.[4] In the current survey, the vaccination rates were lower than expected; however, the results were similar to those seen in a previous Greek study.[6] This may be related to poor awareness of healthcare professionals regarding the risks associated with business travel.[6] Hepatitis A vaccine was prescribed to 783 (10.9%) business travelers seeking pretravel advice, although nearly 100% of them traveled to areas of high or medium endemicity, where vaccination is recommended to non-immune travelers; these rates were lower than expected and lower than those of other studies.[7] Previous immunity was unlikely because hepatitis A vaccination was only introduced to the National Vaccination Program in Greece in 1998.

Yellow fever vaccine was the most commonly administered vaccine in our study. Most business travelers were employees of the shipping industry, traveling to destinations in Africa and South America and also engineers and field workers traveling to Sub-Saharan Africa. The high rates of yellow fever vaccination are therefore justified.

Meningococcal vaccination was administered to only 501 (7%) of all business travelers and 283 (14%) of long-term business travelers to the 'meningitis belt' in Africa. Meningococcal vaccination should be based on factors including long-term travel duration and living in close contact with indigenous populations. Typhoid vaccination was administered to only 49.2% of travelers to the Indian subcontinent. These low rates may be explained by poor awareness of travel health consultants regarding the risks of business travel.[6]

Of all long-term business travelers visiting Sub-Saharan Africa and the Indian subcontinent, the rabies vaccine was received by three (5.9%) and none (0%) of those engaged in outdoor activities, respectively, and two (4%) and one (9.1%) of those who reported contact with animals, respectively. This rate was much lower than previous studies.[7] Poor awareness of the risks of rabies exposure by travel health consultants or refusal of vaccination may explain the very low vaccination rates.[8]

The risk of exposure to malaria for business travelers visiting malaria-endemic countries, in particular Sub-Saharan Africa, is high. Recent GeoSentinel data showed that 17% of travelers with malaria were business travelers.[9] However, in the current study, 26.8% of all business travelers and only 46.5% of those visiting Sub-Saharan Africa received malaria prophylaxis. In our study, more than half of business travelers to the Indian subcontinent received malaria prophylaxis. Recommendations for malaria prophylaxis, including stand-by emergency treatment, should be carefully individualized. Lack of awareness of malaria risks by travel health consultants is a possible contributing factor.[10]

A clear strength of this study is the large number of participating travelers from all over the country between 2008 and 2016. The fact that only travelers who attended pretravel services at the Regional Department of Public Health were selected for the study represents a limitation of the current investigation. Indeed, an airport-based study could provide more data about the overall level of preparedness of business travelers from Greece. The generalizability of our findings to other populations and settings is a potential issue.

In conclusion, our study clearly shows increasing trends of business travelers from Greece to developing countries as a result of the financial crisis. The low percentage of those seeking pretravel advice and gaps regarding vaccination and malaria prophylaxis highlights the need for awareness initiatives to target this group of travelers. Pretravel health advice should be encouraged by employers. Public health strategies are warranted to improve pretravel health services and to promote safe and healthy travel.

Author statements

Ethical approval

This study was approved by the Hellenic Center for Disease Control and Prevention.

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Competing interests

None declared.

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