



# THE EFFECTS OF OBESITY TOWARDS THE ECONOMY OF ASEAN COUNTRIES

ASEAN  
DATA SCIENCE  
EXPLORER  
2019

---

MUHD AIMAN SYAFI'E  
NUR HANNATUL FAR'HANNA



POLIGEN35 |  
POLITEKNIK BRUNEI

# Obesity rates in Brunei highest in region

October 17, 2018

| Azlan Othman |

OBESITY rates among adults in Brunei Darussalam are the highest in the region, with nearly three out of 10 adults found to be obese, according to the 2016 Brunei National Survey on Risk Factors on Non-Communicable Diseases (NCDs) conducted by the Centre for Strategic and Policy Studies (CSPS).

The heavy statistics were laid bare by Minister of Health Dato Seri Setia Dr Haji Mohd Isham bin Haji Jaafar in his message to mark World Obesity Day 2018 yesterday.

The study, commissioned by the Ministry of Health (MoH) and covering a pool of adults aged 18 – 69, was aimed at determining the prevalence of risk factors for NCDs while monitoring the effectiveness of strategies to address NCDs in Brunei.

World Obesity Day was launched in 2015 by the World Obesity Federation and commemorated every October 11, to stimulate practical solutions to help people achieve and maintain a healthy weight in a bid to reverse the obesity crisis.

Obesity is a serious condition as it can lead to more life-threatening health problems such as NCDs like cancer, as well as cardiovascular and diabetic diseases.



## × MORE STORIES

**Right time to self-reflect, says His Majesty**

September 1, 2019



**His Majesty graces new Islamic year 1441 Hijrah celebration**

September 1, 2019



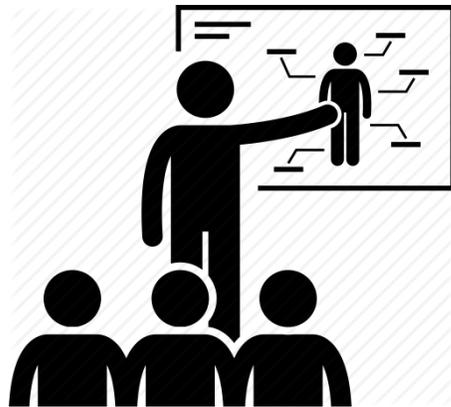
**Crown Prince launches UTB's 'VISION' exhibition**

September 1, 2019



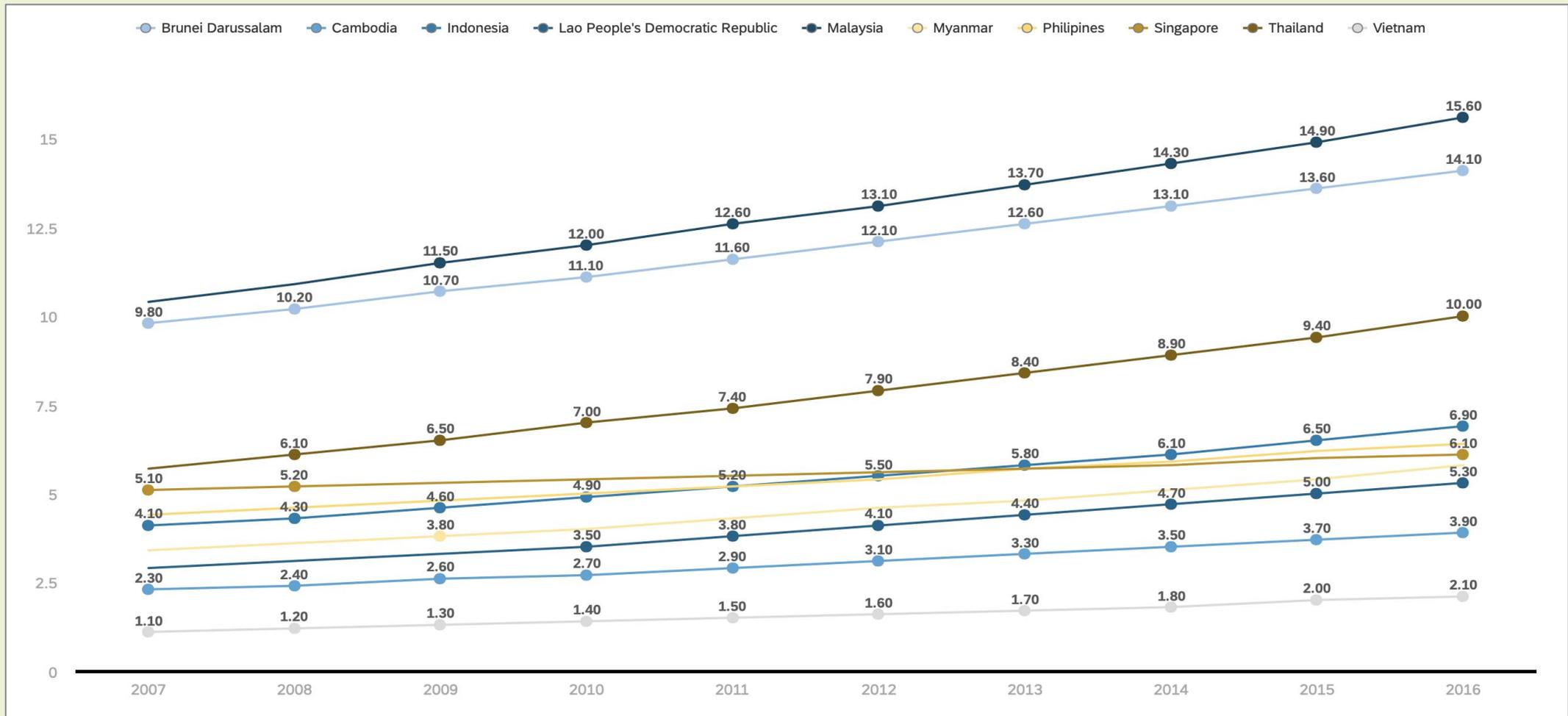
# OBJECTIVES

- **Educate people** regarding lethal effects of obesity
- **Boost economic growth** by increasing productivity and reduce health expenditure
- Increase **health awareness**
- To **achieve UN Goal 3 target (3.D)** & other related UN goals. More info: [un.org](https://un.org)



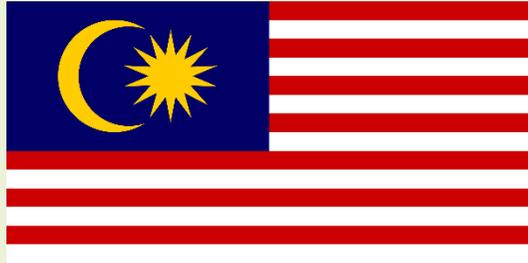
# FINDINGS

# Adult Obesity Rate in ASEAN countries (2007 – 2016)



Source: World Health Organization (WHO)

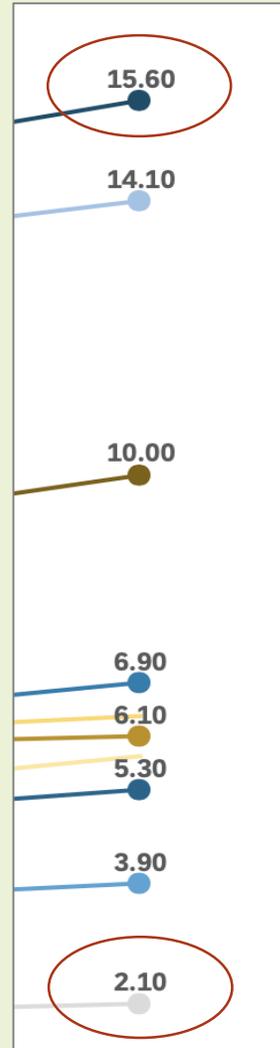
# Adult Obesity Rate in ASEAN countries (2007 – 2016)



**MALAYSIA**

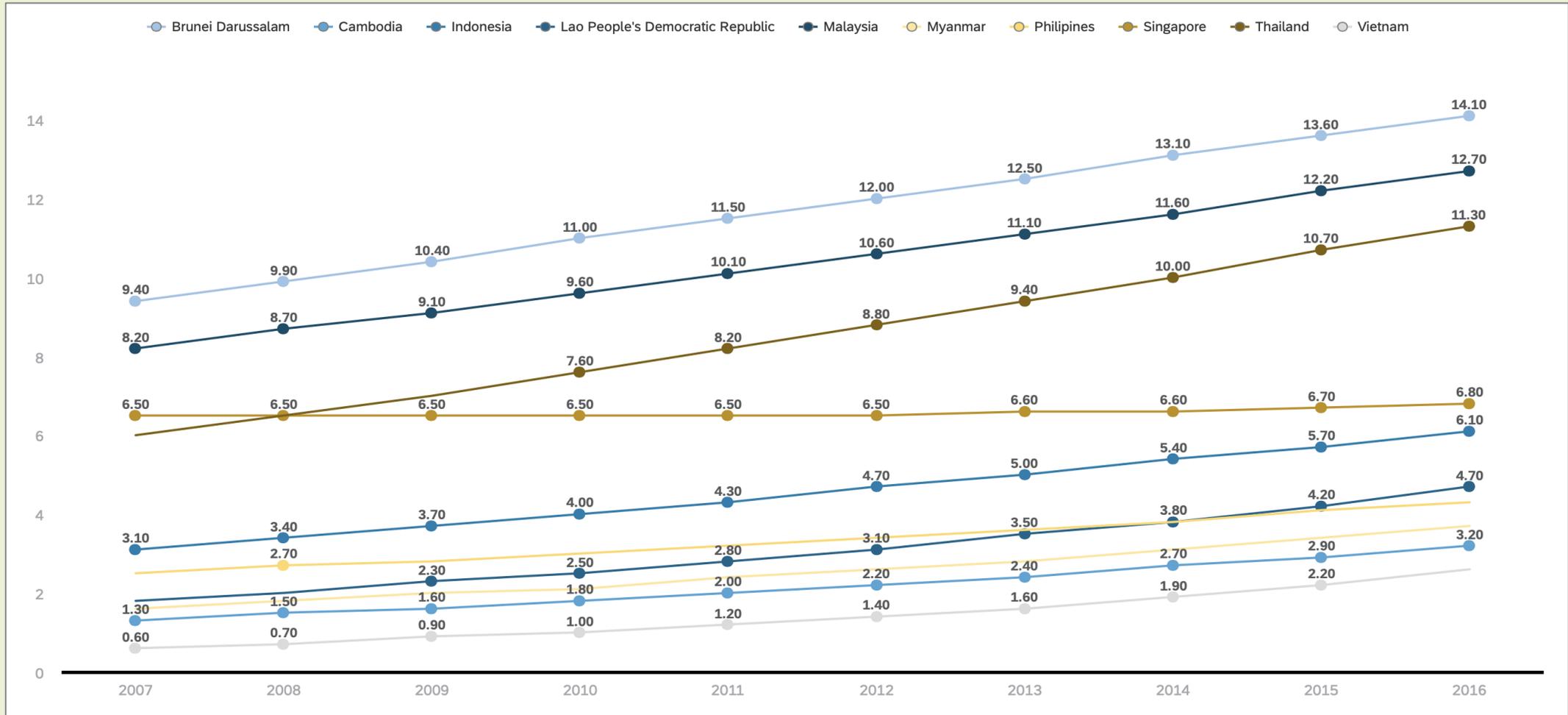


**VIETNAM**



Source: World Health Organization (WHO)

# Child Obesity Rate in ASEAN countries (2007 – 2016)



Source: World Health Organization (WHO)

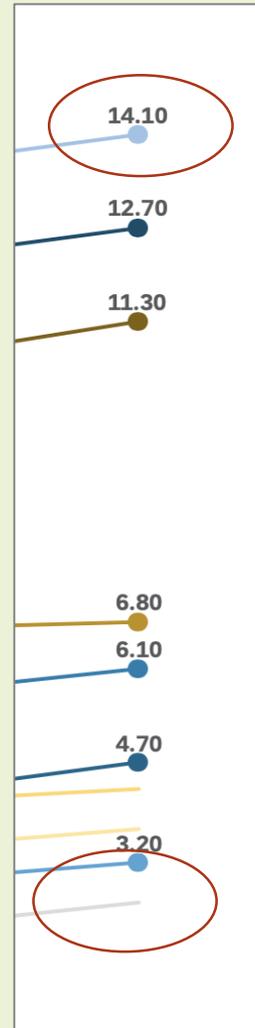
# Child Obesity Rate in ASEAN countries (2007 – 2016)



**BRUNEI**



**VIETNAM**



Source: World Health Organization (WHO)

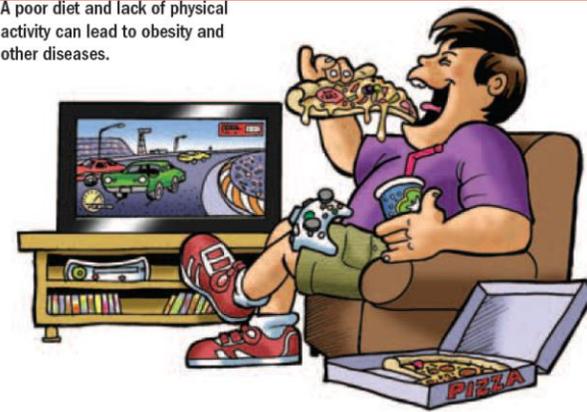
# What Causes Obesity?

## POOR DIET



## LACK OF PHYSICAL ACTIVITY

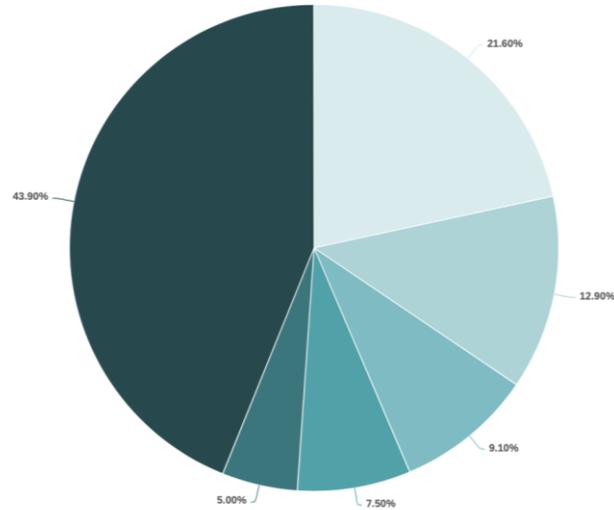
A poor diet and lack of physical activity can lead to obesity and other diseases.



## Top 5 Causes of Death in 2016 (As a % of Total Death)

### BRUNEI

1. Cancer 2. Heart Diseases (including Acute Rheumatic Fever) 3. Diabetes Mellitus 4. Cerebrovascular Diseases 5. Influenza & Pnenumonia 6. Others

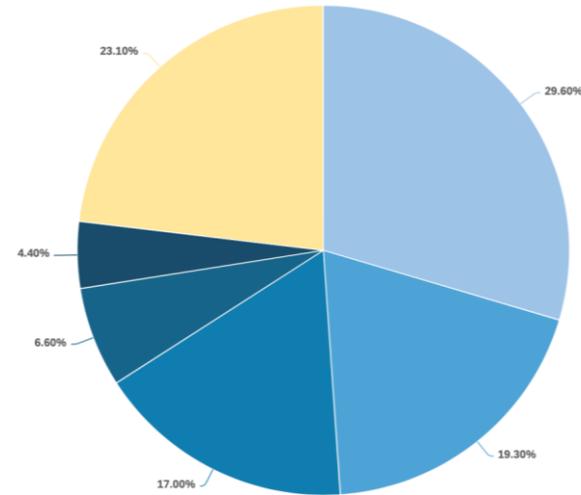


Total no. of death

1,632

### SINGAPORE

1. Cancer 2. Pneumonia 3. Ischaemic Heart Diseases 4. Chronic Obstrctive Pulmonary Disease 5. Alzheimer's Disease 6. Others



Total no. of death

20,017

## Population in 2016



417,256



5,607,300



94,569,072

Source: DEPD, Brunei Darussalam | Department of Statistics Singapore | Worldometers

## Top 5 Causes of Death in 2017 (Vietnam)

1. Stroke

2. Ishaemic Heart Diseases

3. Lung Cancer

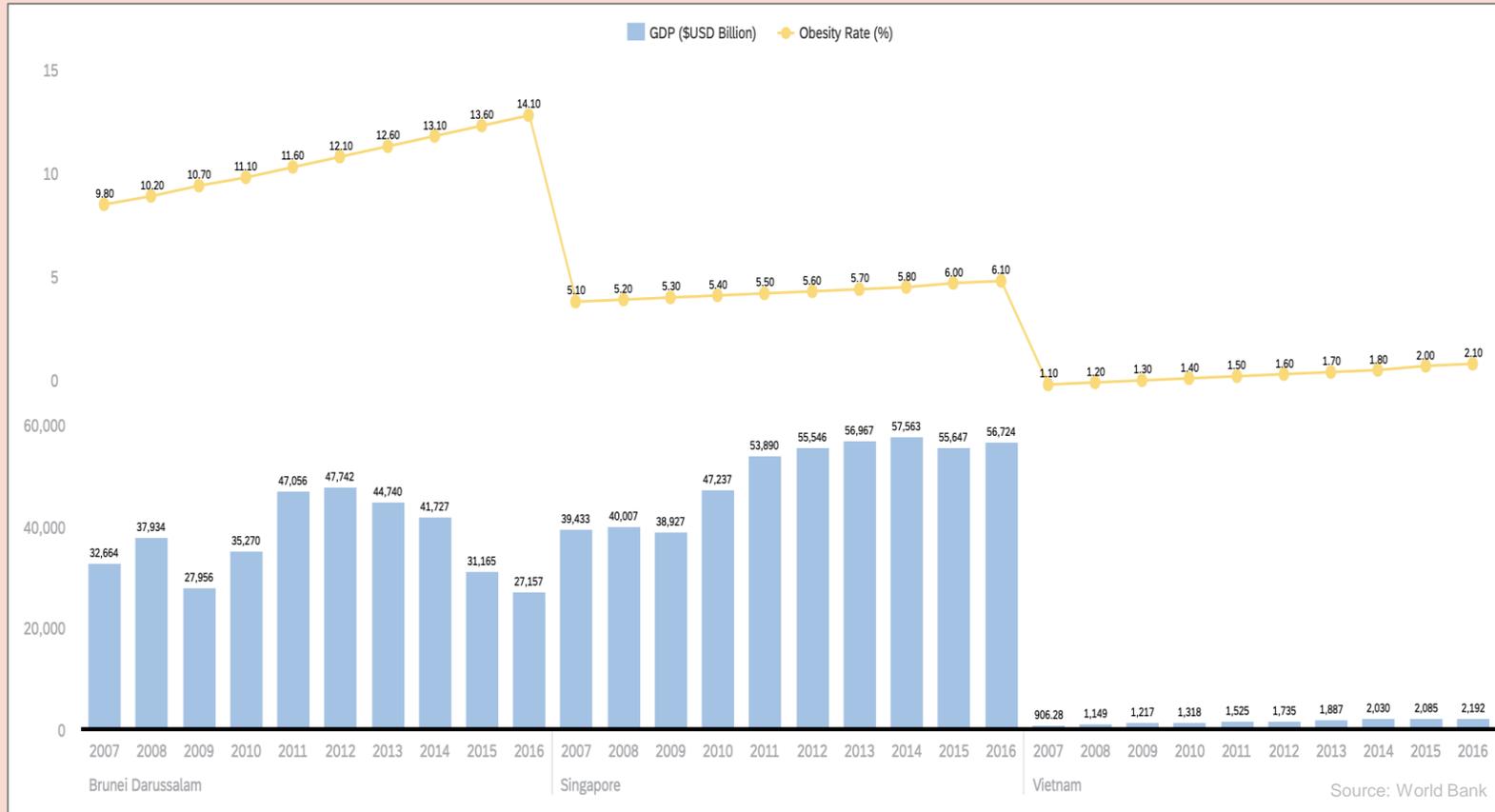
4. Chronic Obstructive Pulmonary Disease

5. Alzheimer's Disease

Source: Ministry of Health, Brunei Darussalam | Ministry of Health, Singapore | World Health Organization (WHO), Vietnam

- Obesity increases the **risk of getting life-threatening health problems**
- A study by The Singapore Burden of Diseases revealed that obesity-related diseases had the most impact on health.
- Moreover, obesity **contributes the most towards** the national disease burden of **diabetes**.

# GDP & Obesity Rate of Brunei Darussalam, Singapore & Vietnam (2007 – 2016)



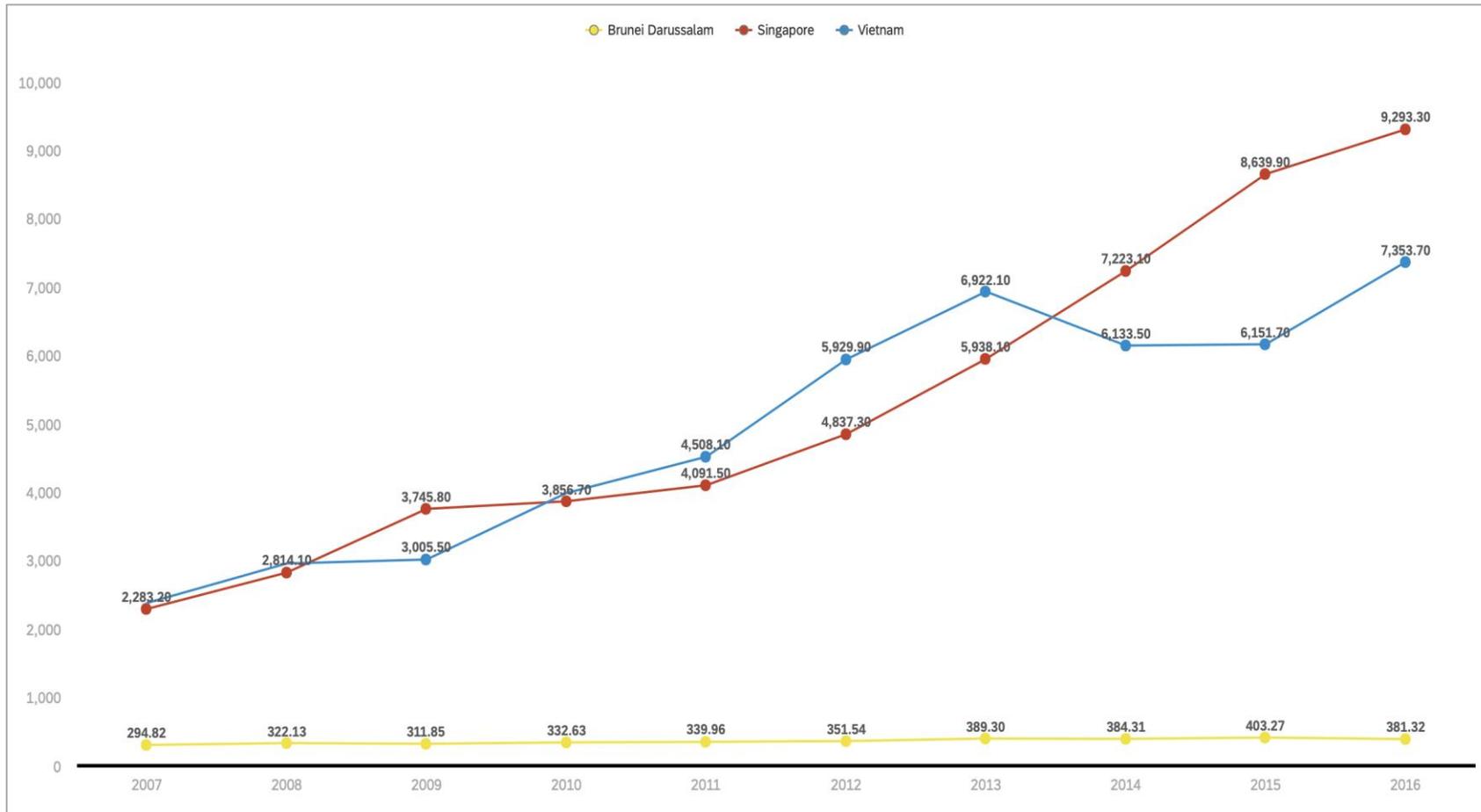
✓ Research conducted by Egger, Swinburn & Islam (2012) shows that there is positive relationship between GDP and Obesity for 175 countries.

✓ According to Deurenberg et al (2001), obesity is associated with extremely large GDP and economic affluence in Singapore.

**Based on Regression conducted:**  
 Positive relationship between GDP & Obesity for Singapore and Vietnam  
 Weak relationship between GDP & Obesity for Brunei

# ECONOMIC IMPACTS OF OBESITY

## Health expenditure of Brunei Darussalam, Singapore & Vietnam (2007 – 2016)



Source: Ministry of Health, Brunei Darussalam | Ministry of Health, Singapore | Country Economy

Brunei health expenditure increases from B\$323.8 to B\$344.3 in 2017 and 2018 respectively.

**Between 2010 – 2014, EIU reported that:**

- The direct and indirect costs of obesity amounted to US\$10 billion for the six ASEAN countries (Malaysia, Indonesia, Singapore, Philippines, Vietnam & Thailand).
- Singapore incurs the third highest costs (direct and indirect costs arising from obesity) equivalent to between 3% and 10% of national healthcare spending, or US\$0.4-1 billion.
- The rates are lowest in Vietnam, at around 1–3% of national healthcare spending.

# ECONOMIC IMPACTS OF OBESITY

- Increasing health expenditure
- Loss of productivity
- Early death or early retirement



**EARLY  
RETIREMENT**

# PROPOSED RECOMMENDATIONS

Implementing AMSO model (**A**wareness, **M**otivation, **S**kills, and **O**pportunities) introduced by Dr. Michael O'Donnell to create an effective wellness program that improves an individual health.

## Awareness

- Educate people of the healthy lifestyle

## Motivation

- Clarify how improving health will help achieve a person's core priorities in life

## Skills

- Train people in the skills required to learn each new health behavior

## Opportunity

- Provide abundant opportunities to practice newly learned healthy behaviors.



1  
Communication efforts

2  
Health Fair (Health Screening)  
*Identify participants (health problems)*

3  
Collected data and inform respective participants via social media e.g. WhatsApp

4  
Awareness



10  
Extrinsic Motivational

*Achieved goals end of 6 months rewarded with gift.*

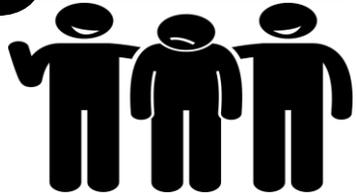


### AMSO MODEL

**Objective:**  
Design to encourage participants to a healthy lifestyle  
**Duration:**  
6 months  
**Target:**  
Organization & School

5  
Intrinsic Motivational Talk

9  
Opportunity



Peer Support

8  
Skills

- ✓ Use guide from social medias into practice
- ✓ Shared their daily food intakes to WhatsApp group.

7  
Opportunity



Healthy Cafe

Instructor



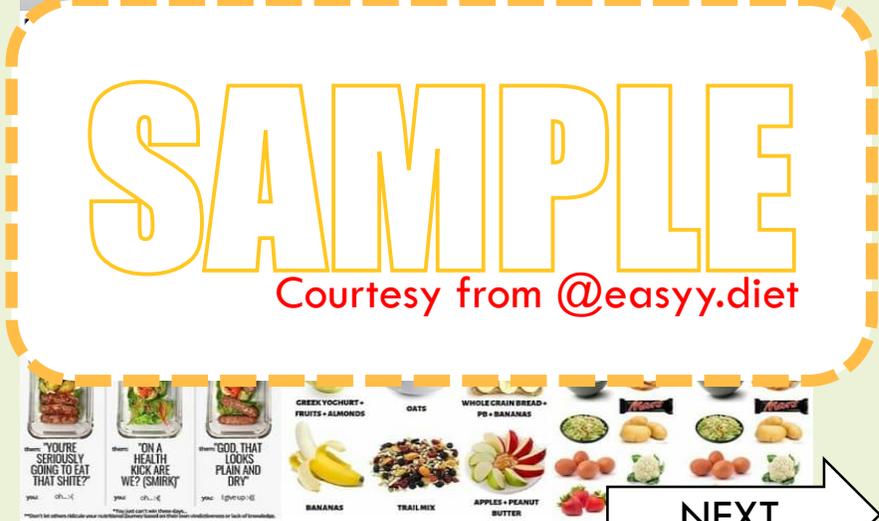
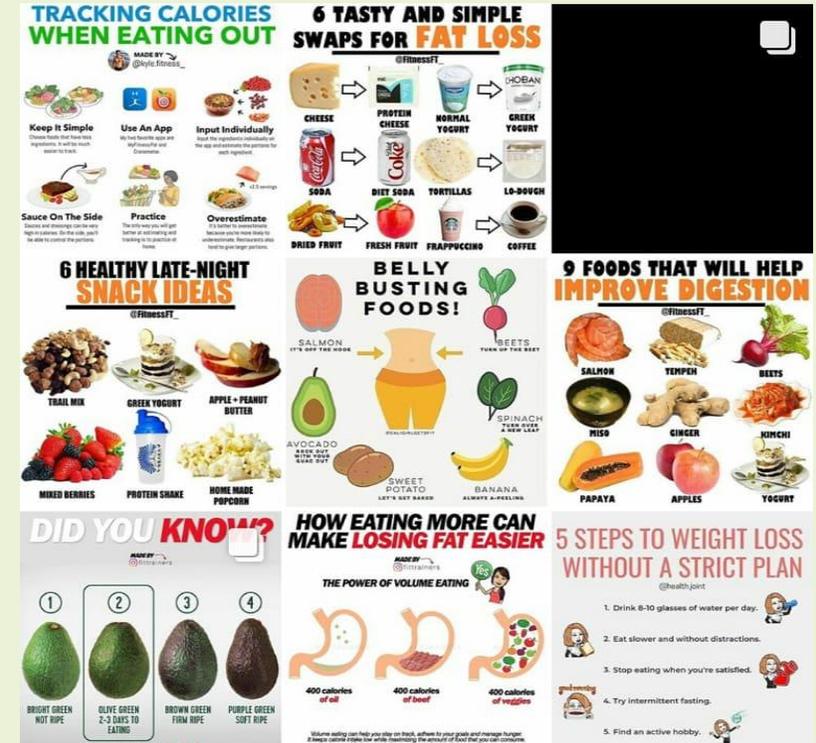
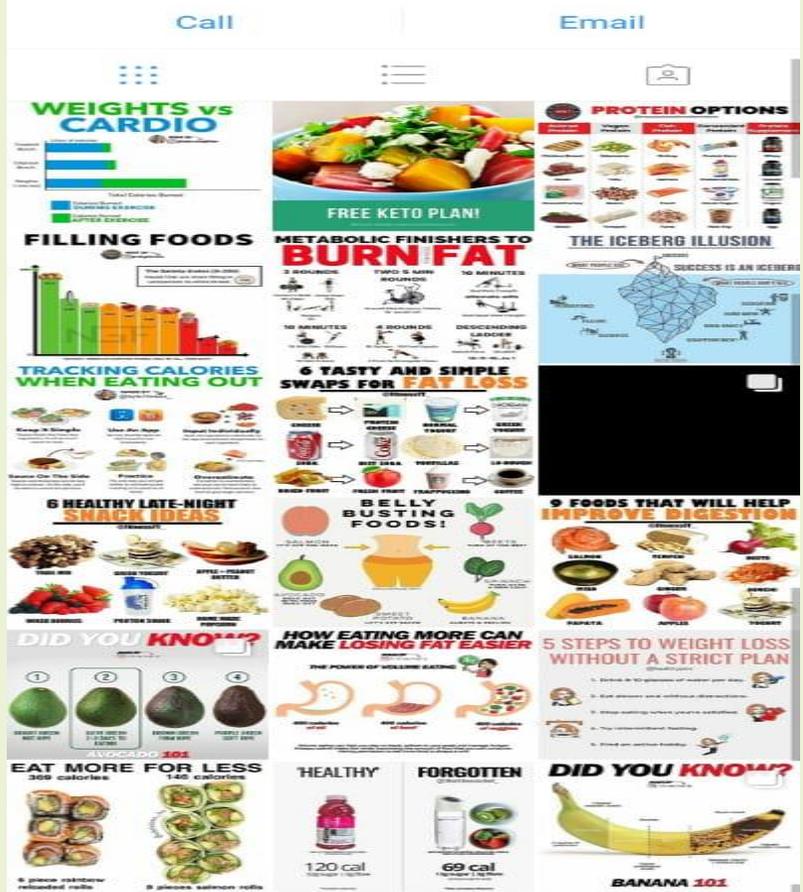
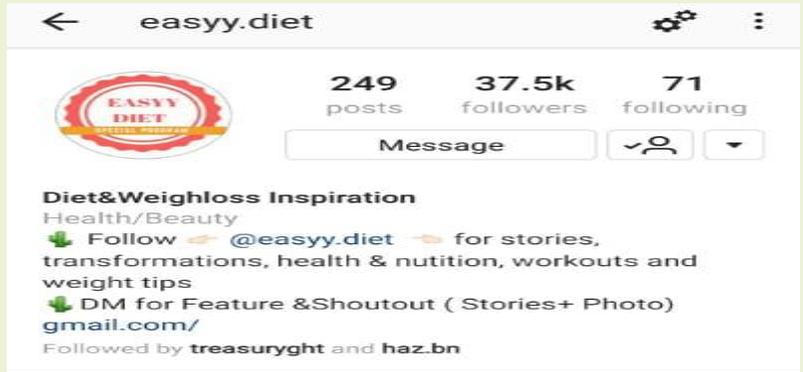
6  
Set goals achieved in 6 months



Health Screening



Incentive Exercise



# METABOLIC FINISHERS TO **BURN FAT**

KURT RAWLINS  
FITNESS

## 3 ROUNDS



Farmer's Walk  
40 steps



Jump Rope  
100



Burpee  
20

## TWO 5 MIN ROUNDS



Assault Bike Reverse Tabata  
10" on/20" off

## 10 MINUTES



Sled Push 1 length

alternate with



Sled Squat Row 1 length

## 10 MINUTES



10 Hits/Side



10 Rows



10 Side Crawls

## 4 ROUNDS



10 Swings



10 Front Squats



5 Push Up Renegade Rows

## DESCENDING LADDER



Bench Press



Deadlift

12-11-10...to 1

Courtesy from @easyy.diet

NEXT

# FLEXIBLE DIETING

## 80/20 RULE

@thoresenfitness

Mon						100%
Tues						80%
Wed						80%
Thur						100%
Fri						60%
Sat						60%
Sun						80%

Courtesy from @easy.diet

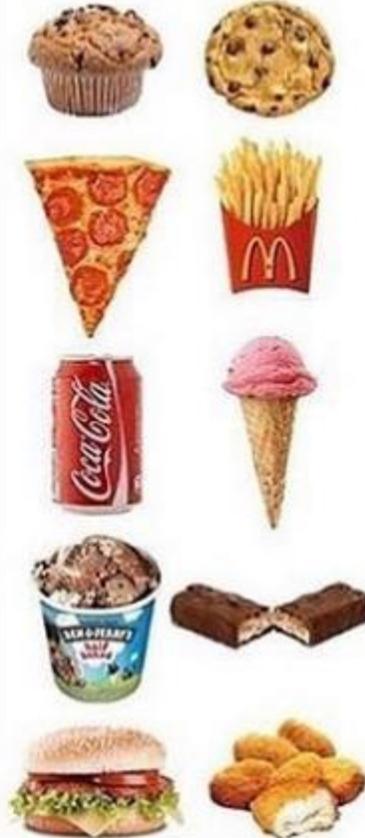
NEXT

# DIETING MINDSET

## BEING GOOD



## BEING BAD



MPOF

## BEING REALISTIC



Courtesy from @easy.diet



# REFERENCES

- Aldana, S. (2018, January 10). Best Worksite Wellness Programs. Available at: <<https://www.wellsteps.com/blog/2018/01/01/best-worksite-wellness-programs/>> [Accessed: 9 July 2019]
- Country Economy (2019) Vietnam – Government Health Expenditure. Available at: < <https://countryeconomy.com/government/expenditure/health/vietnam>> [Accessed: 9 July 2019]
- Department of Economic Planning and Development (2019) Population. Available at: <<http://www.dep.gov.bn/SitePages/Population.aspx>> [Accessed: 7 July 2019]
- Deurenberg-Yap M, Chew SK, Lin VFP, Tan BY, van Staveren WA, Deurenberg P. (2001). Relationships between indices of obesity and its comorbidities in multi-ethnic Singapore. *International Journal of Obesity*. 25(10):1554–1562
- Egger, G., Swinburn, B., & Islam, A. (n.d.). “Economic growth and obesity: An interesting relationship with world-wide implications.” *Economics & Human Biology*, 10(2), pp.147-153. Available at: <<https://www.sciencedirect.com/science/article/pii/S1570677X12000032>> [Accessed: 8 July 2019]
- Healthline Media (2019) Obesity Rising: Can We Do Anything to Reverse This Deadly Trend? Available at: <<https://www.healthline.com/health-news/obesity-rising-can-we-reverse-this-deadly-trend#1>> [Accessed: 25 June 2019]
- Institute for Health Metrics and Evaluation (2019) Singapore. Available at: <<http://www.healthdata.org/singapore>> [Accessed: 25 June 2019]
- Institute for Health Metrics and Evaluation (2019) Vietnam. Available at: <<http://www.healthdata.org/vietnam>> [Accessed: 25 June 2019]
- Katz DL, O'Connell M, Yeh MC, et al. (2005) Public health strategies for preventing and controlling overweight and obesity in school and worksite settings: a report on recommendations of the Task Force on Community Preventive Services. *MMWR Recomm Rep*.54:1–12.
- Ministry of Health Brunei Darussalam (2016) *Health Information Booklet 2016* [pdf] Available at: <[http://www.moh.gov.bn/Downloadables/Health%20Information%20Booklet%202016%20\(21st%20Edition%20Revision%20\).pdf](http://www.moh.gov.bn/Downloadables/Health%20Information%20Booklet%202016%20(21st%20Edition%20Revision%20).pdf)> [Accessed: 13 June 2019]
- Ministry of Health Brunei Darussalam (2019) Health Information Booklet. Available at: < <http://www.moh.gov.bn/SitePages/Health%20Information%20Booklet.aspx>> [Accessed: 7 July 2019]
- Ministry of Health Singapore (2018) Government Health Expenditure and Healthcare Financing. Available at: < <https://www.moh.gov.sg/resources-statistics/singapore-health-facts/government-health-expenditure-and-healthcare-financing>> [Accessed: 7 July 2019]
- Ministry of Health Singapore (2018) Principal Causes of Death. Available at: <<https://www.moh.gov.sg/resources-statistics/singapore-health-facts/principal-causes-of-death>> [Accessed: 25 June 2019]
- O'Donelle, M. (2010). Changing behaviors: Dr. Michael O'Donnell presents a new way to think about behavior change. Available at <[https://www.welcoa.org/wp/wp-content/uploads/2014/06/newsviews\\_odonnell.pdf](https://www.welcoa.org/wp/wp-content/uploads/2014/06/newsviews_odonnell.pdf)> [Accessed: 7 July 2019]
- Pour-Abdollahi P, Zarati M, Razavieh SV, Dastgiri S, Ghaem Maghami SJ, Fathi Azar E. (2004).The effect of nutrition education on the knowledge and practice of elementary school children regarding junk food intake. *Zanjan Univ Med Sci J*. 13:13–20.
- Ries, Nola M. (2012) “Financial incentives for weight loss and healthy behaviours.” *Healthcare policy = Politiques de sante*, 7(3), pp.23–28. *PubMed Central* [Online]. Available at: <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3298019/>> [Accessed: 9 July 2019]
- Sassi F, Cecchini M, Lauer J, Chisholm D., (2009). Improving Lifestyles, Tackling Obesity: The Health and Economic Impact of Prevention Strategies. OECD Health Working Papers, No. 48, Paris: OECD Publishing.
- Singapore Department of Statistics (2016) *Population Trends 2016* [pdf] Available at: <<https://www.singstat.gov.sg/-/media/files/publications/population/population2016.pdf>> [Accessed: 7 July 2019]
- The Conversation Media (2017) How financial incentives could help tackle Britain's childhood obesity problem. Available at: <<http://theconversation.com/how-financial-incentives-could-help-tackle-britains-childhood-obesity-problem-71355>> [Accessed: 1 July 2019]
- The Economist Intelligence Unit 2017. Tackling obesity in ASEAN: Prevalence, impact and guidance on interventions.
- Trading Economics (2019) Singapore GDP. Available at: <<https://tradingeconomics.com/singapore/gdp>> [Accessed on: 1 July 2019]
- Trading Economics (2019) Vietnam GDP. Available at: <<https://tradingeconomics.com/vietnam/gdp>> [Accessed on: 1 July 2019]
- Wakefield MA, Loken B, Hornik RC (2010). Use of mass media campaigns to change health behaviour. *Lancet*. 376(9748):1261–1271.
- World Health Organization (2016) Prevalence of obesity among adults, BMI ≥ 30, age-standardized – Estimates by country. Available at: <<http://apps.who.int/gho/data/node.main.A900A?lang=en>> [Accessed: 9 June 2019]
- World Health Organization (2016) Prevalence of obesity among children and adolescents, BMI>+2 standard deviation above the median, crude – Estimates by country, among children aged 5 - 19 years. Available at: <<http://apps.who.int/gho/data/node.main.A900A?lang=en>> [Accessed: 9 June 2019]
- World Health Organization (2018) *Noncommunicable Diseases (NCD) Country Profiles, 2018 – Vietnam* [pdf] Available at: <[https://www.who.int/nmh/countries/vnm\\_en.pdf?ua=1](https://www.who.int/nmh/countries/vnm_en.pdf?ua=1)> [Accessed: 25 June 2019]
- World Health Organization (2019) Population-based approaches to childhood obesity prevention. Available at: <<https://www.who.int/dietphysicalactivity/childhood/approaches/en/>> [Accessed: 1 July 2019]
- Worldometers (2019) Vietnam Population (Live). Available at: <<https://www.worldometers.info/world-population/vietnam-population/>> [Accessed: 7 July 2019]

Borneobulletin.com. [online] Available at: <https://borneobulletin.com.bn/> [Accessed 2 Sept. 2019]

Healthline.com, (2018). 10 Leading Causes Of Weight Gain and Obesity. [online] Available at: <https://www.healthline.com/nutrition/10-causes-of-weight-gain> [Accessed 2 Sept. 2019]

shapingmyear7pdhpe.weebly.com. Sociocultural Influences on food choices. [online] Available at: <https://shapingmyear7pdhpe.weebly.com/influences-on-young-peoples-food-choices.htm> [Accessed 2 Sept. 2019]