ORIGINAL ARTICLE

Mental health insurance claims among spouses of frequent business travellers

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Objectives: Following up on two earlier publications showing increased psychological stress and psychosocial effects of travel on the business travellers this study investigated the health of spouses of business travellers.
Methods: Medical claims of spouses of Washington DC World Bank staff participating in the medical insurance programme in 1997–8 were reviewed. Only the first of each diagnosis with the ninth revision of the international classification of diseases (ICD-9) recorded for each person was included in this analysis. The claims were grouped into 28 diagnostic categories and subcategories.
Results: There were almost twice as many women as men among the 4630 identified spouses. Overall, male and female spouses of travellers filed claims for medical treatment at about a 16% higher rate than spouses of non-travellers. As hypothesised, a higher rate for psychological treatment was found in the spouses of international business travellers compared with non-travellers (men standardised rate ratios (RR)=1.55; women RR=1.37). For stress related psychological disorders the rates tripled for both female and male spouses of frequent travellers (⩾ four missions/year) compared with those of non-travelling employees. An increased rate of claims among spouses of travellers versus non-travellers was also found for treatment for certain other diagnostic groups. Of these, diseases of the skin (men RR=2.93; women RR=1.41) and intestinal diseases (men RR=1.31; women RR=1.47) may have some association with the spouses' travel, whereas others, such as malignant neoplasms (men RR=1.97; women RR=0.79) are less likely to have such a relation.
Conclusion: The previously identified pattern of increased psychological disorders among business travellers is mirrored among their spouses. This finding underscores the permeable boundary between family relations and working life which earlier studies suggested, and it emphasises the need for concern within institutions and strategies for prevention.

Several recent studies on the health of international business travellers have considered the psychological stress and psychosocial effects of travel.[1–3] The demands of travel were shown to result in high stress levels for many travellers, and tended to correlate with seeking psychological treatment. To date there have been few studies on psychological stress among workers who travel for their jobs and none exploring the general health of their spouses .

In a study of the World Bank's international business travellers, Liese *et al*[1] described a higher rate of medical claims overall and a nearly threefold higher rate of claims for psychological treatment, compared with non-travelling employees within the same organisation.[1] Rates of medical insurance claims for psychological services among those who travelled also increased with the number of travel missions. A subsequent survey of travellers in the same organisation identified a sense of isolation from family and friends and a perceived negative impact of frequent travel on the family as contributing to the stress of travel.[3] Respondents described the need to adjust to repeated separations from home as a source of stress for themselves, their spouses, and their children. The study suggested that the psychological impact of frequent travel may extend to the families of travellers.

In the past few years, a few studies have come forward which focus on the stress among spouses of travelling workers,[4–7] and in this context, it is beginning to be understood that the boundary between the workplace and the home is "permeable".[8–10] The wives of submariners have been found to experience depressive reactions in response to departures for and returns from extended sea duty of their husbands.[5] In three other studies, substantial proportions of wives of both oil workers and air crew showed emotional difficulties related to separation from their working spouses.[4 6 7]

Although these studies describe high levels of stress among spouses of business travellers, there is a lack of research on the psychological and physical health of such spouses. A still unanswered question is whether the separations and necessary adjustments of spouses to the repeated business travel of employees are stressful enough to result in diagnosed health problems. To answer this question, and to provide another clue to understanding the impact of travel related stress, this study analyses the pattern of health insurance claims filed by the spouses of international business travellers. We hypothesised that spouses of travellers will show a higher rate of claims for treatment of all psychological disorders and of those that are defined as stress related, and that these rates will be even higher among spouses of frequent travellers. Further, this study will explore whether there are differences in rates of claims for somatic diagnoses between the spouses of travellers and those of non-travellers. This is the third in a series of studies of the effect of international travel on the health of employees at the World Bank, and of their spouses.

METHODS

The World Bank is an international institution with 8500 staff participating in the medical insurance programme. The staff sex distribution is about equally male and female. About two

Abbreviations: ICD-9, ninth revision of the international classification of diseases; SRR, standardised rate of claims ratios; RR, standardised rate ratios

Table 1 Distribution of spouses by sex, number of business trips, and age, 1997 and 1998 (all spouses filed at least one medical insurance claim in 1997 or 1998)

Characteristic	Insured spouses		
	Male n (%)	Female n (%)	Total n (%)
Business trips (n):			
0	993 (60.9)	771 (25.7)	1764 (38.1)
1	246 (15.1)	401 (13.4)	647 (14.0)
2–3	197 (12.1)	604 (20.1)	801 (17.3)
⩾4	194 (11.9)	1224 (40.8)	1418 (30.6)
Total spouses	1630 (100)	3000 (100)	4630 (100)
Age (y):			
Non-travelling employees:			
20–34	130 (13.1)	161 (20.9)	291 (16.5)
35–44	289 (29.1)	251 (32.6)	540 (30.6)
45–54	376 (37.9)	254 (32.9)	630 (35.7)
55–69	198 (19.9)	105 (24.7)	303 (17.2)
Total spouses	993 (100)	771 (100)	1764 (100)
Travelling employees:			
20–34	57 (9.0)	316 (14.2)	373 (13.0)
35–44	200 (31.4)	754 (33.8)	954 (33.3)
45–54	256 (40.2)	876 (39.3)	1132 (39.5)
55–69	124 (19.5)	283 (12.7)	407 (14.2)
Total spouses	637 (100)	2229 (100)	2866 (100)

thirds travel for business at least once each year, and one third do so at least four times a year. The study cohort was defined as all spouses of World Bank staff working in Washington, DC, who were insured during the years 1997–8. We used travel related to work expense reports to identify staff undertaking at least one international mission during the study period, and to specify dates of travel.

Using the international classification of diseases, ninth revision (ICD-9), we identified all medical insurance claims filed by spouses of Bank employees in 1997–8. Only the first claim for a given ICD-9 diagnosis recorded for each person was included in this analysis. The claims were grouped into 28 diagnostic categories and subcategories (tables 2 and 3), allowing comparison with the previously published study by Liese *et al*.[1] To protect the confidentiality of health records, the identities of the people were not disclosed to the investigators, so no confirmation of the diagnoses—for example, through reviewing medical records—was possible.

Using data recorded in the claims file, we compared the distribution of demographic characteristics and calculated the frequency of selected diagnoses overall and according to frequency of travel related to work. Analyses were conducted separately for male and female spouses. With the methods of Kleinbaum *et al*[11] and described previously,[1] we calculated sex stratified standardised rate of claims ratios (SRRs) and 95% confidence intervals (95% CIs) to compare sex specific, age standardised rate of claims according to categories of frequency of travel related to work. For each diagnostic category considered, we divided the age adjusted rate of claims for spouses of travellers (overall and by frequency of mission) by the corresponding age adjusted rate of claims for the spouses of non-travellers. Age adjusted rate of claims were obtained by summing the age specific rate of claims weighted according to the age distribution of all spouses of World Bank employees who participated in the medical insurance programme.

RESULTS

There were almost twice as many female as male spouses, and within the institution, employees with female spouses travelled more often than their colleagues with male spouses (table 1).

The standardised rate ratios (RRs) for male spouses of travellers compared with non-travellers (table 2) were for stress related psychological disorders (RR 1.92) and for all psychological disorders (RR 1.55). Notably, the RR for all psychological disorders was 1.21 for spouses of employees with one trip compared with spouses of non-travelling employees, whereas the RR was 1.93 for spouses of employees with four or more trips compared with spouses of non-travelling employees. Stress related psychological disorders showed a stronger trend, with an RR of 1.18 for spouses of employees with one trip versus spouses of non-travelling employees and an RR of 2.71 for spouses of employees with four or more trips compared with spouses of non-travelling employees.

The top five of the remaining diagnostic categories for male spouses with increased (RRs) included diseases of the skin and subcutaneous tissue (RR 2.93), diseases of the oral cavity, salivary glands, and jaws (RR 2.09), malignant neoplasms (RR 1.97), diseases of sweat and sebaceous glands (RR 1.46), and intestinal diseases (RR 1.31).

For two of these categories, diseases of the skin and subcutaneous tissues, and diseases of the salivary glands and jaws, the association with the number of business trips was stronger with increasing numbers of travel missions (table 2).

For all claims filed by male spouses of travellers, the RR was 1.17 compared with spouses of non-travellers.

The standardised rate ratios (RR) for female spouses of travellers compared with non-travellers (table 3) were for stress related psychological disorders (RR 2.25) and for all psychological disorders (RR 1.37). The RR for all stress related disorders was 2.26 for spouses of employees with one trip compared with spouses of non-travelling employees, whereas the RR was 2.81 for spouses of employees with four or more trips compared with spouses of non-travelling employees. Corresponding figures for all psychological disorders was RR 1.31 for one trip and RR 1.73 for four or more trips.

The top five of the remaining diagnostic categories with highest RRs for female spouses (table 3) were otitis or external ear disorders (RR 1.71), back injuries (RR 1.55), intestinal diseases (RR 1.47), diseases of the urinary system (RR 1.44), and genitourinary diseases (RR 1.43). The RR for otitis or external ear disorders and intestinal diseases increased clearly with the number of travel missions undertaken.

For all claims filed by female spouses of travellers, the RR was 1.15 compared with spouses of non-travellers.

The patterns of increases in rate of claims on medical insurance for specific diagnoses differed for male and female spouses of travellers. However, for both sexes, spouses of travellers had about twice the rate of claims for psychological stress related diagnoses than did spouses of non-travellers.

Table 4 compares selected results from the current analysis with data from the study of employee health insurance claims.[1]

The diagnostic categories presented might reasonably be assumed to have an association with travel. Although it is inappropriate to compare the magnitude of SRRs directly from the two studies due to the different comparison groups in each, it is reasonable to compare the patterns from the two sets of analyses. For both male and female employees and for male spouses, the rate of claims for psychological disorders increased with each increment in the number of missions. Female spouses of the most frequent travellers also had higher claims than the spouses of non-travellers. When stress related psychological claims were considered separately, male employees and male spouses again showed a consistent increase in the SRR with increasing numbers of trips. The patterns for female employees and female spouses were less consistent, but there were higher rate of claims for psychological stress among the travellers and spouses of travellers than among the non-travellers and spouses of non-travellers. Similarly, rates of insurance claims for treatment of diseases of the skin and subcutaneous tissues and for intestinal diseases were higher

Table 2 Frequency of selected claims diagnoses and standardised claims rate ratios (SRRs) (95% CI) overall and according to frequency of business travel for male spouses of World Bank employees

				Missions								
				1			2–3			≥4		
ICD-9 code	n*	SRR	(95% CI)	n*	SRR	(95% CI)	n*	SRR	(95% CI)	n*	SRR	(95% CI)
Infectious and parasitic diseases (001–139)	70	1.23	0.91 to 1.66	29	1.33	0.89 to 1.98	20	1.16	0.73 to 1.84	21	1.20	0.76 to 1.89
Intestinal (001–009, 120–129)	3	0.67	0.17 to 2.67	2	1.22	0.25 to 5.98	1	0.80	0.10 to 6.57	0	—	—
Malignant neoplasms (140–208)	25	1.97	1.10 to 3.52	11	2.24	1.09 to 4.59	10	2.65	1.26 to 5.56	4	1.11	0.38 to 3.20
Psychological disorders (290–319)	66	1.55	1.12 to 2.15	20	1.21	0.75 to 1.94	20	1.52	0.95 to 2.44	26	1.93	1.26 to 2.96
Stress related disorders (308–309)	17	1.92	0.96 to 3.84	4	1.18	0.40 to 3.54	5	1.87	0.69 to 5.09	8	2.71	1.16 to 6.31
Diseases of the nervous system and sense organs (320–389)	201	1.08	0.93 to 1.25	77	1.06	0.86 to 1.30	61	1.06	0.84 to 1.33	63	1.11	0.88 to 1.39
Cornea/conjunctiva/eyelid (370–374)	26	0.95	0.59 to 1.54	12	1.14	0.61 to 2.12	6	0.72	0.31 to 1.67	8	1.01	0.48 to 2.11
Otitis/external ear (380–384)	24	1.44	0.83 to 2.48	10	1.53	0.75 to 3.11	6	1.17	0.50 to 2.79	8	1.61	0.74 to 3.52
Diseases of the circulatory system (390–459)	117	0.93	0.76 to 1.14	48	0.94	0.72 to 1.24	33	0.84		36	1.01	0.75 to 1.36
Veins (451–456)	25	1.20	0.72 to 2.01	10	1.22	0.61 to 2.43	6	0.92	0.39 to 2.16	9	1.48	0.72 to 3.05
Diseases of the respiratory system (460–159)	153	0.98	0.82 to 1.17	55	0.92	0.71 to 1.18	48	1.01	0.77 to 1.32	50	1.03	0.79 to 1.34
Upper respiratory (460–478)	134	1.07	0.88 to 1.30	48	0.99	0.75 to 1.32	41	1.07	0.80 to 1.44	45	1.15	0.86 to 1.53
Asthma (493)	11	0.51	0.26 to 1.00	4	0.48	0.17 to 1.33	4	0.62	0.23 to 1.69	3	0.44	0.14 to 1.43
Diseases of the digestive system (520–579)	95	1.05	0.82 to 1.33	34	0.96	0.68 to 1.36	36	1.27	0.91 to 1.76	25	0.91	0.61 to 1.36
Oral cavity, salivary glands, jaws (520–529)	9	2.09	0.78 to 5.58	1	0.51	0.06 to 4.09	4	2.84	0.84 to 9.56	4	2.92	0.86 to 9.95
Intestinal (555–569)	42	1.31	0.88 to 1.95	18	1.45	0.86 to 2.43	11	1.12	0.60 to 2.10	13	1.38	0.76 to 2.49
Diseases of the genitourinary system (580–608)	119	1.28	1.02 to 1.59	46	1.26	0.93 to 1.70	41	1.43	1.05 to 1.94	32	1.14	0.80 to 1.62
Urinary disorders (580–599)	41	1.19	0.80 to 1.76	19	1.41	0.85 to 2.34	13	1.25	0.70 to 2.22	9	0.89	0.45 to 1.79
Prostate disorders (600–602)	57	1.29	0.92 to 1.79	21	1.18	0.74 to 1.87	19	1.38	0.86 to 2.21	17	1.30	0.78 to 2.16
Diseases of the skin and subcutaneous tissue (680–709)	159	2.93	2.31 to 3.71	53	2.48	1.82 to 3.38	61	3.65	2.81 to 4.75	45	2.66	1.93 to 3.66
Skin and subcutaneous tissue infections (680–686)	38	1.23	0.83 to 1.83	21	1.75	1.10 to 2.78	9	0.97	0.51 to 1.86	8	1.98	0.47 to 2.02
Skin and subcutaneous tissue inflammations (690–695)	36	1.26	0.82 to 1.94	19	1.82	1.08 to 3.07	6	0.70	0.30 to 1.63	11	1.26	0.66 to 2.39
Disorders of the sweat and sebaceous glands (705–706)	22	1.46	0.82 to 2.60	7	1.23	0.54 to 2.83	3	0.66	0.20 to 2.15	12	2.50	1.26 to 4.93
Diseases of the musculoskeletal system and connective tissue (710–739)	172	1.17	0.99 to 1.39	67	1.18	0.94 to 1.49	52	1.15	0.89 to 1.48	53	1.19	0.92 to 1.54
Back disorders (720–724)	65	0.85	0.64 to 1.14	22	0.75	0.49 to 1.16	24	1.01	0.67 to 1.53	19	0.80	0.50 to 1.26
Symptoms, signs and ill defined conditions (780–799)	224	1.06	0.92 to 1.21	86	1.03	0.86 to 1.25	78	1.19	0.99 to 1.44	60	0.94	0.74 to 1.18
Injury and poisoning (800–999)	129	1.06	0.87 to 1.29	48	1.01	0.76 to 1.34	44	1.16	0.87 to 1.54	37	1.01	0.74 to 1.39
Back fractures, sprains and strains (846–847)	24	0.78	0.48 to 1.27	11	0.97	0.51 to 1.85	7	0.74	0.34 to 1.61	6	0.64	0.28 to 1.47

*Number of spouses of travelling employees who filed claims.

Table 3 Frequency of selected claims diagnoses and standardised claims rate ratios (SRRs) (95% CI) overall and according to frequency of business travel for female spouses of World Bank employees

				Missions								
				1			2–3			≥4		
ICD-9 code	n*	SRR	(95% CI)	n*	SRR	(95% CI)	n*	SRR	(95% CI)	n*	SRR	(95% CI)
Infectious and parasitic diseases (001–139)	224	0.82	0.65 to 1.03	38	0.78	0.55 to 1.13	62	0.85	0.63 to 1.15	124	0.83	0.64 to 1.07
Intestinal (001–009, 120–129)	23	0.63	0.31 to 1.29	3	0.51	0.14 to 1.80	5	0.55	0.19 to 1.58	15	0.83	0.38 to 1.81
Malignant neoplasms (140–208)	93	0.79	0.54 to 1.16	12	0.65	0.34 to 1.24	19	0.65	0.38 to 1.13	62	1.08	0.72 to 1.62
Psychological disorders (290–319)	278	1.37	1.06 to 1.77	42	1.31	0.91 to 1.89	55	1.06	0.76 to 1.50	181	1.73	1.32 to 2.27
Stress related disorders (308–309)	85	2.25	1.23 to 4.13	14	2.26	1.04 to 4.88	16	1.69	0.80 to 3.57	55	2.81	1.51 to 5.25
Diseases of the nervous system and sense organs (320–389)	784	1.17	1.04 to 1.33	145	1.22	1.03 to 1.45	194	1.08	0.92 to 1.27	445	1.22	1.07 to 1.40
Cornea/conjunctiva/eyelid (370–374)	158	1.29	0.92 to 1.80	34	1.45	0.93 to 2.26	40	1.18	0.77 to 1.80	84	1.24	0.86 to 1.78
Otitis/external ear (380–384)	105	1.71	1.07 to 2.72	16	1.56	0.82 to 2.97	27	1.67	0.95 to 2.94	62	1.89	1.15 to 3.09
Diseases of the circulatory system (390–459)	285	1.04	0.84 to 1.29	52	1.06	0.77 to 1.45	87	1.28	0.98 to 1.67	146	0.93	0.73 to 1.18
Veins (451–456)	52	0.94	0.56 to 1.60	10	1.01	0.47 to 2.16	16	1.01	0.52 to 1.95	26	0.82	0.45 to 1.48
Diseases of the respiratory system (460–159)	709	1.08	0.95 to 1.22	121	1.04	0.86 to 1.25	193	1.09	0.93 to 1.28	395	1.10	0.96 to 1.26
Upper respiratory (460–478)	628	1.07	0.93 to 1.23	106	1.03	0.84 to 1.26	166	1.06	0.89 to 1.26	356	1.12	0.97 to 1.30
Asthma (493)	41	1.12	0.59 to 2.15	7	1.08	0.42 to 2.79	7	0.79	0.31 to 2.01	27	1.50	0.75 to 2.98
Diseases of the digestive system (520–579)	307	1.19	0.95 to 1.50	52	1.18	0.85 to 1.62	85	1.21	0.92 to 1.60	170	1.20	0.94 to 1.53
Oral cavity, salivary glands, jaws (520–529)	32	0.99	0.50 to 1.98	5	1.04	0.36 to 2.96	5	0.62	0.22 to 1.77	22	1.33	0.64 to 2.76
Intestinal (555–569)	146	1.47	1.01 to 2.13	21	1.29	0.76 to 2.21	41	1.55	0.99 to 2.43	84	1.55	1.04 to 2.31
Diseases of the genitourinary system (580–608)	247	1.43	1.09 to 1.87	44	1.41	0.97 to 2.04	71	1.50	1.08 to 2.08	132	1.38	1.03 to 1.85
Urinary disorders (580–599)	247	1.44	1.10 to 1.90	44	1.37	0.94 to 2.00	71	1.54	1.11 to 2.15	132	1.42	1.05 to 1.90
Prostate disorders (600–602)	0	NA†	NA†	0	NA†	NA†	0	NA†	NA†	0	NA†	NA†
Diseases of the skin and subcutaneous tissue (680–709)	525	1.19	1.00 to 1.40	81	1.07	0.84 to 1.37	126	1.11	0.89 to 1.37	318	1.38	1.16 to 1.64
Skin and subcutaneous tissue infections (680–686)	132	1.41	0.98 to 2.02	19	1.16	0.68 to 1.98	32	1.27	0.81 to 1.99	81	1.80	1.23 to 2.62
Skin and subcutaneous tissue inflammations (690–695)	194	1.39	1.01 to 1.89	31	1.27	0.81 to 1.97	55	1.47	1.01 to 2.15	108	1.41	1.01 to 1.97
Disorders of the sweat and sebaceous glands (705–706)	112	1.17	0.80 to 1.71	19	1.09	0.62 to 1.92	27	1.09	0.66 to 1.79	66	1.32	0.87 to 1.99
Diseases of the musculoskeletal system and connective tissue (710–739)	703	1.14	1.00 to 1.30	114	1.08	0.89 to 1.31	185	1.13	0.96 to 1.33	404	1.22	1.06 to 1.41
Back disorders (720–724)	271	0.92	0.74 to 1.14	41	0.82	0.58 to 1.16	66	0.86	0.64 to 1.16	164	1.07	0.84 to 1.35
Symptoms, signs and ill defined conditions (780–799)	970	1.25	1.12 to 1.39	174	1.26	1.09 to 1.46	259	1.22	1.07 to 1.39	537	1.25	1.12 to 1.41
Injury and poisoning (800–999)	467	1.10	0.93 to 1.30	88	1.15	0.91 to 1.45	121	1.04	0.84 to 1.30	258	1.11	0.93 to 1.34
Back fractures, sprains and strains (846–847)	113	1.55	1.02 to 2.36	24	1.80	1.04 to 3.08	29	1.40	0.83 to 2.35	60	1.46	0.93 to 2.29

*Number of spouses of travelling employees who filed claims; †NA, Not applicable.

Table 4 Comparisons of selected results: spouse study with previous employee study,[1] (standardised claims rate ratios (SRRs) comparing travel with non-travel categories)

Disease or disorder (ICD-9)	Employee travel category					
	Spouses			Employees		
	1	2–3	⩾4	1	2–3	⩾4
Psychological disorders (230–319):						
Men	1.21	1.52	1.93	2.11	3.13	3.06
Women	1.31	1.06	1.73	1.47	1.96	2.59
Stress-related disorders (308–309):						
Men	1.18	1.87	2.71	1.50	2.18	2.96
Women	2.26	1.69	2.81	1.99	1.50	2.79
Diseases of the skin and subcutaneous tissue (680–709):						
Men	2.48	3.65	2.66	1.48	2.05	2.39
Women	1.07	1.11	1.38	1.21	1.23	1.34
Intestinal diseases (555–569):						
Men	1.45	1.12	1.38	1.38	1.56	1.80
Women	1.29	1.55	1.55	1.49	1.32	1.59

among travelling employees and spouses of travellers, and the employee with the most international missions had the highest SRRs for these diagnostic categories.

DISCUSSION

Overall, male and female spouses of travellers filed claims for medical treatment at about a 16% higher rate than the spouses of non-travellers. This increase for male spouses is lower than the 80% increased rate of claims noted in the study of travelling male employees.[1] For women, the increase for total insurance claims filed among spouses is similar, at 18%, to that of travelling female employees of the World Bank.[1] A higher rate of claims for psychological treatment was found in the spouses of international business travellers than in the spouses of non-travellers. For psychological disorders, the rate of insurance claims was about twice as high for the spouses of travellers as spouses of non-travellers For specifically stress related psychological diagnoses, the rates were three times higher among both female and male spouses of frequent travellers with four missions or more a year compared with spouses of non-travelling employees. We also found higher rates of medical insurance claims for treatment of skin and intestinal disorders. The findings of this study largely corroborate the self reported perceptions of travellers and their spouses that the health impacts of travel on the family can be substantial, and suggest that, for this population, the spouses at home share a similar increased risk of psychological disorders as do the working travellers.[3 12] These results also replicate the findings made for World Bank employees in a previous study.[1]

Rigg and Cosgrove suggested that an intermittent pattern of absence, rather than occasional or prolonged separation, contributed to the greatest stress among wives of aircrews.[7] Disruption of family routines and roles, a sense of isolation, and lack of involvement of husbands upon their return were found to be significant factors in this stress. Cooper and Sloan also found the overload of the domestic role for the spouse and the impact of the airline pilot's travel on the social life of the couple to be key dissatisfactions among spouses of airline pilots.[4] The factors identified in these studies are similar to those identified on surveys by World Bank travellers and their spouses, who also experience frequent and intermittent separations rather than extended absences. From the recent survey of mainly female World Bank spouses, it was clear that for the female spouses a travelling husband means a disruption of family life, difficulties with children, and feelings of missing the traveller.[12]

Morrice *et al* identified anxiety, depression, and sexual difficulties occurring with partings and reunions.[6] This was labelled the "intermittent husband syndrome", and was reported by many (but not all) wives of travelling workers. His sample of the wives of oil crews showed three different types of responses to the absences of their husbands. One group could not cope with the husband's comings and goings and felt lonely, incomplete, anxious, and depressed. Another group of wives resented both the husband's absence and his return. A third group of wives adjusted and learned to cope with and to enjoy the sense of freedom and responsibility of managing the household on their own. The syndrome has also been described by Riggs and Cosgrove among air crew wives.[7] These studies suggest that the husbands' repeated, intermittent absences are quite distinct from an occasional or prolonged separation. The frequent leaving and returning is considered to be more disruptive as it does not allow for easy adaptation and settling in to new routines.

The risk for psychological illness, particularly depressive reactions, was shown to increase among the wives of submarine officers both before the trip and upon the immediate return of their husbands from sea duty.[5] This suggests that it is the acute effects of an abrupt transition of leaving and returning that may be the most emotionally difficult for spouses. If such is the case, then the accumulation of these effects, with an increase in the number of business trips, could result in adjustment problems serious enough to require psychological treatment. The results of the current study seem to support this hypothesis.

DeFrank *et al* proposed a model of travel stress that helps explain these dynamics of more psychological problems among spouses before and after trips taken by the traveller.[13] They divide the travel process into three phases, before the trip, during travel, and after the trip, which present different types of stressors to travellers, and presumably also to their spouses. At the phases before and after the trip family and home stressors are prominent. Stressors before the trip include planning for the absence and a hectic pace with inadequate quality time with family before travelling. Stressors after the trip include a lack of harmony between the needs of the tired and busy returning traveller and the waiting spouse as well as the ongoing quality of marital support. These clearly shared pressures and tense social interactions at different phases of the travel process may also help explain the results of the current study.

The previous studies already cited reported exclusively on the experiences of the wives of travellers. Historically, studies have documented how women are more likely to internalise distress as indicated by higher rates of depression, anxiety, and psychological symptoms. Recent studies identified differences in how women and men react to the same stressful experience. Horwitz *et al* compared men and women experiencing marital dissolution and suggested that women are more likely than men to identify themselves as being depressed as a consequence of the break up, whereas men are more likely to resort to alcohol.[14] Another study reported that there are clear differences between men and women in reaction to life stresses, with women showing hormonal and behavioural responses that could make them less likely to develop stress related health problems.[15] By contrast, our study of the male and female spouses of frequent business travellers showed similar patterns of increases in psychological treatment and increased rates of overall medical insurance claims.

Although travellers and their spouses experience some of the same stressors surrounding business travel, another factor contributing to these similar results among spouses may be a spillover of distress from one spouse to another.[9 10] Westman and Vinokur showed that both male and female spouses can react with depression in response to their partner's depression.[16] This could occur in a circular and escalating way,

especially in our own sample with the accumulation of stresses from frequent travel. Westman and Vinokur suggest that the dynamic is likely to be mediated by the nature of interactions between the partners, through social undermining, or negative communications and attributions. The basic quality of the marital relation thus could both affect and be impacted by the stresses of travel. This implies that intervening with the couple may help to reduce psychological distress.

As well as the psychological diagnoses noted in data from insurance claims, this study showed that other disease groups were also increased for spouses of travellers compared with spouses of non-travellers. For instance, diseases of the skin and subcutaneous tissues were increased significantly among male spouses of travellers, and rates of claims of intestinal disease were increased among men and women. It has been shown in several studies that there is a link between exacerbations of skin diseases such as psoriasis, atopic dermatitis, and urticaria, and increased stress, although the mechanism has not always been well understood.[17–20] Psychological stress and anxiety may also precipitate or sustain disorders such as gastritis, irritable colon, and inflammatory bowel disease.[21–23] Other diagnostic categories that showed higher rates of claims among spouses of travellers compared with non-travellers—such as malignant neoplasms in male spouses or otitis in female spouses—are not so readily explained, and may not yield working hypothesis about travel. For example, this study does not show a dose sensitive influence of travel on rates of cancer or ear disorders in spouses of travellers.

Alternatives to the hypothesised causal connection between any specific diagnostic category and travel related stress must be considered in interpreting the results of this exploratory analysis. Given the many diagnostic categories considered, some of the reported findings may be due to chance. Correlations among spouses for sociodemographic characteristics, access to medical care, willingness to seek medical care, and other characteristics may play a part in producing patterns of increased rate ratios of claims that mirror the increases noted among employees. Although the rate ratios presented here were adjusted for sex and age group, there may be residual confounding. To the extent that these factors are associated both with travel patterns and either health or the willingness to seek care, the results reported here may be spurious. Also, a few spouses whose data were analyzed here are themselves employed by and travellers for the World Bank, whereas others may have accompanied their employee spouse on one or more missions. Some of the spouses, therefore, may have experienced the direct effects of work related travel.

The results from this analysis that are most clearly related to the previous studies in the World Bank are the increased rate of medical insurance claims for psychological disorders. A survey of spouses of World Bank employees indicated that factors which contribute to increases in perceived stress include the number of days away from home, changes in travel dates and their adverse effect on family plans, and lack of control over travel.[12] However, due to concerns over confidentiality, survey results cannot be linked with data from medical insurance claims. Therefore, there is no means of knowing if spouses who filed claims for treatment of psychological disorders are the same ones who completed the survey, or if their experiences of travel related stressors are the same. Furthermore, as we are studying a culturally diverse group, we may in future studies need to consider cultural factors in assessing risk for and expression of psychological stress in this population. Follow up research could help us to identify these and other factors that in turn might be used to develop programmes for risk prevention.

Employees' workplace and home lives are integrated to the extent that both positive experiences and those described as stressful or disruptive make the perception of balancing these competing demands a major challenge. Enlightened companies are acknowledging this conflict as a legitimate business issue, and are beginning to work towards the goal of ensuring healthier and more productive employees by providing policies and practices that support a balance between work and family life.[24 25] Promoting the wellbeing of spouses and family may be particularly important for companies that employ international business travellers, because of the potential impact on functioning at work among stressed employees.

CONCLUSION

This study adds to previous findings showing that frequent travel was associated with increased medical insurance claims for psychological disorders among business travellers. This pattern among the travellers is replicated for the spouses of World Bank employees, with a doubling to tripling of claims for psychological treatment among spouses of travellers with four or more business trips a year. A recent survey among the same population adds strength to the hypothesised causal link between frequent business travel and psychological stress. The stresses of frequent travel for many employees may spill over to affect the psychological and physical health of their spouses. This spillover may, in turn, add more stress for the employees, possibly resulting in decreased work effectiveness and lowered productivity. Therefore, it should be a priority for companies with international travellers to find ways to ease the impact of frequent travel on employees and their families. Research in other organisations could validate our findings and help point the way toward useful, preventive interventions for travellers and their spouses.

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