

**PREVALENCE OF CIGARETTE SMOKING AND ITS SERIOUS HEALTH IMPACT -AN  
INFORMATIVE REVIEW****Kazi Azajul Ferdoush<sup>1</sup>, Nazrin Sultana<sup>2</sup>, Aishi Sharker Shoshi<sup>3</sup>, Md. Anamul Haque<sup>4</sup> and  
Khurshid Jahan<sup>5\*</sup>**<sup>2,3,4,5</sup>World University of Bangladesh, Uttara, Dhaka 1230.<sup>1</sup>Resident, Department of Cardiology, Bangabandhu Sheikh Mujib Medical University (BSMMU), Shahbag, Dhaka  
1209.**\*Corresponding Author: Khurshid Jahan**

World University of Bangladesh, Uttara, Dhaka 1230.

DOI: <https://doi.org/10.17605/OSF.IO/RQJCP>

Article Received on 16/03/2022

Article Revised on 04/04/2022

Article Accepted on 25/04/2022

**ABSTRACT**

Smoking is the habit of burning tobacco. During cigarette smoking the smoke is inspired with cigarettes, or released from the mouth, as is mostly done with pipes and cigars. Tobacco is considered as addictive and world's most-disastrous causes of death. Throughout the world, smoking is increasing and number of smoking related death also increasing. The injurious effect of smoking is not only limited to the smoker, it is similarly harmful to the nonsmokers as well as to the environment. When the nonsmokers are continuously exposed to tobacco smoke in the environment they will be similarly attacked by same diseases that bother smokers like lung cancer and other diseases of different organs. When people start smoking they take it as a source of relieving stress but day by day it turns to an addictive things. The objective of this review was to study the health impacts of cigarette smoking. From our study it was observed that not only environment but also different organs of human body liker lungs, women fertility, kidney and heart can be damaged for long term exposure of smoking. Besides smokers, nonsmokers are similarly attacked by the harmful effects of smoking. The government, non-government organizations and policy makers must take necessary steps to control cigarette smoking.

**KEYWORDS:** Cancer, Cigarettes Smoking, COPD, Diabetes, Devices, Electronic cigarette.**INTRODUCTION**

According to the documentation of World Health Organization (WHO), cigarette is called 'nicotine delivery system' (NDS) which is considered as the biggest avoidable risk factor for mortality throughout the World. Though cigarettes are legal consumer products in the world, long term use is a reason of sudden death also.<sup>[1]</sup>

Smoking is considered as a frequent forms of recreational drug. Tobacco smoking is very common and popular form, globally over billion of people practice it moreover another drugs like opium and cannabis are less commonly used. The active ingredient in tobacco is nicotine which is highly addictive, producing dependency. There are some other components also which are grouped as hard narcotics, like heroin, but they are not marketable available form and use is restricted.<sup>[2]</sup> As tobacco products there are cigarettes, bidis, cigars, kreteks etc. Loose tobacco is also smoked by some people in hookah (water pipe) or in pipe.<sup>[3]</sup> Cigarette smoking causes deep inhalation of smoke into the lungs and deliver extensive amount of nicotine to the brain within 10–20 s of inhalation.<sup>[4]</sup>

According to the National Survey on Drug Use and Health 2012, smoking initiation age was 15.3 years and less than 1.5% of cigarette smokers began smoking in adulthood (after 26 years).<sup>[5]</sup> Each year more than three million people die from smoking and more than one third of smokers will be affected by multiple diseases as smoking of cigarette is related to variety of diseases.<sup>[6]</sup> The habit is a main cause of environmental pollution also. Manufacturing process also release different pollutants to the environment. But recently cigarette smoking is declining and use of electronic cigarettes (e-cigarette) in this population is increasing. These trends in cigarette and e- cigarette featured the consequences of targeting smoking prevention efforts at youngster and young adults as risk health impacts associated to this. As several risk factors are associated to smoking like asthma, arthritis, atherosclerosis, birth defects, cancers, diabetes, skin disease, diseases of oral cavity etc.<sup>[7]</sup>

**Table 1: Highest smoking rates by country 2022.**<sup>[8]</sup>

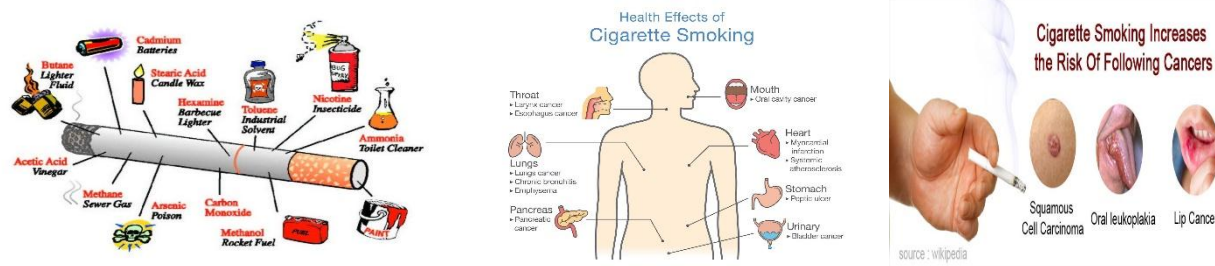
| Country    | Total Smoking Rate | Male Smoking Rate | Female Smoking Rate |
|------------|--------------------|-------------------|---------------------|
| Nauru      | 52.10%             | 51.70%            | 52.60%              |
| Kiribati   | 52.00%             | 68.60%            | 35.50%              |
| Tuvalu     | 48.70%             | 66.00%            | 31.40%              |
| Myanmar    | 45.50%             | 70.20%            | 20.80%              |
| Chile      | 44.70%             | 49.20%            | 40.30%              |
| Lebanon    | 42.60%             | 49.40%            | 35.90%              |
| Serbia     | 40.60%             | 40.00%            | 41.20%              |
| Bangladesh | 39.10%             | 60.60%            | 17.70%              |
| Greece     | 39.10%             | 45.30%            | 32.80%              |
| Bulgaria   | 38.90%             | 42.50%            | 35.30%              |

The intention of the study was to conduct an organized review of health impact of cigarette smoking and its risk on different organ system and infertility in women of reproductive age target to create consciousness among the common population. To perform our study we conducted a literature search on different databases using the following keywords in combination or separately: cigarette smoking, composition of a cigarette, e- cigarette, tobacco smoking, health impacts of cigarette smoking, impact of cigarette smoking on women health, smoking and environmental impact etc.

## HEALTH IMPACTS OF CIGARETTE SMOKING

### Cigarettes Smoking and Cancer

Cancer causes abnormal cell division and this uncontrolled growth invade other cells and tissues of the body. Cancer cells spread to the body by the blood and lymph systems.<sup>[9]</sup> <sup>[10]</sup> Cigarette smoking causes lung cancers and obstruct body from fighting against diseases.<sup>[11]</sup> Poisons in cigarette smoke incapacitate the body's immune system and resist to kill cancer cells. After that, growing of cancer cells become uncontrolled.<sup>[12]</sup>



**Fig 1: Cigarette smoking and its health impacts.**

### Cigarette smoking and heart disease

Cigarette smoking has serious impact on blood vessels that may cause heart diseases. Formation of plaque in the blood vessel narrows and restricts blood flow and may lead to atherosclerosis which may increase risk of angina, heart attack, stroke and peripheral artery disease.<sup>[13]</sup>

### Cigarette smoking and chronic obstructive pulmonary disease (COPD)

COPD causes occlusion of airflow and breathing difficulty. According to the report of American Lung Association about 80% lung disease causes by cigarette smoking. COPD encompasses emphysema, chronic bronchitis, asthma and chronic bronchitis.<sup>[14]</sup>

### Cigarette smoking and diabetes

Cigarette smokers have a 30%–40% risk of developing Type 2 diabetes and managing the condition become harder also. It can cause serious health impact like heart disease, kidney disease, peripheral neuropathy and retinopathy.<sup>[15]</sup>

### Cigarette Smoking and vision -hearing problem

Smokers are at high chance of developing hearing loss<sup>[16]</sup> and vision problem<sup>[17]</sup> than the nonsmokers and these conditions lead to other health conditions like developing cataracts, the clouding of the lens of our eye, and a supreme source of blindness.<sup>[18]</sup> Smoking may cause inflammation that clog blood flow to the cochlea eventually, and make harder to hear high sounds.<sup>[19]</sup>

### Cigarette Smoking and oral hygiene

Cigarette smokers having the risk of gum infection. Symptoms of the condition include: bleeding when brushing, swollen gums, sensitive teeth, teeth loosen etc. and healing become harder for smokers.<sup>[20]</sup>

### Smoking and rheumatoid arthritis (RA)

Smoking is considered as a familiar risk factors of progressing RA which is a chronic inflammatory disorder caused by both genetic and environmental factors. Uncontrolled RA causes damage and deformity of joints and reduce flexibility of normal life. Release of high concentration of inflammatory proteins, cytokines due to smoking connected to inflammation of RA.<sup>[21]</sup>

### Unhealthy skin and hair

Smoking have severe influence on person's skin and hair also. Smokers may experience wrinkle of skin and increase possibility of skin cancer. The habit causes smell to the skin and hair, then hair fall, suppression of immunity and insufficient blood circulation. Actually hair follicle needs oxygen and necessary nutrients for proper hair growth but the toxin that remain in the cigarette smoke could not allow the follicle to get proper nutrients, then hair loss occur. The habit causes air pollution that causes bacterial or fungal infection on the scalp, facilitated by weakened immunity, leading to unhealthy hair.<sup>[22]</sup>

### Pelvic Inflammatory Disease (PID)

Smokers are also in risk of pelvic inflammatory disease than the nonsmokers and smoked around 10 per day is considered as high risk.<sup>[23]</sup>

### Cigarette smoking & women health

Cigarette in pregnancy have negative impact on woman's expected baby. Report showed that about 400,000 US infants exposing to cigarette smoking and the chemicals present in cigarette in the womb<sup>[24]</sup> then the babies having the possibility of growing multiple complications like incomplete lung development, underweight, ectopic pregnancy, sudden death syndrome<sup>[25]</sup> etc. Ectopic pregnancy causes fetal death also. Approximately 23 million women in the USA (23 percent of the female population) smoke cigarettes and are suffering from various diseases as man do where most common diseases are respiratory distress, cancers in mouth, pharynx, larynx, kidney, pancreas, esophagus, and urinary bladder.

### Oral contraceptives and smoking

When women smokers use oral contraceptives there is the probability of stroke, heart attack and other cardiovascular disorders but these ailments are related to age, so for women over 35 years are in high risk. Smoking along oral contraceptives must be avoided. Research showed that the chance of elevation of blood pressure for using oral contraceptives increase for women smokers. It's important to monitor blood pressure after every 6 to 12 months.<sup>[26]</sup>

### Pregnancy and Smoking

Cigarette smoking causes the exposure of different chemicals to both pregnant mother and unborn baby and there is the deficiency of oxygen and nutrients supply also. There is severe impact on pre and post natal growth as nicotine cause lung and brain damage of baby.<sup>[27]</sup> The other similar risk factors during pregnancy is birth defects, premature birth, sudden infant death syndrome (SIDS), loss of pregnancy etc. Nicotine can cross the placental barrier easily.<sup>[28]</sup>

### Infertility and smoking

There is a negative impact of smoking in women health during their reproductive period. It not only cause infertility but may lead to lower fertility rate in the future also. Though men produce new sperm all over their life,

women born with all the eggs they will ever have. Smoking subsided the total number of eggs in the ovaries of women. The chemicals present in cigarettes lead to DNA damage to the ovarian follicles and lead to early menopause, blockage of fallopian tubes that prevent meeting of egg and sperm and a growing risk of ectopic pregnancy.<sup>[29]</sup>

### Premature Menopause

There is a risk of premature menopause for smoking from teenaged. Smokers perceive the symptoms about two to three years earlier than nonsmokers. Amenorrhea, abnormal bleeding and vaginal infections are common complaints among smoking women.

### Breast Cancer and Smoking

According to the report of American Cancer Society, breast cancer patients who are smokers have the risk of dying at the minimum 25%. Women who smoke around two packs or more in a day are susceptible to risk of fatal breast cancer up to 75%.<sup>[30]</sup>

### Cervical Cancer

On the report of American Cancer Society, it was found that smoking can double the chance of developing cervical cancer for women, so it is an important issue for women to have regular pelvic exams.<sup>[31]</sup>

### Mental Health Risks of Smoking

It is a common belief that smoking provide relaxes and relief anxiety, depression but the common scenario is that the habit increases anxiety and tension. Over time smokers are in chance to develop the mentioned symptoms than the nonsmokers.<sup>[32]</sup> Studies also manifested that women smokers are most likely to have mental illness. The other associated problems are post-traumatic stress disorder (PTSD), depression, anxiety, suicidal tendency etc. On those cases quitting is the only solution but having abnormal mental health condition may lead difficulty of quitting smoking.<sup>[33]</sup>

### LIGHT CIGARETTE

Light cigarette is claimed to exhale less tobacco than a regular cigarette when smoked. They are specially redesigned cigarettes having following properties.

- Cellulose acetate filters
- Ventilation holes in the filter tip and
- Various blends of tobacco.

Studies shown that light cigarette never diminished the risk of health hazards.<sup>[34]</sup> Actually, there is no such thing as a safe cigarette. Even though they cause cancers of lungs, kidney, mouth, throat and larynx.<sup>[35]</sup>

### ELECTRONIC CIGARETTE (E-CIGARETTES)

An electronic cigarette (e-cigarettes) is an electronic device that provokes tobacco smoking. The device contain nicotine like regular cigarette but the other chemicals, flavors and additives including propylene glycol or glycerol, is inhaled by a person and they are

not secured actually for human being. Research claim that chemicals found in e-cigarettes may cause intestinal obstruction and also inflammation in the body and finally potential health concerns. People using the devices inhale nicotine in vapor rather than smoke and the device is popular towards the young population due to its different flavor.<sup>[36]</sup>

When the liquids in the device heats up, toxic chemicals are produced. The common toxic metals, chemicals present in e- cigarette are- flavorants such as diacetyl, tin, nickel and lead as heavy metals, acetaldehyde and

formaldehyde as carcinogens, benzene as volatile organic substance.<sup>[37]</sup> The users also experienced stress and other distress in different organs, like propylene glycol is amenable for creation airway irritation and intensity of dyspnea. The other chemicals present like cadmium, copper, chromium, nickel cause bronchial, pulmonary irritations, coughing and wheezing, irritations of the mucous membranes in the upper respiratory tract, eyes etc. Those mentioned chemicals also cause lung cancers. Diacetyl can cause difficulty to breathing.<sup>[38]</sup> A 2020 review found e-cigarettes increase the risk of asthma by 40% and COPD by 50%.<sup>[39]</sup>



**Fig 2: E-Cigarette (Sources: National Academies of Science, Engineering and Medicine, Public Health Consequences of E-Cigarette).**

Common organs affected by e-cigarette are

**Gastrointestinal system:** chronic inflammation, epigastric pain, nausea and vomiting, followed by diarrhea and hemorrhage. During pregnancy it causes shortness of breath to the infants.<sup>[40]</sup>

**Cardiovascular system:** The chemicals acetaldehyde, diacetyl, acrolein, and formaldehyde are responsible for lung disease, together with cardiovascular disorder. Tachycardia, high blood pressure, heart attack also reported. Acrolein present in e-cigarette increase vascular injury, thrombosis and atherosclerosis.<sup>[41]</sup>

The device has serious health impact for pregnant women, as nicotine produce toxicity to fetus. Nicotine can also harm adolescent and young adult brain development. Not only children but also the adults are poisoned by breathing, swallowing, absorbing e-cigarette through their skin or eyes.<sup>[42]</sup> Research is needed to compare the effectiveness and safety of e-cigarettes and other alternative therapies of nicotine replacement system.<sup>[43, 44]</sup>

## CONCLUSION

Cigarette smoking is a reason of weakening immune response which is the main reason of infections and all types of illness.<sup>[45]</sup> So quitting smoking is the only solution though it's not easy one. By engaging in regular exercise, joining different online resources, spending leisure with favorite ones can help to quit the habit permanently. As cigarette smoking is an addiction and different organ damage is a major cause of the addiction everyone should aware of this. The chemical nicotine, may cause withdrawal symptoms like cardiovascular disease. Creating awareness, engaging our young

generation in extracurricular activities can be alternative way of avoiding the bad habit.

## ACKNOWLEDGEMENTS

The author would like to thank Kazi Azajul Ferdoush, Resident BSMMU, Dhaka, Bangladesh, Nazrin Sultana, Aishi Sharker Shoshi and Md. Anamul Haque, World University of Bangladesh.

## CONFLICTS OF INTEREST

No conflicts of interest is declared by the author.

## REFERENCES

1. Fagerström K. The epidemiology of smoking: health consequences and benefits of cessation *Drugs*, 2002; 62(Suppl 2): 1–9.
2. Tobacco Fact sheet N°339". May 2014. Retrieved 13 May 2015.
3. <https://tobaccofreelife.org/tobacco/tobacco-products>.
4. Benowitz NL, Hukkanen J, Jacob P. Nicotine chemistry, metabolism, kinetics and biomarkers. *Handb. Exp. Pharmacol*, 2009; 192: 29–60. doi: 10.1007/978-3-540-69248-5\_2.
5. U. S. Department of Health and Human Services. *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General*; 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: Atlanta, GA, USA, 2014; 1–36.
6. Aldo Leone, Linda Landini and Aurelio Leone. *Current Pharmaceutical Design*, 2010; 16: 2510-2517.
7. Du Y, Liu B, Xu G, et al. Association of Electronic Cigarette Regulations with Electronic Cigarette Use

- Among Adults in the United States. *JAMA Netw Open*, 2020; 3(1): e1920255. doi:10.1001/jamanetworkopen.2019.20255.
8. <https://worldpopulationreview.com/country-rankings/smoking-rates-by-country>.
  9. National Cancer Institute. What Is Cancer? Defining Cancerexternal icon [accessed 2021 Mar 31].
  10. Centers for Disease Control and Prevention. Cancer Prevention [accessed 2021 Mar 31].
  11. U.S. Department of Health and Human Services. A Report of the Surgeon General. How Tobacco Smoke Causes Disease: What It Means to You. Atlanta: 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, 2010 [accessed 2021 Mar 31].
  12. Centers for Disease Control and Prevention. Secondhand Smoke (SHS) Facts [accessed 2021 Mar 31].
  13. <https://www.medicalnewstoday.com/articles/324644> . Medically reviewed by Elaine K. Luo, M.D. — Written by Danielle Dresden on March 7, 2019.
  14. Centers for Disease Control and Prevention. Basics About COPD [last updated 2019 July 19; accessed 2020 February 13].
  15. U.S. Department of Health and Human Services. A Report of the Surgeon General. How Tobacco Smoke Causes Disease: What It Means to You. Atlanta: 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, 2010 [accessed 2021 June 15].
  16. Sound advice: Treat your hearing as a ‘hub’ for overall health; Amplifon Hearing Health Care, (Aug. 30, 2019); <https://blog.amplifonusa.com/treat-your-hearing-as-a-hub-for-overall-health-0>; accessed November 2019.
  17. Vision Loss, Blindness, and Smoking; Centers for Disease Control and Prevention; <https://www.cdc.gov/tobacco/campaign/tips/diseases/vision-loss-blindness.html#how-affect>; accessed November 2019.
  18. How smoking harms your eyes; by Aimee Rodrigues; AllAboutVision; <https://www.allaboutvision.com/smoking/>; accessed November 2019.
  19. Understanding high-frequency hearing loss; by Debbie Clason and Joy Victory; *Healthy Hearing* (Oct. 22, 2019); <https://www.healthyhearing.com/report/52448-Understanding-high-frequency-hearing-loss>; accessed November 2019.
  20. <https://www.medicalnewstoday.com/articles/324644#poor-oral-hygiene>.
  21. Chang K, Yang SM, Kim SH, Han KH, Park SJ and Shin JI. Smoking and Rheumatoid Arthritis. *Int. J. Mol. Sci*, 2014; 15: 22279-22295; doi :10.3390/ijms151222279.
  22. Jeffrey B, Smith MD, Sidney B, Smith. Cigarette Smoking and Inflammatory Skin Disease. *The Good and the Bad. Arch Dermatol*, 1997; 133(7): 901-902. doi:10.1001/archderm.1997.03890430119015.
  23. Jiang C, Chen Q, Xie M. Smoking increases the risk of infectious diseases: A narrative review. *Tob Induc Dis*, 2020; 18(July). doi:10.18332/tid/123845.
  24. Centers for Disease Control and Prevention Office on Smoking and Health. Smoking and Reproduction Fact Sheet. Surgeon General’s Report on Smoking and Health 50th Anniversary. [https://www.cdc.gov/tobacco/data\\_statistics/sgr/50th-anniversary/pdfs/fs\\_smoking\\_reproduction\\_508.pdf](https://www.cdc.gov/tobacco/data_statistics/sgr/50th-anniversary/pdfs/fs_smoking_reproduction_508.pdf). Accessed January 8, 2019.
  25. U. S. Department of Health and Human Services (USDHHS). Women and Smoking. A Report of the Surgeon General. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2001.
  26. Metabolic and Haemostatic Effects of Estradiol Valerate/Dienogest, a Novel Oral Contraceptive. *Clinical Drug Investigation*, 2011; 31(8): 573-84. Wolfgang Junge, Uwe Mellinger, Marco Serrani.
  27. Kinney HC, Filiano JJ, White WF. Medullary serotonergic network deficiency in the sudden infant death syndrome: review of a 15-year study of a single dataset. *J. Neuropathol. Exp. Neurol*, 2001; 60: 228–47.
  28. Butler NR, Goldstein H, Ross EM. Cigarette smoking in pregnancy: its influence on birth weight and perinatal mortality. *Br. Med. J*, 1972; 2: 127–30.
  29. Practice Committee of the American Society for Reproductive Medicine. Smoking and infertility: a committee opinion. *Fertil Steril*, 2012; 98(6): 1400-6. doi:10.1016/j.fertnstert.2012.07.1146.
  30. <https://www.verywellmind.com/smoking-womens-health-perspective-3520429>.
  31. American Cancer Society. Risk factors for cervical cancer.
  32. Jessup MA, Dibble SL, Cooper BA. Smoking and behavioral health of women. *J Women's Health (Larchmt)*, 2012; 21(7): 783-91. doi:10.1089/jwh.2011.2886.
  33. Druss BG, Zhao L, Von Esenwein S, Morrato EH, Marcus SC. Understanding excess mortality in persons with mental illness: 17-year follow up of a nationally representative US survey. *Medical Care*, 2011; 49(6): 599–604.
  34. National Cancer Institute. Risks Associated With Smoking Cigarettes With Low Machine-Measured Yields of Tar and Nicotine. Bethesda, MD: National Cancer Institute; 2001. *Smoking and Tobacco Control Monograph*, 13.
  35. U.S. Department of Health and Human Services. The Health Consequences of Smoking: 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, 2004.
36. Barbeau AM, Burda J, Siegel M. Perceived efficacy of e-cigarettes versus nicotine replacement therapy among successful e-cigarette users: a qualitative approach. *Addict Sci Clin Pract*, 2013; 8(1): 5. doi: 10.1186/1940-0640-8-5. PMID: 23497603; PMCID: PMC3599549.
  37. <https://www.lung.org/quit-smoking/e-cigarettes-vaping/whats-in-an-e-cigarette>. July 13, 2020.
  38. Seiler-Ramadas R, Sandner I, Haider S, Grabovac I, Dorner TE. Health effects of electronic cigarette (e-cigarette) use on organ systems and its implications for public health. *Wien Klin Wochenschr*, 2021; 133(19-20): 1020-1027. doi: 10.1007/s00508-020-01711-z. Epub 2020 Jul 20. PMID: 32691214; PMCID: PMC8500897.
  39. Eyes on Trade: Brazil's flavored cigarette ban now targeted. *Citizen.typepad.com*. 2012-04-16. Retrieved 2013-01-02.
  40. Huaa M and Talbotb P. Potential health effects of electronic cigarettes: A systematic review of case reports. *Preventive Medicine Reports*, 2016; 4:169-178.
  41. Pisinger C and Dossing MA. Systematic review of health effects of electronic cigarettes. *Preventive Medicine*, 2014; (69): 248-260.
  42. US Department of Health and Human Services. E-cigarette use among youth and young adults: a report of the Surgeon General [PDF-8.47 MB] pdf icon. Atlanta, GA: US Department of Health and Human Services, CDC; 2016.
  43. Callahan-LP. Electronic cigarettes: Human health effects. *Tob. Control*, 2014.
  44. Rahman MA, Hann N, Wilson A, Worrall-Carter L. Electronic cigarettes: Patterns of use, health effects, use in smoking cessation and regulatory issues. *Tob. Induc. Dis*, 2014; 12(21).
  45. Jahan K, Ferdoush KA, Rahman MM, Ahmed Z and Khan SI. Yaba, the crazy drug and its social impact in Bangladesh -an informative review. *EJPMR*, 2020; 7(9): 08-14.