Received: 11th October 2015 Accepted: 06th January 2016 Conflicts of Interest: None

Source of Support: Nil

Original Research

Doi: 10.2047/jioh-08-03-03

Validation of Arabic Questionnaire on Impact of Gulf Council Countries Cigarette Package Warning Labels

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How to cite the article:

Ahmed AE, Alwadey AM, Areabi HA. Validation of Arabic questionnaire on impact of Gulf Council Countries cigarette package warning labels. J Int Oral Health 2016;8(3):313-318.

Abstract:

Background: A standard Arabic questionnaire concerning the effect of health warnings on cigarette package labels is lacking in the Arabic world. This questionnaire may be useful to assess smokers' awareness of cigarette package warnings and the health risks of smoking. The aims of the current study are (i) To develop a new Arabic questionnaire that can assess the impact of cigarette package warnings on smokers relative to their awareness of the health risks of smoking, (ii) to assess its reliability, and (iii) to assess construct validity using factor analysis.

Materials and Methods: A pilot cross-sectional study, including 447 Saudi smokers, was used because Gulf Council Countries (GCC) countries enforce graphic health warnings on all cigarette packages. A standard Arabic questionnaire was developed by the Ministry of Health, Saudi Arabia to measure the impact on smokers relative to the GCC graphic health warnings on cigarette packages. The questionnaire included nine items.

Results: The results suggest that the questionnaire is reliable and internally consistent with Cronbach's alpha of 0.89, 0.90, and 0.92 for Picture 1 "Early Death," Picture 2 "Secondhand smoking," and Picture 3 "Diseases," respectively. The factor analysis resulted in a two-factor solution accounting for the Picture 1 "Early Death" and Picture 2 "Secondhand smoking;" however, the Picture 3 "Diseases" resulted in only a one-factor solution.

Conclusions: The study suggests that the questionnaire regarding Arabic health warnings on cigarette packages is valid and reliable to communicate the health risks of smoking among smokers. Accordingly, we recommend a community-based study to include a large number of smokers across all GCC countries to assess smokers' awareness of package warnings and the health risks of smoking.

Key Words: Cigarette packages, Gulf Council Countries, health warnings, smoking, tobacco risks

Introduction

Although cigarette smoking is a serious public health concern that leads to approximately 5 million deaths yearly worldwide,[1] it is very common worldwide,[2,3] especially in Saudi Arabia.[4,5] Several studies have reported a high prevalence of cigarette smokers in Saudi Arabia. Bassiony conducted a systematic review on the prevalence of cigarette smoking in Saudi Arabia.[4] The study concluded that cigarette smoking is prevalent among Saudis of various age groups. According to several studies, the prevalence of cigarette smoking among Saudi adults was found to range between 2.4% and 52.3%.[4-7]

The prevalence of cigarette smoking in Saudi Arabia among high school students was 20%.[8] Studies have shown that the prevalence of cigarette smoking in Saudi Arabia among college or university students ranges from 2.4% to 37%.[8-14] Several studies have suggested that cigarette smoking may increase the risk of lip cancer,[15,16] heart disease,[17] obstructive pulmonary disease,[18] acute eosinophilic pneumonia,[19] and other internal and new diseases that may be linked to smoking. Recently, several studies found a relationship between smoking and hair loss[20] and smoking and premature skin aging.[21]

Tobacco consumption in the Arab world is increasing due to the widespread advertisements of tobacco companies. Like other countries, in 2012, Saudi Arabia started using illustrated and text warnings on cigarette packages to make smokers aware of the risks and to illustrate the dangers of smoking. However, it not yet clear that these warning pictures and texts on cigarette packs are effective or that they increase the intention to quit smoking among Saudi smokers. Several studies supported warning pictures and texts on cigarette packs due to their positive impact on smokers to quit smoking. More than 90% of the youth of Canada acknowledged that picture messages on tobacco packages provided them with important information about the dangers of smoking and that the information was accurate and showed smoking to be less attractive.[22] 67% of smokers in Brazil reported they have already felt like quitting smoking and 73% reported they felt like quitting smoking after being exposed to the new warnings on packages.[23] A telephone survey was conducted with four representative cohorts of adult smokers in Canada, the United States, the UK, and Australia to examine the effectiveness of health warnings on

cigarette packages. According to the authors, the effectiveness of warnings on cigarette packages could vary considerably across countries.[24]

The current study was developed to examine the effectiveness of health warnings on cigarette packages in the Saudi Arabia. The study describes the reliability and the construct validity of a questionnaire designed to assess the effectiveness of the health warnings in Saudi Arabia as well as the effectiveness of health warnings on cigarette packages in four other countries. Saudi Arabia has implemented three different health warnings on cigarette packages to increase the motivation to quit smoking among Saudi smokers. The three-picture warnings deliver messages on the tobacco risks of early death, secondhand smoking, and diseases; therefore, a standardized questionnaire is needed to assess the effectiveness of the health warnings on cigarette packages in Saudi Arabia.

Materials and Methods

This was a pilot cross-sectional study including Saudi smokers ($n = 447$) recruited from the Western, Eastern, Southern, and Central regions of Saudi Arabia. The study has been approved by the Ministry of Health (MOH), Saudi Arabia. A survey was developed and conducted by the Saudi MOH between May 2014 and July 2014. Data were gathered from a total of seven cities. We targeted smokers from the largest shopping malls located in the north, east, west, middle, and south of each city. We defined an individual as a smoker if that person smoked at least 100-lifetime cigarettes or five packs. Smokers who agreed to participate were asked to read and sign the informed consent form and then complete the survey. The inclusion criteria were: Male or female smokers aged 18 years and older. The following socio-demographic characteristics were collected: Age, gender, marital status, education, region, and monthly income.

The Gulf Council Countries (GCC) Standardization Organization (GSO) has developed several labels for tobacco product packages. Health warnings on cigarette packages became mandatory August 9, 2012, in all GCC countries. In this study, we presented three health warnings on cigarette packages that were recommended by GSO to examine the ability of the questionnaire to capture the effectiveness of the pictorial and text warnings on cigarette packages and convince smokers to seriously consider quitting. The instrument included 9 items with a scale from 1 (Not at all) to 5 (Yes, very dramatically). The survey included the following items: "The picture drew your attention?" "Is it real? (It can happen to the smoker)" "Are you familiar with the image (Have you seen it before)?" "Does the picture raise any concerns?" "Does the image make people worry more about the dangers of smoking?" "Does the picture help prevent young people from starting to smoke?" "Does the picture encourage people to stop smoking?" "Is the picture suitable as a health warning for smoking?" and "Is the warning message on the picture suitable as a health warning?"

Statistical analyses

Data were analyzed using IBM SPSS Statistics 22.0 (SPSS, Inc., Chicago, IL, USA). Internal consistency of the items was examined for each image using Cronbach's alpha. Factor analysis with Quartimax rotation was carried out to investigate the dimensionality of the questionnaire. A factor with an Eigenvalue greater than 1 (one) was extracted.

Results

We included 447 smokers who smoked at least 100 cigarettes in their lifetime and whose age ranged from 18 to 61 years. Sample characteristics are presented in Table 1. The mean age was 30.7 (standard deviation ±8.5) years. The majority of the sample participants (87%) were males, and 88.6% were Saudi. Approximately half (51.1%) of the sample were married, 43.5% were single, and 5.4% were divorced or widowed. Only 2.2% of the participants were uneducated, 44.7% could read and write but had not completed high school, 45.6% held a diploma or bachelor's degree, and 7.4% held a postgraduate degree. Nearly 10% reported no income, 10.2% reported income less than SR 1500, 28.7% reported income between SR 1500-5000, 30.5% reported income between SR 5000-10000, 12.4% reported income between SR 10001-15000, 5% reported income between SR 15001-20000, and 3.8% reported income higher than SR 20000.

According to the reliability analyses, the responses on Picture 1 "Early Death" proved to be internally consistent with Cronbach's alpha = 0.89. Factor analyses with Quartimax rotation resulted in 9 items on 2 components that explain 67.4% of the variance in Picture 1 "Early Death" (Factor 1 $\alpha = 0.90$; Factor 2 $\alpha = 0.72$). Factor 1 consists of 6 items reflected mainly on stopping smoking with factor loadings between

Table 1: Sample characteristics.

Selected characteristics	Levels	*n*=447 (%)
Gender	Male	401 (89.7)
	Female	46 (10.3)
Marital status	Married	228 (51.1)
	Single	194 (43.5)
	Divorced/widow	24 (5.4)
Level of education	Uneducated	10 (2.2)
	Secondary/read and write	199 (44.7)
	Diploma or bachelor	203 (45.6)
	Higher education	33 (7.4)
Region	Central	174 (38.9)
	Eastern	95 (21.3)
	Western	131 (29.3)
	Southern	47 (10.5)
Monthly Income	No income	41 (9.3)
	less than 1500	45 (10.2)
	1500-5000	127 (28.7)
	50001-10000	135 (30.5)
	10001-15000	55 (12.4)
	15001-20000	22 (5.0)
	Higher than 20000	17 (3.8)
Age, range (18-61 years)	Mean±SD	30.7±8.5

SD: Standard deviation

0.713 "Is the warning message on the picture suitable as a health warning?" and 0.879 "Does the picture encourage people to stop smoking?." Factor 2 consists of three items focused mainly on concerns about smoking with factor loadings between 0.607 "The picture drew your attention?" and 0.751 "Is it real? (It can happen to the smoker)" (Table 2).

The reliability analyses suggest that the responses on Picture 2 "Secondhand smoking" are reliable with Cronbach's alpha = 0.90. Factor analyses with Quartimax rotation resulted in 9 items on 2 components that explain 69.9% of the variance in Picture 2 "Secondhand smoking" (Factor 1 α = 0.90; Factor 2 α = 0.76). Similar to Picture 1 "Early Death," Factor 1 consists of six items reflecting mainly on stopping smoking with factor loadings between 0.718 "Does the pictures raise any concerns?" and 0.883 "Does the picture encourage people to stop smoking?" Factor 2 consists of three items focused mainly on concerns about smoking with factor loadings between 0.641 "The picture drew your attention?" and 0.736 "Is it real? (It can happen to the smoker)?" (Table 3).

The reliability analyses indicated that the responses on Picture 3 "Diseases" are reliable with Cronbach's alpha = 0.92. Factor analyses with Quartimax rotation of the scale revealed 9 items on a single-component that explains 61.4% of the variance in Picture 3 "Diseases." The single-component reflected mainly on the concerns and dangers of smoking with factor loadings between 0.685 "The picture drew your attention?" and 0.885 "Does the picture make people more worried about the dangers of smoking?" (Table 4 and Figure 1).

Table 2: Factor analysis and factor loadings for picture 1 (early death).

Item	Component	
	1	2
The picture drew your attention?	0.451	0.607
Is it real? (It can happen to the smoker)	0.393	0.751
Are you familiar with the picture (Have you seen it before)?	0.289	0.734
Does the picture raise any concerns?	0.731	0.376
Does the picture make people more worried about the dangers of smoking?	0.810	0.119
Does the picture help prevent young people from starting to smoke?	0.857	0.005
Does the picture encourage people to stop smoking?	0.879	−0.008
Is the picture suitable as a health warning for smoking?	0.809	0.067
Is the warning message on the picture suitable as a health warning?	0.713	0.135
% variance explained	53.7	12.4
Initial Eigenvalues	4.8	1.1

Table 3: Factor analysis and factor loadings for Picture 2 (Secondhand smoking).

Item	Component	
	1	2
The picture drew your attention?	0.454	0.641
Is it real? (It can happen to the smoker)	0.488	0.713
Are you familiar with the picture (Have you seen it before)?	0.332	0.736
Does the picture raise any concerns?	0.718	0.437
Does the picture make people more worried about the dangers of smoking?	0.835	0.149
Does the picture help prevent young people from starting to smoke?	0.836	0.105
Does the picture encourage people to stop smoking?	0.883	−0.001
Is the picture suitable as a health warning for smoking?	0.843	0.043
Is the warning message on the picture suitable as a health warning?	0.758	0.029
% variance explained	57.3	11.9
Initial eigenvalues	5.2	1.1

Table 4: Factor analysis and factor loadings for Picture 3 (diseases).

Item	Component Single
The picture drew your attention?	0.685
Is it real? (It can happen to the smoker)	0.717
Are you familiar with the picture (Have you seen it before)?	0.594
Does the picture raise any concerns?	0.834
Does the picture make people more worried about the dangers of smoking?	0.885
Does the picture help prevent young people from starting to smoke?	0.849
Does the picture encourage people to stop smoking?	0.863
Is the picture suitable as a health warning for smoking?	0.825
Is the warning message on the picture suitable as a health warning?	0.751
% variance explained	61.4
Initial eigenvalue	5.5

Discussion

Cigarette smoking habits are prevalent among Saudis,[4,5,7,25-27] and thus, the intention behind this work is laudable. In 2012, Gulf Cooperation Council (GCC) countries enforced pictorial and text health warning on all cigarette packs. However, the effectiveness of this pictorial and text health warnings has not yet been explored. A questionnaire was developed by the Saudi MOH to assess illustrated graphic health warnings on cigarette packages. An initial task is to determine the construct validity of the questionnaire and assess its reliability so that it can be widely used in GCC countries. Table 5 has shown the English questionnaire on the impact of GCC cigarette package warning labels. We believe that the results of this study should be addressed to the entire Arabic world.

Factor analysis of the questionnaire revealed a two-component model that provided good quality of fit to the responses on Picture 1 "Early Death" and 2 "Secondhand smoking." However, factor analysis of the responses on Picture 3 "Diseases" yielded a single-component. The internal consistency coefficients (0.89 for Picture 1 "Early Death," 0.90 for Picture 2 "Secondhand smoking," and 0.92 for Picture 3 "Diseases") were highly acceptable. This questionnaire can be used to study the perceptions of smokers belonging to the GCC towards the warning labels on cigarette packs.

A well-constructed and epidemiological study is warranted that addresses health knowledge and effectiveness of cigarette warning labels and intentions to quit smoking among Arabic

Table 5: Questionnaire on impact of GCC cigarette package warning labels.					
Questionnaire	**Not at all**	**No**	**I don't know**	**Yes (somewhat)**	**Yes (very dramatically)**
The picture drew your attention?					
Is it real? (It can happen to the smoker)					
Are you familiar with the picture (Have you seen it before)?					
Does the picture raise any concerns?					
Does the picture make people more worried about the dangers of smoking?					
Does the picture help prevent young people from starting to smoke?					
Does the picture encourage people to stop smoking?					
Is the picture suitable as a health warning for smoking?					
Is the warning message on the picture suitable as a health warning?					
GCC: Gulf council countries					

Figure 1: Arabic and English Gulf Council Countries warnings on the package.

speakers who smoke cigarettes in various GCC or Arab countries. The outcome of such study may indicate that illustrated and text health warning on cigarette packages are effective in increasing awareness of the health risks of smoking among Arab smokers. Our study findings support the use of the proposed survey to present evidence about the importance of warning labels on cigarette packs, so that the health system, educational programs, media sources, and public policies address smokers' knowledge about the health risks of smoking.

There are several limitations to this study. The questionnaire used in this study was based on being self-administered, and it

measures smokers' perception of GCC tobacco labels regarding the health risks of smoking. The questionnaire did not ask questions about the size of the pictures or text information regarding the danger of cigarette smoking. There are, however, several strengths to the study. We were able to recruit a significant sample of smokers from four regions of Saudi Arabia. Our sample is well-suited to represent the smokers' population of various age groups.

Conclusions

The study suggests that the questionnaire regarding Arabic health warnings on cigarette packages is valid and reliable to communicate the health risks of smoking among smokers, and they can be used as interventions to quit smoking. We suggest that it would be productive to design and implement a community-based study, one which includes large numbers of smokers across all GCC countries, to assess the impact on smokers after reading the package warnings regarding the health risks of smoking.

Acknowledgement

The study has been approved and funded by the Ministry of Health (MOH), Saudi Arabia. A very special thank to the Tobacco Control Program and Saudi MOH for developing the Arabic questionnaire to assess the impact of cigarette package warnings on smokers relative to their awareness of the health risks of smoking. We are very thankful to the Gulf Council Countries (GCC) Standardization Organization (GSO) for developing several labels for tobacco product packages.

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