

## Fast Food Addiction: A Major Public Health Issue

Abdul Kader Mohiuddin\*

Secretary and Treasurer, Dr. M. Nasirullah, Memorial Trust, Tejgaon, Dhaka 1215, Bangladesh

**\*Corresponding Author:** Abdul Kader Mohiuddin, Secretary and Treasurer, Dr. M. Nasirullah, Memorial Trust, Tejgaon, Dhaka 1215, Bangladesh, **E-mail:** dr.m.nasirullah.trust@gmail.com

**Abstract:** Fast food/Junk food is designed to be tasty, comforting and convenient. Unfortunately, whilst these foods contain lots of calories, they often have far lower levels of fiber, water and minerals as compared to natural foods. Packaged food and snacks are also created specifically so that we get enough texture and taste from each bite to tantalize our taste buds; but not enough to make us feel full. It's evident that fast food feels good to eat and tempts us in many different situations. Fast food first popularized in the 1970s in the United States, which has today the largest fast food industry in the world. As taste, time considerations, convenience, and cost are major factors that contribute to an adolescent's or young adult's food choices, fast food restaurants serve as popular sites for their meals eaten outside the home. Current approaches suggest that fast food restaurants should be required to clarify nutrition information such as energy and fat content on their menu boards and on product packaging. This is important to help the consumer to make better food choices before purchasing. An adequate, nutritious, and balanced diet is essential to maintain health for one's lifetime. To achieve this healthy diet, fast food consumption should be limited.

**Keywords:** morbidity and overweight; obesity among children; junk food; stroke and heart diseases; food induced neuro-degeneration; carbonated beverages; red meat over-consumption; food effects in fertility and sex drive; artificial sweeteners and condensed milk

### 1. INTRODUCTION

Menus, as lists of prepared foods, provides origin of the food items (Thai, Chinese, Continental), restaurant's mission, chef's philosophy of cooking, brief idea about food processing, special combo offers along with their cost.

The colorful menu or flyers attracts fast food lovers to spend more and more in their favorite restaurants for both its decadent yumminess and its ultra-convenience.

High income, rapid urbanization, free home deliveries, mouthwatering advertisements and international cuisines have contributed to a rising trend in increased junk food intake.

Calculation of monetary cost gets more priorities than the actual hidden health costs, as usual.

The growing widespread use of fast food among adolescents and young adults is of concern due to the high fat and energy intake, which may cause obesity and subsequently obesity-related chronic diseases. The added fat, sugar, and salt create a taste that makes

people crave these foods, a sensation that many describe as an addiction.

Increase in the junk food consumption is a global phenomenon having a prevalence of around 70% [1].

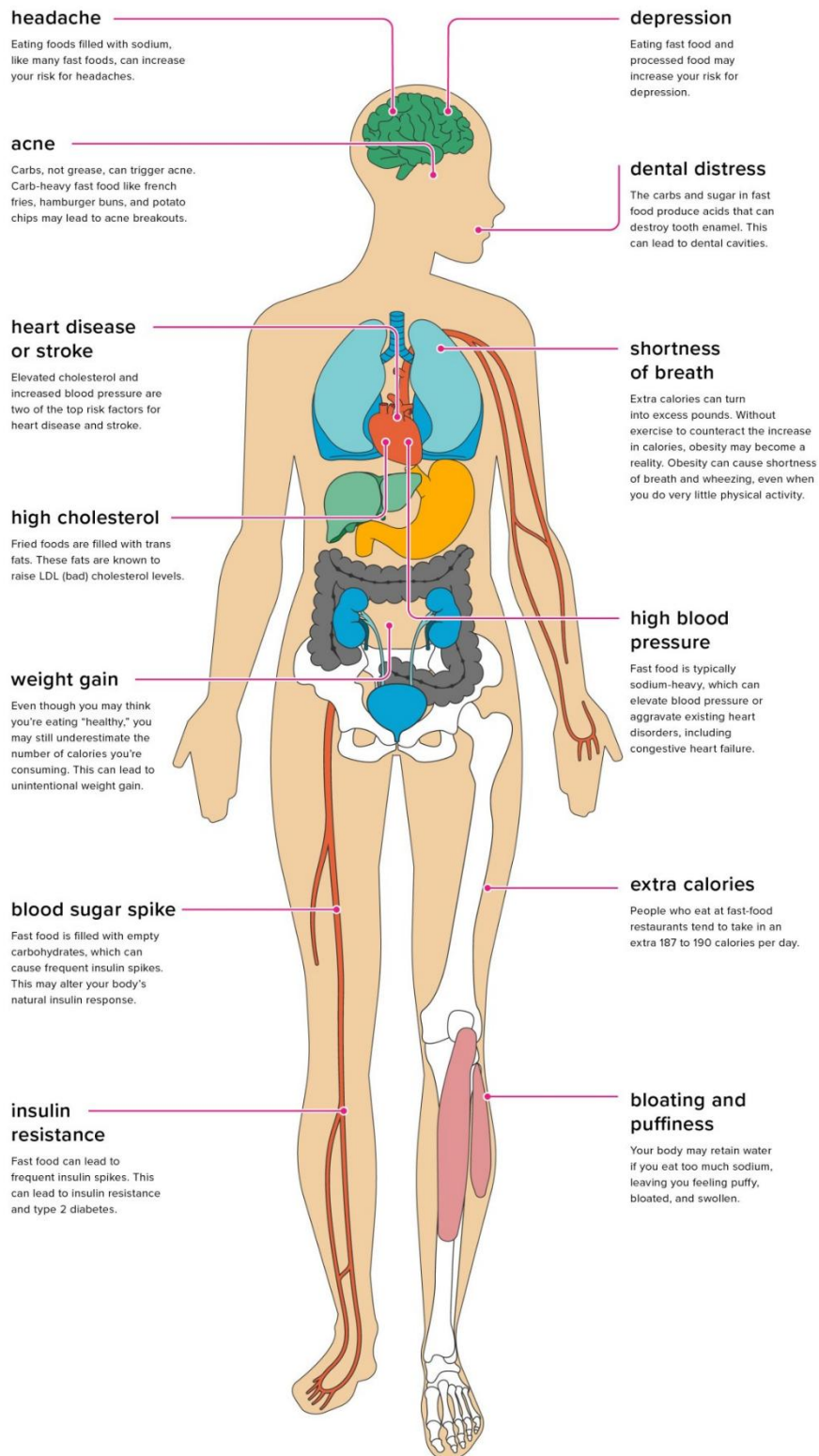
US fast-food sales increased exponentially between 1970 and 2000, from \$6 billion to \$110 billion [2].

During this time, obesity rates among US adults doubled and it is expected that 85% of US citizens will be affected by obesity by 2030 [3].

The real-life cost of fast foods in terms of obesity, diabetes and cardiac complications are well documented, repeated several times in newspapers, health bulletins, journals and so on.

New York City became the first jurisdiction in the US to require restaurant chains to post calorie information on menus and menu boards [4].

However, the dark side of the fast food consumption is not ended yet; some more are there to look forward.



**Figure1.** *The Effects of Fast Food on the Body (Source: Healthline)*

**2. OBESITY**

Most of the fast food contains a large amount of sugar, fats and carbs and less minerals and vitamins. This means that people are taking in large amounts of unhealthy calories in the shape of fast food which leads to weight gain and ultimately obesity. In a Brazilian study, several

products were identified as obesogenic: sweets and sugar, typical rich food dishes, pastries, fast food, oils, milk, cereals, cakes and sauces [5]. Obesity is linked to several long-term health conditions, premature death and illness including diabetes, heart disease, stroke, gall

bladder disease, fatty liver, arthritis and joint disorders and some cancers [6]. In a newspaper interview, Professor AK Azad Khan, President, Diabetic Association of Bangladesh said 40% school going children of Dhaka city were either obese or overweight [7]. A community level cross-sectional study in Bangladesh, Hossain et.al, 2019 reported that nearly 65% of the mothers of preschool aged children were not aware of childhood obesity as a health problem [8]. Fast food consumption habit has been found as a potential risk factor for overweight and/or obesity among children in other studies [9,10].

Also, Al Muktadir et.al, 2019 reported that (systematic random sampling attending in 27 established public and private universities) more than 40% of the youth went to fast food restaurants at least once per week and over 27% went regularly (2 times/week). Youth having fast foods 2 times/week, consuming soft drinks 3-4 times/week were more likely to be obese [11]. Processed and fast foods contain high amounts of saturated fats. Fast foods reduce the quality of diet and provide unhealthy choices especially among children and adolescents raising their risk of obesity.



**Figure 2.** One Hour After Eating A Big Mac. The website 'Fast Food Menu Price' created this infographic outlining what happens to body inside after an hour following ingestion of a Big Mac. It also might shed some light on why we all like fast food so much, even though we're aware it's bad for our health (Source: awesomeinventions.com).

### 3. DIABETES

Junk food includes many types of fast food, processed foods, and premade snack foods. Fast food is often highly processed, and this can have a negative impact on health.

Fast food consumption and out-of-home eating behavior is a main risk factor for lower diet quality, higher calorie and fat intake and lower micronutrients density of diet [12]. The fast food market is mostly unregulated in Bangladesh with no government policy to

control pricing and advertisements giving the way of new global chains in the market. Consumption of fast foods  $\geq 2$  times/week increased the risk of insulin resistance and T2DM. Frequent consumption of fast foods was accompanied with overweight and abdominal fat gain, impaired insulin and glucose homeostasis, lipid and lipoprotein disorders, induction of systemic inflammation and oxidative stress [13]. Fast food restaurants were found to be positively associated with diabetes prevalence in all counties except high poverty/medium-

minority [14]. Research has shown that excess calories shorten lifespan, whereas moderate caloric restriction slows the aging process and protects the body and brain [15]. Overweight and obesity are major risk factors for type 2 diabetes. Again, nitrosamines of processed meats, mostly used in fast foods, have been demonstrated to be toxic to beta cells and subsequently to increase the risk of T2D in animal studies [16]. Higher pre-pregnancy consumption of fast foods was associated with an increased risk of diabetes in pregnancy and high birthweight in first-time mothers, found in a southwest Sydney-based study [17].

### 4. STROKE

Stroke, previously thought a condition belonging to the elderly, is now increasingly a middle-aged health problem too. Healthy lifestyle choice reduces the risk of stroke by ~80%, according to Spence, 2019. Also, each 5 kg/m<sup>2</sup> increase in BMI, within the range of 25–50 kg/m<sup>2</sup> is associated with about 40% higher stroke mortality [18].

Higher consumption of fast food was associated with higher BMI Z score [13]. Frequent consumption of fast food,  $\geq 2$  times/week, compared to  $<1$  time/week, has been accompanied with  $\geq 4.5$  kg weight gain during a fifteen-year follow-up of US adolescents and young adults, says the same study. Fuhrman, 2018 stated that eating unhealthier fast and processed foods 7-fold increase the risk of early-life stroke [15]. Vaitkeviciūtė et.al, 2019 also pointed associations between the frequencies of consumption of unhealthy, high-fat food, soft drinks and higher BMI in children [19].

Wall et.al, 2018 found an inverse association between BMI and higher consumption of fruit, vegetables, pulses and nuts in adolescents [20]. There was a significant association between fast food restaurants and stroke risk in neighborhoods in a community-based study. Accessibility to fast food restaurants may be one pathway by which neighborhood disadvantage contributes to atherosclerosis [21]. Interestingly, living farther away from a fast food restaurant was found to be associated with lower BMI for children, as reported by Huang et.al, 2019 [22]. Caffeinated energy drinks have also been associated with seizures and stroke [23].

#### 4.1. Heart Diseases

The prevalence of fast food consumption, obesity and hypertension is high among children in major cities in China, according to Zhao et.al,

2017. 16-20% of Chinese children have high BP [24]. Association between increased BMI and hypertension in children with fast food is also detailed in another study done in Sikkim, India [25]. A significant association was found between fast food consumption, BP levels, and anthropometric indices in another Iranian study among children [26]. Body size has a major impact on the association between intake of the modern dietary pattern and hypertension. Alsabieh et.al, 2019 demonstrates that increased systolic BP significantly correlated with an increase in BMI [27]. Both Kar et.al and Bahadoran et.al, 2015 supports association between increased BMI and fast food [13], [25]. Shi et.al, 2019 concluded that reducing the consumption of modern fast foods is important to prevent hypertension in Thailand [28]. Higher consumption of fast foods and higher exposure to multiple sources of accessible, cheap, energy-dense fast foods were also accompanied with a 56-162% increased risk of coronary heart disease mortality [13].

#### 4.2. Neurodegeneration and Psychological Changes

Several cross-sectional studies have found significant associations between poor nutritional status and behavioral disturbances, worse cognitive status, and more impaired functioning in adult daily living activities [27]. Fat-filled snack foods may heighten the risk of developing advanced age-related neuro-degeneration, the leading cause of vision and hearing impairment [29]. Researchers from the University of Bristol warn that such poor diets can also permanently damage the nervous system, particularly vision [4]. It negatively affects brain health by damaging regions relevant to memory tasks and by diminishing brain-derived neurotrophic factor levels. This amplifies the risk of developing dementia and Alzheimer's disease later in life [6], [27]. Also, presence of depressive symptoms is positively associated with fast-food intake [30] and junk food consumption may increase the risk for psychiatric distress and violent behaviors in children and adolescents [31, 32]. A study among Iranian children and adolescents reveals that junk food consumption was significantly associated with mental distress, including “worry, depression, confusion, insomnia, anxiety, aggression, and feelings of being worthless” [33]. In addition, caffeine content of cola and carbonated beverages are responsible for hyperactivity/attention deficit in children [34].

### 4.3. Headache/Precipitation of Migraine

Monosodium Glutamate is one of the most widely used food-additives in commercial foods. It has linked with obesity, metabolic disorders, thyroid disorders, Chinese restaurant syndrome (headache, skin flushing, and sweating), neurotoxic effects and detrimental effects on the reproductive organs [35-39]. As it triggers tenderness of the peri-cranial muscles (most prominent clinical finding in tension-type headache), people with migraine should strictly

avoid it. The absence of a significant relationship between processed meat products and canned foods consumption and migraine headache might be due to people's interest in traditional foods and lack of tendency to consume fast foods in Iran [40]. The interruption of daily consumption of caffeine-containing beverages can cause headache and other symptoms within 8 hours [41]. Also, caffeine abstinence is associated with better efficacy of acute migraine treatment [42].

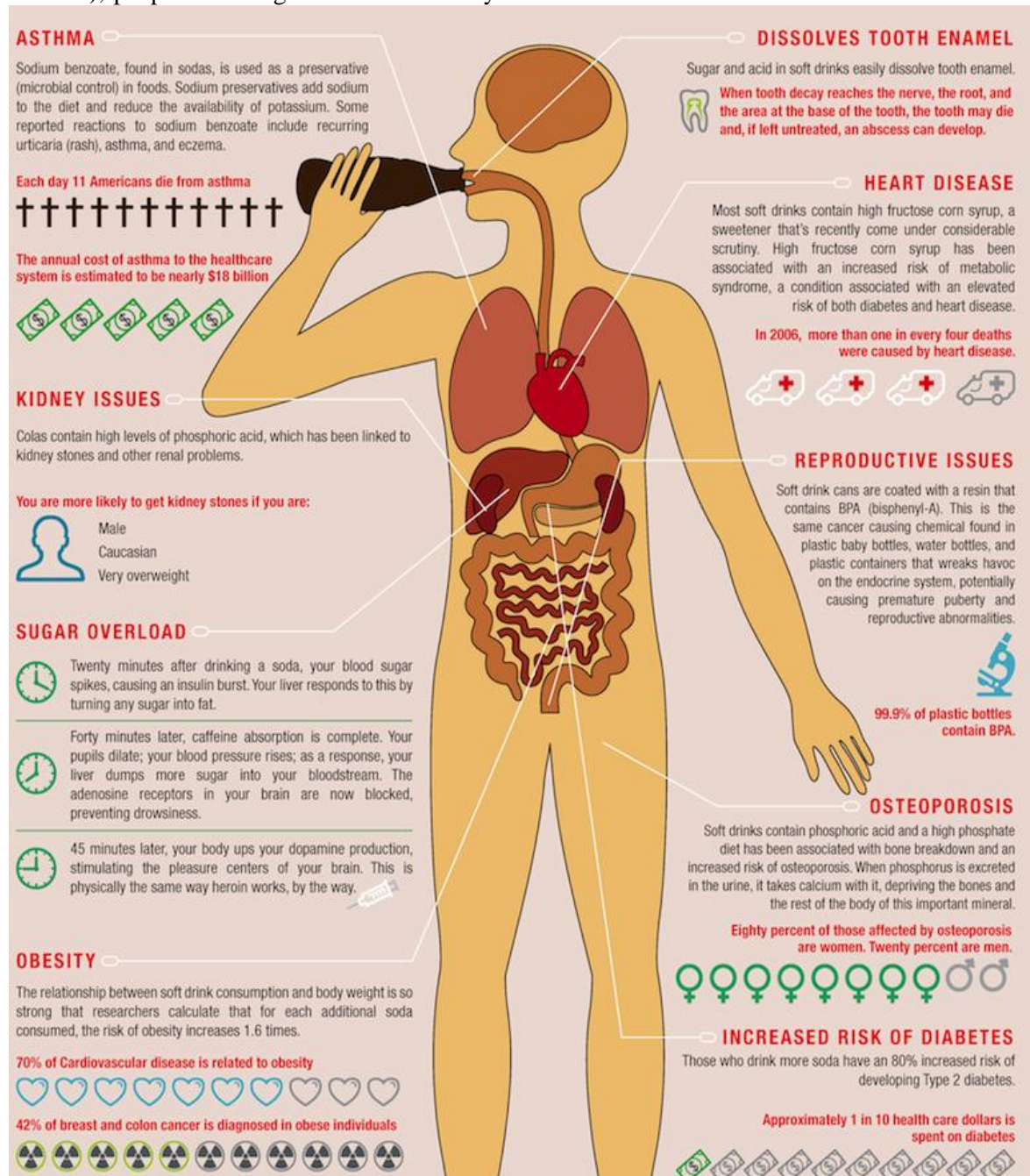


Figure3. Health Impact of Carbonated Beverages (Source: Daily Infographic)

### 4.4. Physical Performance

A Newcastle-based study among elderly people shows that dietary pattern high in red meats,

potato or butter may adversely affect muscle strength and physical performance in later life [43]. The fat and sugar levels in junk foods stress the metabolism, causing it to work less

effectively. Particularly daily consumption of junk food, may be associated with poorer mental and physical health [44]. Abstaining from junk foods is one way to keep cholesterol levels low and prevent clogged arteries, which can reverse the symptoms of heart disease and improve athletic performance. Excess consumption of junk food can affect the physical as well as

### 4.5. Cancers and Auto-Immune Disorders

Gluten, another notorious protein responsible for auto-immune disorders, was found in more than 50% pizza and pasta samples in “Gluten-Free” labelled restaurants [47]. A new study in PLOS Medicine finds eating unhealthy food is associated with a higher risk of developing cancer [48]. People who ate the most junk food showed a higher risk of stomach, colorectal, and surprisingly, lung cancers. Separately, men showed a higher risk of lung cancer, and women showed a higher risk of liver and postmenopausal breast cancers [49]. Nitrate and nitrite, which are abundant in processed meats, are potential carcinogens found in breast, prostate, pancreas, colorectal cancers along with non-alcoholic fatty liver disease and insulin resistance [50-58].

Beyond nutritional composition, neo-formed contaminants, some of which have carcinogenic properties (such as acrylamide, heterocyclic amines, and polycyclic aromatic hydrocarbons), are present in heat treated processed food products as a result of the Maillard reaction, says Cangemi et.al, 2019 [59]. Again, Buckley et.al, 2019 demonstrated that the packaging of ultra-processed foods may contain some materials in contact with food for which carcinogenic and endocrine disruptor properties have been postulated, such as bisphenol A [60]. Finally, ultra-processed foods contain authorized, but controversial, food additives such as sodium nitrite in processed meat or titanium dioxide (TiO<sub>2</sub>, white food pigment), for which carcinogenicity has been suggested in animal or cellular models [59], [61]. Interestingly, people hooked on fast food and have limited intake of vegetables and fruits. High salt intake, including salt preserved foods, smoked or dried meat and fish, pickled food, low intake of fresh fruit and vegetables, obesity are among the most contributory to stomach and colorectal cancers [62].

### 4.6. Gut, Bone Health & Premature Aging

A moderate increased risk of irritable bowel syndrome is reported in a French Internet based

mental performance of children. Addiction of junk-food in early age may cause serious illness in later age.

The harmful effects of junk-food are overweight, low physical stamina and other health problems among adolescents [45, 46]. Also, Stokes et.al, 2018 suggested fast food alternatives to young athletes [47].

study [63]. Symptoms of bloating, gas, or pain passing bowel movements may be aggravated by high fast food consumption [64]. Use of Aspartame, a low-calorie sugar substitute in Coke Zero or Diet Coke is still controversial due to possibility of cancer development [65]. Another study says that a high-fat diet alters the structure of the microbiome even in the absence of obesity [66].

Western diet is characterized by a high intake of saturated and omega-6 fatty acids, reduced omega-3 fat intake, an overuse of salt, and too much refined sugar [67].

“Ingestion of sugar, in particular, can accelerate premature aging”, says The Journal of Clinical and Aesthetic Dermatology [68], as exceeded free blood sugar promotes cross-linking of skin collagen fibers [69].

Fast food and carbonated beverages often contain large amounts of phosphate additives. This, according to another leading journal *In Vivo*, hampers kidney functions and bone health [70].

### 4.7. Reproductive Health

Over-consumption of cheese, yogurt, modified grains (bread, pasta, crackers, cereals) may jeopardize testosterone, male sex hormone that plays a major role in fertility and sex drive, according to Dr. Michael Hirt, founder of the Center for Integrative Medicine in California [71].

In addition, diets that are low in whole-grain foods, legumes, vegetables and fruits, and high in red meat, full-fat dairy products, and sugary foods and beverages are all associated with an increased risk of erectile dysfunction [72].

An official publication of the Federation of Obstetrics and Gynecological Societies of India says that popularity of junk food in adolescence are responsible for the increasing polycystic ovarian syndrome in adolescent girls and is challenge for gynecologists treating them [73]. Market available ice creams or raita salads in hotel-restaurants are storehouse of *E. coli*

bacteria, can be responsible for diarrhea, abdominal cramp, fever, vomiting and uncomplicated urinary infections sometimes [74]. The so-called condensed milk added as artificial sweeteners is nothing but over-boiled palm oil that deposits in the deep tissues, imparts metabolic disorders and poorly eliminates.

### 5. CONCLUSION AND RECOMMENDATIONS

Children and adolescents are exposed to various forms of food marketing while using social media applications, most of which promotes unhealthy foods [75]. Teenagers are aggressively targeted by food marketing messages (primarily for unhealthy foods) and susceptible to this messaging due to developmental vulnerabilities and peer-group influence [76]. Fast-food consumption is associated with lower diet quality [77].

Healthier foods cost nearly twice as much as unhealthier foods per serving on an average among high income countries [78].

Americans allocate more than 40% of their food budget to restaurants and fast foods [40]. The scenario is opposite in Bangladesh. In capital city, people often pay restaurant bills equivalent to more than 500% cost involved in regular meals. Again, traditional fast foods including Singara, Samucha, Puri, Pijaju, Lachcha She maiand Paratha all are generally deeply fried. Commercially available packaged bakery and fast foods often do not contain any declaration of their fat content [79].

Occasional fast food consumption (considered as cheat foods) has been encouraged in various bodybuilding websites, as it stimulates many enzymes that were previously deactivated. Butin Bangladesh, Non-Communicable Disease Risk Factor Survey 2013, consumption of inadequate fruit and/or vegetables (<5 servings per day) was found in more than 90% people [80].

Strong advocacy on the detrimental effects of fast food consumption should be routinely done in educational institutions. But Alas! Most fast foods are consumed by youth and children from the nearby shops of educational institutions or the canteens run by the institutions themselves.

### ACKNOWLEDGEMENT

I'm thankful to Dr. Colin D. Rehm, Clinical Assistant Professor, Department of Epidemiology & Population Health, and Alert Einstein College of Medicine, NY, USA for her precious time to review my literature and

thoughtful suggestions. Also, I'm also grateful to seminar library of Faculty of Pharmacy, University of Dhaka and BANSDOC Library, Bangladesh for providing me books, journal and newsletters.

### REFERENCES

- [1] Mandoura N, Al-Raddadi R, Abdulrashid O, et al. Factors Associated with Consuming Junk Food among Saudi Adults in Jeddah City. *Cureus*. 2017;9(12):e2008. Published 2017 Dec 31. doi:10.7759/cureus.2008
- [2] Dumanovsky T, Huang CY, Bassett MT, Silver LD. Consumer awareness of fast-food calorie information in New York City after implementation of a menu labeling regulation. *Am J Public Health*. 2010;100(12):2520–2525. doi:10.2105/AJPH.2010.191908
- [3] Al-Ghamdi S, Shubair MM, Aldiab A, et al. Prevalence of overweight and obesity based on the body mass index; a cross-sectional study in Alkharj, Saudi Arabia. *Lipids Health Dis*. 2018; 17(1):134. Published 2018 Jun 5. doi:10.1186/s12944-018-0778-5
- [4] Gruner J, DeWeese RS, Lorts C, Yedidia MJ, Ohri-Vachaspati P. Predicted Impact of the Food and Drug Administration's Menu-Labeling Regulations on Restaurants in 4 New Jersey Cities. *Am J Public Health*. 2018;108(2):234–240. doi:10.2105/AJPH.2017.304162
- [5] Santos NH, Fiaccone RL, Barreto ML, Silva LA, Silva Rde C. Association between eating patterns and body mass index in a sample of children and adolescents in Northeastern Brazil. *Cad Saude Publica*. 2014 Oct;30(10):2235-45.
- [6] Hruby A, Hu FB. The Epidemiology of Obesity: A Big Picture. *Pharmacoeconomics*. 2015; 33(7):673–689. doi:10.1007/s40273-014-0243-x
- [7] Mohiuddin AK. TRACK Implementation among Bangladeshi Population. *Int J Diabetol Vasc Dis Res*. 2019; 7(4):254-260. doi:dx.doi.org/10.19070/2328-353X-1900048
- [8] Hossain MS, Siddiquee MH, Ferdous S, et al. Is Childhood Overweight/Obesity Perceived as a Health Problem by Mothers of Preschool Aged Children in Bangladesh? A Community Level Cross-Sectional Study. *Int J Environ Res Public Health*. 2019; 16(2):202. Published 2019 Jan 12. doi:10.3390/ijerph16020202
- [9] Bhuiyan MU, Zaman S, Ahmed T. Risk factors associated with overweight and obesity among urban school children and adolescents in Bangladesh: a case-control study. *BMC Pediatr*. 2013; 13:72. Published 2013 May 8. doi:10.1186/1471-2431-13-72
- [10] Alam MM, Hawlader MDH, Wahab A, Hossain MD, Nishat SA, Zaman S, Ahsan GU. Determinants of overweight and obesity among urban school-going children and adolescents: a

- case-control study in Bangladesh. *Int J Adolesc Med Health*. 2019 May 9. pii: /j/ijamh.ahead-of-print/ijamh-2018-0034/ijamh-2018-0034.x ml. doi: 10.1515/ijamh-2018-0034.
- [11] Al Mukhtadir MH, Islam MA, Amin MN, Ghosh S, Siddiqui SA, Debnath D, Islam MM, Ahmed T, Sultana F. Nutrition transition - Pattern IV: Leads Bangladeshi youth to the increasing prevalence of overweight and obesity. *Diabetes MetabSyndr*. 2019 May - Jun;13(3):1943-1947. doi: 10.1016/j.dsx.2019.04.034.
- [12] Lee KW, Song WO, Cho MS. Dietary quality differs by consumption of meals prepared at home vs. outside in Korean adults. *NutrRes Pract*. 2016; 10(3):294–304. doi:10.4162/nrp.2016.10.3.294
- [13] Bahadoran Z, Mirmiran P, Azizi F. Fast Food Pattern and Cardiometabolic Disorders: A Review of Current Studies. *Health Promot Perspect*. 2016; 5(4):231–240. Published 2016 Jan 30. doi:10.15171/hpp.2015.028
- [14] Haynes-Maslow L, Leone LA. Examining the relationship between the food environment and adult diabetes prevalence by county economic and racial composition: an ecological study. *BMC Public Health*. 2017;17(1):648. Published 2017 Aug 9. doi:10.1186/s12889-017-4658-0
- [15] Fuhrman J. The Hidden Dangers of Fast and Processed Food. *Am J Lifestyle Med*. 2018; 12(5):375–381. Published 2018 Apr 3. doi:10.1177/1559827618766483
- [16] Beigrezaei S, Ghasvand R, Feizi A, Iraj B. Relationship between Dietary Patterns and Incidence of Type 2 Diabetes. *Int J Prev Med*. 2019; 10:122. Published 2019 Jul 5. doi:10.4103/ijpvm.IJPVM\_206\_17
- [17] Wen LM, Simpson JM, Rissel C, Baur LA. Maternal "junk food" diet during pregnancy as a predictor of high birth weight: findings from the healthy beginnings trial. *Birth*. 2013 Mar; 40(1):46-51. doi: 10.1111/birt.12028.
- [18] Spence JD. Nutrition and Risk of Stroke. *Nutrients*. 2019;11(3):647. Published 2019 Mar 17. doi:10.3390/nu11030647
- [19] Vaitkevičiūtė J, Petrauskienė A. The Associations between Body Mass Index of Seven- and Eight-Year-Old Children, Dietary Behaviour and Nutrition-Related Parenting Practices. *Medicina (Kaunas)*. 2019; 55(1):24. Published 2019 Jan 21. doi:10.3390/medicina55010024
- [20] Wall CR, Stewart AW, Hancox RJ, Murphy R, Braithwaite I, Beasley R, Mitchell EA; ISAAC Phase Three Study Group. Association between Frequency of Consumption of Fruit, Vegetables, Nuts and Pulses and BMI: Analyses of the International Study of Asthma and Allergies in Childhood (ISAAC). *Nutrients*. 2018 Mar 7; 10(3). pii: E316. Doi: 10.3390/nu10030316.
- [21] Morgenstern LB, Escobar JD, Sánchez BN, et al. Fast food and neighborhood stroke risk. *Ann Neurol*. 2009; 66(2):165–170. doi:10.1002/ana.21726
- [22] Huang Y, Huang D, Nguyen QC. Census Tract Food Tweets and Chronic Disease Outcomes in the U.S., 2015–2018. *Int J Environ Res Public Health*. 2019;16(6):975. Published 2019 Mar 18. doi:10.3390/ijerph16060975
- [23] Lipton RB, Diener HC, Robbins MS, Garas SY, Patel K. Caffeine in the management of patients with headache. *J Headache Pain*. 2017; 18(1): 107. Published 2017 Oct 24. doi:10.1186/s10194-017-0806-2
- [24] Zhao Y, Wang L, Xue H, Wang H, Wang Y. Fast food consumption and its associations with obesity and hypertension among children: results from the baseline data of the Childhood Obesity Study in China Mega-cities. *BMC Public Health*. 2017 Dec 6; 17(1):933. doi: 10.1186/s12889-017-4952-x.
- [25] Kar S, Khandelwal B. Fast foods and physical inactivity are risk factors for obesity and hypertension among adolescent school children in east district of Sikkim, India. *J Nat Sci Biol Med*. 2015;6(2):356–359. doi:10.4103/0976-9668.160004
- [26] Payab M, Kelishadi R, Qorbani M, Motlagh ME, Ranjbar SH, Ardalan G, Zahedi H, Chinian M, Asayesh H, Larijani B, Heshmat R. Association of junk food consumption with high blood pressure and obesity in Iranian children and adolescents: the CASPIAN-IV Study. *J Pediatr (Rio J)*. 2015 Mar-Apr;91(2):196-205. doi: 10.1016/j.jpmed.2014.07.006.
- [27] Alsabieh M, Alqahtani M, Altamimi A, et al. Fast food consumption and its associations with heart rate, blood pressure, cognitive function and quality of life. Pilot study. *Heliyon*. 2019;5(5):e01566. Published 2019 May 17. doi:10.1016/j.heliyon.2019.e01566
- [28] Shi Z, Papier K, Yiengprugsawan V, Kelly M, Seubsman SA, Sleight AC. Dietary patterns associated with hypertension risk among adults in Thailand: 8-year findings from the Thai Cohort Study. *Public Health Nutr*. 2019; 22(2): 307–313. doi:10.1017/S1368980018002203
- [29] Morris S. Teenager loses sight as eating disorder leads to malnutrition. *The Guardian*, September 03, 2019.
- [30] Khosravi M, Sotoudeh G, Majdzadeh R, et al. Healthy and Unhealthy Dietary Patterns Are Related to Depression: A Case-Control Study. *Psychiatry Investig*. 2015;12(4):434–442. doi:10.4306/pi.2015.12.4.434
- [31] Zahedi H, Kelishadi R, Heshmat R, Motlagh ME, Ranjbar SH, Ardalan G, Payab M, Chinian M, Asayesh H, Larijani B, Qorbani M.



- Association between junk food consumption and mental health in a national sample of Iranian children and adolescents: the CASPIAN-IV study. *Nutrition*. 2014 Nov-Dec;30(11-12):1391-7. doi:10.1016/j.nut.2014.04.014.
- [32] Hemmingsson E. Early Childhood Obesity Risk Factors: Socioeconomic Adversity, Family Dysfunction, Offspring Distress, and Junk Food Self-Medication. *CurrObes Rep*. 2018;7(2): 204–209. doi:10.1007/s13679-018-0310-2
- [33] Mozafarian N, Motlagh ME, Heshmat R, et al. Factors Associated with Screen Time in Iranian Children and Adolescents: The CASPIAN-IV Study. *Int J Prev Med*. 2017; 8:31. Published 2017 May 4. doi:10.4103/ijpvm.IJPVM\_36\_17
- [34] Anjum I, Jaffery SS, Fayyaz M, Wajid A, Ans AH. Sugar Beverages and Dietary Sodas Impact on Brain Health: A Mini Literature Review. *Cureus*. 2018;10(6):e2756. Published 2018 Jun 7. doi:10.7759/cureus.2756
- [35] Niaz K, Zaplatic E, Spoor J. Extensive use of monosodium glutamate: A threat to public health?. *EXCLI J*. 2018;17:273–278. Published 2018 Mar 19. doi:10.17179/excli2018-1092
- [36] Hernández Bautista RJ, Mahmoud AM, Königsberg M, López Díaz Guerrero NE. Obesity: Pathophysiology, monosodium glutamate-induced model and anti-obesity medicinal plants. *Biomed Pharmacother*. 2019Mar;111:503-516. doi:10.1016/j.biopha.2018.12.108.
- [37] Bawaskar HS, Bawaskar PH, Bawaskar PH. Chinese Restaurant Syndrome. *Indian J Crit Care Med*. 2017; 21(1):49–50. doi:10.4103/0972-5229.198327
- [38] Zehra Kazmi, Iffat Fatima, Shaghuftha Perveen & Saima Shakil Malik (2017) Monosodium glutamate: Review on clinical reports, *International Journal of Food Properties*, 20:sup 2,1807-1815, DOI:10.1080/10942912.2017.1295260
- [39] Jubaidi FF, Mathialagan RD, Noor MM, Taib IS, Budin SB. Monosodium glutamate daily oral supplementation: study of its effects on male reproductive system on rat model. *Syst Biol Reprod Med*. 2019 Jun;65(3):194-204. doi: 10.1080/19396368.2019.1573274.
- [40] Nazari F, Eghbali M. Migraine and its relationship with dietary habits in women. *Iran J Nurs Midwifery Res*. 2012; 17(2 Suppl 1):S65–S71.
- [41] Weber JG, Ereth MH, Danielson DR. Perioperative ingestion of caffeine and postoperative headache. *Mayo Clin Proc*. 1993Sep;68(9):842-5.
- [42] Lee MJ, Choi HA, Choi H, Chung CS. Caffeine discontinuation improves acute migraine treatment: a prospective clinic-based study. *J Headache Pain*. 2016;17(1):71. doi:10.1186/s10194-016-0662-5
- [43] Granic A, Jagger C, Davies K, et al. Effect of Dietary Patterns on Muscle Strength and Physical Performance in the Very Old: Findings from the Newcastle 85+ Study. *PLoS One*. 2016; 11(3):e0149699. Published 2016 Mar 2. doi:10.1371/journal.pone.0149699
- [44] Zahra J, Ford T, Jodrell D. Cross-sectional survey of daily junk food consumption, irregular eating, mental and physical health and parenting style of British secondary school children. *Child Care Health Dev*. 2014Jul;40(4):481-91. doi: 10.1111/cch.12068.
- [45] Kashyap R, Joglekar A, and Verma S. Effect Of Junk Food On Physical Performance Of School Children. *Ind. J. Sci. Res. and Tech*. 2014 2(4):21-25. Available From: <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.679.3895&rep=rep1&type=pdf>
- [46] Lamba A, Garg V. Impact of junk food on health status and physical performance of school going children (12-16 Years). *International Journal of Food Science and Nutrition* Volume 2; Issue 6; November 2017; Page No. 49-51
- [47] Stokes EG, Hughes R, Shaw DM, O'Connor HT, Beck KL. Perceptions and Determinants of Eating for Health and Performance in High-Level Male Adolescent Rugby Union Players. *Sports (Basel)*. 2018; 6(2):49. Published 2018 May 28. doi:10.3390/sports6020049
- [48] Lerner BA, Phan Vo LT, Yates S, Rundle AG, Green PHR, Lebwohl B. Detection of Gluten in Gluten-Free Labeled Restaurant Food: Analysis of Crowd-Sourced Data. *Am J Gastroenterol*. 2019 May; 114(5):792-797. doi:10.14309/ajg.000000000000202.
- [49] Deschasaux M, Huybrechts I, Murphy N, et al. Nutritional quality of food as represented by the FSAm-NPS nutrient profiling system underlying the Nutri-Score label and cancer risk in Europe: Results from the EPIC prospective cohort study. *PLoS Med*. 2018; 15(9):e1002651. Published 2018 Sep 18. doi:10.1371/journal.pmed.1002651
- [50] Scutti S. Eating junk food tied to higher risk of numerous cancers. *CNN Health*, September 18, 2018.
- [51] Xie L, Mo M, Jia HX, Liang F, Yuan J, Zhu J. Association between dietary nitrate and nitrite intake and sitespecific cancer risk: evidence from observational studies. *Oncotarget*. 2016; 7(35):56915–56932. doi:10.18632/oncotarget.10917
- [52] Inoue-Choi M, Sinha R, Gierach GL, Ward MH. Red and processed meat, nitrite, and heme iron intakes and postmenopausal breast cancer risk in the NIH-AARP Diet and Health Study. *Int J Cancer*. 2016 Apr 1; 138(7):1609-18. doi: 10.1002/ijc.29901.
- [53] Sinha R, Park Y, Graubard BI, Leitzmann MF, Hollenbeck A, Schatzkin A, Cross AJ. Meat and

- meat-related compounds and risk of prostate cancer in a large prospective cohort study in the United States. *Am J Epidemiol.* 2009 Nov 1; 170(9):1165-77. doi: 10.1093/aje / kwp280.
- [54] Aykan NF. Red Meat and Colorectal Cancer. *Oncol Rev.* 2015;9(1):288. Published 2015 Dec 28. doi:10.4081/oncol.2015.288
- [55] Quist AJL, Inoue-Choi M, Weyer PJ, et al. Ingested nitrate and nitrite, disinfection by-products, and pancreatic cancer risk in postmenopausal women. *Int J Cancer.* 2018; 142(2):251–261. doi:10.1002/ijc.31055
- [56] Perdomo CM, Frühbeck G, Escalada J. Impact of Nutritional Changes on Nonalcoholic Fatty Liver Disease. *Nutrients.* 2019; 11(3):677. Published 2019 Mar 21. doi:10.3390/nu11030677
- [57] Ma L, Hu L, Feng X, Wang S. Nitrate and Nitrite in Health and Disease. *Aging Dis.* 2018; 9(5):938–945. Published 2018 Oct 1. doi:10.14336/AD.2017.1207
- [58] Bouvard V, Loomis D, Guyton KZ, Grosse Y, Ghissassi FE, Benbrahim-Tallaa L, Guha N, Mattock H, Straif K; International Agency for Research on Cancer Monograph Working Group. Carcinogenicity of consumption of red and processed meat. *Lancet Oncol.* 2015 Dec; 16(16):1599-600. doi:10.1016/S1470-2045(15)00444-1.
- [59] Cangemi DJ, Lacy BE. Management of irritable bowel syndrome with diarrhea: a review of nonpharmacological and pharmacological interventions. *Therap Adv Gastroenterol.* 2019; 12:1756284819878950. Published 2019 Oct 4. doi:10.1177/1756284819878950
- [60] Buckley JP, Kim H, Wong E, Rebholz CM. Ultra-processed food consumption and exposure to phthalates and bisphenols in the US National Health and Nutrition Examination Survey, 2013-2014. *Environ Int.* 2019 Oct; 131:105057. doi:10.1016/j.envint.2019.105057.
- [61] Marion-Letellier R, Amamou A, Savoye G, Ghosh S. Inflammatory Bowel Diseases and Food Additives: To Add Fuel on the Flames!. *Nutrients.* 2019; 11(5):1111. Published 2019 May 18. doi:10.3390/nu11051111
- [62] American Institute for cancer Research. Diet, nutrition, physical activity and stomach cancer (Revised 2018). Available From: <https://www.wcrf.org/sites/default/files/Stomach-cancer-report.pdf>
- [63] Buscail C, Sabate JM, Bouchoucha M, et al. Western Dietary Pattern Is Associated with Irritable Bowel Syndrome in the French Nutri Net Cohort. *Nutrients.* 2017; 9(9):986. Published 2017 Sep 7. doi:10.3390/nu9090986
- [64] Okawa Y, Fukudo S, Sanada H. Specific foods can reduce symptoms of irritable bowel syndrome and functional constipation: a review. *Biopsychosoc Med.* 2019; 13:10. Published 2019 May 8. doi:10.1186/s13030-019-0152-5
- [65] Can Aspartame Cause Cancer? The Facts. Healthline, March 21, 2019.
- [66] Myles IA. Fast food fever: reviewing the impacts of the Western diet on immunity. *Nutr J.* 2014; 13:61. Published 2014 Jun 17. doi:10.1186/1475-2891-13-61
- [67] Potvin Kent M, Pauzé E, Roy EA, de Billy N, Czoli C. Children and adolescents' exposure to food and beverage marketing in social media apps. *PediatrObes.* 2019;14(6):e12508. doi:10.1111/ijpo.12508
- [68] Katta R, Desai SP. Diet and dermatology: the role of dietary intervention in skin disease. *J Clin Aesthet Dermatol.* 2014;7(7):46–51.
- [69] Clatici VG, Racoceanu D, Dalle C, et al. Perceived Age and Life Style. The Specific Contributions of Seven Factors Involved in Health and Beauty. *Maedica (Buchar).* 2017;12(3):191–201.
- [70] Shimada M, Shutto-Uchita Y, Yamabe H. Lack of Awareness of Dietary Sources of Phosphorus Is a Clinical Concern. *In Vivo.* 2019;33(1):11–16. doi:10.21873/invivo.11432
- [71] Gordon L. Foods that are killing your sex drive. FOXNEWS, March 20, 2018.
- [72] Yafi FA, Jenkins L, Albersen M, et al. Erectile dysfunction. *Nat Rev Dis Primers.* 2016; 2:160-03. Published 2016 Feb 4. doi:10.1038/nrd.p.2016.3
- [73] Rathod AD, Chavan RP, Pajai SP, Bhagat V, Thool P. Gynecological Problems of Adolescent Girls Attending Outpatient Department at Tertiary Care Center with Evaluation of Cases of Puberty Menorrhagia Requiring Hospitalization. *J ObstetGynaecol India.* 2016;66(Suppl 1):400–406. doi:10.1007/s13224-015-0770-1
- [74] Hebbelstrup Jensen B, Olsen KE, Struve C, Kroghfelt KA, Petersen AM. Epidemiology and clinical manifestations of enteroaggregative *Escherichia coli*. *Clin Microbiol Rev.* 2014; 27(3):614–630. doi:10.1128/CMR.00112-13
- [75] Potvin Kent M, Pauzé E, Roy EA, de Billy N, Czoli C. Children and adolescents' exposure to food and beverage marketing in social media apps. *Pediatr Obes.* 2019;14(6):e12508. doi:10.1111/ijpo.12508
- [76] Truman E, Elliott C. Identifying food marketing to teenagers: a scoping review. *Int J BehavNutr Phys Act.* 2019;16(1):67. Published 2019 Aug 19. doi:10.1186/s12966-019-0833-2
- [77] Barnes TL, French SA, Mitchell NR, Wolfson J. Fast-food consumption, diet quality and body weight: cross-sectional and prospective associations in a community sample of working adults.

- Public Health Nutr. 2016;19(5):885–892. doi:10.1017/S1368980015001871
- [78] Kern DM, Auchincloss AH, Stehr MF, et al. Neighborhood Prices of Healthier and Unhealthier Foods and Associations with Diet Quality: Evidence from the Multi-Ethnic Study of Atherosclerosis. *Int J Environ Res Public Health*. 2017; 14(11):1394. Published 2017 Nov 16. doi:10.3390/ijerph14111394
- [79] Islam AK, Majumder AA. Coronary artery disease in Bangladesh: a review. *Indian Heart J*. 2013; 65(4):424–435. doi:10.1016 /j.ihj.2013.06.004
- [80] Zaman MM, Bhuiyan MR, Karim MN, et al. Clustering of non-communicable diseases risk factors in Bangladeshi adults: An analysis of STEPS survey 2013 [published correction appears in *BMC Public Health*. 2015;15:892]. *BMC Public Health*. 2015;15:659. Published 2015 Jul 14. doi:10.1186/s12889-015-1938-4

**Citation:** *Abdul Kader Mohiuddin, Fast Food Addiction: A Major Public Health Issue. ARC Journal of Addiction. 2019; 4(2):1-11.*

**Copyright:** © 2019 Authors. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.