THE ROLE OF CIGARETTE POLICIES IN REDUCING CIGARETTE CONSUMPTION AND THE OCCURRENCES OF CHRONIC OBSTRUCTIVE PULMONARY DISEASE AND LUNG CANCER IN MALAYSIA

Intan Syafinaz S., Muhamad Hanafiah Juni, Rosliza Abdul Manaf, Lim Poh Ying

1DrPH Candidate, Department of Community Health, Faculty of Medicine, Universiti Putra Malaysia
2Ministry of Health Malaysia
3Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia

*Corresponding author: Dr. Muhamad Hanafiah Juni, Department of Community Health, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia
Email: hanafiah4660@gmail.com

https://doi.org/10.32827/ijphcs.6.3.161

ABSTRACT

In Malaysia, smoking is the third risk factor with the most disease burden and it was hugely associated with diseases of the heart and lungs. In response to the tobacco epidemic, WHO had adopted the Framework Convention on Tobacco Control (FCTC) on 21th May 2003 but despite ratifying to FCTC in 2005 and enforcing various types of policies in the country, consumption of cigarette remains widespread in Malaysia. Hence the objective of this study which is to determine the role of cigarette policies in reducing cigarette consumption and the occurrences of chronic obstructive pulmonary disease (COPD) and lung cancer in Malaysia. This is a time series study with cigarette consumption and COPD and lung cancer occurrences as the dependent variables while the independent variable was all policies related to cigarette smoking in Malaysia between the years 1995 until 2017. Data analyses were done using Microsoft Excel Version 16.12, and IBM SPSS Statistics Version 23. Descriptive statistics were conducted to describe the variables using mean and standard deviation or as median and interquartile range. Time series scatter plot was utilized to plot the data on a monthly basis. The mean for cigarette consumption was 1,268.34 million cigarettes (standard deviation (SD) 669.31 million). The median for minimum cigarette price was RM0.35 per cigarette (interquartile range (IQR) RM0.10 per cigarette). Import duty showed a median of RM0.20 (IQR RM0.06) while excise duty’s median and IQR was RM0.12 and RM0.19 respectively. The median for COPD was 962 cases (IQR 381), while the mean for lung cancer cases was 231 cases (SD 55). Cigarette consumption showed a fluctuating pattern followed by a down going trend from year 2012 until 2017. This coincides with the introduction of more cigarette related policies and the introduction of minimum cigarette price policy with increasing excise tax rates. However, COPD and lung cancer cases showed an increasing trend despite the decreasing cigarette consumption, more policies implementation and increasing tax rates. In conclusion, cigarette policies have played a major role in reducing cigarette consumption but not the number of COPD and lung cancer occurrences in Malaysia from year 1995 until 2017.

Keywords: cigarette related policies, cigarette consumption, lung cancer, COPD, Malaysia
1.0 Introduction

Tobacco is known to be the leading global cause of preventable death and the biggest threat to public health worldwide. The use of tobacco killed more than 7 million people from all over the world every year (World Health Organization [WHO], 2018) and this number is expected to increase over the years. There is one death associated with tobacco for every three seconds, and the death toll could reach to more than 10 million by 2030 (WHO, 2018). An estimate of the global mortality attributable to smoking identified the leading causes of death due to smoking as cardiovascular diseases (1.69 million deaths), chronic obstructive pulmonary disease (COPD) (0.97 million deaths) and lung cancer (0.85 million deaths) (Ezzati & Lopez, 2003). In Malaysia, diseases related to smoking particularly lung cancers and COPD are among the top 10 causes of death in the Ministry of Health (MOH) hospitals, recording 15% of hospitalizations and 35% of deaths (Global Adult Tobacco Survey, 2011). According to the Global Burden of Disease Profile Malaysia 2010, smoking is the third risk factor with the most disease burden in Malaysia and had been highly associated with diseases such as COPD and lung cancers (MOH, 2010). In terms of cigarette consumption, roughly about one fifth of the Malaysian population are current consumers of cigarettes (MOH, 2015). In 2011, among Malaysian adults aged 15 years and older, 23.1% or 4.75 million were tobacco users which consists of 43.9% of men and 1.0% of women (Global Adult Tobacco Survey, 2011). In 2015, also for adults aged 15 years and above, approximately 22.8% (4,991,458) were smokers which consist of 43.0% (4.85 millions) of men and 1.4% (143,566) of women (MOH, 2015).

In response to this tobacco epidemic, the WHO adopted the Framework Convention on Tobacco Control (FCTC) on 21st May 2003 which provides guidelines as foundation for countries to implement and manage tobacco control through MPOWER, a package of six most important and effective tobacco control policies. It consists of (M) monitoring the epidemic and prevention policies, (P) protecting people from second-hand smoke, (O) offering help to people who wants to quit, (W) warning everyone about the dangers of tobacco, (E) enforcing bans on tobacco advertising, promotion and sponsorship, and (R) raising tobacco taxes and prices, (WHO, 2008). There was a total of 168 signatories to the WHO FCTC with 181 countries becoming parties to the Convention hence in effect, all of these countries have strengthened their national tobacco policies to meet the obligations under this treaty. Malaysia ratified to the FCTC in 2005 while introducing the Control of Tobacco Product Regulations (CTPR) and its subsequent amendments apart from various other anti-tobacco campaigns and related policies.

Nevertheless, even with the enforcement of these policies, tobacco use among Malaysians remains widespread. Hence the objective of this study which is to determine the role of cigarette related policies in reducing cigarette consumption and the occurrences of COPD and lung cancer in Malaysia.

2.0 Methodology

A time series study was carried out in Malaysia utilizing data from the year 1995 until 2017 obtained from various sources as follows; data on COPD and lung cancer occurrences from
the MOH Malaysia, data on cigarette tax rates in Malaysia from the Royal Customs Department Malaysia, data on number of cigarettes imported into Malaysia, number of cigarettes exported out of Malaysia and number of cigarettes produced locally from the Department of Statistics Malaysia, and data on cigarette policies in Malaysia obtained by conducting review of various documents. The inclusion criteria were all available secondary data on COPD and lung cancer occurrences, cigarette prices and taxes, cigarette-related policies and cigarette consumption in Malaysia from year 1995 until 2017 while all duplicates, incomplete or unverified data were excluded from this study. Data was collected using a pro forma that was developed with reference made to literatures and according to the objectives of this study. The collected data went through a data cleaning process and stored in Microsoft Excel Version 16.12 or exported to relevant software for further analyses as required.

The dependent variables of this study were cigarette consumption and the occurrences of lung cancer and COPD. Cigarette consumption was obtained by taking the total number of cigarettes imported into Malaysia and the number of cigarettes produced locally from years 1995 until 2017 minus the total number of cigarettes exported from Malaysia (Cigarette consumption = (Cigarette imported + cigarette produced locally) - cigarette exported) (Shafey & Guindon, 2003). This was reported according to cigarette sticks consumed per month (cigarette/month). Lung cancer and COPD occurrences were according to data received from the Ministry of Health for cases that was recorded as lung cancer and COPD as the principle diagnoses. They were coded using the International Statistical Classification of Diseases and Related Health Problems 10th Revision (ICD-10) code of C34 for lung cancer and J44 for COPD (WHO, 2016) from all government and private hospitals in the country. This was recorded as cases per month (cases/month). The independent variable was the set of policies related to cigarette smoking in Malaysia between the years 1995 until 2017 that was divided into tax policies, non-tax policies and others. Tax policies are polices gazetted as an act under the CTPR which documented any change in cigarette tax or cigarette price, while non-tax policies are policies gazetted under the CTPR but documented all other statements not related to cigarette price or tax. For the category ‘others’, it includes all other policies that was not covered in the CTPR but is cigarette or tobacco related. Tax policies were further divided and represented by the variables minimum cigarette price, import duty and excise tax rates.

Data analyses were done using Microsoft Excel Version 16.12, and IBM SPSS Statistics Version 23. Continuous variables were checked for normality using histograms and skewness or kurtosis. Descriptive statistics were conducted to describe the variables using mean and standard deviation for normally distributed variables or as median and interquartile range for variables that were not normally distributed. Time series scatter plots were utilized to plot the monthly data and the data were examined for patterns. This study was approved by the Medical Research Ethics Committee (MREC), MOH Malaysia and the Ethics Committee for Research involving Human Subjects of Universiti Putra Malaysia (JKEUPM). To get access to required data, approval was obtained from relevant authorities in the MOH, Royal Customs Department Malaysia and Department of Statistics Malaysia.
3.0 Results

Data on cigarette consumption, minimum cigarette price, import duty and excise tax rates, as well as COPD and lung cancer occurrences were collected monthly from January 1995 until August 2017 with a maximum of 271 months and a minimum of 91 months. For the variable cigarette consumption, the mean number of cigarettes consumed from year 1995 until 2017 for 271 months was 1,268.34 million cigarettes and standard deviation (SD) of 669.31 million. Minimal cigarette price was recorded as RM/cigarette where there were 91 observations, the minimum being RM0.32 per cigarette and the maximum RM0.50 per cigarette. The median for minimum cigarette price was RM0.35 per cigarette while its interquartile range (IQR) was RM0.10 per cigarette. Both the cigarette import duty and excise duty were also recorded as RM/cigarette with import duty showing a median of RM0.20 and IQR of RM0.06 while excise duty’s median and IQR was RM0.12 and RM0.19 respectively. The monthly cases of both COPD and lung cancer was collected for 216 months, from January 1999 until December 2016. The median for COPD was 962 cases with IQR of 381, while the mean for lung cancer cases was 231 cases with SD of 55.

Policies related to cigarette smoking in Malaysia are listed in Table 1 together with the type of policy for each. Review of cigarette-related polices that existed in Malaysia from 1995 until 2017 was done using multiple sources and documents especially the Control for Tobacco Product Regulation (CTPR) and Declaration of Non-smoking Areas documents as well as other documents published by the Ministry of Health Malaysia on public health programmes or other agencies related to smoking. A total of 21 policies had been extracted and listed down with summaries of each policies as well as the policy type. As some of the documented policies have more than one category of policy which happened when a single document contains both tax and non-tax policies, there were a total of 5 tax related policies, 13 non-tax related, and 5 in the ‘others’ category.

Table 1. List of cigarette-related policies in Malaysia from 1995 until 2017

<table>
<thead>
<tr>
<th>Year</th>
<th>Policies</th>
<th>Policy type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to 1995</td>
<td>CTPR 1993, Smoke-free public places policy implemented in entertainment centres or theatres, hospital and clinics, public lifts, public toilets and public transportation with a partial ban for air-conditioned eating places</td>
<td>Non-tax related</td>
</tr>
<tr>
<td>1995 (March)</td>
<td>Declaration that smoking is harmful by the National Fatwa Council of Malaysia</td>
<td>Others</td>
</tr>
<tr>
<td>2001</td>
<td>Launching of the Quit Smoking Clinic under the Ministry of Health Malaysia</td>
<td>Others</td>
</tr>
<tr>
<td>2004 (February)</td>
<td>Kempen Tak Nak Merokok was launched by the Prime Minister at the time Datuk Seri Abdullah Ahmad Badawi</td>
<td>Others</td>
</tr>
<tr>
<td>2004 (September)</td>
<td>CTPR 1993 revoked and CTPR 2004 gazetted</td>
<td>Non-tax related</td>
</tr>
<tr>
<td></td>
<td>-Smoke-free public places policy include air-conditioned shops, government premises, places of public assembly, educational institutions, nurseries, school buses, floor with service counters, shopping complexes, petrol stations, religious institutions, libraries and internet cafes. Partial ban declared for public transport terminals, airports, stadiums, sports complexes, and fitness centres or gymnasiaums.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Prohibition of smoking for any person below 18 years old, selling loose cigarettes, vending machine for cigarettes, giving out free samples or as gifts, and all forms of tobacco advertising, promotions or sponsorship.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Tobacco packaging and labelling - requirement for a combined picture and text health warnings occupying 50% of front and 60% of back of the package. A cigarette pack should not contain &lt; 20 cigarettes per pack.</td>
<td></td>
</tr>
<tr>
<td>2005 (September)</td>
<td>Malaysia ratified to the Framework Convention on Tobacco Control (FCTC) by WHO.</td>
<td>Others</td>
</tr>
<tr>
<td>2008 (September)</td>
<td>CTPR 2008 (amendment)</td>
<td>Non-tax related</td>
</tr>
<tr>
<td></td>
<td>-Introduced new and larger health warnings containing graphic images.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Ban on tobacco product packaging misleading terms suggesting one brand is less harmful than another.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-Maximum allowable level for nicotine is 1.5mg per cigarette, 20mg per cigarette.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-The places declared as smoke-free areas includes all previous mentioned places with the addition of the National Service Training Centres</td>
<td></td>
</tr>
</tbody>
</table>
The national legislation for tobacco control in Malaysia was first gazetted in the year 1993 under the Food Act 1983 but it mostly covers the declaration of several smoke-free areas in the country. There were several new policies or events introduced following that but no major event until the introduction of the WHO FCTC in 2003. Malaysia finally revoked the CTPR 1993 and on 23rd September 2004 the CTPR 2004 was gazetted (CTPR, 2004). With Malaysia’s ratification to the WHO FCTC, it is obligated to establish strict provisions with regards to tobacco control through legal tools and law enforcement, as well as to develop national policies which prioritize public health and tobacco control. Malaysia’s seriousness in this fight against tobacco could be seen after that with new policies, amendments or programmes introduced almost every year since the year 2008 and sometimes even twice a year (CTPR [Amendment], 2008; CTPR [Amendment], 2009; CTPR [Amendment], 2010; CTPR [Amendment], 2011; CTPR [Amendment], 2012; CTPR [Amendment], 2013; CTPR [Amendment], 2014; CTPR [Amendment], 2015, & CTPR [Amendment], 2017). The enforcement of CTPR is by the MOH Malaysia hence any person who contravenes the regulations will be reliable to a fine or imprisonment (CTPR, 2004).

Figure 1 shows the plot for cigarette consumption from January 1995 until July 2017 together with concurrent policies that went into effect within the same duration. At the start of the

<table>
<thead>
<tr>
<th>Year</th>
<th>Policy</th>
<th>Nature of Policy</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010 (January)</td>
<td>CTPR 2009 (amendment)</td>
<td>Tax-related</td>
<td>- Prohibition of selling cigarettes below minimum cigarette price. Minimum cigarette price is RM6.40 for a packet of 20 cigarettes. Prohibition of selling tobacco products below retail selling price or giving promotion. - Tightening rules on tobacco advertising, promotion and sponsorship.</td>
</tr>
<tr>
<td>2010 (July)</td>
<td>CTPR 2010 (amendment)</td>
<td>Non-tax related</td>
<td>- Prohibition of smoking in airconditioned workplace</td>
</tr>
<tr>
<td>2011 (March)</td>
<td>CTPR 2011 (Amendment)</td>
<td>Tax-related</td>
<td>- Manufacturer or importer must increase retail selling price to the rate of at least similar to retail selling price prior to an increment and then add with the increased total excise duty and sales tax</td>
</tr>
<tr>
<td>2011 (June)</td>
<td>Declaration of non-smoking area 2011</td>
<td>Non-tax related</td>
<td>- To include World Heritage Melaka City as a non-smoking area</td>
</tr>
<tr>
<td>2012 (February)</td>
<td>CTPR 2012 (Amendment)</td>
<td>Non-tax related</td>
<td>- Minister may prohibit smoking in a building, premise or place</td>
</tr>
<tr>
<td>2012 (October)</td>
<td>Declaration of non-smoking area 2012</td>
<td>Non-tax related</td>
<td>- To include more places in Johor and Penang as non-smoking areas</td>
</tr>
<tr>
<td>2013 (June)</td>
<td>CTPR 2013 (amendment)</td>
<td>Tax-related</td>
<td>- Declaring minimum price of RM7 for a pack of 20 cigarettes - Prohibiting the promotion of any tobacco products, the use of any words such as 'light,' 'ultra light,' etc that gives impression cigarette is less harmful. Printing the text set and health warning images. Declaring maximum allowable level for nicotine is 1mg/cigarette, tar 10mg/cigarette and carbon monoxide 10mg/cigarette</td>
</tr>
<tr>
<td>2014 (June)</td>
<td>Declaration of Non-Smoking Area 2014</td>
<td>Non-tax related</td>
<td>- To include recreation parks and Taman Negara in Johor</td>
</tr>
<tr>
<td>2014 (November)</td>
<td>CTPR 2014 (Amendment)</td>
<td>Non-tax related</td>
<td>- To include any building, playground or garden in R&amp;R provided by the Malaysian Highway Authority, Department of Public Works, and local authorities as a non-smoking area</td>
</tr>
<tr>
<td>2015 (July)</td>
<td>CTPR 2015 (Amendment)</td>
<td>Non-tax related</td>
<td>- Prohibiting the sale of tobacco products via internet, and requirement of displaying a clear price label approved by the Director on each packet of cigarette and carton. - Declaration of non-smoking area to include Georgetown World Heritage site.</td>
</tr>
<tr>
<td>2015 (August)</td>
<td>CTPR 2015 (amendment)</td>
<td>Tax-related</td>
<td>- Minimum price RM9 for pack of 20 for any type of cigarettes</td>
</tr>
<tr>
<td>2015 (November)</td>
<td>Launching of the programme M Quit Services</td>
<td>Others</td>
<td></td>
</tr>
<tr>
<td>2016 (August)</td>
<td>CTPR 2015 (amendment)</td>
<td>Tax-related</td>
<td>- Minimum price RM10 for pack of 20 cigarettes</td>
</tr>
<tr>
<td>2017 (February)</td>
<td>CTPR 2017 (Amendment)</td>
<td>Non-tax related</td>
<td>- Expanding the number of outdoor public places where smoking is prohibited</td>
</tr>
</tbody>
</table>


Intan Syafinaz S., Muhamad Hanafiah Juni, Rosliza Abdul Manaf, Lim Poh Ying
https://doi.org/10.32827/ijphcs.6.3.161
observation, there were already policies in effect prior to the year 1995. There were not many policies that was implemented in the early parts of the observed period, only for the last 10 years of the study period that many policies went into effect. Consequently, cigarette consumption was fluctuating but generally a down going trend after the year 2002 and more obviously from year 2012 until 2017, and this coincides with the introduction of more cigarette-related policies starting in 2001 with the launching of Quit Smoking Clinic programme in 2001, the ‘Tak Nak Merokok’ campaign in 2004, the revocation of the CTPR 1993 with the gazettement of the CTPR 2004 and especially the multiple policies introduced in succession between the years 2010 and 2017.

Figure 1. Cigarette consumption with cigarette-related policies (all types) from January 1995 until July 2017 by month

Figure 2 illustrates cigarette consumption with tax-related policies represented by excise duty, import duty and minimal cigarette price rate that were regulated during the observed period. Import duty started at RM0.13 per cigarette and continued to rise slowly with only slight fluctuations to the rate, ending at a rate of RM0.20 per cigarette. As for excise duty, the rate during the initial stage was RM0.02 per cigarette. This rate continued to rise continuously and steadily until the end of the study period where the rate was at its peak at RM0.40 per cigarette. On the other hand, no policies addressed regarding minimal cigarette prices until January 2010 where the CTPR 2009 set a minimal cigarette price of RM0.32 per cigarette. This rate was revised several times throughout the observation period reaching a rate of RM0.50 per cigarette that went into effect in August 2016 and this rate was still in use at the end of the observation.

The plot indicated that with increasing taxes and increasing rate for the minimal cigarette prices, cigarette consumption also showed a declining trend. This was especially seen in the year 2015 when the rate of excise duty together with the Minimum Cigarette Price was increased simultaneously by the authorities, the number of cigarette consumption dramatically dropped. Overall, cigarette consumption trend was declining especially in the last 6 to 7 years which was where most of the taxes and minimal cigarette price were on the rise. Among the
taxes that were not included in these plots were sales tax at 5% of cigarette price that was in effect from the start of observation period until March 2015, followed by Goods and Services Tax (GST) at 6% rate from April 2015 until the end of the study period.

**Figure 2. Cigarette consumption with tax-related policies from January 1995 until July 2017 by month**

Figure 3 shows the plot of monthly cigarette consumption with policies and COPD and lung cancer occurrences from January 1995 until July 2017. Both COPD and lung cancer number of cases showed an increasing trend throughout the observation period, though more obviously for COPD compared to lung cancer. The graph indicated that especially during the last 15 years where cigarette consumption was generally on a decline with more policies coming into effect, concurrently cases of COPD and lung cancer was the opposite where it was on the rise especially for COPD.
Figure 3. Cigarette related policies (all types), cigarette consumption and COPD and lung cancer occurrences from January 1995 until July 2017 by month

4.0 Discussion

Overall, the trend of cigarette consumption in Malaysia may be influenced by the lack of policies concerning tobacco in the early years. The policy in-use during the start of the observation period was the CTPR 1993 which only focused on the policy for a small number of smoke-free public places and in 1995 the National Fatwa Council of Malaysia declared that smoking was ‘haram’ while in 2001 the MOH launched its Quit Smoking Clinic programme. Only in 2004 the CTPR 1993 was revoked and the CTPR 2004 went into effect which saw the expansion of smoke-free public places, start of the age-restriction for smoking, any form of tobacco advertising, promotions or sponsorship as well as a stricter guide for tobacco packaging and labelling. A drop in the number of cigarette consumption could be observed after the year 2004. However, cigarette consumption peaks again in the year 2010 and 2011 followed by a dramatic drop in the consumption trend for the last 6 years of study period. Concurrently, the CTPR 2009 went into effect in January 2010 introducing the minimum cigarette price law as well as tightening the rules on tobacco advertising, promotion and sponsorship. The rate for the minimum cigarette price were revised several times until the end of the observation period and this, together with the increasing rates of taxes especially for excise duty, appeared to be in line with the decreasing number of cigarette consumption.

On the other hand, the drop and plateauing in cigarette consumption trend for the last few years of observation found in this study could be influenced by many factors apart from a straightforward decrease in demand for cigarettes in Malaysia. One of them is perhaps from increasing number of smokers substituting cigarettes to electronic cigarettes (e-cigarettes) and some to other smokeless tobacco products. The Malaysian National Health Morbidity Survey (NHMS) 2015 had recorded that there was an increase in the number of e-cigarette users with 10.9% use among Malaysian age 15 years and above (NHMS, 2015), as compared to only 1% prevalence in 2011 (Global Adult Tobacco Survey, 2011). A survey conducted between 2009 and 2013 had shown that the prevalence of e-cigarette users in Malaysia was 14%, which was higher than several other countries such as Australia (7%), United States (6%), United Kingdom (4%) and Netherlands (3%) (Gravely, Fong, Cummings, Yan, Quah, Borland, Yong, Hitchman, McNeill, Hammond, Thrasher, Willemsen, Seo, Jiang, Cavalcante, Perez, Omar, & Hummel, 2015).

Additionally, a cross sectional study among university students who smokes in Malaysia found that 74.9% smoked e-cigarettes, but out of the e-cigarette smokers, 40.3% are still smoking both cigarettes and e-cigarettes while 14.1% of the e-cigarette users were ex-cigarette smokers who had changed from smoking cigarette to e-cigarettes (Wan Puteh, Abdul Manap, Hassan, Ahmad, Idris, Md Sham, Ban, Chun, Pakri Mohamed, Mokhtar, Zakaria, Jing Lee, Amer Nordin, Ariaratnam, & Mohd Yusoff, 2018). The use of e-cigarettes especially had been a cause for debates globally with many arising issues that have yet to be resolved. There is also the possibility that e-cigarettes could pull ex-smokers into using nicotine again. Issues with e-cigarettes has become a challenge to policy makers, as most countries struggled to regulate them effectively (Drope & Schluger, 2018). In Malaysia itself the last few years had
seen more efforts taken by the government to control smoking in the country with introduction of various new anti-smoking policies signalling their stand against smoking. However the government is finding it difficult to ban vaping or e-cigarettes due to lack of laws governing such activity in the country.

The result from this study was similar with the findings from a study in France that showed the relationship between cigarette price, smoking and male lung cancer cases from year 1980 until 2010 (Jha & Hill, 2012). This study showed that the introduction of the annual tax increase in France resulting in the increasing price of cigarettes from year 1990 onwards gave an immediate impact to the number of cigarette consumption in France which saw a decreasing trend starting from the same year. On the other hand, the rate of lung cancer cases was already on the rise since the start of their study and only saw a changing trend of at least 5 years after the decreasing number of cigarette consumption. The trend for diseases in Malaysia especially for COPD cases was still increasing when the number of cigarette consumption from year 1995 until 2011 was fluctuating and even with the dramatic drop in consumption for the last 5 years. Referring to the study by Jha & Hill, it may take at least 5 years for disease burden to respond to the number of cigarettes consumed in a country (Jha & Hill, 2012). Taking that into consideration as well as the knowledge of long-term disease manifestation especially for lung cancer. This could indicate that only after a period of at least 5 years that the relationship between cigarette consumption with COPD and lung cancer occurrences would show that a decrease in cigarette consumption would result in a decrease in COPD and lung cancer cases. A future study should continue the monitoring of cigarette consumption and disease occurrences to look for the change in trend of diseases with regards to cigarette consumption in the next few years.

5.0 Conclusion

Policies related to cigarette had played a major role in reducing cigarette consumption in Malaysia from year 1995 until 2017, however there was no indication of their role in decreasing the number of COPD and lung cancer occurrences in the country, though evidence from other studies may have suggested a lag of at least 5 years for these change in trend to occur.

Author’s contribution

Author 1 : information gathering, preparation, writing and editing of manuscript
Author 2 : final review of manuscript
Author 3 : review of manuscript
Author 4 : review of manuscript
Acknowledgement

This manuscript is prepared as a requirement for the Doctor of Public Health programme in Universiti Putra Malaysia.

References

Control for Tobacco Product Regulation (Amendment) (2017)
Control for Tobacco Product Regulation (Amendment) (2014)
Control for Tobacco Product Regulation (Amendment) (2013)
Control for Tobacco Product Regulation (Amendment) (2012)
Control for Tobacco Product Regulation (Amendment) (2011)
Control for Tobacco Product Regulation (Amendment) (2010)
Control for Tobacco Product Regulation (Amendment) (2009)
Control for Tobacco Product Regulation (Amendment) (2008)
Control for Tobacco Product Regulation Malaysia (2004)
Declaration of Non-Smoking Area (2015)
Declaration of Non-Smoking Area (2014)
Declaration of Non-Smoking Area (2012)
Declaration of Non-Smoking Area (2011)


Global Adult Tobacco Survey Malaysia (2011). Institute for Public Health (IPH), Ministry of Health Malaysia


