

# Health locus of control beliefs and smoking among male Kuwaiti government employees

H.E. Badr<sup>1</sup> and P.M. Moody<sup>1</sup>

معتقدات الموظفين الحكوميين الكويتيين الذكور حول محلّ التحكم في الصحة وحول التدخين  
حنان السيد بدر، فيليب مودي

**الخلاصة:** أُجري مسح مستعرض طبائقيّ متعدّد المراحل وشاملٌ لجميع القطاعات، لعدد 1798 من الكويتيين الذكور البالغين، لاستطلاع العلاقة بين معتقداتهم حول محلّ التحكم في الصحة، ومعتقداتهم الصحية حول التدخين، ووضعهم من حيث التدخين. وقد بيّن المسح قوة معتقدات غير المدخنين بأن التحكم في الصحة يأتي من خارج الشخص، بالمقارنة مع المدخنين، وأن غير المدخنين لديهم معتقدات صحية أفضل عن مضار التدخين بالمقارنة مع المدخنين. أي إن الكويتيين الذكور المدخنين يرون أنفسهم أكثر قدرة على التحكم في حياتهم من غير المدخنين. وقد بيّن تحليل التحوُّف regression اللوجستي المرحلي أن ضعف التحكم في الصحة، وعدم صوابيّة المعتقدات الصحية حول التدخين، وكون الشخص غير متزوج، وانخفاض مستوى التعليم، كل ذلك من العوامل القوية التي تنبئ بمخاطر الإقبال على التدخين. وأوضح تحليل التحوُّف الخطي البسيط وجود علاقة سلبية قوية بين محلّ التحكم في الصحة وبين المعتقدات الصحية عن مضار التدخين بين غير المدخنين والمدخنين السابقين، ولكن ليس بين المدخنين الحاليين.

**ABSTRACT** A cross-sectional multistage stratified cluster survey of 1798 Kuwaiti male adults investigated the relationship between health locus of control (HLC) beliefs, health beliefs about smoking and smoking status. Non-smokers had stronger external HLC and better health beliefs about smoking than smokers. Thus the Kuwaiti men who used tobacco believed themselves to be more in control of their own lives than did non-users. Stepwise logistic regression analysis revealed that low HLC, poor health beliefs about smoking, single marital status and low level of education were significant predictors of risk of smoking. Simple linear regression analysis showed a significant negative relationship between HLC and health beliefs about smoking among non-smokers and ex-smokers, but not among smokers.

## Croyances en fonction du lieu de contrôle de la santé et tabagisme chez des fonctionnaires koweïtiens

**RÉSUMÉ** Une enquête transversale utilisant un échantillonnage stratifié à plusieurs niveaux auprès de 1798 hommes koweïtiens a permis d'examiner la relation qui existe entre les croyances en fonction du lieu de contrôle de la santé ainsi que les croyances relatives aux effets sur la santé du tabagisme et le statut tabagique. Les non-fumeurs avaient un lieu de contrôle de la santé plus fréquemment externe et de meilleures croyances relatives aux effets sur la santé du tabagisme que les fumeurs. Les Koweïtiens qui consommaient du tabac croyaient ainsi qu'ils contrôlaient davantage leur vie que ceux qui n'en consommaient pas. L'analyse de régression logistique par étapes a révélé que le lieu de contrôle de la santé, les croyances relatives aux effets sur la santé du tabagisme, le célibat et le niveau d'instruction constituaient des facteurs prédictifs significatifs du risque de tabagisme. L'analyse de régression linéaire simple a montré une relation négative significative entre le lieu de contrôle de la santé et les croyances relatives aux effets sur la santé du tabagisme chez les non-fumeurs et les ex-fumeurs, mais pas chez les fumeurs.

<sup>1</sup>Department of Community Medicine and Behavioural Sciences, Faculty of Medicine, University of Kuwait, Safat, Kuwait (Correspondence to H.E. Badr: hanan@hsc.edu.kw).

Received: 18/09/03; accepted: 25/02/04

## Introduction

The notion of perceived locus of control is perhaps the most widely known of the psychological constructs associated with beliefs about control. Although this trait is no doubt distributed normally among people, those who believe that they are influenced by external forces are considered to have an external locus of control. However, those who have confidence that whatever happens to them, pleasant or unpleasant, is substantially within their domain of influence are said to have a predominantly internal locus of control [1]. In other words, people who score external on locus of control are more likely to attribute life's successes and failures to factors such as fate, luck, and chance. Conversely, internal scoring people have a greater tendency to attribute life's outcomes to personal attributes relating to ability, effort, and personal power of control [2].

Suffice it to say that the development of a health locus of control (HLC) scale has led to research demonstrating that there is, indeed, an association between internality and the likelihood of making healthy choices [3,4]. One particular health-related aspect in which locus of control is considered to be significant is cigarette smoking [5]. Locus of control is an attributional personality dimension that has been linked to a host of behaviours including cigarette smoking [6].

These aspects have been shown to differentially predict health-related behaviours in that people with a more internal HLC generally adhere more closely to health regimens whereas more externally oriented individuals are less likely to engage in health-protective behaviours [7,8]. It is reported that simple knowledge of the dangers associated with tobacco use has little impact on adolescent tobacco uptake. Indi-

viduals' predispositions, however, show promise for understanding the decisions [9].

The decision to take up smoking is an individual one. Regardless of the myriad of external or situational factors, no one forces people to experiment with tobacco use. Even though contacts and interaction with smoking peers and family members are major predictors of eventual smoking uptake, the actual choice ultimately rests with the individual [10,11].

It is well known that different cultures have different health outcomes influenced by different beliefs. Previous studies have found an association and an influence of cultural origin over generalized locus of control. An interaction between culture, belief and health was apparent from these studies [12,13]. In addition, factors such as occupational stressors, socioeconomic status, gender, age, etc. are likely to influence the outcome of health [14-16]. Also for illustrating the interconnection between socioeconomic status and locus of control, Smith et al. mentioned "an internal locus of control may facilitate selection into higher status groups and occupations by fostering an increased sense of self-efficacy. Additionally, social roles linked with status may influence locus of control" [17].

Cigarette smoking is considered one of the important public health problems in Kuwait and the prevalence of smoking among adult males has been estimated at 34.4% [18]. This is despite numerous community interventions and government legislation against smoking in 1995, suggesting that an individual's decision to use tobacco is a critical point in the process of preventing smoking. A review of a body of literature indicates that HLC and its association with smoking have not been reported in the Kuwaiti culture. The aim of this study is to assess the relationship between HLC be-

liefs, health beliefs about smoking according to smoking status and different socio-demographic factors among Kuwaiti men working in government ministries. It is anticipated that such results may help the health planners to design messages or interventions that are more effective in preventing tobacco use in Kuwait.

## Methods

### Study design and sampling procedure

The study was a cross-sectional multistage stratified cluster survey of men working in government ministries. The first stratification was according to ministry; 6 ministries were systematically selected. The second level of stratification was according to the number of departments within each ministry; 3 departments were chosen from each ministry, with probability proportional to the number of employees in each department. In the last stage, all the male employees in the chosen departments were grouped in equal clusters, with 8 clusters chosen randomly for inclusion in the study. A total of 1918 male Kuwaiti adults aged 18 years and over formed the target population of the study. Full details of the survey sample have been reported earlier [18].

### Study instrument

An anonymous self-administered questionnaire was completed by the study sample. Socioeconomic data were collected about age, marital status, monthly income and level of education. Smoking behaviour was assessed as: current smoker (those who at the time of the survey had smoked at least 100 cigarettes during their lifetime and were currently smoking), non-smoker (smoked less than 100 cigarettes during their lifetime or had never smoked before)

or ex-smoker (smoked at least 100 cigarettes during their lifetime and reported quitting smoking) [19].

Respondents completed the HLC scale, consisting of 11 items that measure external versus internal HLC. The scale was scored in the external direction, with each item scored from 1 (strongly disagree) to 5 (strongly agree) for the externally worded items and reverse scored for the internally worded items [20].

Respondents' beliefs about cigarette smoking and health were also evaluated using a set of 10 statements, e.g. "I believe that cigarette smoking is not good for my health and I believe that quitting smoking prevents a person from getting lung cancer". Each statement was scored using a 5-point Likert scale, which ranged from strongly disagree to strongly agree, with high scores indicating better (beneficial) health beliefs.

### Data collection and analysis

Data were collected from April to December 1996. A pilot study was performed on 243 individuals using the translated Arabic version of the scales and the necessary modifications were made accordingly.

Data entry and analysis were done using *SPSS*, version 10. Mean and standard deviation (SD) and odds ratios (OR) were calculated. Stepwise binary logistic regression, simple linear regression, and analysis of variance were used to estimate the relationship between the studied variables at a level of significance of  $P < 0.05$  and 95% confidence interval (CI).

## Results

### Description of the study sample

The total sample included 1918 individuals; 1798 of them returned complete question-

naires, giving a response rate of 93.7%. The mean age and standard deviation (SD) was 33.2 (7.9); the median was 32 years.

Almost one-quarter of the men was single (25.2%). Regarding the level of education, 24.1% of them had graduated from university or held advanced degrees, 40.4% held diplomas, 18.9% had secondary level education and 16.6% had intermediate level or below.

### HLC and health beliefs about smoking

The mean (SD) score for the HLC was 29.83 (4.29) for the whole sample (Table 1). Non-smokers had higher scores than smokers [30.38 (SD 4.05) and 29.65 (SD 4.34) respectively], indicating a stronger external HLC. Ex-smokers had the lowest score [28.68 (SD 4.57)], i.e. the weakest external HLC. The difference between the 3 categories was statistically significant ( $F = 19.45, P < 0.0001$ ).

Table 1 also shows that the mean (SD) score for health beliefs about smoking was 41.97 (SD 6.54) among the studied group. Ex-smokers had the highest mean health belief score [44.44 (SD 4.99)] followed by non-smokers [43.27 (SD 5.71)]. Smokers had the lowest mean score for health beliefs about smoking [38.87 (SD 7.15)]. The

difference between the 3 groups was statistically significant ( $F = 124.17, P < 0.0001$ ).

### Stepwise logistic regression

The relationship between smoking status and HLC, health beliefs about smoking and socioeconomic factors (age, marital status, level of education and monthly income) was examined using stepwise multivariate binary logistic regression (Table 2). Adding HLC and health beliefs about smoking and the 4 socioeconomic variables as independent variables to the dependent variable (0 = smokers and 1 = non-smokers) led to a significant improvement in the prediction of smoking status over the model (the classification matrix = 68.3%).

Four independent variables out of the 6 entered into the equation emerged as significant predictors in the regression equation. HLC was the first predictor, with non-smokers having higher external HLC scores than smokers (OR = 0.95, 95% CI: 0.92–0.98,  $P < 0.0001$ ). Non-smokers also had better scores on health beliefs about smoking and this emerged as the second predictor (OR = 0.9, 95% CI: 0.88–0.91,  $P < 0.0001$ ). Marital status ranked as the third predictor for smoking, where single men were at higher risk and had higher ex-

Table 1 Mean total scores for health locus of control (HLC) and health beliefs about smoking, according to smoking status for a sample of Kuwaiti men

Smoking status	No.	%	Mean (SD) HLC score	Mean (SD) health beliefs score
Smokers	618	34.4	29.65 (4.34)	38.87 (7.15)
Non-smokers	861	47.9	30.38 (4.05)	43.27 (5.71)
Ex-smokers	319	17.7	28.68 (4.57)	44.44 (4.99)
Total	1798	100.0	29.83 (4.29)	41.97 (6.54)

$F=19.45, P < 0.0001$      $F=124.17, P < 0.0001$

SD = standard deviation.

المجلة الصحية لشرق المتوسط، منظمة الصحة العالمية، المجلد الحادي عشر، العددان ٢/١، ٢٠٠٥

Table 2 Stepwise logistic regression of different confounders among smokers and non-smokers

Variables	Odds ratio	$\beta$	CI	P-value
HLC score	0.948	-0.054	0.923 to 0.974	$P < 0.0001$
Health beliefs score	0.895	-0.111	0.879 to 0.911	$P < 0.0001$
Marital status	0.769	-0.262	0.599 to 0.988	$P < 0.05$
Level of education				
Intermediate and below	2.038	0.712	1.472 to 2.912	$P < 0.0001$
Secondary	1.738	0.553	1.243 to 2.432	$P < 0.001$
Diploma	1.411	0.344	1.056 to 1.885	$P < 0.05$

HLC = health locus of control.  
CI = confidence interval.

ternal HLC than ever-married men (OR = 0.77, 95% CI: 0.6–0.99,  $P < 0.05$ ). The fourth predictor was the level of education. The model showed that the lower the level of education, the higher the risk for smoking. The people with the lowest level of education (intermediate or below) were at higher risk compared with the reference group (university or above) (OR = 2.04, 95% CI: 1.43–2.91,  $P < 0.0001$ ).

The same method of analysis was used for the smokers and ex-smokers, but HLC did not enter the equation and was not a predictor for smoking in the 2 groups. Health beliefs about smoking was the first predictor, with ex-smokers having better beliefs than smokers. Age and marital status were the second and third predictors in the equation, with older and ever-married men at lower risk for smoking than younger participants and single men.

### HLC and health beliefs about smoking

Separating smokers, non-smokers and ex-smokers, the relationship between the 2 variables—HLC and health beliefs about smoking—for the 3 groups separately was investigated using simple linear regression.

There was no significant relationship between the 2 variables among smokers, but there was a negative significant relationship between them for both non-smokers ( $\beta = -0.14$ , CI: -0.24 to -0.05,  $P < 0.01$ ) and ex-smokers ( $\beta = -0.19$ , 95% CI: -0.31 to -0.07,  $P < 0.01$ ) (Table 3).

### Discussion

The HLC model suggests that those who score high on the internal dimension, i.e. who regard their health as largely within their own control, are likely to engage in

Table 3 Linear regression between HLC total score and health beliefs about smoking total score among smokers, non-smokers and ex-smokers

Smoking status	$\beta$	CI	P-value
Smokers	-0.02	-0.15 to 0.115	NS
Non-smokers	-0.14	-0.24 to -0.05	$P < 0.01$
Ex-smokers	-0.19	-0.31 to -0.07	$P < 0.01$

NS = not significant.  
CI = confidence interval.

health-maintaining behaviours. Conversely, those who score high on the external dimension view their health as relatively independent of their behaviour and, accordingly, are more likely to engage in health-damaging behaviours than those with lower scores [21]. Sense of control has been recognized over the past 25 years as a psychological construct with important implications for health [22].

The present study investigated the relationship between HLC, health beliefs about smoking and smoking status in a representative sample of 1798 male Kuwaiti adults.

The findings of the present study provide limited support for the HLC model in relation to smoking behaviour. Non-smokers were found to have stronger external HLC than smokers. The relationship is counterintuitive but does coincide with the findings of other studies [23,24]. One explanation for the apparent contradiction may involve a process of denial through which smokers believe they are in control of their health despite their smoking. This belief in the lack of control of their health serves to further rationalize their smoking. The denial process has been suggested in another study [25,26].

The study revealed that HLC did not follow the predicted pattern for tobacco users as non-smokers had a stronger belief in external control than smokers. This may suggest that these non-smoking adults were more compliant with authority figures. This finding is compatible with the results of another study where non-smoking adolescents had a higher belief in powerful others than smokers, which may indicate a reliance on the credibility, knowledge and curative abilities of health care providers [27].

On the other hand, smokers in our study had a stronger external HLC than ex-smokers. Maybe this group of ex-smokers

became more aware about their health as a result of preventive programmes they attended or started to view certain medical problems as complications of smoking, and thus developed a belief of their own self-control about their health.

Some studies have suggested that HLC "internals" are more likely to achieve and maintain abstinence than "externals" thereby suggesting that ex-smokers are more likely to demonstrate a lower external HLC score than current smokers. This agrees with the findings of this study, as ex-smokers had the weakest external HLC, lower than either smokers or non-smokers [28–32].

Regarding health beliefs about smoking, the study revealed that both non-smokers and ex-smokers had stronger health beliefs about the adverse effects of smoking on their health than smokers. This can add more to the denial process of the smokers that smoking did not harm their health. The evidence for this is the presence of a negative significant relationship between HLC and health beliefs about smoking among non-smokers and ex-smokers, but not among smokers. This is in accordance with the suggestion that a strong and consistent relationship would be found between HLC and behaviour only among people who score high for beliefs about their health [33].

It is well known that cigarette smokers acknowledge that smoking is damaging to health. One possible reason for such apparent discrepancy between health beliefs and smoking behaviour is that individuals differ in how much they believe they are in control of their own health and are able to control their behaviour and lifestyle. A second reason is that health itself is only one of a number of values that can motivate health-related behaviour [26].

The non-smokers with stronger external HLC might be dependent on values obtained from different cultures. Early childhood experiences and environments in which children are allowed no control, or ones in which they see individual control as random, may contribute to the development of an external locus of control [34]. Furthermore, it has been suggested that "individuals reared in a culture that values independence, uniqueness, self-reliant individualism, and personal output of energy are likely to be more internally oriented than individuals from a culture that tends to emphasize a different set of values" [35]. In the United States of America, a person has access to education and economic advantages not available worldwide. According to this country's values, education and economic advantage increase a person's chances of adopting an internal HLC [36]. This contradicts the findings of our study, which reveals the effect of different cultural values on embedded HLC beliefs.

## Conclusion and recommendations

The study focused on the HLC beliefs and its relationship to smoking behaviour. HLC

is an important factor playing a principal role in directing people's health behaviours. These Kuwaiti men had a lower external HLC than non-smokers. Ex-smokers had the lowest external HLC. However, health beliefs about smoking were the highest for ex-smokers and the lowest for smokers. Socioeconomic differences (young age, low level of education and single) were risk factors predicting smoking behaviour.

In the light of these findings, we recommend that HLC deserves sustained consideration in investigations of behaviour and health as it reflects general attitudes to health. Smoking prevention efforts need to tap into the psychological profile of smokers who believe in their own control on health in order to help them to quit smoking. Health education programmes about healthy behaviours should start at an early age to help with constructing the internal belief of HLC.

## Acknowledgements

This research was funded by a grant from the Research Administration, University of Kuwait (project no. MC040).

## References

1. Tones K. Health education, behaviour change, and the public health. In: Detels R et al., eds. *Oxford textbook of public health. Volume 2. Methods of public health*, 3rd ed. Oxford, Oxford University Press, 1997:791–814.
2. Molloy GN et al. Locus of control of smokers, nonsmokers and nonpracticing smokers. *Psychological reports*, 1997, 81:781–2.
3. Wallston KA, Wallston BS. Locus of control and health: a review of the literature *Health education monographs*, 1978, 6(2):107–17.
4. Tones BK. Health promotion, empowerment and the concept of control. In: *Health education: politics and practice*. Victoria, Australia, Deakin University Press, 1992.

5. Georgiou A, Bradley C. The development of a smoking-specific locus of control scale. *Psychology and health*, 1992, 6:227–46.
6. Rotter JB. Internal versus external locus of control of reinforcement. A case history of a variable. *American psychologist*, 1990, 45:489–93.
7. Jessor R, Turbin M, Costa F. Protective factors in adolescent health behavior. *Journal of personality and social psychology*, 1998, 75:788–800.
8. Newsom J, Knapp J, Schulz R. Longitudinal analysis of specific domains of internal control and depressive symptoms in patients with recurrent cancer. *Health psychology*, 1996, 15:323–31.
9. Nutbeam D et al. Evaluation of two school smoking evaluation programmes under normal classroom conditions. *British medical journal*, 1993, 306:102–7.
10. Greenlund K et al. Cigarette smoking attitudes and first use among third-through sixth-grade students: the Bogalusa Heart Study. *American journal of public health*, 1997, 87:1345–8.
11. Hunter S et al. Psychosocial influences on cigarette smoking among youth in a southern community: the Bogalusa Heart Study. *Morbidity and mortality weekly report*, 1987, 36(suppl. 4):17S–23S.
12. Marano HE. Depression: beyond serotonin. *Psychology today*, 1999, 32:30–76.
13. Duffy ME. Determinants of reported health promotion behaviors in employed Mexican American women. *Health care for women international*, 1997, 18:149–63.
14. Bates MS, Rankin-Hill L. Control, culture and chronic pain. *Social science and medicine*, 1994, 39:629–45.
15. Parmenter K, Waller J, Wardle J. Demographic variation in nutrition knowledge in England. *Health education research*, 2000, 15:163–74.
16. Wardle J, Steptoe A. Socioeconomic differences in attitudes and beliefs about healthy lifestyles. *Journal of epidemiology and community health*, 2003, 57:440–3.
17. Smith PB, Dugan S, Trompenaars F. Locus of control and affectivity by gender and occupational status: a 14 nation study. *Sex roles*, 1997, 36:51–7.
18. Moody PM et al. Factors associated with the initiation of smoking by Kuwaiti males. *Journal of substance abuse*, 1998, 10(4):375–84.
19. Cigarette smoking among adults—United States, 1992, and changes in the definition of smoking. *Journal of the American Medical Association*, 1994, 272:14–6.
20. Wallston BS et al. Development and validation of the health locus of control (HLC) scale. *Journal of consulting and clinical psychology*, 1976, 44:580–5.
21. Wallston KA, Wallston BS, DeVellis R. Development of the Multidimensional Health Locus of Control (MHLC) Scales. *Health education monographs*, 1978, 6:160–70.
22. Steptoe A, Wardle J. Locus of control and health behaviour revisited: a multivariate analysis of young adults from 18 countries. *British journal of psychology*, 2001, 92:659–72.
23. Norman P. Health locus of control and health behaviour: an investigation into the role of health value and behaviour specific efficacy beliefs. *Personality and individual differences*, 1995, 18:213–8.
24. Bennett P et al. Health locus of control and value for health in smokers and non-smokers. *Health psychology*, 1997, 16(2):179–82.

25. Booth-Butterfield M, Anderson RH, Booth-Butterfield S. Adolescents' use of tobacco, health locus of control and self-monitoring. *Health communication*, 2000, 12(2):137-48.
26. Stenstrom U, Andersson P. Smoking, blood glucose control, and locus of control beliefs in people with type 1 diabetes mellitus. *Diabetes research clinical practice*, 2000, 50(2):103-7.
27. Eiser J et al. Health locus of control and health beliefs in relation to adolescent smoking. *British journal of addiction*, 1989, 84:1059-65.
28. Mlott SR, Mlott YD. Dogmatism and locus of control in individuals who smoke, have stopped smoking and never smoked. *Journal of community psychology*, 1975, 3:53-7.
29. Ockene JK et al. Relationship of psychological factors to smoking behavior change in an intervention program. *Preventive medicine*, 1982, 11:13-28.
30. Rosenbaum M, Argon S. Locus of control and success in self-initiated attempts to stop smoking. *Journal of clinical psychology*, 1979, 35:870-2.
31. Seeman M, Seeman TE. Health behavior and personal autonomy: a longitudinal study of the sense of control in illness. *Journal of health and social behavior*, 1983, 24:144-60.
32. Shipley RH. Maintenance of smoking cessation: effect of follow-up letters, smoking motivation, muscle tension and health locus of control. *Journal of consulting and clinical psychology*, 1981, 49:982-4.
33. Wallston KA, Smith MS. Issues of control and health: the action is in the interaction. In: Penny G, Bennett P, Herbert M, eds. *Health psychology: a lifespan perspective*. London, Harwood, 1994.
34. Chorpita B, Barlow D. The development of anxiety: the role of control in the early environment. *Psychological bulletin*, 1998, 124:3-21.
35. McLaughlin SC, Saccuzzo DP. Ethnic and gender differences in locus of control in children referred for gifted programs: the effects of vulnerability factors. *Journal for the education of the gifted*, 1997, 20:268-83.
36. Hamid PN. Self-monitoring, locus of control and social encounters of Chinese and New Zealand students. *Journal of cross cultural psychology*, 1994, 25: 353-68.