



Reliability and Validity of the Fagerstrom Test for Cigarettes Dependence among Malaysian Adolescents

****Kuang Hock LIM¹, Chien Huey THE¹, Hui Li LIM², Yi Yi KHOO³, Keng Joo LAU⁴, Chan YY¹, Sumarni MOHD GHAZALIG¹, Chee Cheong KEE CC², Kuang Kuay LIM², Normala IBRAHIM⁵, Fadhli Mohd YUSOFF²***

- 1. Institute for Medical Research, Kuala Lumpur, Malaysia*
- 2. Manipal Medical College, Malacca, Malaysia*
- 3. Institute of Public Health, Kuala Lumpur, Malaysia*
- 4. School of Health Sciences, Universiti Sains Malaysia, Kelantan, Malaysia*
- 5. Psychiatric Department, Faculty of Medicine and Health Science, University Putra Malaysia, Selangor, Malaysia*

***Corresponding Author:** Email: keelimkota@yahoo.com

(Received 05 Aug 2015; accepted 24 Aug 2015)

Dear Editor in Chief

Reducing the prevalence of smoking among teenagers who smoked by increasing the rate of smoking cessation is among the feasible long term measures to reduce health problems related to smoking among Malaysian population. However, previous studies have revealed that addiction to nicotine is one of the identified barriers for adolescent smokers to quit smoking (1). Identification of their addiction levels enables the planning and administration of the appropriate measures to increase the rate of smoking cessation. A simple and valid but not intrusive instrument is the prerequisites for the measurement of nicotine addiction among the smokers. The Fagerstrom Test for Cigarette Dependence (FTCD) which consists of six items and was modified from the Fagerstrom Tolerance Questionnaire (FTQ) is among the widely used instruments for measurement of nicotine addiction among the smokers(2) due to its non-invasiveness, simplicity and easiness to understand and can rapidly assess nicotine dependence (3). In light of the high prevalence of smoking among adolescents in Malaysia, and the lack of a valid instrument to measure the nicotine addiction as well as

the incur of social and cultural bias if direct adaptation of the validated FTCD were used as Malaysian adolescents may interpret the items in the instrument differently from the adolescents from other countries, the present study was conducted to determine the validity and reliability of the Bahasa Malaysia version of FTCD-BM among 130 secondary school students aged 13-16 years before it is being used to measure nicotine addiction among the Malaysian adolescents.

Our study indicated that the FTCD-BM was of good construct validity as demonstrated by a good value of 0.699 from the Kaiser-Mayer-Olkin measure of sampling adequacy, a significant value from the Bartlett's test of sphericity in the exploratory factor analysis. In addition, Varimax rotation also revealed that 41% of the variations in determining nicotine addiction among Malaysian adolescents were explained by the FTCD-BM. On the other hand, the reliability of the FTCD-BM was of moderate level with Cronbach alpha value of 0.61. Of note, to the best of our knowledge, the present study, which investigated the validation of FTCD among daily adolescent smokers, is

the first study in Malaysia, thus far. Using the FTCD-BM, this study revealed that 14% of the daily adolescent smokers were moderately or highly addicted to nicotine. This rate was lower than 60% as reported by Salameh and colleague (2013) (4) among university students in Lebanon, 45% among university students in USA (5) and 30% among college students in Saudi Arabia (6). However, notwithstanding the lower rate of nicotine dependence among Malaysian adolescent smokers as compared to other countries, adequate attention should be given and all possible interventional strategies and educational measures should be undertaken in order to curb or reduce the nicotine addiction level among these adolescents since many previous studies had reported that addicted adolescent smokers tend to continue their smoking behavior till their adulthood (7).

Acknowledgement

This study was a part of a longitudinal study, which aimed to investigate psychosocial factors related to smoking initiation among school-going adolescents in Kota Tinggi District, Johor, Malaysia. The authors would like to thank the Director-General of Health, Malaysia for his permission to publish this paper. We would also like to thank those who were involved in the study and assisted in data collection and management for their support and cooperation. The authors declare that there is no conflict of interest.

References

1. Prokhorov AV, Pallonen UE, Fava JL, Ding L, Niaura R (1996). Measuring nicotine dependence among high-risk adolescent smokers. *Addict Behav*, 21: 117–127.
2. Fagerström KO, Schneider NG (1989). Measuring nicotine dependence: a review of the Fagerström Tolerance Questionnaire. *J Behav Med*, 12(2): 159–182.
3. Alvir TM, Cinar N, Oncel S, Akduran F, Dede C (2014). Trends in smoking among university students between 2005- 2012 in Sakarya, Turkey. *Asian Pac J Cancer Prev*, 15(11): 4575-4581.
4. Salameh P, Jomaa I, Farhat G, Zeghondi H, Gergas N, Issa C et al. (2013). The Young Adults' Cigarette Dependence (YACD) score: an improved tool for cigarette dependence assessment in university students. *Addict Behav*, 38(5): 2174-2179.
5. Halperin AC, Smith SS, Heiligenstein E, Brown D, Fleming M F (2010). Cigarette smoking and associated health risks among students at five universities. *Nicotine Tob Res*, 12(2): 96–104.
6. Amin TT, Amr MA, Zaza BO (2011). Psychosocial predictors of smoking among secondary school students in Al-Hassa, Saudi Arabia. *J Behav Med*, 34(5): 339–350.
7. United States Department of Health and Human Services, USDHHS (2011). How Tobacco Smoke Causes Diseases- Preventing tobacco use among youth and young adults: a report of the Surgeon General. Atlanta (GA): U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.