Self-rated health in a population of expatriate workers and partners in Riyadh, Saudi Arabia

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**Background**
Anthropological theory suggests that expatriate workers progress through a sequence of adaptive stages during their adjustment to a new environment. The psychological and physiological effects of this adaptation process may be reflected in changes in self-rated general health.

**Aims**
To explore the relationship between self-rated general health, duration of expatriate assignment and two health-related behaviours: physical exercise and cigarette smoking.

**Method**
A self-administered questionnaire recorded the demographics, self-rated general health, exercise and smoking behaviours of the adult non-Saudi residents of an expatriate compound in Riyadh, Saudi Arabia.

**Results**
The mean self-rated general health of the study group was better than comparable UK and New Zealand population norms. Self-rated general health was not associated with duration of assignment, but was associated with physical exercise, including a dose–response effect. Middle Eastern expatriates had lower self-rated health scores and a higher prevalence of cigarette smoking than other expatriates.

**Conclusions**
While the sampling frame limits generalization, physical exercise may promote expatriates' general health. Middle Eastern expatriates may be a target group for smoking health education.

**Key words**
Exercise; expatriate; general health; Middle Eastern; Saudi; smoking.

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**Background**
Globalization of the workforce has been described as ‘one of the most significant trends that will affect workers in the next century’ [1]. Although the role of health in assignment failure is unknown, research in this area is important to effectively focus potential preventive efforts. The stress of expatriate work, which combines cultural, professional and personal transitions, may lead to deteriorating general health. Adaptive stress, or ‘culture shock’, has been described as passing through three stages, in a so-called ‘U-shaped’ pattern [2]. We report a project designed to test for similar changes in expatriates’ self-rated general health.

**Method**
In late 2001, we conducted a self-administered questionnaire survey of all English-literate, non-Saudi residents, aged 18 years or more, of an expatriate residential compound in Riyadh, Saudi Arabia. A 27-item questionnaire incorporating demographic, exercise, tobacco smoking and general health questions from the Short Form 36 (SF-36) was designed for the study, and allowed calculation of a single numerical index of self-rated general health perception (GHP) [3].

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respondents were followed up by repeat questionnaire and telephone survey at 5 and 6 weeks. English literacy was judged by the ability to complete a questionnaire. Data were analysed by simple frequency analysis and one sample \( \chi^2 \)-test to compare general health perception responses with assignment duration and other respondent characteristics. Statistical significance was \( P < 0.05 \). Ethical approval was obtained from the Standing Committee on Ethics in Research Involving Humans at Monash University, Australia.

**Results**

Of the 535 adults (306 men and 229 women) registered on the compound database, 270 returned questionnaires, giving a response rate of 51%. The respondents’ mean age ± SD was 45 ± 1 years, with 58% men. Mean assignment duration was 40 months, with a range of 1–336 months. Ninety-three per cent of respondents were married and 182 were married couples. There were no significant associations between GHP and duration of assignment.

Overall, the mean GHP was 78 ± 15.7, at least as good as calculated population norms for the UK and New Zealand [4,5]. Engaging in physical exercise was reported by 83% of respondents, who had significantly higher GHP than non-exercisers (79 ± 1 versus 70 ± 3 respectively, \( P < 0.001 \)). A significant association was found between GHP and duration of daily exercise (Spearman’s \( \rho = +0.25, P < 0.001 \)), with exercise >30 min/day leading to higher GHP than exercising <30 min/day (82 ± 1 versus 75 ± 1, respectively, \( P < 0.01 \)). The participation rate for physical exercise was 83%, much higher than the 60% rate reported amongst Australians [6].

The prevalence of smoking in the study group overall was 22%, comparable with other population estimates [7]. More men smoked than women (30 versus 11% respectively, \( P < 0.01 \)). Middle Eastern respondents (\( n = 23 \)) were more likely to smoke than all others (45 versus 20% respectively, \( P < 0.01 \)).

**Discussion**

A number of limitations affect interpretation of this study. The cross-sectional design does not allow any inference of a causal relationship between the variables measured. Use of the preferred longitudinal or qualitative methods was ruled out by the time limitations of a Masters Degree programme. Lack of non-respondents’ demographic information prevented assessment of selection bias. The extent of English literacy amongst non-respondents was also unknown and may have had a bearing on the response rate (51%). Survivor bias, where residents had left Saudi Arabia for health reasons, is a potential confounder. The difficulty of defining culture for comparative purposes was demonstrated by 20% of the respondents reporting different nationality and country of birth. Finally, the validity of GHP has not been tested in the study population.

**Conclusion**

This group of expatriates and spouses was found to have better GHP than several population norms, with no association found between GHP and the duration of assignment. Physical exercise was shown to be strongly associated with higher GHP scores, including a dose–response effect. A prospective study is warranted to investigate these associations.

**References**