General Self-efficacy, Health Locus of Control and Lifestyle as Predictors of Self-Rated Health

*Radhey Shyam **Renu ***S.R. Khan

Abstract

Through several factors affect the health of a person yet the lifestyle related factors have been reported to play a major role in the maintenance and promotion of health. Self- efficacy and health locus of control have also been reported to be related to health, though there are variations in the direction and strength of relationship. Present study was intended to examine the relationship of self-efficacy, health locus of control and lifestyle with self- reported health. It was also intended to identify the role of self- efficacy, health locus of control and lifestyle in determining health. A sample of 300 adults (150 male and 150 female) selected on incidental basis from Rohtak city and adjoining villages (Haryana state, India) were administered self- efficacy scale (Sud, Schwarzer and Jerusalem, 1998), health locus of control scale of Wallston and Wallston and De Vellis (1978) and lifestyle check assessment (Hall and Ches, 2001). All the respondents were asked to rate their health status on a five point scale ranging from "poor" (1) to "excellent" (5). The obtained data were analyzed by Pearson coefficient of correlation. To identify the role of self-efficacy, health locus of control and lifestyle in predicating self – reported health stepwise multiple regressions was done. Result revealed that self-efficacy, health locus of control (internal, chance, powerful others) and lifestyle (total score as well as component parts) were significantly and positively related with self –reported health, through the strength of the relationship varied from low to moderate. Lifestyle emerged as the strongest predictor of self- reported health accounting 31% of variance. The other significant predicators were internal health locus of control, eating practices (component of lifestyle scale) and self- efficacy and taken together with lifestyle (total score) all these accounted for 36% of the variance in self – reported health. Findings are discussed in the light of previous studies and implications are discussed.

Introduction :

Health is an asset, most valuable resource of one's life. It is usually conceptualized as a state or disposition of a person's freedom either from illness or capacity to resist illness in a discrete manner. It affects every aspect of life i.e. ability to work, to play, to enjoy etc. all depend upon health. Health is not merely the absence of disease rather it is more than that. It has been clearly outlined in WHO's definition of health (World Health Organization, 1946) which says "Health is a state of complete physical, mental and social well being and not merely, the absence of disease or infirmity."

Health is commonly measured by health status, health care and health maintenance (Bond and Bond, 1994). Campbell et al. (1976) found respondents to judge, "good health" as the most important of various life domains. Watten et al. (1997) suggested that perception of health is more important than objective health in their effects on subjective

wellbeing. Multiple studies, conducted in a variety of cultures and settings, have consistently shown that persons reporting poorer self-rated health suffer a higher subsequent risk of mortality. Such studies have spanned a wide range of populations, from persons with illnesses such as cancer (Shadbolt, Barresi and Craft, 2002) and cardiovascular disease (Bardage, Isacson and Pedersen, 2001), to the elderly (Ishizaki, Kai and Imanaka, 2006; Idler, Kasl and Lemke, 1990; Mossey and Shapiro, 1982) and to general populations (Franks, Gold and Fiscella, 2003; Larsson, Hemmingsson, Allebeck and Lundberg, 2002). Poor self-rated health has also been shown to be independently predictive of subsequent morbidity and higher healthcare utilization (Salvo, Fan, McDonell and Fihn, 2005).

Health is not a matter of luck, there are many factors which independently and interactively influence health. Psychosocial factors affecting health include belief, personality, stress, coping strategies, locus of control, attitude, general self-efficacy, social support, self-esteem, negative affectivity etc. Dahlgren and Whitehead (1991) gave a framework for the determinants of health. His framework was multilayered onion like structure which placed the individual at the centre, endowed with fixed factors of age, sex and genetic factors, but firmly surrounded by four layers of influence consisting of individual lifestyle, social and community influences, living and working conditions and general socioeconomic, cultural and environmental conditions. Han, Lee, Lee and Park (2003) revealed that the combination of health promoting behaviour, activity related affect, self-esteem, health perception and commitment to planned action, social support and perceived barriers to action accounted for 57% of the variance in quality of life. Kaplan, Sallies and Patterson (1993) on the basis of their study reported that about 40% of variance in health is accounted for by behavioural factors.

A person who believes in being able to cause an event can conduct a more active and self-determined life course. This “can do”cognition mirror a sense of control over one's environment. The feeling of “can do” refers to self-efficacy. In 1977, the famous psychologist Albert Bandura at Stanford University introduced the concept of perceived self-efficacy in the context of cognitive behaviour modification. This concept has been applied to such diverse areas as school achievement, emotional disorders, mental and physical health, career choice and sociopolitical change. It has become a key variable in clinical, educational, social, developmental, health and personality psychology (Bandura, 1977, 1992). A strong sense of personal efficacy has been reported to be related to better health (Schwarzer and Fuchs, 1995). In one study Fallon, Wilcox and Ainsworth (2005) examined the correlates of self-efficacy for physical activity in African-American women and reported that self-efficacy was positively correlated with perceived health status, physical activity and negatively with social role constraint. Similarly, Riazi, Thompson and Hobart (2004) found both baseline and changes in self-efficacies were strong and independent predictors of changes in health status.

Health locus of control is defined as one's belief that the state of one's health is determined by internal or external factors as well as, the level of personal control over

desired outcomes (Bane, Hughes and McElnay, 2006; Takaki and Yano, 2006). Locus of control refers to an individual's generalized expectations concerning where control over subsequent events resides (Rotter, 1954). It has been suggested that those who strongly believe that internal factors control their health tend 'to seek more health related information, remember the information better and respond more readily to messages encouraging medical examination than do those who believe in external control. Many researchers for example Poortinga, Dunstan and Fone (2008) found and reported that the HLC was significantly associated with individual and neighborhood socio-economic status, as well as with self-rated health. Simoni and Ng (2002) examined abuse, health locus of control and perceived health among 230 predominantly poor Hispanic and African American women aged 25 to 61 years living with HIV/AIDS in New York City. Multivariate analysis revealed that controlling for relevant covariates, the powerful others and internal control subscales of the Multidimensional Health Locus of Control Scale acted as independent predictors of perceived health rather than (as hypothesized) mediators of the association between trauma and perceived health. Swinney (2002) reported that subjects tended to view God as the powerful other capable of influencing their health and well-being. Self-esteem and an internal health locus of control were found to account for 23% of the perceived variance in health status and a significant positive relationship was discovered between self-esteem and powerful others health locus of control. Though, there is an abundant literature suggesting association between health and internality yet there are some studies suggesting lack of agreement and ambiguities and that the relationship is far from established (Norman and Bennett, 1995).

Life style refers to the general pattern of living and behaving e.g. diet, exercise, sleep, etc. There are some people who have faulty habits; they may either not exercise at all or indulge in very heavy exercise. In health psychology two types of life style/behaviours have been mentioned. These are health promoting and health endangering life style/behaviours. Health promoting life style may include, taking a balanced/nutritious diet, doing exercise regularly, adequate and sound sleep, abstinence from smoking and heavy drinking etc. Smoking, heavy drinking, taking unbalanced diet, lack of exercise, irregular sleeping schedules, etc. on the contrary are health-endangering behaviours. The behaviour pattern followed by a person, predicts his health e.g. in a study of Japanese-Americans, it was found that smoking accounted for 29% of all cancers and 85 percent of lung cancers (Chyou, Nomura and Stemmermann, 1992). De Groot, Verheijden, Henauw, Schroll and Van Staveren, et al. (2004) reported that a healthy lifestyle was related to stable self-perceived health, a delay in functional dependence and mortality. Faulty lifestyle i.e. alcohol use, lack of exercise and being a current smoker were associated with poor self-rated health (Rutten, Abel, Kannas et al., 2001; Okosun, Seale, Daniel and Eriksen, 2005).

There is abundant research literature whereby the relationship between such factors as the general self-efficacy, health belief or health locus of control with health has been

examined. Though majority of studies have reported a positive relationship, yet there are studies which either failed to find such relationship or have contrary findings. Moreover, in such studies general health or psychological health has been taken up. In recent years in health psychology, the health behaviour or lifestyle choice of the person have also been examined and linked with health. The healthy lifestyle or health promoting behaviour is reported to be associated with good health and health endangering behavior has been found to be associated with poor health. Therefore, the present study was planned to examine the relationship among general self-efficacy, health locus of control, lifestyle and self-rated health. It was also intended to identify the role of general self- efficacy, health locus of control and lifestyle in predicting self-rated health.

Sample

The sample of the study comprised of 300 (150 male & 150 female) persons in the age range of 20-50 years (Mean age = 34.95, S.D=10.07 years). The sample was selected on incidental sampling basis from urban and rural areas of Rohtak district (Haryana, India).

Tools

Self Rated Health

Self-rated health is frequently used in large population surveys and is a useful "opener" in interview situations that allow interviewers to seek more nuanced and complex responses about people's perceptions of their health (Lim, Ma, Heng, Bhalla and Chew, 2007). It was measured by single item i.e. “in general, what would you say about your present health?” It was rated on 5 point scale ranging from 'excellent' (5) to 'poor' (1). A score of 5 was given to 'excellent', 4 to 'very good', 3 to 'good', 2 to 'fair', 1 to 'poor'. The score ranged from 1 to 5 and high score indicate good self rated health. Such single item measures and checklists of happiness health and wellbeing/ life satisfaction have been used extensively (Easterlin, 2001; Veenhoven, 1993).

Self-efficacy Scale

Self-efficacy was measured by self-efficacy scale (Sud, Schwarzer and Jerusalem, 1998). The scale was originally developed in German by Jerusalem and Schwarzer in 1981. It is a 10-item scale designed to assess optimistic self-beliefs used to cope with a variety of demands in life. Items were rated on 4 point scale from “not at all” (1) to “exactly true” (4). Thus, the score may range from a minimum of 10 and maximum of 40. Higher scores indicate stronger belief in self-efficacy. Studies have shown that the general self efficacy scale has high reliability and construct validity (Leganger, Kraft and Roysamb, 2000; Schwarzer, Mueller and Greenglass, 1999).

Health Locus of Control Scale (HLOC)

HLOC belief was assessed by using form A of the multidimensional health locus of control scale, developed by Wallston, Wallston and DeVellis (1978). It measures one internal and two external dimensions (chance and powerful others) of health locus of control. It consists of 18 items. There are 6 items for each of the subscales i.e. internal, chance and powerful others. Subjects were required to mark their responses using a 6 point response scale from “strongly disagree” to “strongly agree”. A scoring weight of 1 was given for strongly disagree and a weight of 6 was given for

strongly agree, thus the possible score of each dimension (internal, chance and powerful others) of health locus of control ranged from 6-36. Reliability indices for internal, chance and powerful others were 0.60, 0.58, 0.74 respectively (Moshki, Ghofranipour, Hajizadeh and Azadfallah, 2007). The Cronbach alpha coefficient was 0.68 for internal, 0.72 for powerful others and 0.66 for chance health locus of control. The concurrent validity was 0.57 for internal, 0.49 for powerful others and 0.53 for chance (Moshki, Ghofranipour, Hajizadeh and Azadfallah, 2007).

Lifestyle Check Assessment

For measuring lifestyle choices lifestyle check assessment developed by Hall and Ches (2001) was used. It is based on the U.S. Department of health and Human Services of healthy people on 2010 health objectives. It consist of 29 items related to five areas of life style i.e. practices, eating practices, mental and social health, safety and health examination. There are 7 items for practices, 9 for eating practices, 7 for mental and social health and 4 for safety and 1 item for health examination. High score indicate healthier or health promoting lifestyle.

Results and Discussion

To examine the relationship among the variables (i.e. self-reported health, health locus of control, lifestyle and self-efficacy) coefficients of correlations were calculated and the intercorrelation matrix is given in Table1. For identifying the role of health locus of control, lifestyle and self-efficacy stepwise- multiple regression was done and results are given in Table 2.

Table-1 Intercorrelation matrix (Mean and SD'S are given in the last two rows)

	SE	IN	C	PO	LS (TS)	P	EP	M&SH	S	HE	SRH
SE	1										
IN	0.21**	1									
C	0.08	0.26**	1								
PO	0.19**	0.44**	0.47**	1							
LS(TS)	0.19**	0.14*	0.13*	0.19**	1						
P	0.02	0.05	0.15*	0.04	0.69**	1					
EP	0.12*	0.10	0.10	0.12*	0.68**	0.33**	1				
M&SH	0.21**	0. 14*	0.02	0.17*	0.72**	0.23**	0.24**	1			
S	0.14*	0.07	0.10	0.17*	0.41**	0.19**	0.17**	0.12*	1		
HE	0.06	0.05	-0.02	0.14*	0.19**	-0.08	0.04	0.13*	0.19**	1	
SRH	0.24**	0.26**	0.17**	0.16**	0.55**	0.39**	0.45**	0.34**	0.23**	0.06	1
Mean	3.40	27.4	19.56	22.99	33.57	11.41	9.52	9.86	1.50	1.28	3.04
S.D	5.67	6.09	6.53	6.89	4.06	1.71	1.56	2.01	0.73	0.45	0.90

**Significant at the 0.01 level * Significant at the 0.05 level.

Index :

SE	= Self-efficacy	EP	= Eating practices
IN	= Internal	MH & SH	= Mental and Social Health
C	= Chance	S	= Safety
PO	= Powerful Others	HE	= Health exam
LS(TS)	= Lifestyle total score	SRH	= Self rated health
P	= Practice		

Table-2 Stepwise Multiple Regression of Self rated health on other variables

Model No.	Variables	Mean	Regression Coefficient (b)	SE	R	R^2	F-value
Criterion	SRH	3.04					
Predictors 1	LS Constant	33.57	0.12 -1.09	0.01 0.36	0.55	0.31	131.05 (1,298)
2	LS In Constant	33.57 27.64	0.12 0.03 -1.65	0.01 0.01 0.38	0.58	0.34	76.27 (2,297)
3	LS In EP Constant	33.57 27.64 9.52	0.10 0.03 0.08 -1.71	0.01 0.01 0.04 0.38	0.59	0.35	53.21 (3,296)
4	LS In EP SE Constant	33.57 27.64 9.52 30.40	0.09 0.03 0.08 0.02 -2.02	0.01 0.01 0.04 0.01 0.40	0.60	0.36	41.70 (4,295)

SRH - Self rated health EP-Eating behaviour
LS-Lifestyle SE-Self-efficacy

In-Internal health locus of control

It was found that except health examination (r=0.06) all other factors i.e. health locus of control (internal, chance and powerful others), lifestyle (total score, practices, eating practices, mental and social health, safety) and general self-efficacy were found to be significantly and positively associated with self-reported health (Table-1). The size of the coefficients varied from r=0.55 (for lifestyle total score), r=0.45(eating practices, r=0.39 (for practices) to as low as r=0.16 for powerful others. Stepwise multiple regression revealed (Table-2) that lifestyle (total score) was the strongest predictor of self-reported health. It accounted 31 percent(R=0.55, R^2 = 0.31) of the

variance in self-reported health. When the next significant predictor was taken up, internal health locus of control along with lifestyle (total score) accounted for 34 percent of the variance in self-reported health. Eating practices (a component of lifestyle) and self-efficacy were the third and fourth significant predictors of self-reported health. But both of these accounted only one percent additional variance (each). Thus, all the four significant predictors [Lifestyle (total score), internal health locus of control, eating practices and general self-efficacy] together accounted 36 percent of the variance in self-reported health (Table 2).

Results of the study (Table-1) revealed that general self-efficacy was significantly and positively correlated with self-rated health. It implies that those who believed that they are efficacious enough and believe in themselves had reported their health as good. Finding of the present study are in agreement with earlier study of Fallon, Wilcox and Ainswoth, (2005) reporting that self-efficacy was positively correlated with perceived health status. Schwarzer and Fuchs, (1995) also found that a strong sense of personal efficacy is related to better health. In patients with clinical manifestations of atherosclerotic vascular diseases appeared to have high levels of self-efficacy regarding medication use, exercise and controlling weight (Sol, van der Graff, van der Bijl, Goessens and Visseren, 2006).

Dimensions of health locus of control i.e. internal, chance, powerful others health locus of control found to be positively and significantly related with self-rated health. Finding attest the result of Poortinga, Dunstan and Fone (2008) reporting that health locus of control (internal, chance and powerful) were significantly associated with self rated health it seems to forms a part of the pathway between individual, neighborhood socioeconomic status and health. Johansson, Grant, Plomin et al. (2001) found modest associations between health control beliefs and self rated health. Internal health locus of control found to be the significant and positive predictor of self-rated health. This finding implies that people, who believe that they are responsible for their health, rated their health as good. Internal factors control their health tend 'to seek more health related information, remember the information better and respond more readily to messages encouraging medical examination than do those who believe in external control (Quadrel and Lau, 1989).Results of the present study do not support findings of Simoni and Ng, (2002) who reported that multidimensional health locus of control acted as independent predictor of perceived health, where as Norman, Bennett, Smith and Murphy (1998) revealed that overall health locus of control found to be weak predictor of health/ health behaviour.

Lifestyle total score was found to be significantly and positively correlated with self-rated health. Taking the components of lifestyle checklist, it was found that practices, eating practices, mental and social health and safety were significantly correlated with self-rated health and the direction was positive. Lifestyle total score emerged as strongest predictors (Table 2) of self rated health. Results are in consonance with popular belief that 'one's health is the product of one's actions' i.e. what one is doing is related with his/her health. The importance of lifestyle as a determinant of health status is also reported by Rohrer, Arif, Pierce and Blackburn, (2004). Several studies conducted in this area (e.g. Wei-yen, Stefan,

Derrick, Vineta and Kai, 2007) have also reported results similar to the present study. Results of the present study are in line with those of earlier studies of De Groot, Verheijden, de Henauw, van Staveren and Seneca (2004) reporting that a healthy lifestyle was related to stable self-perceived health. Many researchers (Rutten, Abel, Kannas et al., 2001; Okosun, Seale, Daniel and Eriksen, 2005) have reported that faulty lifestyle i.e. alcohol use, lack of exercise and being a current smoker were associated with poor self-rated health. The component of lifestyle i.e. eating practices also emerged as the significant and positive predictor of health. This implies that good eating practices like eating balanced diet leads a person to report their health as positive.

Findings of the present study have implications for the health professionals as well as for the lay man as it suggest the casual link between lifestyle, general self-efficacy, health locus of control and self rated health. The increasing incidence of diabetes, cardiovascular and other diseases is a challenge for the health professionals and the government of these countries. The intervention programs need to be focused on increasing the level of awareness as well as for the prevention and management of these illnesses and promotion of health.

References:

Bandura, A. (1977). Social learning theory.
Englewood Cliffs N.J. : Prentice Hall.

Bandura, A. (1992). Self-efficacy mechanism in psychobiologic functioning. In R. Schwarzer (Eds.). Self-efficacy: Thought control of action . Washington, DC: Hemisphere.

Bane, C., Hughes, C. M., and McElnay, J. C. (2006). The impact of depressive symptoms and psychosocial factors on medication adherence in cardiovascular disease. Patient Education and Counseling, 60: 187-193.

Bardage, C., Isacson, D., and Pedersen, N.L. (2001). Self-rated health as a predictor of mortality among persons with cardiovascular disease in Sweden. Scan Journal Public Health, 29: 13-22.

Bond, J., and Bond, S.(1994). Sociology and Healthcare.Churchill Livingstone.

Campbell, A., Converse, P., and Rodgers, W. (1976). The quality of American life. New York: Russell Sage Foundation.

Chyou, P.H., Nomura, A.M.Y., and Stemmermann, G.N. (1992). A prospective study of the attributable risk of cancer due to cigarette smoking. American Journal of Public Health, 82: 37-40.

Dahlgren, G., and Whitehead, M. (1991). Policies and strategies to promote social equity in health. Stockholm: Institute of Futures Studies.

De Groot, L.C.P.G.M., Verheijden, M.W., de Henauw, S., Schroll, M., van Staveren WA; SENECA investigators. (2004). Lifestyle, nutritional status, health and mortality in elderly people across Europe: a review of the longitudinal results of the SENECA study. Journal of Gerontology: A Biological Science and Medicinal Science, 59: 1277–1284.

Easterlin, R.A. (2001). Income and happiness: Towards a unified theory. The Economic Journal, 111: 465-484.

Fallon, E.A, Wilcox, S., and Ainsworth, B.S. (2005). Correlates of self-efficacy for physical activity in African American women. Women and Health, 41: 47-62.

Franks, P., Gold, M.R., and Fiscella, K. (2003). Sociodemographics, self-rated health and mortality in the US. Social Science Medicine, 56: 2505-2514.

Hall, D.R., and Ches, DR PH. (2001). Lifestyle check assessment. U.S. Deptt. of Health and Human Services, Wall source inc. Retrieved from http:/uanderbiltowc.wellsource.com on 7.7.2006.

Han, K., Lee, P., Lee, S., and Park, E. (2003). Factors influencing quality of life in people with chronic illness in Korea. Journal of Nursing Scholars, 35: 139-44.

Idler, E.L., Kasl, S.V., and Lemke, J.H. (1990). Self-evaluated health and mortality among the elderly in New Haven, Connecticutand Iowa and Washington Counties, Iowa, 1982–1986. American Journal of Epidemiology, 131: 91-103.

Ishizaki, T., Kai, I., and Imanaka, Y. (2006), Self-rated health and social role as predictors for 6-year total mortality among non-disabled older Japanese population. Archives of Gerontology Geriatric, 42: 91-99.

Jerusalem, M., and Schwarzer R. (1981). The General-Self Efficacy Scale. Retrieved from http://userpage.fu-berlin.de/health/selfscal.htm on 7/5/2006.

Johansson, B.,Grant, J.D., Plomin, R., and Pedersen, N.L.(2001). Health locus of control in later life: A study of genetic and environmental influences in twins aged 80 years and older. Health Psychology, 20: 33-40.

Kaplan, R.M., Sallis J.R., and Patterson, T.L. (1993). Health and Human Behaviour. New York: Mc Graw Hill.

Larsson, D., Hemmingsson, T., Allebeck, P., and Lundberg, I. (2002). Self-rated health and mortality among young men: what is the relation and how may it be explained? Scandvian Journal of Public Health, 30:259-66.

Leganger, A. Kraft, P., and Roysamb, E. (2000). Perceived self-efficacy in health behaviour research: Conceptualisation, measurement and correlates. Psychology and Health, 15: 51-69.

Lim, W.Y, Ma, S., Heng, D., Bhalla, V., and Chew, S.K. (2007). Gender, ethnicity, health behaviour and self rated health in Singapore. BMC Public health, 7: 184.

Moshki, M., Ghofranipour, F., Hajizadeh, E., and Azadfollah, P. (2007). Validity and Reliability of the multidimensional health locus of control scale for college students. BMC Public Health. Retrieved from http://www.pubmedcentral.nih.gov/articlerender.fcgi?artid=2206030 on 10.12.2008.

Mossey, J.M., and Shapiro, E. (1982). Self-rated health: A predictor of mortality among the elderly. American Journal of Public Health, 72: 800-808.

Norman, P. and Bennett, P. (1995). Health locus of control. In M. Canner and P Norman (Eds.) Predicting Health Behavior. Buckingham: Open University Press.

Norman, P., Bennett, P., Smith, C., and Murphy, S. (1998). Health locus of control and Health Behavior. Journal of Health Psychology, 3: 171-180.

Okosun, I.S., Seale, J.P., Daniel, J.B., and Eriksen, M.P. (2005). Poor health is associated with episodic heavy alcohol use: evidence from a national survey. Public Health, 119: 509-517.

Poortinga, W., Dunstan, F.D., and Fone, D.L. (2008). Health locus of control beliefs and socio-economic differences in self-rated health. Preventive Medicine, 46: 374-80.

Quadrel, M.J., and Lau, R.R. (1989). Health promotion, health locus of control and health behavior: Two field experiments. Journal of Applied Social Psychology, 19: 1497-1521.

Riazi, A., Thompson, A.J., and Hobart, J.C. (2004). Self-efficacy predicts self-reported health status in multiple sclerosis. Multiple Sclerosis, 10: 61-66.

Rohrer, J.E., Arif, A.A., Pierce, J.R., and Blackburn, C. (2004). Unsafe Neighborhoods, Social Group Activity, and Self-Rated Health. Journal of Public Health Manag Prac, 10:124-129.

Rotter, J. (1954). Social Learning and Clinical Psychology. Englewood Cliffs, NJ: Prentice. Hall.

Rutten, A., Abel, T., Kannas, L., von Lengerke, T., Luschen, G., Rodriguez Diaz, J.A., Vinck, J., and van der Zee, J. (2001). Self-reported physical activity, public health and perceived environment: Results from a comparative European study. Journal of Epidemiology and Community Health, 55:139-46

Salvo, K.B., Fan, V.S., McDonell, M.B., and Fihn, S.D.C. (2005). Predicting mortality and healthcare utilization with a single question. Health Service Research, 40: 1234-1246.

Schwarzer, R., and Fuchs, R. (1995). Changing risks behaviours and adopting health behaviours: the role for self-efficacy beliefs. In A. Bandura (Eds.). Self-efficacy in Changing Societies. New York : Cambridge University,

Schwarzer, R., Mueller, J., and Greenglass, E. (1999). Assessment of perceived general self-efficacy on the internet: Data collection in cyberspace. Anxiety, Stress and Coping, 12: 145-161

Shadbolt, B., Barresi, J., and Craft, P., (2002). Self-rated health as a predictor of survival among patients with advanced cancer. Journal of Clinical Oncology, 20: 2514-2519.

Simoni, J.M., and Ng, M.T. (2002). Abuse health locus of control and perceived health among HIV-positive women. Health Psychology, 21: 89-93.

Sol, B.G., van der Graff, Y., van der Bijl, J.J., Goessens, N.B., and Visseren, F.L. (2006). Self-efficacy in patients with clinical manifestations as vascular diseases. Patient Education and Counseling, 61: 443-8.

Sud, S., Sehwarzer, R., and Jerusalem, M. (1998). Hindi version of the General-Self Efficacy Scale. Retrieved from http://userpage.fu-berlin.De/~health/hidi.htm on 7/5/2006.

Swinney, J.E. (2002). African Americans with cancer: The relationships among self-esteem, locus of control and health perception. Research Nursing Health, 25: 371-82.

Takaki, J., and Yano, E. (2006). Possible gender differences in the relationships of self-efficacy and the internal locus of control with compliance in hemodialysis patients. BehavioralMedicine, 32: 5-11.

Veenhoven, R. (1993). Happiness in Nations, Subjective Appreciation of life in 56 Nationsl 1946-1992, Rotterdam : Erasmus University.

Wallston, K.A., Wallston, B.S., and DeVellis, R. (1978). Development of the multidimensional health locus of control (MHLC) scales. Health Educational Monographs, 6: 161-170.

Watten, R.G., Vassend, D., Myhrer, T., and Syversen, J. L. (1997). Personality factors and somatic symptoms. European Journal of Personality, 11: 57-68.

Wei-Yen, L., Stefan, M., Derrick, H., Vineta, B., and Kai, C.S. (2007). Gender, ethnicity, health behaviour and self-rated health in Singapore. BMC Public Health. 7: 184.

WHO (World Health Organization) (1946). Preamble of the constitution of the World Health organization. Geneva: WHO.

***Professor of Psychology, M.D.University, Rohtak**
**** Department of Psychology, M.D.University, Rohtak**
***** Department of Psychology and Counseling, Sultan Idris Education University(UPSI), Sultan Azlan Shah Campus,Proton City, Tanzong Malim, Perak dar ul Ridzuan, Malaysia**