Assessing Validity and Reliability of Hookah Dependence's Questionnaire

Zahra pourmohammad shandiz
Ms in General Psychology, Ferdowsi University of Mashhad, Mashhad, Iran
azadeh.poormohamad@gmail.com

Abstract: This current study aims to assess validity and reliability of questionnaire of Hookah dependence. The current sturdy has descriptive-analytical method of cross-sectional type in order to determine validity and reliability of hookah dependence's questionnaire for people ranged from 18 to 60 years of age in Mashhad city. The population of this study is all hookah consumers. The sample is 120 hookah consumers, ranged from low- to high-smoking, chosen by purposefulsampling method while attending recreationand tourist places (given that intended society has specific properties). The tool of study consists of researcher-made questionnaire, having 12 items, isbased on five-point Likert Scale ranging from always to never. Using statistical software spss with exploratory factor analysis and principal component analysis in analysis, research questionsare examined. To determine validity, Cronbach's alpha and split-half method are used. Formal Validity of the questionnaire is examined and approved by four relevant professors. In all questions, achieved average was higher than 4. Totally, assessing the professors' views suggest formal validity of given tool. Exploratory factor analysis is used to assess the construct validity as well. The result of this study is that exploratory factor analysis is used to determine latent factors in tendency tohookah. In first step performing exploratory factor analysis shows that KMO index in the current study is 0.79 being acceptable rate and suggesting that selected sample size (n=120) is enough to perform analysis. Barthel Index in reviewing adequacy matrix is 303.7 being significant in P≤0.01 level. That is, achieved matrix has necessary adequacy and the data of this research has the ability of factorization. The correlation matrix suggests that the value of KMO for every element in questionnaire is more than 0.7 indicating adequacy of this index for every element of questionnaire. In addition to this review, Reproduced and residual correlations show that the figures related to residual correlation is small for all questions and this means that factor analysis gives a good explanation of data. Three factors have ability to explain about 61.67% of variance. According to varimax rotation, reviewing the content of each factor shows factor 1, interest in hookah smoking, factor 2, spending time and money, and factor 3, confrontation with opposition. Also Cronbach's alpha coefficient is used to assess reliability of tool. Calculated alpha coefficient for questionnaire is 0.79 that is acceptable rate. Achieved alpha coefficient in factor 1 (interest in hookah smoking) is 0.83, in factor 2 (spending time and money) 0.74 and in factor 3 (confrontation with opposition) 0.73. In addition to Cronbach's alpha coefficient, split-half method is used. Reported correlated coefficient for odd and even questions of test is 0.83 suggesting strong correlation between two parts, so the reliability of and validity of tool are approved.

Key Words: reliability, validity, hookah dependence.

Introduction

Tobacco smoking is cause of 20 percent of preventable deaths in the world. So some researchers believe that smoking is health problem. According to available statistics, every year more than 5 million deaths in the world occur due to smoking and for next 20 years it increases to 8 million deaths (Hoseinzadeh, 1392).Hookah is one of ways in tobacco smoking in the world. Use of hookah in east is known as traditional way of tobacco smoking, but its consumption is increased during 30 years dramatically (.Roskin&Aveyard, 2009). Tobacco consumption is inclusive problem in today's society (Noonan &Kulbok, 2009). Maziak et al (2014) in their

study acknowledge that with regard to collected data from different countries of the world, hookah consumption has intensely pervaded for the last 10 years and is seen more among adolescents and youth than other age groups.

If this trend of consumption continues, it annually results in 10 million deaths during next 30 years and 70 percent of deaths occur in developing countries with low income. The research, treatm

ent, policies, and efforts focus on the cigarette smoking and now many people in such developing region as Asian countries, India, and Eastern Mediterranean are increasingly consuming hookah (World Health Organization, 2010). Since hookah consumption for 30 to 60 minutes equals one packet of cigarette, so it is more harmful than cigarette smoking (Loffredo, 2008; Zhang, 2013). The popularity of hookah among adolescents is growing and consumers consider it as entertainment. The hookah smoke consists of condensed carbon monoxide, nicotine, fiber, and heavy material, so it results in aspiratory system's disease and cancer (Taha et al, 2010). Many hookah consumers believe that water available in hookah serves like filter hereby toxins of tobacco are removed (World Health Organization, 2010), Mann et al (quote from Babaee, 1390) examine the size of particles in hookah; in comparison to cigarette, hookah has more fine particles with size 0.02-1micrometer made of burning coal. The importance of particles is related to place of deposit in respiratory tract. The particles with 5-10 micrometers in size often deposit in large airway. Particles with 2-5 micrometers in size deposit in lower respiratory tract and particles with 8-3 micrometers in sizedeposit in distal airways and alveoli or air sacs of the lungs. Irreversible lung diseases, including chronic obstructive pulmonary disease are caused by deposit of particles of tobacco consumption in the distal air sacs. The size of particles along with chemical and metal exposure results in chronically destructive effect on the respiratory system. In addition to addiction to nicotine, hookah consumption causes infectious diseases and may be entrance for cannabis consumption (Babaee, 1390).

Blank et al find that hookah consumption is influenced by social factors and groups of friends and peers, while many hookah consumers in this study acknowledge that they are affected by peers and family.

Alaee-Kharem et al (1390) in their study admit the prevalence of hookah consumption among people of society especially students.

According to research done byFDA's Center for Tobacco Products (CTP) (2015), one of effective factors in preventing tobacco consumption is to primarily recognize people's addiction to variety of tobacco consumption including tobacco (hookah).

Aboaziza&Eissenberg (2014) in their study draw attention to this matter that measurement of tobacco dependence and hookah consumption can play important role in controlling and treating overuse of hookah.

One of basic requirements in preventing and treating hookah dependence is to have standard tool to measure level of consumers' dependenceon hookah, while it seems that standard tool to measure consumers' dependence on hookah is not made and addressed regarding some reviews. So in the present study with regard to importance of physical and mental health of people in society especially youth and adolescents as future makers of country, taking into account their professional role and demanding happy and healthy people to administer country in future, reviewing and identifying validity and reliability to measure people's dependence especially given group to hookah consumption are problems that should be dealt with.Since research in hookah dependencedrawsthe attention of many specialiststo many fields including social and behavioral sciences, necessary toolto measure dependence on hookah smoking among consumersshould be strongly perceived. Hence in the present study, reviewing validity of and reliability of researcher-made questionnaire is dealt with.

Methodology

The methodology of present study is descriptive-analytical of cross-sectional type to determine validity and reliability of questionnaire of people's hookah dependence ranged from 18 to 60 years of age in Mashhad city. Population of this study is all consumers. The samples are 120 hookah consumers, from low- to high-smoking,chosen by purposefulsampling method while attending recreation and tourist places(given that intended society has specific properties). The tool of study consists of researcher-made questionnaire having 12 items isbased on five-point Likert Scale ranging from always to never.

Formal reliability and construct validity is used to review validity of questionnaire. Using statistical software spss with exploratory factor analysis and principal component analysis in analysis, research questionsare examined. To determine validity, Cronbach's alpha and split-half method are used.

Findings

Table 1. Demographic data of the study case.

Variable		Frequency	Percent
Six	Female	42	35.00
	Male	78	65.00
Education	Diploma	47	39.16
	BA/BS	49	40.83
	MS/MA	24	20.0
age	Under 20 years old	29	24.16
	Between 20 and 30 years old	38	31.66
	Between 30 and 40 years old	33	27.5
	Between 40 and 50 years old	11	9.16
	Between 50 and 60 years old	9	7.5
	Total	120	

According to given data in above table, 35.00 percent of participants were female and 65.00 percent of participants male.

According to given data in above table, 39.16 percent of participants have diploma, 40.83 percent of participants BA/BS and 20.00 percent of participants MA/MS.

According to given data in above table, 24.16 percent of participants are under 20 years old, 31.66 percent of participants are between 20 and 30 years old, 27.5 percent of participants between 30 and 40 years old, 9.16 percent of participants between 40 and 50 and 7.5 percent of participants between 50 to 60 years old.

Validity of Tool

Provided questionnaire in current paper is designed by studying theoretical basis in the field of social and behavioral sciences while trying to include main behavioral components associated with hookah consumption in it. Meanwhile after providing questionnaire, its items are approved by four relevant professors, so formal validity of tool is confirmed.

In this respect, selected professors assign scores for each item from 1 (the least appropriate) to 5 (the most appropriate) in proportion to reviewed subject matter. Taken score to every item is examined by professors and average score related to each question is reported in below table. In all questions, achieved average is higher than 4. Overall, reviewing professors' view suggests provided formal validity.

Table 2. Average score of professors' view about formal validity of each question.

Related Items	Average Score
1- I spend more time and much money than other hookah consumers.	
2- I search tobacco with new flavor when shopping	
3- I go out even in abnormal time such as morning to consume hookah	
4- I become angry when others want to prevent me from doing it.	
5- Every time of day I have stress and tension only hookah smoking relieves me.	
6- I tell lie about my interest in hookah smoking.	
7- I have personal hookah.	
8- While other kinds of recreation is provided for me, just hookah smoking satisfies me.	

9- Although after hookah smoking, I suffer from such symptomsas headache, nausea, drop in blood pressure, anxiety, illness,but Iam interested in hookah smoking.	
10- Hookah smoking is part of my daily program.	
11- While I know about long term effect of hookah-smoking such as cancer, I am doubtful about stopping hookah smoking.	
12- If I attend a group that does not have hookah, I get bored.	

Furthermore, exploratory factor analysis is used to assess construct validity. The result of this assessment is as follows:

Exploratory factor analysis is used to determine latent factors in tendency to hookah. In first step performing exploratory factor analysis shows that KMO index in the current study is 0.79 being acceptable rate and suggesting that selected sample size (n=120) is enough to perform factor analysis. Barthel Index in reviewing adequacy matrix is 303.7 being significant in P≤0.01 level. That is, achieved matrix has necessary adequacy and the data of this research has the ability of factorization. This allows us to continue performing factor analysis.

The correlation matrix suggests that the value of KMO for every element in questionnaire is more than 0.7 indicating adequacy of this index for every element of questionnaire. In addition to this review, Reproduced and residual correlations show that the figure for residual correlation is small for all questions and this means that factor analysis gives a good explanation of data.

After that, data is analyzed by use of factor analysis using varimax rotation. As a result of this rotation, three factors have value more than 1 and data related to eigenvalue, variance percentage, and cumulative variance are given in below table.

Table 3. Factors, variance percentage, and eigenvalue (before rotation)

Factors	Eigenvalue	Percentage of Variance	Percentage of Cumulative Variance
1	4.24	35.57	35.57
2	1.90	15.90	51.47
3	1.22	10.20	61.67

According to data in above table, three factors have ability to explain about 61.67% of variance. After that, given Cattell Scree plot confirms above-mentioned matters.
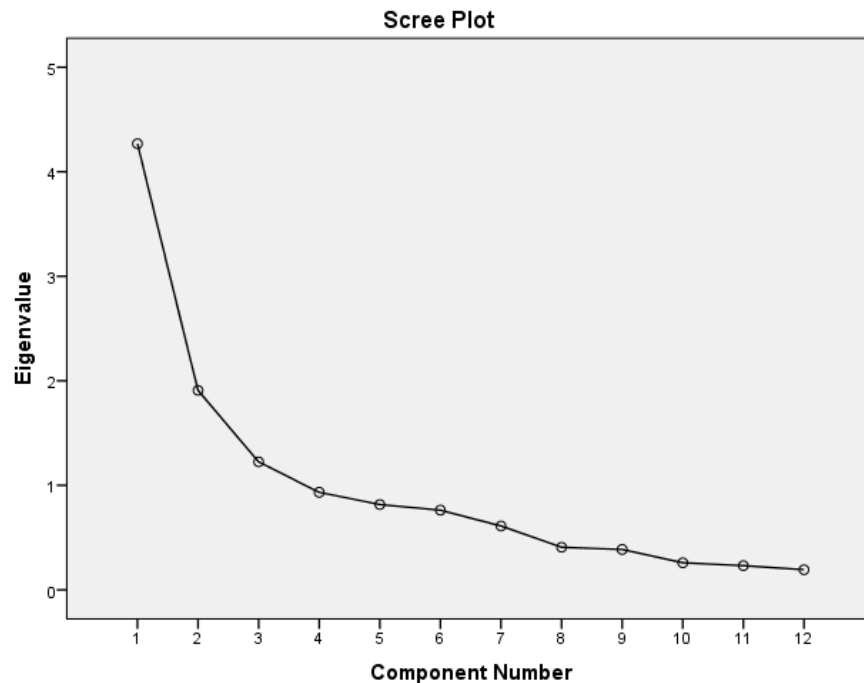
In the next step, varimax rotation is applied to achieve simpler factor structure.
Next table shows factor matrix and factor loading (correlation with factor). Questions are put in the table in the order of the highest factor loading on each factor. To facilitate table review, the highest loading factor is reported.

Table 4.Defined basic factors in factor analysis and loaded variables on them

Factor 1		Factor 2		Factor 3	
Question Number	Factor Loading	Question Number	Factor Loading	Question Number	Factor Loading
5	0.61	1	0.89	4	0.70
7	0.67	2	0.86	6	0.68
8	0.66	3	0.67	–	–
9	0.70	–	–	–	–
10	0.74	–	–	–	–
11	0.80	–	–	–	–
12	0.60	–	–	–	–

The content of each factor shows factor 1, interest in hookah smoking, factor 2, spending time and money, and factor 3, confrontation with opposition.

Reliability of Tool
Calculated alpha coefficient for questionnaire is 0.79 that is acceptable rate. Achieved alpha coefficient in factor 1 (interest in hookah smoking) is 0.83, in factor 2 (spending time and money) 0.74 and in factor 3 (confrontation with opposition) 0.73. In addition to Cronbach's alpha coefficient, split-half method is used. Reported correlated coefficient for odd and even questions of test is 0.83 suggesting strong correlation between two parts.

Discussion and Conclusion

This study aims to review validity and reliability of hookah dependence's questionnaire. According to achieved findings from current study, 35.00 percent of participants were female and 65.00 percent of participants male. 39.16 percent of participants have diploma, 40.83 percent of participants BA/BS and 20.00 percent of participants MA/MS. 24.16 percent of participants are under 20 years old, 31.66 percent of participants are between 20 and 30 years old, 27.5 percent of participants between 30 and 40 years old, 9.16 percent of participants between 40 and 50 and 7.5 percent of participants between 50 to 60 years old. To measure validity of questionnaire, after providing questionnaire, four relevant professors approve its items;hence this confirms the formal validity of tool. In this respect, selected professors assign scores foreach item from 1 (the least appropriate) to 5 (the most appropriate) in proportion to reviewed subject matter. Given score to every item is examined and approved by professors. In all questions, achieved average is higher than 4. Overall, reviewing professors' view suggests provided formal validity. Exploratory factor analysis is used to assess the construct validity as well. The result of this study is that exploratory factor analysis is used to determine latent factors in tendency to hookah.In first stepperforming exploratory factor analysis shows that KMO index in the current study is 0.79 being acceptable rate and suggesting that selected sample size (n=120) is enough to perform analysis. Barthel Index in reviewing adequacy matrix is 303.7 being significant in P≤0.01. That is, achieved matrix has necessary adequacy and the data of this research has the ability of factorization. This allows us to continue performing factor analysis.Assessing correlation matrix suggests that the value of KMO for every element in questionnaire is more than 0.7 indicating adequacy of this index for every element of questionnaire. In addition to this review, Reproduced and residual correlations show that figures related to residual correlation is small for all questions and this means that factor analysis gives a good explanation of data. After that, data is analyzed by use of factor analysis using varimax rotation. As a result of this rotation, three factors have value more than 1. Three factors have ability to explain about 61.67% of variance. In next step, varimax rotation is applied to achieve simpler factor analysis. The content of each factor shows factor 1, interest in hookah smoking, factor 2, spending time and money, and factor 3, confrontation with opposition.

Also Cronbach's alpha coefficient is used to assess reliability of tool. Calculated alpha coefficient for questionnaire is 0.79 that is acceptable rate. Achieved alpha coefficient in factor 1 (interest in hookah smoking) is 0.83, in factor 2 (spending time and money) 0.74 and in factor 3 (confrontation with opposition) 0.73. In addition to Cronbach's alpha coefficient, split-half method is used too. Reported correlated coefficient for odd and even questions of test is 0.83 suggesting strong correlation between two parts.

Hence based on the achieved findings about validity and reliability, it can be said that researcher-made questionnaire of hookah dependence is suitable due to given properties. Indeed results from this study show researcher-made questionnaire of hookah dependence have suitable validity and reliability. There is no formal problem in this test and sample group can easily understand the questions and the questions are interesting and attractive for them, with regard to achieved results it can be asserted that questionnaire has suitable reliability and it can be said that this tool measures dependence onhookah accurately to an acceptable extent.

Reference

- Babaee, D. A. *Save Me from Tobacco consumption of Adolescent. New Medical Fortnight Magazine*. 497-98 and (1 and 5). 36-42.

- Hoseinzadeh, A. (1392). *Assessing Information, View, and Performance of High School Students about Tobacco Consumption*. Thesis of Master of Science. Faculty of Medical Sciences of Shahrood Islamic Azad University.

- Alaee-Kharem, R.,Kadior, P.,Mohammadkhani, and Sh.,Sarami, gh (1390). *Prevalence of Cigarette, Hookah, Alcohol, Drugand StimulantsConsumptionamong High School Students*. Journal of Addiction Studies. 5 (18): 99-144.

− Aboaziza, Eiman&Eissenberg,Thomas. (2014). Waterpipe tobacco smoking: what is the evidence that it supports nicotine/tobacco dependence?.avalable in: *http://tobaccocontrol.bmj.com/content/early/2014/12/08/tobaccocontrol-2014-051910.full.pdf*.

− Blank, Melissa.D., Warren Brown, Kirk., Goodman,Robert.J. & Eissenberg, Thomas. (2014). An Observational Study of Group Waterpipe Use in a Natural Environment.*Nicotine & Tobacco Research*, 16, (1) 93–99.

- FDA Center for Tobacco Product. (2015). Overview of the Family Smoking Prevention and Tobacco Control Act. avalable in: *http://www.fda.gov/downloads/TobaccoProducts/Labeling/RulesRegulationsGuidance/UCM336940.pdf.*
- Loffredo C. (2008). Hold the hookah: research warns against trendy tobacco use. avalable in: *http://explore.georgetown.edu/news/?ID=18216, accessed 15 March.*
- Maziak, Wasim., Ben Taleb, Ziyad., Bahelah, Raed., Islam, Farahnaz., Jabar, Rana., Auf, Rahab&Salloum, Ramzi. (2014). The Global Epidemiology Of Waterpipe Smoking. An international peer-reviewed *journal for health professionals and others in tobacco control.* 3, 1-11.
- Noonan, D &Kulbok, P.A. (2009). New tobacco trends: waterpipe (hookah) smoking and implications for healthcare providers. *Journal of Am Acad Nurse Pract*; 21(5): 258-60.
- Roskin, J&Aveyard, P. (2009). Canadian and English students' beliefs about waterpipe smoking: a qualitative study. *journal of BMC Public Health*; 9: 10. 2.
- Taha, A.Z., Sabra, A.A., Al-Mustafa, Z.Z., Al-Awami, H.R., Al-Khalaf, M.A. & Al-Momen, M.M. (2010) Waterpipe (shisha) smoking among male students of medical colleges in the eastern region of Saudi Arabia. *journal of Ann Saudi Med*; 30(3): 222-6.
- world health organisation. (2010). Addiction to Nicotine: Gender, Women, and the Tobacco Epidemic. avalable in: *http://www.who.int/tobacco/publications/gender/en_tfi_gender_women_addiction_nicotine.pdf.*
- Zhang B, et al. (2013). Enter at your own risk: a multimethod study of air quality and biological measures in Canadian waterpipe cafes. *Tobacco Control,* Published Online First: 25 October, doi: 10.1136/tobaccocontrol- 2013-051180.