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Travel related illness in short-term volunteers from the UK to developing countries☆

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Summary People of all ages volunteer in developing countries, but little is known about the health risks they face. InterHealth, a travel clinic, provides a health screening service for short-term overseas volunteers.

A cross-sectional study design was used to analyse 413 post-travel health questionnaires completed between February and November 2009. The sample consisted of volunteers who worked on short-term projects in developing countries for a variety of non-governmental organisations.

At least one sick day was taken by 137 (33.2%) participants. Medical care was accessed by 39 (9.6%) participants, and standby medication was used by 87 (21.6%) participants. Diarrhoea, especially amongst those aged under 20 or who visited Latin America, was the most commonly reported health problem (95; 23.9%). Possible exposure to schistosomiasis was reported by 56 (13.8%) participants, mostly from East Africa. Upon return, the majority of participants (371; 91.2%) reported feeling well.

The findings of this study show the importance of tailored post-travel health screening for short-term overseas volunteers. This study may help to tailor pre-departure travel health consultations for this group, particularly around food hygiene, hand washing and potential exposure to infection, but further research is needed to assess the impact of pre-travel health advice.
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Introduction

Since the 1990s, there has been substantial growth in the volunteer tourism market, partly due to the increasing variety in available volunteer experiences.[1] In the United Kingdom alone, it is thought that 230,000 young people take gap years, 90,000 people take career breaks, and 200,000 people travel in their retirement.[2]

A gap year may be defined as 'time taken out of education or the workplace, for a purpose', for instance, personal development, or desire to make a difference in a developing country.[3] Many people on a gap year will undertake voluntary work during their trip, often for international development charities. As well as the typical young gap year traveller who is pre-university or pre-employment, there are an increasing number of so called 'career gappers'.

Volunteering in a developing country may provide unique opportunities and experiences, but it is important to remember that these volunteers may be exposed to certain health risks along the way. Research into the health of gap year volunteers to developing countries is limited.[4] The most significant study into health problems encountered by overseas volunteers was carried out by the UK-based organisation Voluntary Service Overseas (VSO).[5] In a questionnaire based study conducted by VSO, in which participants were mainly between the ages of 26–45 years old and overseas for over 12 months, diarrhoea was found to be the most prevalent health problem (experienced by 79.9%), experienced less among older volunteers. VSO also reported that upon return, a quarter of volunteers reported ongoing medical or psychological problems.

Other research into travellers to developing countries with different study populations includes Hill's large prospective study of American travellers attending a travel health centre for advice before going to a developing country.[6] Participants were given a card pre-travel to record any adverse events and were followed up post-travel. Hill found that diarrhoea was the most prevalent health problem abroad, occurring in 46% of travellers. Their results highlighted that attention should be paid to the prevention and therapy of traveller's diarrhoea, prophylaxis of malaria and management of respiratory illness. Dahlgren examined health risks and risk taking behaviour amongst humanitarian expatriates with the International Committee of the Red Cross, and found that they experienced significantly worse health whilst abroad and engaged in risky behaviour.[7]

Other studies focus on specific health problems, such as sexual health of backpackers or up-to-date incidence rates for travellers' diarrhoea.[8,9] There are also studies into knowledge, attitudes and practices of specific groups of travellers; for example, research has been carried out into attitudes and practices of medical students towards travel health issues, and knowledge of travel related health issues in aid workers.[10,11]

However, there is little research which describes the health problems encountered by short-term volunteers to developing countries on a pre-university gap year, summer holiday, or career break. This group deserves study to determine the health problems it faces overseas, as well as the pre-departure advice it needs to ensure that overseas voluntary work is not affected by sickness. Studies have also shown that effective communication in pre-travel consultations may help to motivate travellers to respond to health risks encountered whilst abroad as well as influencing use of chemoprophylaxis for malaria[12,13] If better informed, the volunteer may be less likely to engage in risky behaviour and more likely to take steps to prevent illness, for example by complying with prophylaxis or taking care with food hygiene.[12,14]

InterHealth, a specialist travel health centre provides a pre- and post-travel health screening service for organisations sending participants overseas on voluntary short-term placements. This study uses data from the post-travel health questionnaire to summarise health problems faced overseas and upon return of short-term volunteers.

Methods

Design

A cross-sectional questionnaire was used to assess short-term volunteers' health overseas and on return to the UK.

Setting

InterHealth is a specialist travel clinic in London with charitable status, providing medicals, vaccinations, travel supplies, and psychological support predominantly to those working overseas in the relief and development sector.

Sample

The sample consisted of volunteers who belong to an organisation which sends participants on short-term voluntary placements to developing countries. Many of these organisations are faith-based, and typical activities carried out during the trip included community work, teaching, healthcare, expedition, sports, and construction. The volunteers were in group settings supervised by an experienced team leader.

Participation in health screening is mandatory for participants travelling with a number of organisations, although for many only pre-travel screening is mandated. This study includes participants from organisations who require post-travel health screening. Volunteers who spent more than six months overseas were excluded from the study.

Questionnaire

This study collated data from the post-travel health questionnaire, a questionnaire developed by InterHealth clinicians with extensive experience in travel medicine. The questionnaire covers basic demographics, the placement, illness encountered overseas, and state of health upon return to the UK. It specifically asks about diarrhoea, schistosomiasis, and malaria (Fig. 1). The questionnaire is not extensive; neither do the questions require detailed responses, although space for further information is available. The post-travel health questionnaire used at InterHealth has similarities to the questionnaire used in a study carried out by Bhatta et al. of Voluntary Service Overseas (VSO) volunteers.[3]

Diarrhoea

Have you had any severe or recurrent bouts of diarrhoea?
☐ Yes ☐ No
If **YES**, please give details below:

When	Any blood/mucus?	Test results	Treatment	Outcome

Schistosomiasis

Do you think you may have been exposed to any risk of **bilharzia**? (by swimming in freshwater lakes/rivers in Africa, parts of South East Asia and North East Latin America)
☐ Yes ☐ No

Malaria

Have you had any attacks of **malaria** (confirmed or suspected) during your time overseas?
☐ Yes ☐ No

When	Symptoms	Blood smear result	Treatment taken	Outcome

Figure 1 Questions from the post-travel health questionnaire.

Procedure

Volunteers required to complete the post-travel screening were sent a link to fill in a post-travel health questionnaire online around the time of their return date. Questionnaires were requested to be returned to InterHealth as soon as possible, and email reminders were sent from InterHealth until the questionnaire was returned in order to minimise delay in completing forms after travel. If the volunteer declared any ongoing ill health related to travel, or any possible risk exposures, they were contacted by email to provide more information, and in the case of ongoing concerns, were recommended to visit the InterHealth clinic or a general practitioner for a face to face consultation.

Data analysis

Data from questionnaires completed between February and November 2009 were exported from our database into Microsoft Office Excel 2003 and analysed using descriptive statistics and chi square analyses. No patient identifiers were included; therefore patient consent was not required, consistent with current guidelines on anonymised data and medical research from the Medical Research Council.[15]

Results

Response rate

Since completion of the questionnaire was compulsory, an overall response rate of 100% was achieved. Within the questionnaire, the response rate ranged from 67.6% to 100% to individual questions.

From the 426 completed forms, one patient was excluded as they completed the post-travel health questionnaire in error. A further twelve forms were excluded because their trip duration was over 6 months, and it was decided that these individuals would constitute a different group of longer term travellers. Thus, the total sample size was 413.

Demographics

Of the 413 participants, 212 (51.3%) were age 17–21, a typical gap year age, and the majority were female (263; 63.7%). The most visited region was South America (147; 35.6%), followed by East Africa (144; 34.8%), and all participants visited developing countries. The most common trip duration was less than one month (196; 47.5%) (Table 1).

Illness whilst overseas

At least one sick day abroad was taken by 137 (33.2%) participants, with 17 (4.1%) participants taking at least a week of sick days and six (1.5%) taking at least two weeks.

Medical care whilst abroad was accessed by 39 (9.6%) participants for a variety of reasons such as infection (excluding malaria) ($n = 13$) and injury or trauma such as a fracture or fall ($n = 10$). Several participants accessed medical care for more serious medical problems such as a dog bite ($n = 1$), altitude sickness ($n = 1$), surgery for testicular torsion ($n = 1$) and suspected swine flu ($n = 1$). Table 2 illustrates that those aged 20 or under were more likely to require treatment abroad ($p < 0.05$) as were those abroad for 4–6 months ($p < 0.001$).

Standby medication was used by 87 (21.6%) participants, and 71 (91%) of them used standby treatment for diarrhoea. These kits included antibiotics, Imodium and rehydration sachets. Malaria standby kits were used by three participants, and four participants used kits for both diarrhoea and malaria.

Table 1 Demographic characteristics of participants.

Characteristics		Number of participants (/413)
Gender	Male	150 (36.3%)
	Female	263 (63.7%)
Age group	Under 16	17 (4.1%)
	17–21	212 (51.3%)
	22–29	88 (21.3%)
	30–39	21 (5.1%)
	40–49	27 (6.5%)
	50–59	34 (8.1%)
	60+	14 (3.4%)
Trip region	East Africa	144 (34.8%)
	Central Africa	7 (1.7%)
	Southern Africa	19 (4.6%)
	West Africa	28 (6.8%)
	East Asia	1 (0.2%)
	South-central Asia	23 (5.6%)
	South-eastern Asia	13 (3.1%)
	Eastern Europe	11 (2.6%)
	Central America	20 (4.8%)
	South America	147 (35.6%)
Trip duration	<1 month	196 (47.5%)
	1–3 months	122 (29.5%)
	4–6 months	95 (23.0%)

Disease specific illness whilst abroad

Diarrhoea

Diarrhoea was the most commonly reported health problem in this group, with 57 (14.3%) participants reporting at least one episode of severe or recurrent diarrhoea whilst overseas. Of these 57 participants, 32 (56.1%) also self-treated for diarrhoea. Those who reported severe or recurrent diarrhoea or reported using diarrhoea treatment, and thus the total number of participants reporting diarrhoea overseas, was 95 participants (23.9%). Of these 95 participants, those aged 20 or under were the most likely to experience diarrhoea abroad ($p < 0.01$), and those aged 51–70 were the least likely ($p < 0.01$) (Table 3). Latin America, almost exclusively South America, was the most common region for participants to experience diarrhoea ($p < 0.05$). Those who travelled for 4–6 months were at high risk in comparison to those travelling for very short trips of less than a month ($p < 0.001$). The incidence of diarrhoea overseas is 16.2 cases per 100 person months. There were nine participants who reported multiple episodes of diarrhoea, only one of which had a test, and only four used treatment. Bloody diarrhoea was reported by one these participants, as was mucus.

Malaria

Sixteen participants were excluded from this sub-analysis because the exact location (i.e. village, district) travelled to within a country with variable risk of malaria was unknown. Malarial regions were visited by 224 (56.4%) participants, although 238 reported taking antimalarials. Of these 238 participants, nine (3.8%) changed or stopped their antimalarials, 187 (78.6%) never missed taking them, 45 (18.9%) sometimes missed them, and five participants usually missed them (2.1%). Of the 224 participants who visited malarial areas, 141 (73.8%) used insecticide. Additionally, 193 (88.1%) participants always, usually, or sometimes slept under mosquito nets.

Three participants reported experiencing malaria whilst abroad, of which two subsequently had confirmed diagnoses. These two people took malarone, used insecticide, and usually or sometimes slept under mosquito nets. Standby medication for malaria was reportedly used by seven participants.

Schistosomiasis

Participants were asked to report whether they might have been exposed to schistosomiasis. The questionnaire explains that they may have been exposed by swimming in freshwater lakes/rivers in Africa, parts of South East Asia and North East Latin America (Fig. 1). Possible exposure was reported by 56 (13.8%) participants, with exposure most commonly reported in East Africa (36; 64%), followed by South-East Asia (8; 14.3%).

HIV

Possible exposure to HIV was reported by five (1.2%) participants; they were sent follow up information

Table 2 Travellers who received treatment overseas, stratified by demographic characteristics and destinations.

Variables		Overseas treatment	*P* value
Gender ($n = 407$)	Male	14 (9.4%)	0.949
	Female	25 (9.6%)	
Age ($n = 407$)	≤20	28 (13.4%)	0.026
	21–30	9 (8.3%)	
	31–50	1 (2.1%)	
	51–70	1 (2.4%)	
Trip destination ($n = 407$)	Africa	16 (8.2%)	N/A (expected values to low)
	Asia	7 (19.4%)	
	Eastern Europe	0	
	Latin America	16 (9.6%)	
Trip duration ($n = 407$)	< 1 month	8 (4.1%)	<0.0001
	1–3 months	8 (1.7%)	
	4–6 months	23 (24.2%)	

Table 3 Travellers who experienced diarrhoea abroad, stratified by demographic characteristics and destinations.

Variables		Experienced diarrhoea	*P* value
Gender ($n = 397$)	Male	28 (19.3%)	0.102
	Female	67 (15.3%)	
Age ($n = 397$)	≤20	63 (30.6%)	0.002
	21–30	23 (21.7%)	
	31–50	7 (15.6%)	
	51–70	2 (5%)	
Trip destination ($n = 397$)	Africa	35 (18.1%)	0.018
	Asia	9 (25.7%)	
	Europe	1 (9.1%)	
	Latin America	50 (31.6%)	
Trip duration ($n = 397$)	< 1 month	28 (15.1%)	0.000
	1–3 months	24 (19.8%)	
	4–6 months	43 (47.8%)	

recommending they had an HIV test either at InterHealth, their GP or at a GUM clinic.

Other health related problems

Pre-existing health conditions

Nine (2.2%) participants reported health problems related to pre-existing health conditions. The conditions affecting this group included: Asthma ($n = 2$), Eczema ($n = 2$), Crohns ($n = 1$) and Irritable Bowel Syndrome ($n = 1$).

Emotional or stress related problems

Nine (2.2%) volunteers reported stress or emotional problems, including the death of a close friend or relative whilst abroad, stress, or homesickness.

Illness and health upon return

Ongoing diarrhoea or a change from their normal bowel pattern upon return was reported in 9.4% ($n = 38$) of volunteers. Of this group of participants, 22 (57.9%) reported diarrhoea overseas. 19 out of the 22 reported severe or recurrent diarrhoea, 15 used diarrhoea treatment, and 12 reported both severe or recurrent diarrhoea and use of diarrhoea treatment. The remaining 16 of these 38 participants with ongoing diarrhoea or a change from normal bowel pattern (42%) did not report any diarrhoea overseas. There was no significance between ongoing diarrhoea or a change from normal bowel pattern and demographic factors such as gender, age, trip destination or trip duration.

Malaria upon return was suspected in three (0.8%) volunteers, and was confirmed in one case. 11 (2.7%) participants reported difficulty readapting to the UK once returned. Of these, seven stated they had reverse culture shock and two stated they suffered from severe jet lag. Other ongoing health problems on return from placement were reported by 28 (6.9%) volunteers. Those who spent 4–6 months abroad were the most likely to report ongoing concerns ($p = 0.01$).

The majority of participants reported they felt well at the time of filling out the questionnaire (371; 91.2%), needing no further medical attention.

Discussion

This cross-sectional questionnaire study of 413 participants is the largest study of the health of short-term overseas volunteers to developing countries to date. Other studies have used similar questionnaire methodologies but have had different populations of older aid, humanitarian and health workers on longer assignments.[5,7]

A principal finding of this study was that at least one sick day was taken by 137 (33.2%) volunteers, highlighting that this group does experience periods of illness abroad, illustrating the need for thorough pre-departure health advice as well as post-travel screening.

Medical care abroad was accessed by 39 (9.6%) individuals. This is similar to other studies, which state that 8% are likely to access health care.[16–19] In this sample, infection and injury or trauma were the main reasons for accessing medical care. In other studies one sixth of volunteers were involved in accidents whilst abroad; this is higher than our results, although there was no specific question about accidents on the questionnaire.[5,20] Consistent with other studies, infection was highlighted as a common cause for seeking medical care in this study.[6] Those 20 or under were more likely to require treatment abroad ($p < 0.05$), showing that this group of young people in particular should be seen as a risk group for practitioners during pre-travel screening or consultations.

Standby medication is an area of travel medicine with little research available, and has recently been highlighted as an area for further research.[4] In this sample, standby medication was used by 87 (21.6%) participants, and 71 (91%) of these used standby kits for diarrhoea. There is limited information available about the use of diarrhoea standby kits. Hill identified that 80% of those who developed traveller's diarrhoea self-treated, and Du Pont found that 82% of travellers who self-treated saw a marked improvement in diarrhoea.[21,22] Out of the 224 participants who went to a malarial area, malaria standby kits were used by seven participants, two of which were diagnosed with malaria. A previous study by Roukens showed that a fifth of participants used malaria standby kits, of which 43% had malaria.[23] As many travellers are using these kits to self-treat, pre-travel consultations should include a thorough explanation

of how and when to use standby kits, as literature suggests often travellers do not take these kits appropriately.[24]

Consistent with many other studies, diarrhoea was the most commonly reported health problem in this sample, with 57 (14.3%) reporting at least one episode of severe or recurrent diarrhoea, and 95 (23.9%) reporting either severe or recurrent diarrhoea or the use of diarrhoea treatment.[5,6,20,25] However, severe diarrhoea was only reported in 8.5% of the sample in Steffen et al's study, which is the only other study specifically asking about severe or recurrent diarrhoea rather than diarrhoea generally.[18] Other studies report up to 60% of travellers experiencing diarrhoea abroad.[5,6,25,26] Consistent with previous studies, age was a significant risk factor for diarrhoea, with those aged 20 or under at much higher risk than older travellers aged 51–70 ($p < 0.01$).[5,21,27] It is thought that younger travellers put themselves at higher risk of diarrhoea due to risk taking behaviour whilst abroad.[25] In our sample, length of trip was strongly associated with risk of diarrhoea, with those travelling for 4–6 months more likely to suffer than those of shorter trip duration ($p < 0.001$). Further research into how to reduce episodes of diarrhoea overseas and whether pre-travel health advice can help to change behaviour is needed.

Possible exposure to schistosomiasis was reported by 56 (13.8%) individuals. Many of the volunteers went to Malawi which is the most common source of imported bilharzia in the UK.[28] Others went to Uganda where white water rafting is a popular activity on gap years.[29] There are few studies documenting schistosomiasis exposure in travellers, so this is a new finding and comparing this result with other groups is difficult. Consistent with previous research, the most common area of exposure was East Africa, followed by South-east Asia; studies report exposure is rare in South America, particularly in tourist areas.[30] Nicolls documents that those travelling for missionary or volunteer work were more likely to acquire schistosomiasis than tourists.[31] Schistosomiasis is thought to be a poorly understood infection amongst travellers; however, in this study, the questionnaire did allow for a lack of understanding by stating how schistosomiasis can be caught. As indicated in other research, travellers should receive more education about schistosomiasis if travelling to known risk areas.[30]

Other adverse health problems occurred less frequently. Malaria overseas was only suspected in three cases (0.8%), and diagnosed in two of those individuals, both of whom were volunteering in Uganda. These two individuals used bite avoidance measures and took prophylaxis, illustrating that malaria can still present a problem despite preventative measures. The number of cases of malaria is lower compared with other studies, with 12% of VSO volunteers having smear-positive malaria.[5] However, long term travellers, expatriates and those visiting friends and relatives are often at higher risk of contracting malaria than tourists and short-term travellers.[32,33] Bite avoidance and chemoprophylaxis are key methods for preventing malaria. Previous studies have shown poor compliance in up to two thirds of travellers abroad.[32,33] This study showed good self-reported compliance to antimalarials and fairly good use of bite avoidance measures. Although it cannot be speculated how appropriately the bit avoidance measures were used, it is possible that participants may have been encouraged by their team leader to adhere to prophylaxis regimes and take every precaution to avoid bites.

In this study, a low number (5; 1.2%) reported possible exposure to HIV. Bhatta reported 11.1% of volunteers put themselves at risk of HIV or STIs, and Dahlgren reported one fifth of volunteers took an HIV test, with a further 20% stating they had reason to believe they needed to take an HIV test.[5,7] However, these two studies included different groups of people on riskier and longer assignments. Additionally, our sample consisted of almost exclusively of volunteers with faith based organisations, which may lower the likelihood of them participating in risk-taking behaviour.

Upon return, 371 (91.2%) volunteers reported currently feeling well, suggesting that health problems experienced by short-term travellers may be self-limiting and of short duration. However, 38 (9.4%) reported ongoing diarrhoea or a change from their normal bowel pattern, in spite of the fact that 16 of these 38 participants (42.1%) did not report any diarrhoea overseas. That nearly 10% of participants experienced ongoing concerns in this area highlights the need for further research in the area of ongoing bowel problems following short-term overseas travel. Other ongoing health concerns were reported by 29 participants (6.8%), showing that post-trip screening is valuable to ensure that these small minority of individuals have the opportunity to express any concerns they may have.

There are several limitations to this study. The data were self-reported, therefore lacking supporting clinical confirmation. Individuals may have experienced response bias and recall bias as the questionnaire may have been completed some months after return from travel, although every effort was made to ensure prompt completion by weekly email reminders.

As not all volunteer organisations use the post-travel health questionnaire service, the countries visited and the demographic characteristics of respondents are not representative of the entire travelling population of short-term volunteers, and therefore the results need to be interpreted with caution. All volunteers in this study would have completed a pre-travel health screening questionnaire during which they would have received travel health information sheets relevant to their placement, distinguishing them from others who travel independently without the support and advice of a sending organisation. For the same reason, the sample would exclude individuals who are in very poor health before travel, as they would have be advised against travel through InterHealth's pre-travel screening.

Although the questions are generally relevant and clearly worded, the questionnaire could be developed further and improved as a research tool. This study does not address several key health problems reported in other research. The questionnaire lacked an important question concerning accidents or injuries abroad, albeit some information about accidents was discerned from the question on access to medical care whilst abroad. Respiratory diseases are reported as frequent and common health problems in travellers, however the questionnaire did not specifically ask about such health problems.[6]

In a recent paper, Talbot et al describe the research priorities in travel medicine, and state that "better evidence to support when such screening [asymptomatic screening of returned travellers] is appropriate and worthwhile would be valuable."[4] Data from the questionnaire has shown that short-term overseas volunteers do

experience health problems overseas and have ongoing issues upon return, and that it is worth providing these individuals with an opportunity to share these concerns with a clinician. The post-travel health questionnaire is also a valuable monitoring tool to help travel health clinicians focus on the specific health issues arising in short-term overseas volunteers. Diarrhoea was the most commonly reported health problem overseas, especially in those aged 20 and under, and there were ongoing concerns in almost 10% of the sample around ongoing diarrhoea or changes from normal bowel patterns. As well as this illustrating the need for post-travel advice, this underscores the importance of research into the effectiveness of pre-travel education around food hygiene and hand washing. The study also highlighted that further research into exposure to schistosomiasis, and providing informed health education to travellers is needed, as a high number of volunteers reported possible exposure to the infection by the Schistosoma parasite. Applying the findings of studies such as this to pre- and post-travel care could have a significant impact on health overseas in the travelling population.

Conflicts of interest

None declared.

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