

IMPLIKASI KESEHATAN DAN EKONOMI DARI MEROKOK DI INDONESIA : KAJIAN LITERATURE

Health and Economic Implications of Smoking in Indonesia: A Review of the Literature

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ABSTRAK

Merokok merupakan ancaman pada penduduk karena potensi dampak ekonomi dan kesehatan yang buruk. Namun, studi yang meninjau pustaka-pustaka terkait dampak-dampak tersebut sangat jarang. Tujuan dari artikel ini adalah untuk melakukan kajian mengenai dampak kesehatan dan ekonomi dari merokok di Indonesia. Kami melakukan tinjauan pustaka naratif dengan cara mencari pustaka dari berbagai sumber informasi yang memungkinkan. Pustaka-pustaka tersebut kami pilih berdasarkan kesesuaian dan relevansi dengan topik. Kami mengumpulkan 75 artikel yang relevan, dan 37 laporan dari pemerintah atau organisasi non-pemerintah dan produk-produk hukum. Dari pustaka-pustaka tersebut, kami mendapati bahwa merokok memperburuk derajat kesehatan, menyebabkan kematian dini, dan kemungkinan, berakibat negatif pada pertumbuhan ekonomi Indonesia dalam jangka panjang. Hubungan-hubungan antara merokok, modal manusia, dan pertumbuhan ekonomi membutuhkan penelitian lebih lanjut. Perumusan kebijakan pengendalian tembakau di Indonesia harus memperhatikan aspek gender dan budaya yang sangat kental di Indonesia.

Keywords: tembakau, merokok, modal manusia, pertumbuhan ekonomi, gender, derajat kesehatan

ABSTRACT

Tobacco smoking is a huge health threat to the population due to its potential adverse health and economic consequences. Yet, studies that review these consequences in Indonesia are rare. This paper attempts to address the health and economic implications of smoking in Indonesia. We performed a narrative literature review from various feasible sources of information. We carefully selected literature based on its suitability and relevance. We collected 75 relevant peer-reviewed journal articles, and 37 reports and legal products pertaining to tobacco control. From those literatures, we then infer that smoking lowers the health status, causes premature mortality, and possibly, impedes future economic growth. The links between smoking, human capital and economic growth warrant further research. The formulation of appropriate policies must consider gender and cultural issues prevalent in Indonesia

Kata kunci: Tobacco, smoking, human capital, economic growth, gender, health status

INTRODUCTION

Tobacco is the only legal product that adversely affects people who are exposed to it (World Health Organization, 2008). While tobacco consumption is slowly decreasing in developed countries, it is increasing in many developing countries, including Indonesia (World Health Organization, 2008). In 2004, 70% of deaths attributable to tobacco use occurred in low-

and middle-income countries (World Health Organization, 2009). If urgent action is not taken, it is projected that by 2030 deaths due to smoking will exceed 8 million annually, and four in every five of those, will be in developing countries (Mathers & Loncar, 2006).

Other than the known adverse health effects, smoking could impact economically. Studies show smoking affecting households'

standard of living (de Beyer, Lovelace, & Yürekli, 2001; Hu, Mao, Liu, de Beyer, & Ong, 2005; World Health Organization, 2011), by crowding out expenditures on education (John, Ross, & Blecher, 2012; Wang, Sindelar, & Busch, 2006; Xin et al., 2009) and food (Efroymsen et al., 2001; John et al., 2012; Nonnemaker & Sur, 2007). The impact on standard of living may also be intergenerational (LaFave, 2010; Paavola, Vartiainen, & Haukkala, 2004), putting human capital (consisting of health and education) at stake.

Indonesia, being in the top five countries of tobacco consumption (Eriksen, Mackay, & Ross, 2012), faces a serious public health problem. In 2010, it was estimated that Indonesians spent IDR 138 trillion (Tobacco Control Support Center, 2012). Moreover, in 2013, one of three persons aged more than 15 years, were reported as smokers (National Institute of Health Research and Development, 2013b).

Despite these facts, the political will of the Government of Indonesia (GoI) in tobacco control has been blurry. As an example, Indonesia has not yet signed and ratified the World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC) (World Health Organization, 2013). Given the persistence rate of smoking, and the government's apparent lack of political will to control tobacco use, how will they implicate Indonesia's human capital and economic development? The persistence rate of smoking will adversely impact human capital in Indonesia through ill-health, early mortality, and lowered educational attainment that could potentially lower future economic growth. Yet, studies that review the health and economic impacts of smoking in Indonesia are rare.

This paper attempts to address the health and economic implications of smoking. This is done in four sections. The first, briefly profiles the demography and economy of Indonesia. An overview of Indonesia's current smoking status follows. The next two sections outline the health and economic impact of smoking. In the final section, Indonesia's tobacco related policies will be discussed, with a number of policy

recommendations to minimise tobacco's negative impact.

METHODS

To fulfill the objective of this paper, we performed a narrative literature review in lieu of a systematic literature review. While neither methods can fully satisfy our objectives (Collins & Fauser, 2005), we think that the former is more feasible to conduct. The results of a narrative review is intended to serve as a comprehensive background so that one can have better understanding of- and can cognize gaps or inconsistencies in a particular topic in a body of knowledge (Cronin, Ryan, & Coughlan, 2008).

Before the review is conducted, we have done a preliminary search of the literature to see whether our topic has previously been written by other authors (Green, Johnson, & Adams, 2006). Afterwards, we searched for both research and non-research literature. The sources of information for the research literature were databases such as Scopus, Proquest, and Pubmed. We also searched in websites like the Directory of Open Access Journals (DOAJ), "Journals for free", and Google Scholar. In addition, non-research literature was also collected, which comprises reports from non-governmental organisations (NGOs), reports from ministries and legal products on tobacco control in Indonesia. The literatures were all critically assess in terms of suitability and relevance.

RESULTS

The search for the literature resulted in three main types of literature, namely: peer-reviewed journal articles, government and non-governmental reports, and legal products. There were 75 relevant peer-reviewed journal articles identified and 28 of which are based on Indonesia setting. They are mostly on ill-health conditions related to smoking such as diabetes, cardiovascular diseases (CVDs), cancer, and pulmonary tuberculosis (TB). There were also articles pertaining to economic consequences of smoking-related diseases.

In addition, we also collected 37 reports from various NGOs and the GoI, and legal products pertaining to tobacco control. The reports are mostly on demographic and economic profile of Indonesia. From all the literature, we infer that smoking lowers the health status, causes premature mortality, and possibly, impedes future economic growth. The links between smoking, human capital and economic growth will be discussed in the subsequent sections.

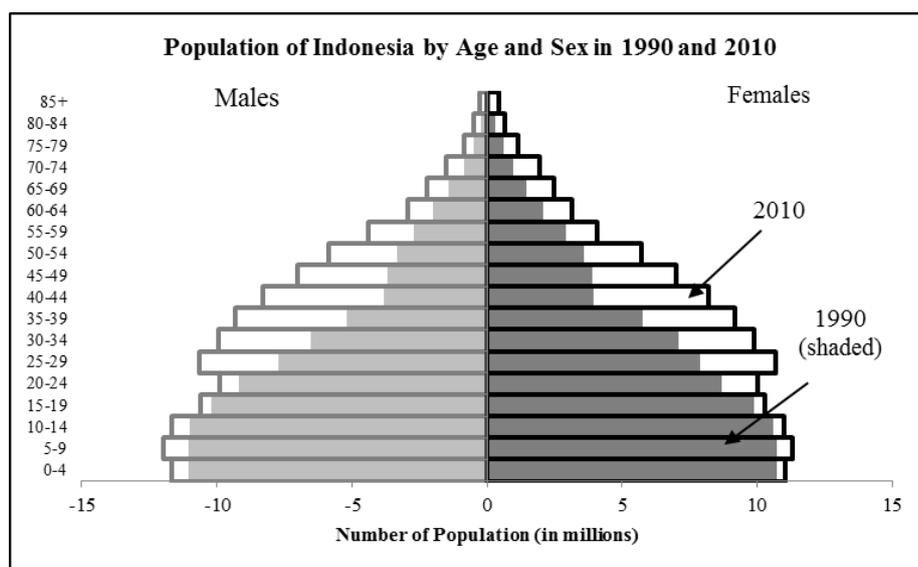
DISCUSSION

Demographic and Economic Profile of Indonesia

Indonesia is the fourth most populous country – after China, India, and Indonesia (Population Reference Bureau, 2012) – with 238 million people in 2010 (Statistics Indonesia, 2011a). Crude birth rate (CBR) declined from 45 per 1000 people in 1960, to 18 per 1000 midyear population in 2010 (World Bank, 2012); and, crude death rate declined from 20 per 1000 midyear population in 1960, to 7 per 1000 midyear population in 2010 (World Bank, 2012). Consequently, life expectancy at birth increased from 45 years in 1960, to 69 in 2010 (World Bank, 2012). However, fertility rate being around 2.4 children per woman (Statistics Indonesia, 2011b), is still above replacement-level fertility of 2.1 children per

woman (McDonald, 2014), the population thus continues to grow. Based on these circumstances, Indonesia is now at the third stage of demographic transition. However, if the fertility rate is not slowed down to its replacement level, Indonesia may not enjoy more sustainable economic growth in the future (McDonald, 2014).

Indonesia's age structure shows a low dependency ratio of 51.3% in 2010 (Statistics Indonesia, 2011a), indicating a high proportion of working-age people. There is, however, a considerable urban-rural divide where it is 56.3% in urban areas and 46.6% in the rural areas (Statistics Indonesia, 2011a). The population pyramid of Indonesia for 1990 and 2010 shows this clearly in Figure 1. The 'young' age structure of 1990, starts to become a 'mature' one in 2010, as mortality rates decline, but fertility remains above its replacement rate, at 2.4 children per woman (Statistics Indonesia, 2011b). This rate of fertility slows down the process of maturing of the population, but the decline in mortality rates leads to an excess of people in their productive ages, widely know as the demographic bonus. On one hand, this could spur economic growth of Indonesia, provided that more jobs are available. But it could also deterrent economic growth, on the other, if those young and productive people are unemployed or if they are plagued with unhealthy lifestyle such as smoking.

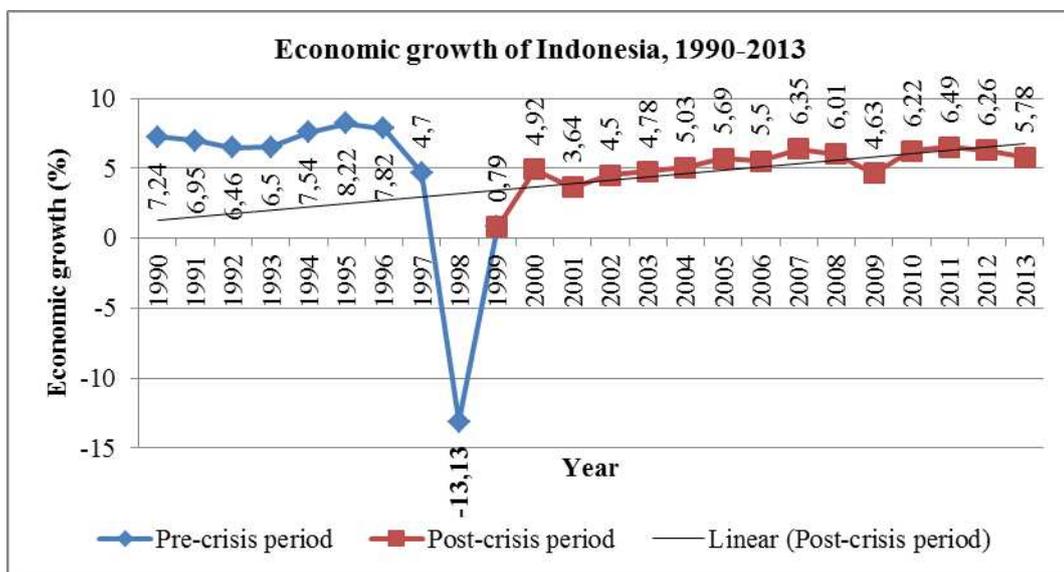


Sources : The 1990 and 2010 Indonesia's Population Census. (Statistics Indonesia, 2011a; United States Census Bureau, 2012)

Figure 1. Population pyramid of Indonesia in 1990 and 2010

Economic growth has long served as one of the indicators of economic development. In that regard, Indonesia's economic development classifies it as a lower middle-income country (World Bank, 2012). For the past twenty-three years (1990-2013), except during the Asian Financial Crisis (1997-1998), Indonesia has enjoyed relatively stable, economic growth (shown by Figure 2), averaging at 4.95% and showing a positive trend after the crisis. This fact, however, has not translated into effective poverty reduction; in fact, poverty reduction related to economic growth – measured by growth elasticity of poverty – has been slow

after the crisis (Suryahadi, Hadiwidjaja, & Sumarto, 2012). The growth elasticity of poverty in rural areas was -0.37, slightly higher than that during the pre-crisis period (-0.30). The figures for urban areas are in similar fashion, the elasticity for post-crisis period (-0.23) was not very far from that during the pre-crisis period (-0.20). As of September 2013, 28.55 million people (11.47%) were still considered 'poor,' defined as 'unable to fulfil their basic needs' (Statistics Indonesia, 2013). This suggests that increasing income, alone, is insufficient to reduce poverty.



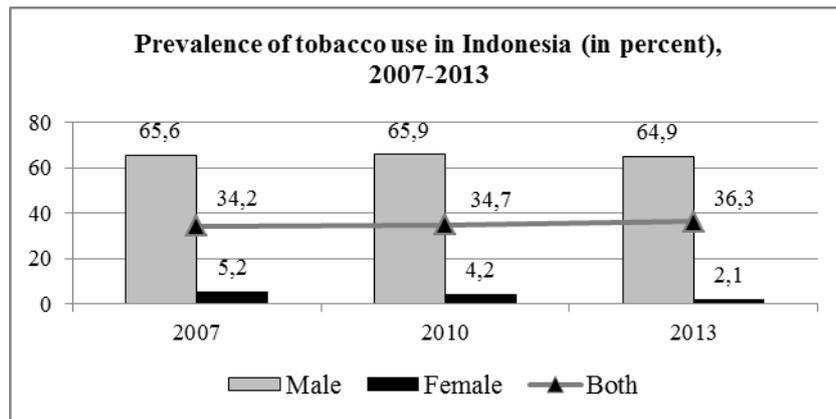
Note : The figure for 2012 is preliminary and figure for 2013 is very preliminary
 Source : Statistics Indonesia (Statistics Indonesia, 2014)

Figure 2. Economic growth of Indonesia, 1990-2013

Current Status of Smoking in Indonesia

Smoking is a public health concern in Indonesia. The recent Global Adult Tobacco Survey (GATS) 2011 conducted in Indonesia reported that almost three in four persons aged 25-64 years smoke tobacco product of any kind (World Health Organization, 2012a). Figure 3 presents the prevalent rates of smoking from 2007 to 2013 based on three Basic Health Research (National Institute of Health Research and Development, 2008, 2010, 2013b). It

suggests two inferences: 1) overall smoking prevalence is persistent, and possibly, increasing; 2) some disparity is seen between its prevalence in males and females. In 2013, the prevalence amongst males was a staggering 64.9%, with only 2.1% amongst females. One reason behind the high prevalence in males is the cultural acceptance of smoking amongst matured males in Indonesia, i.e., those who have been circumcised (Ng, Weinehall, & Öhman, 2007; Nilan, 2009).



Notes : The prevalence rates are for population aged 15 and above. The 2007 and 2010 figures include tobacco chewing and smokeless tobacco, while the 2013 figure does not.

Sources : Basic Health Research 2007, 2010, and 2013 (National Institute of Health Research and Development, 2008, 2010, 2013b)

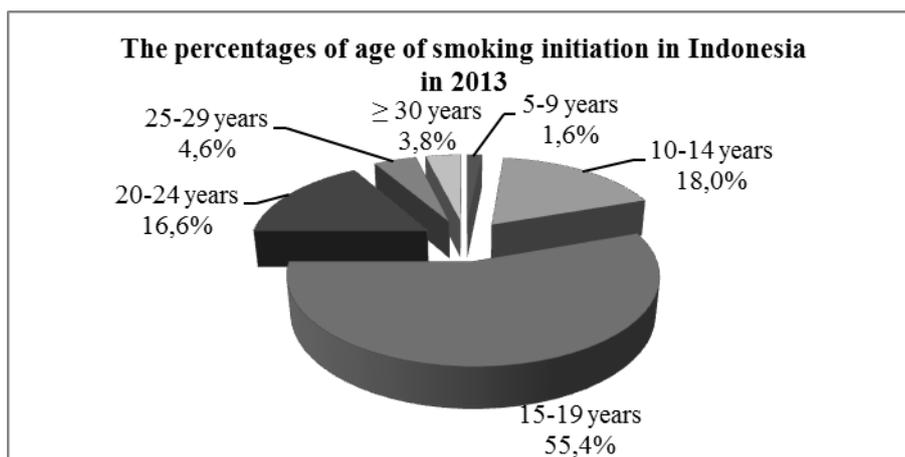
Figure 3. Prevalence of smoking in Indonesia, 2007-2013

Smoking prevalence figures clearly demonstrate a tobacco epidemic in Indonesia. The WHO adopted a model proposed by Lopez, Collishaw, and Piha (1994) describing the evolving tobacco epidemic as a continuum that conflates four stages based on prevalence of male and female smokers. Although initially proposed for developed economies, the model is also applicable to developing countries (Thun, Peto, Boreham, & Lopez, 2012). Based on this, Indonesia is currently in the second stage of the epidemic, where smoking prevalence amongst males aged 15 and above is reported to be above 50% (64.9% in 2013) and the prevalence in females lags behind males at 2.1% in 2013 (National Institute of Health Research and Development, 2013b).

Indonesia's cigarette consumption, is the world's third largest, after China and India, with, approximately, a staggering 261 billion sticks (Eriksen et al., 2012). It was found that 88% of Indonesian smokers choose *kretek*, or clove cigarettes (Ministry of Health - Republic of Indonesia, 2004). They contain 60% to 70% tobacco, and hence, impose the same health risks as other

tobacco products (Ministry of Health - Republic of Indonesia, 2004).

Moreover, youth smoking is the most worrisome in Indonesia. In 2005, the prevalence of youth smokers was 38% in boys, and 5.3% in girls, also reflecting gender differences (Ng et al., 2007). What matters is smoking initiation – the age in which one first smoke cigarettes – as it determines the continuation (Khuder, Dayal, & Mutgi, 1999) and intensity of smoking (Chen & Millar, 1998; Choe et al., 2004) and conversely, the likelihood of quitting (Breslau & Peterson, 1996; Chen & Millar, 1998). **Error! Reference source not found.** presents the percentages of smoking initiation age intervals from a recent national survey, Basic Health Research 2013 (National Institute of Health Research and Development, 2013a). The numbers are disturbing, where 55.4% started between 15-19 years, followed by 18% between 10-14 years, 16.6% between 20-24 years, 4.6% between 25-29 years, 3.8% at 30 years and over, and 1.6% between 5-9 years. The easy access of cigarettes is one of the chief reasons behind this phenomenon (Ministry of Health - Republic of Indonesia, 2010).



Source: Basic Health Research 2013 (National Institute of Health Research and Development, 2013a)

Figure 4. The percentages of age of smoking initiation in Indonesia in 2013

Smoking—whether in adolescents or adults—is indeed a public health concern, requiring public and government attention. Its continuation, could lead to ill-health and economic consequences for current and future generations of Indonesians.

Health Implications of Smoking

Health consequences of smoking are both, direct (lowering health status), and indirect (lowered health status leading to lower education attainment or even death). Smoking is a known risk factor for various kinds of disease, such as, diabetes (Soewondo & Pramono, 2011; Tonstad, 2009), CVDs (Barnoya & Glantz, 2005; Sumartono & Herawati, 2010), cancers (Alberg et al., 2007; Ezzati, Henley, Lopez, & Thun, 2005; Hecht, 1999, 2006; Jemal et al., 2011; Sasco, Secretan, & Straif, 2004), pulmonary TB (Heriyani, Sutomo, & Saleh, 2013; Leung et al., 2010; Watkins & Plant, 2006), and other respiratory illnesses (Liew & Hsu, 2009; Mangunegoro & Sutoyo, 1996). Pulmonary TB is chronically prevalent in Indonesia with an estimated period prevalence of 10.6% in 2010 (National Institute of Health Research and Development, 2010). Literary reviews conducted by Aditama (2003); Hassmiller (2006); Lin, Ezzati, and Murray (2007) confirm the association between smoking and the risk of developing, and dying from, tuberculosis. Moreover, smoking has been found to be associated with higher likelihood

of developing depression (Berlin, Covey, & Glassman, 2009; Covey, Glassman, & Stetner, 1998), lower sleep quality (McNamara et al., 2013), and lower self-rated health (Liew & Hsu, 2009).

Smokers pose a risk to themselves, and for people around them, known as passive smoking. Passive smoking can occur in public places or even at home. In 2004, the worldwide deaths attributable to passive smoking was estimated at a staggering 600,000 (Öberg, Jaakkola, Woodward, Peruga, & Prüss-Ustün, 2011). Of those, 46.6% occurred in women, 27.5% in children, and 25.9% in men; reflecting gender disparities in mortality. In Japan, smoking-related mortality was attributable to a loss of 10 years of life expectancy (Sakata et al., 2012). In Indonesia, paternal smoking has also been demonstrated to be significantly and positively associated with infant and under-5 mortality (Semba et al., 2008). Put differently, children in households headed by a male smoker were more likely to experience death. Moreover, smoking behaviour of parents could be the chief culprit of smoking among children (LaFave, 2010). Efforts have been made to reduce passive smoking, such as separating smokers by providing them designated smoking areas. However, a recent study by Byron and colleagues (2013) demonstrated considerable presence second-hand smoke (SHS) in non-designated smoking areas, showing low compliance by smokers.

Economic Implications of Smoking

As discussed above, smoking can cause all sorts of illness, and thus, impose economic costs, mainly, two fundamental ones: 1) limiting one's ability to work, thus reducing income; and, 2) the extra care and medical expenditures, involved, can be catastrophic to an ill person (Genoni, 2012; Minh, Phuong, Saksena, James, & Xu, 2013; Xu et al., 2003). The poor copes with such disastrous expenses through borrowing and selling their assets (Leive & Xu, 2008), and even worse, by reducing their food consumption (Amendah, Buigut, & Mohamed, 2014); this could further drown them into deeper iatrogenic poverty (Meessen et al., 2003).

The GoI gains revenue from tobacco companies' sales of cigarette. In 2009, the GoI reaped over US\$ 6 billion, the largest gain among other south-east Asian countries (Southeast Asia Tobacco Control Alliance, 2012). On the flip side, however, smoking also puts a burden on the Indonesian healthcare system. Djutaharta, Thabrany, Sung, Ong, and Hu (2012) estimated direct medical costs for tobacco related illnesses in 2011 from seven public hospitals to be IDR 3.77 trillion (equivalent to US\$ 418). While it represented only 0.0527% of the gross domestic product (GDP) in that year, it is preventable. The indirect costs (opportunity cost from premature mortality, assumed to be four times the direct costs), however, are equivalent to 0.21% of GDP in 2011 (Djutaharta et al., 2012). This could still be worrying, because as of 2013, more than half (50.5%) of the population are not covered by any form of health insurance (National Institute of Health Research and Development, 2013b). Moreover, it was estimated that 41% of the total health expenditure in 2009 was paid out-of-pocket (OOP) (World Health Organization, 2012b).

The lack of health insurance can be catastrophic when there are health shocks (Xu et al., 2003). This is true in Indonesia backed up by Aji and colleagues' (2013) study which found that having *Askeskin* (health insurance scheme for the poor) correspond with 11% less of OOP health expenditure. The enactment of the National Social Security System Act No. 40/2004

(Government of Indonesia, 2004), and the implementation of single-payer umbrella program (*Badan Penyelenggara Jaminan Sosial – BPJS*) starting from 1st of January 2014 (The Lancet, 2014), will hopefully further reduce OOP health expenditure in Indonesia.

Genoni (2012), using longitudinal data from the Indonesia Family Life Survey (IFLS), recently found people to be very susceptible to economic shocks due to illness. They were, however, able to smooth away these impacts by increasing their labour activities. There was also evidence that extended families send money to smooth out the deficits. Although the authors concede that the study is subject to several limitations, it suggests that Indonesian people are resilient in coping with health shocks.

Deaths of parents could reduce or end family incomes, possibly, disrupting or ending finances needed for children's education. This has several consequences: 1) the death of parents, especially breadwinner, could worsen financial situation of households; 2) the death of parents results in loss of working population. Gertler, Levine, and Ames (2004) found that a recent parent's death forces children out of school, especially, at the transition between primary and junior secondary school, and between junior secondary and secondary school. This is congruent with Asri Yusrina's (2013) research that points out that single-parent households are more financially prone compared to married-couple poor households.

Premature deaths, especially in children, also have important implications for human capital. Semba et al. (2008) analysed household data from the Indonesian Nutritional and Health Surveillance System in Indonesia. They found that, after controlling for several socioeconomic factors, urban families with smoking fathers were more likely to have their children die. This was also true in rural families with even higher risks of infant and under-5 mortality. Children are future replacement of current workers, hence, their deaths would also mean a reduction in future human capital in Indonesia.

Cigarette consumption may crowd out other family needs. Smoking is addictive due to its nicotine content (Asma et al., 2009), meaning that addicted people must buy more and more cigarettes to satisfy their addiction. The adverse effects of this addiction are worse in less affluent families in Indonesia as its members are more likely to consume tobacco (Sreeramareddy, Pradhan, Mir, & Sin, 2014). In poor families, this implies family necessities, such as, health care, food, and education, could be sacrificed. In 2005, households in the lowest expenditure quintile with smokers spent 11.9% on tobacco products, compared with 9.2% for fish, meat, eggs and milk, combined; 2.1% for health; and 1.8% for education (Barber, Ahsan, Adioetomo, & Setyonaluri, 2008).

Studies by Best et al. (2008), Block and Webb (2009), and Semba et al. (2011) suggest that expenditure for tobacco products may crowd out expenditures for family needs. Using the data from Indonesian Nutrition Surveillance System (NSS) in 2003, Best and colleagues (2008) found that rural families with smoking fathers were at greater risk of malnutrition. Using the same data, Semba and colleagues (2011) demonstrated higher risk of food insecurity in those families. Furthermore, the findings from Block and Webb's (2009) research are also suggest that smoking is detrimental to household allocation of resources. They found that having at least one smoker, low-income households divert a substantial amount of their income to tobacco products, with a higher proportion of which comes from food expenditure. This misallocation could lead to less nutrition being provided in the family which, in turn, could also undermine children's growth (Semba et al., 2007). Although the four aforementioned studies were cross-sectional, making it difficult to establish causality, they still provide preliminary evidence that paternal smoking possibly crowds out expenditure for food, and thus, increases the risk of child malnutrition.

Health has long been considered a form of human capital (see Becker (1962, 1975) and Grossman (1972, 2000) for detailed explanation). Improvements in human capital can lead to higher economic

growth, and thus, investments in health may spur economic growth (Huang, Hwang, & Chen, 2008). The converse—lower health leads to lower human capital, which, in turn, could lower future economic growth—may also be true (Barber et al., 2008). Smoking lowers health status, increases medical expenditures, and causes premature mortality, which could lead to lower educational attainment for children, and crowds out expenditures for family needs (Sparrow et al., 2014), possibly, lowering health status and educational attainment. All of these would lower human capital, and thus, impede future economic growth.

Current Tobacco-Related Policies and Future Directions

The political will of the Indonesian government is questionable, as Indonesia is, to date (as of 2013), the only Asian nation that has not signed nor ratified the WHO's FCTC—the world's first evidence based public health treaty on tobacco control (World Health Organization, 2013). One reason for this is the tobacco industry being deemed an integral part of the Indonesian economy by the national government, owing to the revenue and employment it generated (Hurt, Ebbert, Achadi, & Croghan, 2012). This is also reflected in the 2007-2020 Roadmap of Tobacco Related Industry, which called for a 12% increased production over the next 15 years (Ministry of Industry - Republic of Indonesia, 2007). This rationale is flawed, as the number employed in cigarette manufacturing has significantly declined from 28% of manufacturing employment in 1970, to less than 6% in 2004 (Barber et al., 2008). To make matters worse, cigarette companies are still allowed to sponsor concerts in which youth friendly international musicians perform, with an intention to lure replacement smokers (Hefler, 2012).

Studies suggest that increasing the price of cigarettes, e.g., through taxation, is one of the most effective ways to suppress demand for tobacco products (Hidayat & Thabrany, 2010; Jha, 2009; Jha et al., 2006), raise cessation rates (Jha, 2009), and to reduce social inequalities in smoking (Ross & Chaloupka, 2006). However, this might

not be the case in Indonesia, as Barber and Ahsan (2009) suggest. They argue that Indonesia's excise system — where tax rates are tiered—enables firms to absorb the tax increases, keeping the prices at point of sale, low. Consequently, the demand for cigarettes is not reduced. To successfully suppress cigarette consumption, the price should be set such that increase in the real price of cigarettes exceeds increase in real per capita income (Djutaharta, Surya, Pasay, Hendratno, & Adioetomo, 2005).

Additionally, tax increases could, unintendedly, spur illicit production and distribution of cigarettes. In 2011, Ahsan, Wiyono, and Setyonaluri (2011) estimated that 10 billion sticks of cigarette were illegally traded in Indonesia in 2001. Therefore, tax increases could incentivise the illegal production and sale of cigarettes, implying loss of potential revenue. Moreover, taxation is unsustainable, being merely a form of income redistribution; it will not add new value to the economy (Ross & Chaloupka, 2002).

A study in Vietnam revealed graphic warning labels to be a most cost-effective tobacco intervention available, exceeding excise tax increases (Higashi et al., 2011). Pictorial Health Warnings (PHWs) – covering 50% of the pack surface – inform young people of tobacco's health hazards, deterring them from starting to smoke (Higashi et al., 2011). There have been no reported regulations on graphic warning labels until 2012 when the GoI enacted the Government Regulation No. 109/2012 on the Control of Materials that Contain Addictive Substances in Tobacco Products in the Interests of Health (Ministry of State Secretariat - Republic of Indonesia, 2012). This regulation instructs tobacco companies to add PHWs on cigarette packaging. In the following year, the Health Minister enacted the Health Ministerial Decree No. 28/2013 (Ministry of Health - Republic of Indonesia, 2013), which governs the inclusion of PHWs on tobacco product packaging. This is akin to the regulation in Vietnam albeit in smaller PHW coverage (40%). This regulation gave 18 months for the cigarette companies to adjust their products' packaging. As of 31 October 2014, the brands that have included PHW in their packaging have reached 67.9%

(Indonesia National Agency of Drug and Food Control, 2014).

In addition to taxation and graphic warning labels, improving the educational status of the people could help reduce smoking prevalence. In 2013, Sohn (2013) investigated the connection between education and smoking behaviour. Adjusting for cognitive skills, risk aversion, and patience, he found that receiving an education above junior high school level is associated with a lower likelihood and intensity of smoking. Provided that this evidence is valid, increasing educational attainment may suppress the prevalence of smokers in the long term.

CONCLUSION AND RECOMMENDATION

Conclusion

The problem of tobacco smoking in Indonesia calls for its curtailment. The persistence rate can adversely implicate human capital, lowering health status, and educational attainment, and causing premature mortality. Consequently, these could impede future economic growth of Indonesia. Further research can strengthen anti-smoking interventions. Economic, gender and cultural issues must be integrally considered when formulating policies.

Recommendation

Given the smoking status in Indonesia, the following recommendations may help to minimise the smoking epidemic's effects:

- The Indonesian government to sign and ratify the FCTC, demonstrating political will on tobacco control, and also to meaningfully intervene in curbing the tobacco epidemic;
- Interventions must be gender-specific, targeting boys and men. For example, the existing 'masculinity' norm of smoking, can be challenged by promoting men who dare to quit smoking as more masculine than those who do not;

- Interventions targeting youth with graphic warning labels to inform them of the health hazards of smoking, irrespective of quantity;
- Tax increases to be considerably high for cigarette firms to be unable to absorb, forcing them to increase cigarette prices, which would reduce their demand;
- Tax increases, accompanied by smoking cessation programmes, can be complemented by unconditional cash transfers (BLT) being reallocated to these programs;
- The effects of smoking on human capital calls for further research to address causality, particularly in Indonesia's setting, thus providing a stronger rationale for anti-smoking interventions. Further research that assesses the effectiveness of various smoking cessation programs should be conducted (Pierce, White, & Emery, 2012), such as the one in Australia, "Quitline", which is a free resource that can be utilised by smokers who would like to quit (Young et al., 2014).

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REFERENCES

Aditama, T. Y. (2003). TB & tobacco. *Medical Journal of Indonesia*, 12(1), 48-52. doi: 10.13181/mji.v12i1.89

Ahsan, A., Wiyono, N. H., & Setyonaluri, D. (2011). *Illicit cigarettes in Indonesia*. Dusit, Bangkok: Demographic Institute, Faculty of Economics, University of Indonesia and Southeast Asia Tobacco Control Alliance.

Aji, B., De Allegri, M., Soares, A., & Sauerborn, R. (2013). The impact of health insurance

programs on out-of-pocket expenditures in Indonesia: an increase or a decrease? *International Journal of Environmental Research and Public Health*, 10(7), 2995-3013. doi: 10.3390/ijerph10072995

Alberg, A. J., Kouzis, A., Genkinger, J. M., Gallicchio, L., Burke, A. E., Hoffman, S. C., . . . Comstock, G. W. (2007). A prospective cohort study of bladder cancer risk in relation to active cigarette smoking and household exposure to secondhand cigarette smoke. *American Journal of Epidemiology*, 165(6), 660-666. doi: 10.1093/aje/kwk047

Amendah, D. D., Buigut, S., & Mohamed, S. (2014). Coping strategies among urban poor: Evidence from Nairobi, Kenya. *PLoS ONE*, 9(1), e83428. doi: 10.1371/journal.pone.0083428

Asma, S., Bettcher, D. W., Samet, J., Palipudi, K. M., Giovino, G., Bialous, S., . . . Yach, D. (2009). Tobacco. In R. Detels, R. Beaglehole, M. A. Lansang & M. Gulliford (Eds.), *Oxford Textbook of Public Health: The Scope of Public Health* (5th ed., Vol. 1). New York: Oxford University Press Inc.

Barber, S., & Ahsan, A. (2009). The tobacco excise system in Indonesia: Hindering effective tobacco control for health. *Journal of Public Health Policy*, 30(2), 208-225.

Barber, S., Ahsan, A., Adioetomo, S. M., & Setyonaluri, D. (2008). *Tobacco economics in Indonesia*. Paris: International Union Against Tuberculosis and Lung Disease (The Union).

Barnoya, J., & Glantz, S. A. (2005). Cardiovascular effects of secondhand smoke. *Circulation*, 111(20), 2684-2698. doi: 10.1161/circulationaha.104.492215

Becker, G. S. (1962). Investment in human capital: A theoretical analysis. *Journal of Political Economy*, 70(5), 9-49.

Becker, G. S. (1975). *Human capital: A theoretical and empirical analysis, with special reference to education* (2nd ed.). Cambridge, MA: National Bureau of Economic Research (NBER).

Berlin, I., Covey, L. S., & Glassman, A. H. (2009). Smoking and depression: A co-morbidity. *Journal of Dual Diagnosis*, 5(2), 149-158. doi: 10.1080/15504260902870129

Best, C. M., Sun, K., de Pee, S., Sari, M., Bloem, M. W., & Semba, R. D. (2008). Paternal smoking and increased risk of child malnutrition among families in rural Indonesia. *Tobacco Control*, 17(1), 38-45. doi: 10.1136/tc.2007.020875

Block, S., & Webb, P. (2009). Up in smoke: Tobacco use, expenditure on food, and child malnutrition in developing countries. *Economic Development and Cultural Change*, 58(1), 1-23.

Breslau, N., & Peterson, E. L. (1996). Smoking cessation in young adults: Age at initiation of cigarette smoking and other suspected influences. *American Journal of Public Health*, 86(2), 214-220. doi: 10.2105/ajph.86.2.214

- Byron, M. J., Suhadi, D. R., Hepp, L. M., Avila-Tang, E., Yang, J., Asiani, G., . . . Cohen, J. E. (2013). Secondhand tobacco smoke in public venues in three Indonesian cities. *Medical Journal of Indonesia*, 22(4), 232-237. doi: 10.13181/mji.v22i4.606
- Chen, J., & Millar, W. J. (1998). Age of smoking initiation: Implications for quitting. *Health Reports*, 9(4), 39-46.
- Choe, M. K., Thapa, S., Podhisita, C., Raymundo, C., Lin, H.-s., & Achmad, S. (2004). The teen tobacco epidemic in Asia: Indonesia, Nepal, Philippines, Taiwan, and Thailand. *Journal of Youth Studies*, 7(1), 73-87. doi: 10.1080/1367626042000209967
- Collins, J. A., & Fauser, B. C. J. M. (2005). Balancing the strengths of systematic and narrative reviews. *Human Reproduction Update*, 11(2), 103-104. doi: 10.1093/humupd/dmh058
- Covey, L. S., Glassman, A. H., & Stetner, F. (1998). Cigarette smoking and major depression. *Journal of Addictive Diseases*, 17(1), 35-46. doi: 10.1300/J069v17n01_04
- Cronin, P., Ryan, F., & Coughlan, M. (2008). Undertaking a literature review: A step-by-step approach. *British Journal of Nursing*, 17(1), 38-43.
- de Beyer, J., Lovelace, C., & Yürekli, A. (2001). Poverty and tobacco. *Tobacco Control*, 10(3), 210-211. doi: 10.1136/tc.10.3.210
- Djutaharta, T., Surya, H. V., Pasay, N. H. A., Hendratno, & Adioetomo, S. M. (2005). *Aggregate analysis of the impact of cigarette tax rate increases on tobacco consumption and government revenue : The case of Indonesia*. Washington, DC. : World Bank Retrieved from <http://hdl.handle.net/10986/13758>.
- Djutaharta, T., Thabrany, H., Sung, H.-Y., Ong, M. K., & Hu, T.-w. (2012). Healthcare cost of tobacco related diseases in Indonesia, 2011. In H. Thabrany & P. Sarnantio (Eds.), *Indonesia: The heaven for cigarette companies and the hell for people* (pp. 15-25). Depok: Center for Anti Smoking, School of Public Health, The University of Indonesia.
- Efroymson, D., Ahmed, S., Townsend, J., Alam, S. M., Dey, A. R., Saha, R., . . . Rahman, O. (2001). Hungry for tobacco: An analysis of the economic impact of tobacco consumption on the poor in Bangladesh. *Tobacco Control*, 10(3), 212-217. doi: 10.1136/tc.10.3.212
- Eriksen, M., Mackay, J., & Ross, H. (2012). *The tobacco atlas* (4th ed.). Atlanta, Georgia: American Cancer Society.
- Ezzati, M., Henley, S. J., Lopez, A. D., & Thun, M. J. (2005). Role of smoking in global and regional cancer epidemiology: Current patterns and data needs. *International Journal of Cancer*, 116(6), 963-971. doi: 10.1002/ijc.21100
- Genoni, M. E. (2012). Health shocks and consumption smoothing: Evidence from Indonesia. *Economic Development and Cultural Change*, 60(3), 475-506.
- Gertler, P., Levine, D. I., & Ames, M. (2004). Schooling and parental death. *The Review of Economics and Statistics*, 86(1), 211-225.
- Government of Indonesia. (2004). Undang-Undang Republik Indonesia Nomor 40 Tahun 2004 tentang Sistem Jaminan Sosial Nasional [The National Social Security System Act No. 40/2004]. Jakarta: Government of Indonesia.
- Green, B. N., Johnson, C. D., & Adams, A. (2006). Writing narrative literature reviews for peer-reviewed journals: Secrets of the trade. *Journal of Chiropractic Medicine*, 5(3), 101-117. doi: 10.1016/S0899-3467(07)60142-6
- Grossman, M. (1972). On the concept of health capital and the demand for health. *Journal of Political Economy*, 80(2), 223-255.
- Grossman, M. (2000). The human capital model. In J. C. Anthony & P. N. Joseph (Eds.), *Handbook of Health Economics* (Vol. Volume 1, Part A, pp. 347-408). Amsterdam: Elsevier.
- Hassmiller, K. M. (2006). The association between smoking and tuberculosis. *Salud Pública de México*, 48, s201-s216.
- Hecht, S. S. (1999). Tobacco smoke carcinogens and lung cancer. *Journal of the National Cancer Institute*, 91(14), 1194-1210. doi: 10.1093/jnci/91.14.1194
- Hecht, S. S. (2006). Cigarette smoking: cancer risks, carcinogens, and mechanisms. *Langenbeck's Archives of Surgery*, 391(6), 603-613. doi: 10.1007/s00423-006-0111-z
- Hefler, M. (2012). Worldwide news and comment: Indonesia/world: using music to target youth. *Tobacco Control*, 21(2), 82-86. doi: 10.1136/tobaccocontrol-2012-050448
- Heriyani, F., Sutomo, A. H., & Saleh, Y. D. a. (2013). Risk factors of the incidence of pulmonary tuberculosis in Banjarmasin City, Kalimantan, Indonesia. *International Journal of Public Health Science*, 2(1), 1-6.
- Hidayat, B., & Thabrany, H. (2010). Cigarette smoking in Indonesia: Examination of a myopic model of addictive behaviour. *International Journal of Environmental Research and Public Health*, 7(6), 2473-2485. doi: 10.3390/ijerph7062473
- Higashi, H., Truong, K. D., Barendregt, J. J., Nguyen, P. K., Vuong, M. L., Nguyen, T. T., . . . Doran, C. M. (2011). Cost effectiveness of tobacco control policies in Vietnam. *Applied Health Economics and Health Policy*, 9(3), 183-196.
- Hu, T.-w., Mao, Z., Liu, Y., de Beyer, J., & Ong, M. (2005). Smoking, standard of living, and poverty in China. *Tobacco Control*, 14(4), 247-250. doi: 10.1136/tc.2004.010777
- Huang, M.-L., Hwang, J.-T., & Chen, M.-R. (2008). Health, human capital and economic growth: An international comparison study. *Journal of American Academy of Business*, 14(1), 110-122.
- Hurt, R. D., Ebbert, J. O., Achadi, A., & Croghan, I. T. (2012). Roadmap to a tobacco epidemic: Transnational tobacco companies invade Indonesia. *Tobacco Control*, 21(3), 306-312. doi: 10.1136/tc.2010.036814

- Indonesia National Agency of Drug and Food Control. (2014). Penerapan PHW Pada 31 Oktober 2014 Mencapai 67,90% [The Implementation of PHW has reached 67,9% on 31st October 2014]. Retrieved 30 November, 2014, from <http://www.pom.go.id/new/index.php/view/berita/7134/Penerapan-PHW-Pada-31-Oktober-2014-Mencapai-67-90-.html>
- Jemal, A., Bray, F., Center, M. M., Ferlay, J., Ward, E., & Forman, D. (2011). Global cancer statistics. *CA: A Cancer Journal for Clinicians*, 61(2), 69-90. doi: 10.3322/caac.20107
- Jha, P. (2009). Avoidable global cancer deaths and total deaths from smoking. *Nat Rev Cancer*, 9(9), 655-664. doi: 10.1038/nrc2703
- Jha, P., Chaloupka, F. J., Moore, J., Gajalakshmi, V., Gupta, P. C., Peck, R., . . . Zatonski, W. (2006). Tobacco addiction. In D. T. Jamison, J. G. Breman, A. R. Measham, G. Alleyne, M. Claeson, D. B. Evans, P. Jha, A. Mills & P. Musgrove (Eds.), *Disease control priorities in developing countries* (2nd ed., pp. 869-885). New York, NY: Oxford University Press.
- John, R. M., Ross, H., & Blecher, E. (2012). Tobacco expenditures and its implications for household resource allocation in Cambodia. *Tobacco Control*, 21(3), 341-346. doi: 10.1136/tc.2010.042598
- Khuder, S. A., Dayal, H. H., & Mutgi, A. B. (1999). Age at smoking onset and its effect on smoking cessation. *Addictive Behaviors*, 24(5), 673-677. doi: [http://dx.doi.org/10.1016/S0306-4603\(98\)00113-0](http://dx.doi.org/10.1016/S0306-4603(98)00113-0)
- LaFave, D. (2010). *Seeing Through the Haze: Examining Tobacco Use in Indonesia*. Retrieved from http://econ.duke.edu/uploads/assets/PhD%20Program/LaFave_prospectus.pdf.
- Leive, A., & Xu, K. (2008). Coping with out-of-pocket health payments: Empirical evidence from 15 African countries. *Bulletin of the World Health Organization*, 86, 849-856C. doi: 10.1590/S0042-96862008001100014
- Leung, C. C., Lam, T. H., Ho, K. S., Yew, W. W., Tam, C. M., Chan, W. M., . . . Au, K. F. (2010). Passive smoking and tuberculosis. *Archives of Internal Medicine*, 170(3), 287-292. doi: 10.1001/archinternmed.2009.506
- Liew, H.-P., & Hsu, T.-I. (2009). Smoking and health in Indonesia: The need for comprehensive intervention strategies. *Asian Population Studies*, 5(2), 189-209. doi: 10.1080/17441730902992117
- Lin, H.-H., Ezzati, M., & Murray, M. (2007). Tobacco smoke, indoor air pollution and tuberculosis: A systematic review and meta-analysis. *PLoS Med*, 4(1), e20. doi: 10.1371/journal.pmed.0040020
- Mangunegoro, H., & Sutoyo, D. K. (1996). Environmental and occupational lung diseases in Indonesia. *Respirology*, 1(2), 85-93. doi: 10.1111/j.1440-1843.1996.tb00016.x
- Mathers, C. D., & Loncar, D. (2006). Projections of global mortality and burden of disease from 2002 to 2030. *PLoS Med*, 3(11), e442. doi: 10.1371/journal.pmed.0030442
- McDonald, P. (2014). The demography of Indonesia in comparative perspective. *Bulletin of Indonesian Economic Studies*, 50(1), 29-52. doi: 10.1080/00074918.2014.896236
- McNamara, J. P. H., Wang, J., Holiday, D. B., Warren, J. Y., Paradoa, M., Balkhi, A. M., . . . McCrae, C. S. (2013). Sleep disturbances associated with cigarette smoking. *Psychology, Health & Medicine*, 1-10. doi: 10.1080/13548506.2013.832782
- Meessen, B., Zhenzhong, Z., Damme, W. V., Devadasan, N., Criel, B., & Bloom, G. (2003). Editorial: Iatrogenic poverty. *Tropical Medicine & International Health*, 8(7), 581-584. doi: 10.1046/j.1365-3156.2003.01081.x
- Minh, H. V., Phuong, N. T. K., Saksena, P., James, C. D., & Xu, K. (2013). Financial burden of household out-of pocket health expenditure in Viet Nam: Findings from the National Living Standard Survey 2002–2010. *Social Science & Medicine*, 96(0), 258-263. doi: <http://dx.doi.org/10.1016/j.socscimed.2012.11.028>
- Ministry of Health - Republic of Indonesia. (2004). *The tobacco sourcebook: Data to support a national tobacco control strategy*. Jakarta: Ministry of Health Indonesia (MoH), Republic of Indonesia.
- Ministry of Health - Republic of Indonesia. (2010). *National health profile, 2010*. Jakarta: Ministry of Health Indonesia (MoH), Republic of Indonesia.
- Ministry of Health - Republic of Indonesia. (2013). Peraturan Menteri Kesehatan Republik Indonesia Nomor 28 Tahun 2013 tentang Pencantuman Peringatan Kesehatan dan Informasi Kesehatan pada Kemasan Produk Tembakau [Health Ministerial Decree No. 28/2013 on Inclusion of Health Information and Health Warnings on Tobacco Product Packaging]. Jakarta: Ministry of Health (MoH), Republic of Indonesia.
- Ministry of Industry - Republic of Indonesia. (2007). *The 2007-2020 roadmap of tobacco related industry*. Jakarta: Ministry of Industry (MoI), Republic of Indonesia.
- Ministry of State Secretariat - Republic of Indonesia. (2012). Peraturan Pemerintah Republik Indonesia Nomor 109 Tahun 2012 tentang Pengamanan Bahan yang Mengandung Zat Adiktif Berupa Produk Tembakau Bagi Kesehatan [Government Regulation of the Republic of Indonesia No. 109 of 2012 Concerning Control of Materials that Contain Addictive Substances in Tobacco Products in the Interests of Health]. Jakarta: Ministry of State Secretariat, Republic of Indonesia Retrieved from <http://www.hukor.depkes.go.id/?dokumen=global&type=2&th=2012>.
- National Institute of Health Research and Development. (2008). *Basic health research report, 2007*. Jakarta: National Institute of Health Research and Development (NIHRD),

- Ministry of Health (MoH), Republic of Indonesia.
- National Institute of Health Research and Development. (2010). *Basic health research report, 2010*. Jakarta: National Institute of Health Research and Development (NIHRD), Ministry of Health Indonesia (MoH), Republic of Indonesia.
- National Institute of Health Research and Development. (2013a). *Basic Health Research in Numbers 2013*. Jakarta: National Institute of Health Research and Development, Ministry of Health, Republic of Indonesia Retrieved from http://www.litbang.depkes.go.id/sites/download/rkd2013/RKD_dalam_angka_nonkuning.pdf.
- National Institute of Health Research and Development. (2013b). *Basic health research report, 2013*. Jakarta: National Institute of Health Research and Development (NIHRD), Ministry of Health Indonesia (MoH), Republic of Indonesia.
- Ng, N., Weinehall, L., & Öhman, A. (2007). 'If I don't smoke, I'm not a real man'—Indonesian teenage boys' views about smoking. *Health Education Research*, 22(6), 794-804. doi: 10.1093/her/cyl104
- Nilan, P. (2009). Contemporary masculinities and young men in Indonesia. *Indonesia and the Malay World*, 37(109), 327-344. doi: 10.1080/13639810903269318
- Nonnemaker, J., & Sur, M. (2007). Tobacco expenditures and child health and nutritional outcomes in rural Bangladesh. *Social Science & Medicine*, 65(12), 2517-2526. doi: 10.1016/j.socscimed.2007.07.008
- Öberg, M., Jaakkola, M. S., Woodward, A., Peruga, A., & Prüss-Ustün, A. (2011). Worldwide burden of disease from exposure to second-hand smoke: A retrospective analysis of data from 192 countries. *Lancet*, 377(9760), 139-146. doi: 10.1016/s0140-6736(10)61388-8
- Paavola, M., Vartiainen, E., & Haukkala, A. (2004). Smoking from adolescence to adulthood. *The European Journal of Public Health*, 14(4), 417-421. doi: 10.1093/eurpub/14.4.417
- Pierce, J. P., White, V. M., & Emery, S. L. (2012). What public health strategies are needed to reduce smoking initiation? *Tobacco Control*, 21(2), 258-264. doi: 10.1136/tobaccocontrol-2011-050359
- Population Reference Bureau. (2012). *The 2011 world population data sheet*. Washington, DC: Population Reference Bureau (PRB).
- Ross, H., & Chaloupka, F. J. (2002). *Economics of tobacco control*. Chicago, Illinois: International Tobacco Evidence Network (ITEN).
- Ross, H., & Chaloupka, F. J. (2006). Economic policies for tobacco control in developing countries. *Salud Pública de México*, 48(Suppl. 1), s113-120. doi: 10.1590/S0036-36342006000700014
- Sakata, R., McGale, P., Grant, E. J., Ozasa, K., Peto, R., & Darby, S. C. (2012). Impact of smoking on mortality and life expectancy in Japanese smokers: A prospective cohort study. *BMJ*, 345, e7093. doi: 10.1136/bmj.e7093
- Sasco, A. J., Secretan, M. B., & Straif, K. (2004). Tobacco smoking and cancer: A brief review of recent epidemiological evidence. *Lung Cancer*, 45(Suppl. 2), s3-s9. doi: 10.1016/j.lungcan.2004.07.998
- Semba, R. D., Campbell, A. A., Sun, K., de Pee, S., Akhter, N., Moench-Pfanner, R., . . . Bloem, M. W. (2011). Paternal smoking is associated with greater food insecurity among poor families in rural Indonesia. *Asia Pacific Journal of Clinical Nutrition*, 20(4), 618-623.
- Semba, R. D., de Pee, S., Sun, K., Best, C. M., Sari, M., & Bloem, M. W. (2008). Paternal smoking and increased risk of infant and under-5 child mortality in Indonesia. *American Journal of Public Health*, 98(10), 1824-1826. doi: 10.2105/ajph.2007.119289
- Semba, R. D., Kalm, L. M., Pee, S. d., Ricks, M. O., Sari, M., & Bloem, M. W. (2007). Paternal smoking is associated with increased risk of child malnutrition among poor urban families in Indonesia. *Public Health Nutrition*, 10(01), 7-15. doi: doi:10.1017/S136898000722292X
- Soewondo, P., & Pramono, L. A. (2011). Prevalence, characteristics, and predictors of pre-diabetes in Indonesia. *Medical Journal of Indonesia*, 20(4), 283-294.
- Sohn, K. (2013). A note on the effects of education on youth smoking in a developing country. *Journal of the Asia Pacific Economy*, 19(1), 66-73. doi: 10.1080/13547860.2013.803845
- Southeast Asia Tobacco Control Alliance. (2012). *ASEAN tobacco tax report card: regional comparisons and trends: February 2012*. Bangkok, Thailand: Southeast Asia Tobacco Control Alliance (SEATCA).
- Sparrow, R., de Poel, E. V., Hadiwidjaja, G., Yumna, A., Warda, N., & Suryahadi, A. (2014). Coping with the economic consequences of ill health in Indonesia. *Health Economics*, 23(6), 719-728. doi: 10.1002/hec.2945
- Sreeramareddy, C., Pradhan, P., Mir, I., & Sin, S. (2014). Smoking and smokeless tobacco use in nine South and Southeast Asian countries: Prevalence estimates and social determinants from Demographic and Health Surveys. *Population Health Metrics*, 12(1), 22. doi: 10.1186/s12963-014-0022-0
- Statistics Indonesia. (2011a). *Age and sex of Indonesia's population: Results of 2010 census*. Jakarta: Badan Pusat Statistik (BPS - Statistics Indonesia).
- Statistics Indonesia. (2011b). *Indonesia's fertility: Results of 2010 census*. Jakarta: Badan Pusat Statistik (BPS - Statistics Indonesia).
- Statistics Indonesia. (2013). *Trends of selected socio-economic indicators of Indonesia - August 2013*. Jakarta: Badan Pusat Statistik (BPS - Statistics Indonesia).
- Statistics Indonesia. (2014). *Trends of selected socio-economic indicators of Indonesia - August 2014*. Jakarta: Badan Pusat Statistik (BPS - Statistics Indonesia).
- Sumartono, W., & Herawati, M. H. (2010). Smoking and socio-demographic risk factors of

- cardiovascular disease among middle-aged and elderly Indonesian men. *Health Science Journal of Indonesia*, 1(1), 20-25.
- Suryahadi, A., Hadiwidjaja, G., & Sumarto, S. (2012). Economic growth and poverty reduction in Indonesia before and after the asian financial crisis. *Bulletin of Indonesian Economic Studies*, 48(2), 209-227. doi: 10.1080/00074918.2012.694155
- The Lancet. (2014). Indonesia strides towards universal health care. *The Lancet*, 383(9911), 2. doi: 10.1016/S0140-6736(13)62716-6
- Thun, M., Peto, R., Boreham, J., & Lopez, A. D. (2012). Stages of the cigarette epidemic on entering its second century. *Tobacco Control*, 21(2), 96-101. doi: 10.1136/tobaccocontrol-2011-050294
- Tobacco Control Support Center. (2012). *Bunga Rampai Fakta Tembakau dan Permasalahannya di Indonesia Tahun 2012*. Jakarta: Tobacco Control Support Center, Ikatan Ahli Kesehatan Masyarakat Indonesia.
- Tonstad, S. (2009). Cigarette smoking, smoking cessation, and diabetes. *Diabetes Research and Clinical Practice*, 85(1), 4-13. doi: 10.1016/j.diabres.2009.04.013
- United States Census Bureau. (2012). International Data Base: Indonesia. In U. S. C. B. (USCB) (Ed.).
- Wang, H., Sindelar, J. L., & Busch, S. H. (2006). The impact of tobacco expenditure on household consumption patterns in rural China. *Social Science & Medicine*, 62(6), 1414-1426. doi: 10.1016/j.socscimed.2005.07.032
- Watkins, R. E., & Plant, A. J. (2006). Does smoking explain sex differences in the global tuberculosis epidemic? *Epidemiology & Infection*, 134(02), 333-339. doi: 10.1017/S0950268805005042
- World Bank. (2012). World Development Indicators (WDI) and Global Development Finance (GDF): Indonesia. from <http://data.worldbank.org/country/indonesia>
- World Health Organization. (2008). *WHO report on the global tobacco epidemic, 2008: The MPOWER package*. Geneva: World Health Organization (WHO).
- World Health Organization. (2009). *Global health risks: Mortality and burden of disease attributable to selected major risks*. Geneva: World Health Organization (WHO).
- World Health Organization. (2011). *Systematic review of the link between tobacco and poverty*. Geneva: World Health Organization (WHO).
- World Health Organization. (2012a). *Global Adult Tobacco Survey: Indonesia Report 2011*. New Delhi: World Health Organization (WHO), Regional Office for South-East Asia.
- World Health Organization. (2012b). *World health statistics 2012*. Geneva: World Health Organization (WHO).
- World Health Organization. (2013). *WHO report on the global tobacco epidemic, 2013: Enforcing bans on tobacco advertising, promotion, and sponsorship*. Geneva: World Health Organization (WHO).
- Xin, Y., Qian, J., Xu, L., Tang, S., Gao, J., & Critchley, J. A. (2009). The impact of smoking and quitting on household expenditure patterns and medical care costs in China. *Tobacco Control*, 18(2), 150-155. doi: 10.1136/tc.2008.026955
- Xu, K., Evans, D. B., Kawabata, K., Zeramdini, R., Klavus, J., & Murray, C. J. L. (2003). Household catastrophic health expenditure: A multicountry analysis. *Lancet*, 362(9378), 111-117. doi: 10.1016/s0140-6736(03)13861-5
- Young, J. M., Stacey, I., Dobbins, T. A., Dunlop, S., Dessaix, A. L., & Currow, D. C. (2014). Association between tobacco plain packaging and Quitline calls: A population-based, interrupted time-series analysis. *Medical Journal of Australia*, 200(1), 29-32. doi: 10.5694/mja13.11070
- Yusrina, A. (2013). Are female-headed households poorer than male-headed households? *SMERU Bulletin*, 34, 11-17.