

ORIGINAL ARTICLE

PERCEIVED SUSCEPTIBILITY TO CHRONIC DISEASE AMONG HEALTHY PEOPLE QUESTIONNAIRE: DEVELOPMENT, VALIDITY AND RELIABILITY AMONG YOUNG IRAQI ADULTS

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ABSTRACT

Chronic non-communicable diseases are the new emerging epidemic, and they are thought to challenge only rich countries; cardiovascular disease, cancer, diabetes, and other non-communicable diseases (NCDs) are now the leading cause of death and disability in low-income and middle-income countries, where they killed almost 8 million people younger than 60 years in 2013. Therefore, there is a need to develop a valid and reliable tool to measure the beliefs that influence people's general behaviour, and a used to measure beliefs about chronic disease perceived susceptibility. The purpose of this study was to develop and validate the use of perception questionnaire among the young Iraqi adults. A total of 200 young adults participated who are free from any chronic diseases under study, and are living in Baghdad. The questionnaire, validated by an expert's panel, translated to Arabic language, and pretested. Analyses included descriptive statistics of all the study variables, reliability estimates, and construct validity using confirmatory factor analysis (CFA). Results showed that mean age of respondents was 30 years old, majority were males 71.5%, and EFA showed that factor loading was more than 0.4. CFA results show that Chi-square (df) = 1.213(2); p value (>0.05) = 0.297. Internal consistency reliability analysis on health-related behaviour; special practice, information seeking and perceived probability of diseases have good Cronbach's a value of between 0.8 - 0.9. These findings revealed that validation is favourable and can be utilized on larger scale of sample to proceed with main study on chronic disease perceived susceptibility among healthy people.

Keywords: perception, validity, chronic disease

INTRODUCTION

Non-communicable diseases (NCDs) are the leading cause of death around the world causing death of more people than any other combined causes, and 80% of this death occurs in middle and low-income countries with cardiovascular disease, diabetes and cancers are among the top causes¹. These diseases caused, mainly, by modifiable risk factors such as sedentary lifestyle, tobacco smoking, unhealthy diet, and harmful use of alcohol. There was a trend shift of mortality in 2010 from communicable, maternal and neonatal death to NCDs².

Additionally, there has been much less attention on how healthy people think about health and illness, and how their ways of thinking relate to health-related behaviours³⁻⁵. The majority of studies focusing on patients' perceptions of illness are based upon Leventhal's common sense model of illness, which proposes that individuals construct schematic representations of illness and health-threatening conditions according to the concrete and abstract sources of information available to them⁶.

A thorough understanding of illness perceptions has shown to be pivotal in managing and assessing patient's health outcomes⁷. Illness and its treatment representations are established within the perceived self and may result in backed perceptions of the durability and competence of the physical self and its ability to functioning in various cognitive tasks and social functions⁸. For instance, regarding cervical cancer development, beliefs about individual vulnerability and the knowledge about the severity of the condition are among the factors that have been mostly linked to some women having performed a minor gynaecological procedure⁹. People's perception is difficult to measure as this, itself, might be changed within time from one state to another¹⁰. This is explained by the value placed by an individual on a particular goal; and the individual's estimation of the probability that a given action would achieve that target. Individuals show good reaction towards health when they do think they are in risk, and the risk is very serious, which may be affecting or changing their behaviour that is beneficial to them. Also, they can eliminate the barriers to health behaviour¹¹. When these variables were conceptualized in the context of health-related behaviour, the correspondences were firstly, the

desire to avoid illness or if ill, to get well; and secondly the belief that a specific health action will prevent (or ameliorate) illness, in other words, the individual's estimate of the threat of illness, and of the likelihood of being able, through personal action, to reduce that threat¹²⁻¹⁴.

According to our knowledge, there is no previous study done in Iraq in this field that touch people's belief and behaviour regarding their perceived susceptibility to major chronic diseases³. Moreover, there is comprehensive literature regarding peoples' health beliefs and their relation to various health-behaviours. However, most studies have examined illness specific beliefs and behaviours within specific groups of patients, or groups at risk from a certain illness⁴ and not the healthy people and how they think generally about their health, and health preventive behaviour. The aim of this study is to validate the questionnaire about perceived susceptibility of major chronic diseases namely stroke, diabetes mellitus, hypertension, cardiovascular disease and cancer in young adult healthy people living in Baghdad, Iraq.

METHODS

A cross sectional study was carried out with 200 respondents aged 18 to 40 years old in Baghdad, Iraq from June to August 2016 through convenient sampling. Questionnaire for the study was adopted and adapted from Hafiza et al. 2013 and Figueiras & Alvis 2007^{15, 16} and then reviewed by public health specialists and epidemiologist to ensure the content validity of the questionnaire. Since it was conducted in different environment, so there is need to evaluate the situations in which previous studies were done, and determining the application of the previous studies to the current one especially for population and setting¹⁷. The use of the questionnaire developed by previous studies is efficient, and also allows comparability of data and findings¹⁸. Concerning the face validation of the questionnaire, pretesting was done by distributing it to ten people to emphasis on its comprehensibility as well as its readability. Modifications to the questions were then conducted after taking into account all the inquiries and suggestions given by the respondents.

The questionnaires were translated to Arabic language by linguistic, then distributed to respondents, then translated back to English. All comments were taken into consideration and put them in a lay-person language by providing the meaning and definitions of some scientific terms that were in the questionnaire form. The

questionnaire measured for its internal consistency to assess whether concepts were able to represents what it measures. For validity, it measures what it supposed to measure. It has two types: content validity examines the operationalization against the relevance content of the domain construct. It indicated whether the content covered the topic evidently, and Construct validity the extent to which a research instrument measures the intended constructs

The questionnaire, after modification, had been distributed to 200 respondents. They met the eligibility criteria of being 18 to 40 years of age. Free from any chronic disease under study which is stroke, diabetes mellitus, hypertension, cardiovascular disease (CVD) and cancer. Those who had any of the aforementioned diseases were excluded, or those who refused to participate.

A total of 32 items in 8 sections were included in the questionnaire, one section was sociodemographic characteristics. Questions on family history for the chronic diseases under study were asked (yes, no) other sections were included questions about health behaviour, preventive behaviour, health information seeking, special practice. Psychological components included questions on Treatment control (whether the disease can be cured or not), consequences (the disease has financial sequel, impact on patient relatives), timeline (whether the disease will be for short or long term), emotional (being upset, depressed, or anxious)

These questions were designed in likert scale of (1 to 5) graded from strongly disagree to strongly agree. Those with positive health behaviour and activity will be graded towards five. Negative scoring questions were reversed. Questions were summed to get over all score. Sample characteristics were described using frequency and percentage. For perceived susceptibility of healthy people summative score were used. Internal consistency reliability analysis was tested by using Cronbach's alpha α . SPSS version 21 were used for statistical analysis with Confirmation of model fit was conducted using analysis of moment structures (AMOS) software and structural equation modelling (SEM).

RESULTS

For descriptive results (Table-1) it showed that Respondents selected for the study answered all questions and they all were analysed. It showed that majority of the sample was male (71.5), married (60.5), gained tertiary level of education (41.5%), employed (57.5), non-smoker (61%), and no drink of alcohol (82.2%).

Table 1: Sociodemographic characteristics (N=200 respondents)

variable	frequency	percent
Gender		
male	143	71.5
female	57	28.5
Marital status		
married	121	60.5
single	78	39.5
Education level		
no schooling	5	2.5
primary	66	33.0
secondary	46	23.0
tertiary	83	41.5
Employment		
employed	115	57.5
non-employed	85	42.5
Smoking		
smoker	78	39.0
non-smoker	122	61.0
Alcohol drink		
drink	36	18.0
no drink	164	82.2

Table 2: Family history of chronic disease

Disease	Frequency (%)	
Stroke		
yes	1	(0.5)
no	199	(99.5)
Diabetes		
yes	62	(31.0)
no	138	(69.0)
Hypertension		
yes	100	(50.0)
no	100	(50.0)
CVD		
yes	53	(26.5)
no	147	(73.5)
Cancer		
yes	16	(8.0)
no	184	(92.0)

Regarding their family history of chronic disease (Table-2) the results revealed that 50% of them had close relative with hypertension. Another 31% had family member with diabetes mellitus. CVD family member was 26.5%. Family member with cancer was represented by 8%, and 0.5% was represented by family member with stroke.

Table 3 showed rotated matrix results with all factors have factor loading more than 0.4. There were strong positive correlations between subscales, but not with other domains. Kaiser-

Meyer-Olkin was 0.71 and Bartlett's test of Sphericity is significant <0.0001

Variables that caused misspecification by achieving low factor loading were excluded. Confirmation of model fit was conducted using analysis of moment structures (AMOS) software and structural equation modelling (SEM) with the following output as shown in figure (1)

Chi-square (df) = 1.213(2); p value (>0.05) = 0.297; GFI (>=0.95) = 0.995

AGFI (>=0.9) = 0.964; Pratio = 0.200; RMSEA= (<0.08) = .033

Table 3: Rotated component matrix

Factors	Disease probability	Information seeking	Perceived severity	Special practice
Herbs	-	-	-	0.57
Nutritional	-	-	-	0.53
Labelling	-	-	-	0.53
Recreation	-	-	-	0.53
Newspaper	-	0.51	-	-
Radio/TV	-	0.75	-	-
Internet surf	-	0.69	-	-
Consult health person	-	0.61	-	-
Consult family	-	0.47	-	-
Perceived severity	-	-	-	-
HT	-	-	0.82	-
Diabetes	-	-	0.75	-
Stroke	-	-	0.66	-
CVD disease	-	-	0.76	-
Cancer	-	-	0.55	-
Risk perception HT	0.68	-	-	-
Diabetes	0.75	-	-	-
Stroke	0.84	-	-	-
CVD disease	0.78	-	-	-
Cancer	0.82	-	-	-

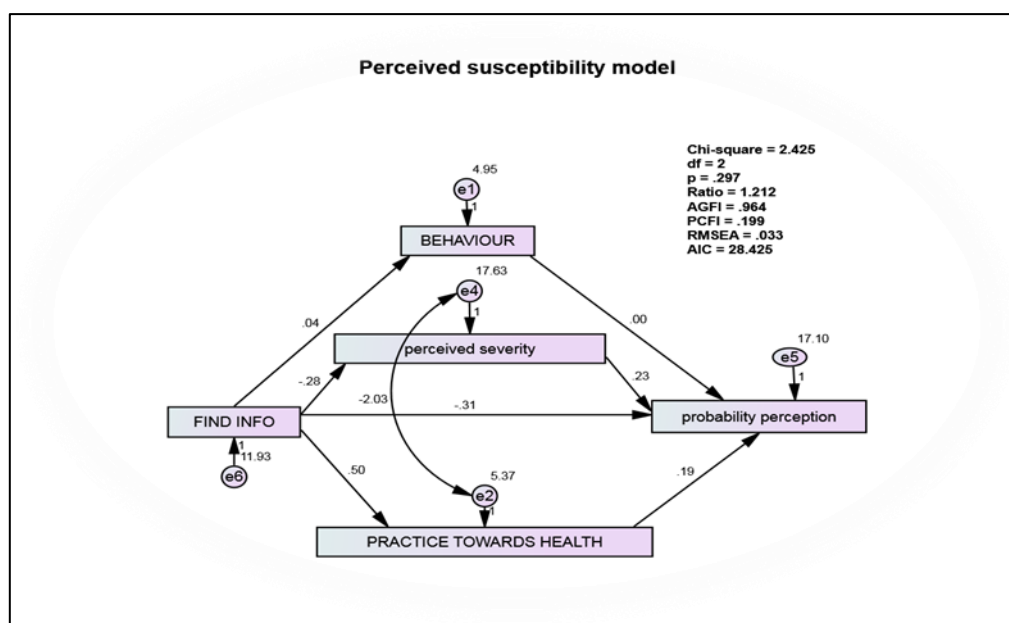


Figure 1- SEM modelling of perceived susceptibility towards chronic disease

Internal consistency reliability analysis (Table4) was tested by using Cronbach's alpha α . Results revealed that preventive behaviour factors Cronbach's α was 0.8, for health information search was 0.73, for chronic disease (0.82-0.86),

and for psychological component was 0.94. The higher the coefficient, the more consistent is the questionnaire items in measuring the variables under study. The Cronbach α was set at 0.7 for this current study¹⁹.

Table 4: Internal consistency and reliability analysis

Factors	Mean(SD)	Cronbach α
exercise	4.70(3.23)	0.80
smoking	4.99 (3.31)	
alcohol	2.76 (0.94)	
fast food	2.99 (0.19)	
snack	3.58 (1.17)	
herbs	3.43 (1.39)	
nutritional labelling	2.56 (0.98)	
health screening	2.37 (1.33)	
recreation	3.47 (1.95)	
newspaper	2.42 (1.01)	
Radio/TV	3.18 (0.96)	0.73
internet surf	3.35 (1.05)	
consult health staff	2.95 (0.38)	
consult others	3.23 (0.78)	
perceived severity HT	3.31 (0.79)	
DM	3.44 (0.90)	
Stroke	3.37 (0.77)	
CVD disease	3.24 (0.71)	
cancer	3.41 (0.75)	
risk perception HT	3.42 (1.01)	0.82
DM	2.60 (1.18)	
Stroke	2.90 (1.88)	
CVD disease	2.98 (1.39)	
cancer	3.06 (1.22)	
treatment control	3.47 (1.18)	
timeline	3.35 (0.83)	
consequences	3.23 (0.98)	
emotional	2.86 (0.97)	0.86

DISCUSSION

The aim of this study was to develop empirically validated the measurement properties of the questionnaire to be used as a tool to measure the perceived susceptibility towards chronic disease. To our knowledge, this was the first work to be conducted in Iraq concerning the questionnaire validation for perceived susceptibility of chronic disease. Cause and causal symptoms were excluded from this study²⁰ and some questions from consequences like "This illness strongly affects the way the patient sees himself as a person" and "This illness is very serious" were dropped as they were not clear.

Our findings revealed that behavioural components like health practice and health information search showed satisfactory results (73%). Psychological components like timeline, consequences and emotional subscales also yielded good results (94%). Mostly respondents are familiar with some of chronic diseases such as diabetes and hypertension as there is almost 50% of positive family history to these illnesses. These factors supported by health belief model trying to explain and predict health behaviour of the people at risk of getting a chronic disease which proposes that an individual's cognitive and

emotional representations of a health threat guide how he or she copes with the threat²¹.

Our results were consistent with previous studies conducted in Australia on breast and cervical cancer perception on healthy respondents showed that strong emotional factors were associated with control belief with 77% Cronbach's α ²². Similarly, results were consistent with Hafiza et al, 2013 on healthy Malaysian respondents on their chronic disease perceived susceptibility (0.5%-0.8% Cronbach's α)¹⁵.

Furthermore, a study conducted in Oman semi-urban neighbourhood with 563 adults to explore their perception towards diabetes. Questions related to diabetes knowledge, symptoms and risk factors were asked, in addition to overall diabetes perception. Cronbach's α for the study was 0.86²³. Additionally, a study on 900 respondents in was conducted in Kuwait to measure perception to cardiovascular disease. Their questionnaire was composed of different sections; one part for sociodemographic, second part for medical history, third part for cardiovascular disease knowledge with Cronbach's α was 0.92 for the study⁴. A study conducted among 1539 university students in Netherlands to evaluate vulnerability to disease, they used 15-item questionnaire concerning disease susceptibility, and their scale consistency was 0.83²⁴

Similarly, perception to diabetes was studied among 790 participants in the US adults where questionnaire covering most of illness items was used. They found good internal consistency with Cronbach's α range from 0.6-0.83²⁵

There are relatively few studies in Arabic countries have touched healthy people behaviour and how their beliefs affect their health and illness-related behaviour²⁶. Furthermore, research specific to NCDs are scarce although they are the leading cause of death in Iraq. Thus developing a tool would be helpful for healthy people to examine the relationship between their beliefs and models of illness towards preventive health actions²⁷.

CONCLUSION

A questionnaire has been adapted in order to better assess representations related to peoples perceived susceptibility to chronic diseases in Bagdad. Satisfactory internal consistency and construct validity support the use of illness perception domains in research. This tool will facilitate the evaluation of representations, which might help targeting people's belief concerning their current health condition.

LIMITATIONS

Few limitations of this study are worth mentioning. First the sample may not be representative of all Iraqi population. Secondly, some items in the questionnaire might be confusing to the respondents. However, these findings lay the foundation for future studies concerning the disease perception in Iraq.

ACKNOWLEDGMENT

We acknowledge support and fund provided by Medical Faculty, Universiti Kebangsaan Malaysia for the study with ethical no. FF-2016-261

REFERENCES

1. Al Hilfi, T. K., Lafta, R., & Burnham, G. Health services in Iraq. *The Lancet* 2013; **381**:9870, 939-948.
2. Abdul Rahim, H. F., Sibai, A., Khader, Y., Hwalla, N., Fadhil, I., Alsiyabi, H. Hussein, A. Non-communicable diseases in the Arab world. *The Lancet* 2014; **383**:9914, 356-367.
3. Hay, J. L., Orom, H., Kiviniemi, M. T., & Waters, E. a. "I Don't Know" My Cancer Risk: Exploring Deficits in Cancer Knowledge and Information-Seeking Skills to Explain an Often-Overlooked Participant Response. *Medical Decision Making* 2015; **35**:4, 436-445.
4. Abdelmoneim Awad and Hala Al-Nafisi .Public knowledge of cardiovascular disease and risk factors in Kuwait: a cross-sectional survey\r. *BioMed Central Public Health* 2014; **14**: 1131.
5. Walker, M. J., Mirea, L., Glendon, G., Ritvo, P., Andrulis, I. L., Knight, J. A., & Chiarelli, A. M. Does perceived risk predict breast cancer screening use? Findings from a prospective cohort study of female relatives from the Ontario site of the Breast Cancer Family Registry. *Breast* 2014; **23**:4, 482-488.
6. Weinman, J. & Petrie, K. Illness perceptions: a new paradigm for psychosomatics Journal of Psychosomatic Research 1997; **42**:2, 113-116.
7. Muayyad M. Ahmad, Latefa Dardas, Lubna Dardas, Huthaifa Ahmad. Colorectal cancer in Jordan: prevention and care. *Global Health Promotion* 2014; **22**:4,39-47
8. Leventhal, H., Weinman, J., Leventhal, E. a, & Phillips, L. A. Health Psychology: the Search for Pathways between Behaviour and Health. *Annual Review of Psychology* 2008; **59**: 477-505.
9. Castro, E. K. de, Peuker, A. C., Lawrenz, P., & Figueiras, M. J. Illness Perception, Knowledge and Self-Care about Cervical Cancer. *Psicologia: Reflexão E Crítica* 2015; **28**:3, 483-489.
10. Anagnostopoulos, F., Dimitrakaki, C., Fitzsimmons, D., Potamianos, G., Niakas, D., & Tountas, Y. Health beliefs and illness perceptions as related to mammography uptake in randomly selected women in Greece. *Journal of Clinical Psychology in Medical Settings* 2012; **19**:2, 147-164.
11. Mickevičienė, A., Vanagas, G., Jievaltas, M., & Ulys, A. (2013). Does illness perception explain quality of life of patients with prostate cancer *Medicina (Kaunas, Lithuania)* 2013 ;**49**: 5, 235-41
12. Castillo, A. Del, Godoy-Izquierdo, D., Vázquez, M. L., & Godoy, J. F. (2013). Illness beliefs about hypertension among non-patients and healthy relatives of patients. *Health* 2013; **5**:4, 47-58.
13. Lawson, B., Aarsen, K. Van, Mhi, C. L., & Fcfp, W. P. Self-Reported Health Beliefs , Lifestyle and Health Behaviours in Community-Based Patients with Diabetes

- and Hypertension. *Canadian Journal of Diabetes* 2013; 35:5, 490-496
14. Allen, P., Sequeira, S., Best, L., Jones, E., Baker, E. A., & Brownson, R. C. Perceived benefits and challenges of coordinated approaches to chronic disease prevention in state health departments. *Preventing Chronic Disease* 2014; 11, E76
15. Hafizah, P., Zaleha, M. I., & Shamsul, A. S. The Validation of Questionnaire on Risk Perception of Developing Five Most Common Non-Communicable Diseases in Malaysia, *Journal of Nursing and Health Science* 2013; 1:2, 29-35.
16. Figueiras, M. J., & Alves, N. C. Lay perceptions of serious illnesses: An adapted version of the Revised Illness Perception Questionnaire (IPQ-R) for healthy people. *Psychology & Health* 2007; 22:2, 143-158.
17. AlGhamdi, K. M. Beliefs and perceptions of Arab vitiligo patients regarding their condition. *International Journal of Dermatology* 2010; 49:10, 1141-1145.
18. Moss-Morris, R., Weinman, J., Petrie, K. J., Horne, R., Cameron, L. D., & Buick, D. The revised Illness Perception Questionnaire (IPQ-R). *Psychology & Health* 2002; 17:1, 1-16
19. Heale, R. & Twycross, A. 2015. Validity and Reliability in Quantitative Research. *Evidence-Based Nursing* 2015; 21:1
20. Goodman, H., Firouzi, A., Banya, W., Lau-Walker, M., & Cowie, M. R. Illness perception, self-care behaviour and quality of life of heart failure patients: A longitudinal questionnaire survey. *International Journal of Nursing Studies* 2013; 50:7, 945-953
21. Chung, C., & Lee, S. J. Estimated risks and optimistic self-perception of breast cancer risk in Korean women. *Applied Nursing Research* 2013; 26:4, 180-185.
22. Petrak, A., Sherman, K. A., & Fitness, J. (2013). Validation of the Croatian and Lebanese Revised Illness Perception Questionnaires for Healthy People (IPQ-RH). *European Journal of Cancer Care* 2013; 24:3, 355-366
23. Al Shafae, M. a, Al-Shukaili, S., Rizvi, S.G. a, Al Farsi, Y., Khan, M. a, Ganguly, S.S., Afifi, M. & Al Adawi, S. 2008. Knowledge and perceptions of diabetes in a semi-urban Omani population. *BMC public health* 8: 249.
24. Duncan, L.A., Schaller, M. & Park, J.H. 2009. Perceived vulnerability to disease: Development and validation of a 15-item self-report instrument. *Personality and Individual Differences* 47(6): 541-546. <http://dx.doi.org/10.1016/j.paid.2009.05.001>
25. Stetson, B., Schlundt, D., Rothschild, C., Floyd, J.E., Rogers, W. & Mokshagundam, S.P. 2011. Development and validation of The Personal Diabetes Questionnaire (PDQ): A measure of diabetes self-care behaviours, perceptions and barriers. *Diabetes Research and Clinical Practice* 91(3): 321-332. <http://dx.doi.org/10.1016/j.diabres.2010.12.002>
26. Knowles, S., Swan, L., Salzberg, M., Castle, D., & Langham, R. Exploring the Relationships between Health Status, Illness Perceptions, Coping Strategies and Psychological Morbidity in a Chronic Kidney Disease Cohort. *The American Journal of the Medical Sciences* 2014; 4:271-6
27. Nouredine, S., Massouh, A. & Froeliche. Perceptions of heart disease in community-dwelling Lebanese. *European Journal of Cardiovascular Nursing* 2013; 12(1): 56-63.