



INTEGRATED ROLE OF SOCIAL ELEMENTS TOWARD OBESITY IN MALAY COMMUNITY



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ABSTRACT

Article History

Received: 26 August 2019

Revised: 3 October 2019

Accepted: 7 November 2019

Published: 12 December 2019

Keywords

Social elements
Malay community
Obesity
Obesity Malaysia
Factors of obesity
Prevalence of obesity.

The pervasiveness of obesity has been increasing drastically in Malaysia, and proved to be a serious health issue along with its effect on the economic growth of the country. Obesity pervasiveness is found to be higher in Malay community as compared to other ethnics or communities. Hence, the aim of this study is to investigate the role of social elements toward obesity in Malay community. A quantitative (cross-sectional) survey was conducted by using questionnaire. A total of 150 obese people from Malay community (age: 20-59 years) were included in the study through purposive sampling. Body mass index of all participants was measured under given guidelines for Asian people. Inferential statistics (Spearman Correlation) was used to obtain the objective of the study. Social elements such as feelings (low self-esteem), body image dissatisfaction, eating habits, physical activity, physical activity barriers and media influence were correlated with obesity. However, dieting behavior, health knowledge and religiosity were found insignificant. This pioneer study has explored the mechanism and role of social elements toward obesity, and providing a baseline data for future researches. It is hoped that the state and federal government could take proactive actions against obesity ratio to secure the health of Malay community, and to decrease financial cost which will also be beneficial for economic growth of the country.

Contribution/ Originality: Obesity has been scaled up among Malay community that causes higher rate of chronic diseases and their medical cost. However, previous studies have not been focusing on social elements of obesity among Malay community. Therefore, this pioneer study inspects the impact of social elements toward obesity among Malay community.

1. INTRODUCTION

Nowadays obesity deems to be a worldwide severe grave subject of matter in both developed and developing countries, its predominance has also been increasing day by day. Furthermore, it is also related to physical and mental problems in an individual and community [1]. Obesity can be stated as ranges of weight that are greater than what is generally considered healthy for a given height. It can be calculated through the Body Mass Index

(BMI). BMI is defined as the ratio of height and weight and represents a proxy measure for the level of fatness a person possesses [2].

Further, Azmi, et al. [3] stated that the pervasiveness of obesity is higher in Malaysia. In fact, the third National Health and Morbidity Survey (NHMS III) was conducted among 33,055 adults, and identified 14.0% obese individuals respectively [4]. Moreover, Azmi asserted that 14.66% adult women and 9.72% adult men are obese. It is hard to believe about the rapid increment of obesity in the population [5].

Obesity prevailed 12.1% among Malaysian adults. Nearly one out of two adults (age: 25-64) are found overweight and obese, with the greater pervasiveness among Indian community, Malays are at second position, and Chinese stand third in Malaysia. The next NHMS survey has been conducted after five years in 2011, where obesity ratio is still increasing [6]. Likewise, the report of Institute for Public Health [7] shows that the pervasiveness of overweight, obesity and abdominal obesity has been increased at the national level by 0.6%, 2.6% and 2.0% respectively as compared with the previous ratio given by Institute for Public Health [6]. Rampal, et al. [5] describes the findings of the Malaysian Adult Nutrition Survey (MANS), where men are more overweight and female are more obese in different states of Malaysia. A study conducted by San, et al. [8] observes that the pervasiveness of obesity is 25.7% in Sri-Kolam flats in Kuala Terengganu. The study elaborates that legion elements are contributing to overweight and obesity.

Obesity is a massive threat to public health as numerous researchers indicate a higher risk of mortality, social impact and its related diseases such as cardiovascular disease, cancer, hypertension, and diabetes [1, 9] including obesity cost [10]. In addition, Adams, et al. [11] also confirmed that increasing death rate was being correlated with obesity. There was a specific influence of ethnicity and age among population, who had 25kg/m² or higher BMI [12].

However it is not ended here. The direct cost of obesity due to chronic diseases has also been increased up to US\$4-7 billion which is equal to RM17-30 billion [13]. The substantial burden of illness apparently has been found among Malay community. Demographic and development in urbanization, socio-economics status, cultural and environmental influence, adoption of a sedentary lifestyle, poor diet, lack of physical exercise are the results of obesity, which is now alarming to health concern in remote communities putting the public health in danger with infectious disease [14-16].

Additionally, Saunders, et al. [17] renders that social elements have a critical role in human weight gain. Social elements are inclusive of all elements which arise from cultural, environmental, community, family, organizational, societal, governmental, the state, the media, technology, religious, ideology, discourse, communication, and which influences the individual personality, attitudes and lifestyle. However, previously studies conducted in Malaysia are not discussing about the role of social elements on obesity [18]. In a nutshell, the identification and the correlation of social elements with obesity are essential to study in order to reduce the morbidity and mortality rates of cardiovascular diseases. Therefore, the purpose of this study is to evaluate the role of social elements of obesity in Malay community.

2. LITERATURE REVIEW

Self-esteem is considered as most essential regulator of human behavior where it is developed across the lifespan of an individual. But it has been reported that obese people as an object experience low self-esteem due to obesity and its related negative emotions. Studies are stressing that such convictions lead to the formation of stereotypes and prejudices that relate to an entire person including personal characteristics. Obese and overweight individuals are more likely to have low body-esteem, and low self-esteem as compared to normal individuals [19]. Although, Ternouth, et al. [20] mentioned that low self-esteem is the predictor of obesity among young generation. But the influence of feelings (low-self-esteem) on obesity has not been evaluated in previously conducted studies [21-23].

Similarly, studies have been mentioned only that obesity is correlated with body image dissatisfaction. As Weinberger, et al. [24] described the degree of the body dissatisfaction among obese individuals and normal-weight individuals. Obese subjects rated their bodily appearance significantly more negative while comparing with normal-weight subjects Weinberger, et al. [24]. Japil, et al. [25] also observed the correlation between body mass index and body dissatisfaction in his research. But none of those studies described the impact of body image dissatisfaction toward obesity.

Besides low self-esteem and body image dissatisfaction, eating habits are also playing a vital role toward obesity. Rezali, et al. [26] and Ganasegeran, et al. [27] stated that there are many poor eating habits among Malaysians such as late breakfast and late night supper, skipping breakfast, eat from fast-food restaurants, and more energy intake. Moreover, studies described the correlation of dieting behavior and obesity. These behaviors not only limited to fasting, skipping meal, smoking for appetite reduction and compensatory exercise but also consuming stimulants (i.e) drugs and energy drinks [28, 29]. Yet the correlation of dieting behaviors toward obesity has not been assessed among the adult population.

Furthermore, health knowledge is one of the variables included in this study. Obesity and risk of cardiovascular diseases such as hypertension and diabetes are associated with health knowledge [30]. Further, several types of research have declared the importance of physical activity for weight control [31, 32]. According to Warburton, et al. [33] physical activity can reduce the risk of chronic and cardiovascular diseases. Being inactive may be correlated with barriers for individuals. From the last few years, physical inactivity has been received more attention and known as a public health issue. It may because of some unknown barriers that prevent individuals not to be indulged in physical activity that need to be identified. Although, Ibrahim, et al. [34] described such barriers that hold back a person from physical activity. However, Ibrahim included males participants only, and poorly defined age strata (20 years and older) that are creating a space for future research.

In addition, social networking sites and social media could be one of leading barriers of physical inactivity. The importance of social networking sites has been increasing in social life of Malaysians as a key activity [35]. Although it is affordable for the people to connect with each other, still it has some drawbacks in the aspect of socialization. Due to its excessive use many health and social problems are arising in Malaysia including obesity. Malaysia ranks sixth in terms of obesity ratio in the whole Asia. It is reported that people with age 18 and above are suffering the problem of obesity [35]. The highest numbers of internet users are found in Malaysia. And this activity has changed the lifestyle of Malaysians. It has made the people to spend their time idly in front computers and limited their physical activities [35]. According to Boyce [36] the media has been influencing the obesity levels among population. He points out several influencing areas such as increased snacking with media use, sedentary lifestyle and media, body image as presented by the media, and unhealthy food consumption through advertising. Different theories may explore how media is effecting on obesity. In addition, media stigmatized overweight and obese individuals in various forms. Moreover, religiosity is developing bad eating habits of an individual, and there is a significant correlation of obesity and religiosity [37]. However, Dodor has selected African American adults (particular age group 28-36 years) for his study. And only investigated the association between religiosity and obesity with health behavior among people belong to Christianity. Based on the evidence, people who are involved in prayers and frequently attended the church are implicated in heightened the level of obesity. Reason can be explained of association where spending more time in prayer and making religion more important in life is affecting their health behaviors.

3. MATERIALS AND METHODS

Quantitative (cross-sectional) research design was adopted for this study. Further, a total of 150 participants from Malay community were included in this research via non-probability sampling technique (purposive sampling). Body weight and height were measured by using Health Scale. The participants were asked to take off

the shoes before the measurements. Weight was measured in kilograms (kg) to the nearest 0.1 kg. The participants were asked to stand in the center of scale area with accurate position, looking straight ahead with hands at sides in order to check evenly distributed weight on both feet. Lee and Nieman [38] stated that, during weight and height measurements, a subject supposed to be standing straight with evenly distributed weight on both feet including light clothes, empty pockets without hat or belt. BMI of participants was obtained by given guidelines of Clinical Practice Guidelines on Management of Zainudin, et al. [39]. The criteria classified underweight (BMI <18.5kg/m²), normal (BMI 18.5– 22.9kg/m²), overweight (BMI 23.00-27.49kg/m²), obese (BMI > 27.49kg/m²).

This cross-sectional survey was conducted through structured questionnaire that consists of 5-point scale. Therefore, the validity of questionnaire was necessary before conducting the full-scale study. In the present study, content and face validity had been employed as it refers to extent to which measurements made represent aspects of the measured content. Moreover, questionnaire has also been translated into Bahasa Melayu.

The data had been gathered from Terengganu, Malaysia. The participants had been approached who fulfilled the inclusion criteria (BMI > 27.49kg/m²), and willing to participate voluntarily for this study. Data had been analyzed by using SPSS version 21.0. Statistical test Spearman correlation was used based on the items to examine the relationships between the total score of the results of social elements and obesity. To check the relationship among variables, the significance level was set at p <0.05.

4. RESULT

The demographic profile of participants has well elaborated in the Table 1. Frequency analysis has shown that both male and female obese people were included in the study and their distribution is almost equal. On the other side, majority of participants have age of 40-49 years old. Only 11.3% subjects are from lowest age group 20-29 years. While 72% participants in this study are ever married (divorced, widows, and currently married), and more than 85.3% participants are employed. Approximately 28% respondents have low income (less than RM3000), and 14.7% respondents are earning RM3001-6000.

Table-1. Socio-Demographic Profile of the Participants

Profile of participants	No. of respondents	Frequency (%) of respondents
Sex		
Male	80	53.3
Female	70	46.7
Age		
20-29	17	11.3
30-39	28	18.7
40-49	82	54.7
50-59	23	15.3
Marital status		
Never married	42	28.0
Ever married	108	72.0
Employment status		
Yes	128	85.3
No	22	14.7
Income level		
Less than 3000	42	28.0
3001-6000	22	14.7
More than 6000	86	57.3
Educational level		
Low education (UPSR, PMR, SPM, SPTM)	60	40.0
Certificate and diploma	28	18.7
A-level and graduation	46	30.7
Masters and above	16	10.7

However, 57.3% participants have high monthly income more than RM6000. Almost 40% respondents having low education (UPSR, PMR, SPM, STPM), and have some informal education; certification or diploma. A significant proportion of people have graduation degree, while 10% of total respondents are qualified with masters and above.

To check the correlation between social elements and obesity, Spearman's Rho Correlation analysis was utilized. The results are determined given below. Table 2 has shown that body image dissatisfaction ($r_s=.430$) with $p< 0.05$, eating habits ($r_s= .554$) with $p< 0.05$, physical activity barriers ($r_s= .435$) with $p< 0.05$, and media influence ($r_s= .443$) with $p< 0.05$ are positive significantly correlated to obesity. The meaning of positive correlations is the higher the outcome score of the factor, higher will be the effect on obesity. On the contrary, feelings (low self-esteem) ($r_s= -.182$) with $p< 0.05$, and physical activity ($r_s= -.175$) with $p< 0.05$ is negatively correlated to obesity. It shows lower self-esteem and lower the tendency to do physical activity higher will be the obesity and vice versa.

Among these elements like dieting behavior, health knowledge, and religiosity is found insignificant by Spearman's Rho correlation analysis. Correlation coefficients have shown the correlation but their corresponding p-values have explained that these indicators are insignificantly correlated with obesity. Like dieting behavior and obesity has correlation coefficient ($r_s= .062$) with $p> 0.05$. It means dieting behavior and obesity has no relationship, and indicated insignificantly correlated to each other. Similarly it goes with remaining elements like health knowledge ($r_s= -.020$) with $P> 0.05$, and religiosity ($r_s= -.100$) with $p> 0.05$. P-value is insignificant at 0.05 level of significance.

Table-2. Correlation between social elements and obesity.

Sample	Constructs	Correlation coefficient	Sig. (2-tailed)
150	Feelings (low self-esteem)	$r_s= -.182$.026
	Body image dissatisfaction	$r_s=.430$.000
	Eating habits	$r_s= .554$.000
	Dieting behavior	$r_s= .062$.453
	Health knowledge	$r_s= -.020$.810
	Physical activity	$r_s= -.175$.032
	Physical activity barriers	$r_s= .435$.000
	Media influence	$r_s= .443$.000
	Religiosity	$r_s= -.100$.223

Source: Spearman's Rho Correlation Analysis, *Significant at $p<0.05$.

5. DISCUSSION

Obesity is an epidemic disease reached to its great extent; and this pioneer study has been evaluated that feelings (low self-esteem) are responsible for obesity among participants. What come first, overweight or lack of self-esteem? Which one is the cause and which one is the effect? So far it seems that individuals who have excessive body weight feel uncomfortable with their appearance and themselves. But apparently, it is not that simple. So the aim was to identify the impact of feelings (low self-esteem) on obesity. The findings of this present study indicate that feelings (low self-esteem) is significant negative correlated with obesity as ($r_s= -.182$) with $p<0.05$ in participants. Spearman correlational analysis gives the significant association. This statistical test proves that feelings (low self-esteem) have a strong negative correlation with obesity among Malay community which is in line with previous study [20].

Further, this current study assesses the correlation of body image dissatisfaction and obesity. The results indicates a significantly positive correlation with obesity ($p<0.05$). This pioneer study has been determined that body image dissatisfaction may impact on obesity, which may lead toward many cardiovascular problems. The reason of this relationship between body image dissatisfaction and obesity including weight control behavior Jun and Choi [40] can be explained in terms of anti-fat attitudes, negative messages about being obese among the

general population and discouragement from media [41]. In addition, food is genuinely the one thing that brings Malaysians together belongs from different ethnicities. This present study has evaluated the correlation of eating habits and obesity. Eating habits among Malay community are influenced by different elements. As an outcome, obesity is progressively seen among Malay community. Obesity may vary with different dietary patterns like fast food consumption, eating when people are not hungry, how often people eat at restaurants, whether they are overeating while feeling stress [42, 43]. Moreover, results report that there is no significant correlation between dieting behavior and obesity. It shows that Malay people are not adopting any weight control dieting behavior which is in line with study of Blokstra, et al. [44]. Health knowledge has also shown no significance with obesity that is in line with study of San, et al. [8]. It might be due to demographic differences. Current study has also assessed the relationship of physical activity with obesity among Malay community. Findings show a significant negative correlation ($r_s = -.175$, $p = .032$) with obesity. Hence, it can be said that physical activity found less in Malay community and results are in line with previous study [45]. One possible reason is one's own behavior toward physical activity, as Malaysians believe that it is uninteresting, dangerous, uncomfortable and too difficult.

This current study has been added all relevant questions for physical activity barriers to check their relationship with obesity. Based on given results, physical activity barriers were significantly positive associated with obesity ($r_s = .435$) with $p < .000$. It could be explained in a way where people found morbid obese and therefore need more energy for survival.

Based on findings, study has also been determined that media is one of element that has a significant positive relationship with obesity. The results are correlated with previous study done by Melkevik, et al. [46]. Ads and mass media significantly affect dietary patterns. The content viewed and amount of time spent while watching TV was the explanation behind the development of obesity. TV ads and other programs not only motivate to eat more but also contribute to physical inactivity. Television watching and of web-based social networking both are contributing elements to obesity. It detracts adults to spend time for physical exercises and prompts to increase energy intake through snacking and to take the meal while viewing it. These patterns of snacking and sitting time also make an impact toward unhealthy food choices [47].

Religiosity is last variable used in context of Islamic religiosity. Relatively several researches that have inspected the significant positive connection among religiosity and obesity [37, 48]. Although, the findings of this pioneer study found no significant correlation between religiosity and obesity. The results are in line with previous study carried out by Reeves, et al. [49]. Generally the increasing level of religiosity is connected with healthier and longer life. On the contrary, obesity is associated with several diseases and risk of mortality. So it can be explained with logic that increased level of religiosity will be associated with healthier life, so how can religiosity will contribute toward obesity, and reject the phenomena of significant correlation among both variables.

6. CONCLUSION

This study has achieved its research objective in identifying the role of social elements toward obesity among Malay community. To the best of knowledge, it is the first study in Malaysia concerning social elements and its impact on obesity among Malay adult community. Arising from the findings government should appreciate the fact that identifying the social elements is a remedy toward improving the management of the obesity, as its increasing level within Malaysia causes different health problems highlighted by Institute for Public Health [7]. It is hoped that these findings and recommendations established through the study, the state and federal government could take proactive actions in order to decrease the level of obesity ratio. Therefore, it is a need for advocacy, full strength of awareness, campaign through incorporation with traditional leaders, educationist medical nurses and religious scholars including imams to develop interventional programs primarily

in the country like Malaysia. As it is essential to realize that people are mentally less able to make such changes by their own, it could be possible only by prevailing healthy social, physical and economic environment that will be requisite to promote and encourage such change and the sustainability of good health of individuals besides less health issues and economics cost toward obesity.

Funding: This study received no specific financial support.

Competing Interests: The authors declare that they have no competing interests.

Acknowledgement: All authors contributed equally to the conception and design of the study.

REFERENCES

- [1] S. Djalalinia, M. Qorbani, N. Peykari, and R. Kelishadi, "Health impacts of obesity," *Pakistan Journal of Medical Sciences*, vol. 31, pp. 239-242, 2015.
- [2] C. M. Hales, M. D. Carroll, C. D. Fryar, and C. L. Ogden, *Prevalence of obesity among adults and youth: United States, 2015–2016*. Hyattsville, MD: National Center for Health Statistics, NCHS Data Brief, No 288, 2019.
- [3] M. Azmi, R. Junidah, A. S. Mariam, M. Safiah, S. Fatimah, A. Norimah, B. Poh, M. Kandiah, M. Zalilah, and W. Wan Abdul Manan, "Body mass index (bmi) of adults: Findings of the Malaysian adult nutrition survey (mans)," *Malaysian Journal of Nutrition*, vol. 15, pp. 97-119, 2009.
- [4] Institute for Public Health (IPH), "The third national health and morbidity survey (NHMS III) 2006," *General Findings. Ministry of Health, Malaysia*, 2008.
- [5] L. Rampal, S. Rampal, G. Khor, A. Zain, S. Ooyub, R. Rahmat, S. Ghani, and J. Krishnan, "A national study on the prevalence of obesity among 16,127 Malaysians," *Asia Pacific Journal of Clinical Nutrition*, vol. 16, pp. 561-566, 2007.
- [6] Institute for Public Health, *National health and morbidity survey 2011 (NHMS 2011). Methodology and General Findings* vol. 1, 2011.
- [7] Institute for Public Health, *National health and morbidity survey 2015: On-communicable disease, risk factors, & other health problems* vol. 2. Kuala Lumpur, Malaysia: Malaysia Institute for Public Health, 2015.
- [8] S. San, U. S. Rao, and T. M. Zin, "Prevalence and factors associated with obesity among adult at the Kampung Kolam, East Coast Malaysian Peninsula – A cross sectional study," *International Journal of Pharmacy and Pharmaceutical Sciences*, vol. 9, pp. 273-281, 2017.
- [9] World Health Organization, *Diabetes, fact sheet No 312*. Geneva: World Health Organization. Retrieved: <http://www.who.int/mediacentre/factsheets/fs312/en>, 2013.
- [10] J. B. Dixon, "The effect of obesity on health outcomes," *Molecular and Cellular Endocrinology*, vol. 316, pp. 104-108, 2010. Available at: <https://doi.org/10.1016/j.mce.2009.07.008>.
- [11] K. F. Adams, A. Schatzkin, T. B. Harris, V. Kipnis, T. Mouw, R. Ballard-Barbash, A. Hollenbeck, and M. F. Leitzmann, "Overweight, obesity, and mortality in a large prospective cohort of persons 50 to 71 years old," *New England Journal of Medicine*, vol. 355, pp. 763-778, 2006.
- [12] K. M. Flegal, B. I. Graubard, D. F. Williamson, and M. H. Gail, "Excess deaths associated with underweight, overweight, and obesity," *Jama*, vol. 293, pp. 1861-1867, 2005. Available at: <https://doi.org/10.1001/jama.293.15.1861>.
- [13] The Economist Intelligence Unit Limited, *Tackling obesity in ASEAN (Prevalence, impact, and guidance on interventions): Asia Roundtable on Food Innovation for Improved Nutrition*, 2017.
- [14] G. A. Shayo and F. M. Mugusi, "Prevalence of obesity and associated risk factors among adults in Kinondoni Municipal district, Dar es Salaam Tanzania," *BMC Public Health*, vol. 11, p. 365, 2011.
- [15] G. D. Dinsa, Y. Goryakin, E. Fumagalli, and M. Suhreke, "Obesity and socioeconomic status in developing countries: A systematic review," *Obesity Reviews*, vol. 13, pp. 1067-1079, 2012. Available at: <https://doi.org/10.1111/j.1467-789x.2012.01017.x>.

- [16] K. Ball, D. Crawford, R. Jeffery, and J. Brug, "The role of socio-cultural factors in the obesity epidemic," *Obesity Epidemiology: From Aetiology to Public Health*, vol. 2, pp. 105-118, 2010. Available at: <https://doi.org/10.1093/acprof:oso/9780199571512.003.0008>.
- [17] M. R. Saunders, K. T. Watson, and H. J. Tak, "Social factors in childhood and adulthood associated with adult obesity in African American and white women," *International Scholarly Research Network*, vol. 2012, p. 10, 2012. Available at: [10.5402/2012/931854](https://doi.org/10.5402/2012/931854).
- [18] L. K. Ghee, "A review of adult obesity research in Malaysia," *Medical Journal of Malaysia*, vol. 71, p. 7, 2016.
- [19] A. Abdollahi and T. M. Abu, "Self-esteem, body-esteem, emotional intelligence, and social anxiety in a college sample: The moderating role of weight," *Psychology, Health & Medicine*, vol. 21, pp. 221-225, 2016. Available at: <https://doi.org/10.1080/13548506.2015.1017825>.
- [20] A. Ternouth, D. Collier, and B. Maughan, "Childhood emotional problems and self-perceptions predict weight gain in a longitudinal regression model," *BMC Medicine*, vol. 7, p. 46, 2009. Available at: <https://doi.org/10.1186/1741-7015-7-46>.
- [21] A. Nieśpiałowski and J. F. Terelak, "Obesity-related self-esteem and its relationship to coping with stress," *Polish Journal of Aviation Medicine Psychology*, vol. 22, pp. 18-26, 2016.
- [22] A. Pilafova, D. J. Angelone, and K. Bledsoe, "The relationship between gender, BMI, self-esteem, and body esteem in college students," *Psi Chi Journal of Undergraduate Research*, vol. 12, pp. 24-30, 2007.
- [23] A. F. M. D. Haya, S. Abog, B. M. N. S. Najla, and A. M. B. S. N. Wojdan, "Relationship between body mass index," *Self-Esteem and Quality of Life among Adolescent Saudi Female*, vol. 5, pp. 130-139, 2015.
- [24] N.-A. Weinberger, A. Kersting, S. G. Riedel-Heller, and C. Luck-Sikorski, "Body dissatisfaction in individuals with obesity compared to normal-weight individuals: A systematic review and meta-analysis," *Obesity Facts*, vol. 9, pp. 424-441, 2016. Available at: <https://doi.org/10.1159/000454837>.
- [25] A. M. Japil, M. Mustapha, and T. E. Guan, "Body dissatisfaction among male and female adolescents," *Journal of Psychology and Social Health*, vol. 1, pp. 1-7, 2017.
- [26] F. W. Rezali, Y. S. Chin, M. Yusof, and B. Nisak, "Obesity-related behaviors of Malaysian adolescents: A sample from Kajang district of Selangor State," *Nutrition Research and Practice*, vol. 6, pp. 458-465, 2012.
- [27] K. Ganasegeran, S. A. Al-Dubai, A. M. Qureshi, A.-A. A. Al-Abed, A. Rizal, and S. M. Aljunid, "Social and psychological factors affecting eating habits among university students in a Malaysian medical school: A cross-sectional study," *Nutrition Journal*, vol. 11, p. 48, 2012. Available at: <https://doi.org/10.1186/1475-2891-11-48>.
- [28] H. M. Blanck, M. K. Serdula, C. Gillespie, D. A. Galuska, P. A. Sharpe, J. M. Conway, L. K. Khan, and B. E. Ainsworth, "Use of nonprescription dietary supplements for weight loss is common among Americans," *Journal of the American Dietetic Association*, vol. 107, pp. 441-447, 2007. Available at: <https://doi.org/10.1016/j.jada.2006.12.009>.
- [29] A. J. Jeffers, K. E. Vatalaro Hill, and E. G. Benotsch, "Energy drinks, weight loss, and disordered eating behaviors," *Journal of American College Health*, vol. 62, pp. 336-342, 2014. Available at: <https://doi.org/10.1080/07448481.2014.902838>.
- [30] S. H. Wong, "The prevalence of obesity and the knowledge, Attitude and Practice of Ealthy Lifestyle Among the Adult Population in Kampung Banyuk, Kampung Kerto and Kampung Langup (Doctoral Dissertation, Universiti Malaysia Sarawak), 2013.
- [31] J. M. Jakicic, "The effect of physical activity on body weight," *Obesity*, vol. 17, pp. S34-S38, 2009.
- [32] C. A. Maher, E. Mire, D. M. Harrington, A. E. Staiano, and P. T. Katzmarzyk, "The independent and combined associations of physical activity and sedentary behavior with obesity in adults: NHANES 2003-06," *Obesity*, vol. 21, pp. E730-E737, 2013. Available at: <https://doi.org/10.1002/oby.20430>.
- [33] D. E. Warburton, C. W. Nicol, and S. S. Bredin, "Health benefits of physical activity: The evidence," *Canadian Medical Association Journal*, vol. 174, pp. 801-809, 2006.

- [34] S. Ibrahim, N. Karim, N. Oon, and W. Ngah, "Perceived physical activity barriers related to body weight status and sociodemographic factors among Malaysian men in Klang Valley," *BMC Public Health*, vol. 13, pp. 275-275, 2013. Available at: <https://doi.org/10.1186/1471-2458-13-275>.
- [35] L. Muniandy and B. Muniandy, "The impact of social media in social and political aspects in Malaysia: An overview," *International Journal of Humanities and Social Science*, vol. 3, pp. 71-76, 2013.
- [36] T. Boyce, "The media and obesity," *Obesity Reviews*, vol. 8, pp. 201-205, 2007. Available at: <https://doi.org/10.1111/j.1467-789x.2007.00342.x>.
- [37] B. Dodor, "The impact of religiosity on health behaviors and obesity among African Americans," *Journal of Human Behavior in the Social Environment*, vol. 22, pp. 451-462, 2012. Available at: <https://doi.org/10.1080/10911359.2012.664977>.
- [38] R. D. Lee and D. C. Nieman, *Nutritional assessment*. Singapore: The McGraw Hill Companies, 2007.
- [39] S. Zainudin, Z. Daud, M. Mohamad, A. T. T. Boon, and W. M. I. W. Mohamed, "A summary of the Malaysian clinical practice guidelines on management of obesity 2004," *Journal of the ASEAN Federation of Endocrine Societies*, vol. 26, pp. 101-104, 2014. Available at: <https://doi.org/10.15605/jafes.026.2.03>.
- [40] E. M. Jun and S. B. Choi, "Obesity, body image, depression, and weight-control behaviour among female university students in Korea," *Journal of Cancer Prevention*, vol. 19, pp. 240-246, 2014. Available at: <https://doi.org/10.15430/jcp.2014.19.3.240>.
- [41] L. Lin and K. Reid, "The relationship between media exposure and antifat attitudes: The role of dysfunctional appearance beliefs," *Body Image*, vol. 6, pp. 52-55, 2009. Available at: <https://doi.org/10.1016/j.bodyim.2008.09.001>.
- [42] G. S. Savge, K. Ball, A. Worsley, and D. Crawford, "Food intake patterns among Australian adolescents," *Asia Pacific Journal of Clinical Nutrition*, vol. 16, pp. 738-746, 2007.
- [43] Z. Shi, N. Lien, B. N. Kumar, and G. Holmboe-Ottesen, "Socio-demographic differences in food habits and preferences of school adolescents in Jiangsu Province, China," *European Journal of Clinical Nutrition*, vol. 59, pp. 1439-1448, 2005. Available at: <https://doi.org/10.1038/sj.ejcn.1602259>.
- [44] A. Blokstra, C. Burns, and J. Seidell, "Perception of weight status and dieting behaviour in Dutch men and women," *International Journal of Obesity and Related Metabolic Disorders: Journal of the International Association for the Study of Obesity*, vol. 23, pp. 7-17, 1999.
- [45] I. Hong, P. Coker-Bolt, K. R. Anderson, D. Lee, and C. A. Velozo, "Relationship between physical activity and overweight and obesity in children: Findings from the 2012 national health and nutrition examination survey national youth fitness survey," *American Journal of Occupational Therapy*, vol. 70, pp. 7005180060p1-7005180060p8, 2016. Available at: <https://doi.org/10.5014/ajot.2016.021212>.
- [46] O. Melkevik, E. Haug, M. Rasmussen, A. S. Fismen, B. Wold, A. Borraccino, E. Sigmund, R. Balazsi, J. Bucksch, and J. Inchley, "Are associations between electronic media use and BMI different across levels of physical activity?," *BMC Public Health*, vol. 15, p. 497, 2015. Available at: <https://doi.org/10.1186/s12889-015-1810-6>.
- [47] F. J. Zimmerman and J. F. Bell, "Associations of television content type and obesity in children," *American Journal of Public Health*, vol. 100, pp. 334-340, 2010. Available at: <https://doi.org/10.2105/ajph.2008.155119>.
- [48] M. Feinstein, K. Liu, H. Ning, G. Fitchett, and D. Lloyd-Jones, "Burden of cardiovascular risk factors, subclinical atherosclerosis, and dimensions of religiosity: The multi-ethnic study of atherosclerosis," *Circulation*, vol. 121, pp. 659-666, 2010. Available at: <https://doi.org/10.1161/circulationaha.109.879973>.
- [49] R. R. Reeves, C. E. Adams, P. M. Dubbert, D. A. Hickson, and S. B. Wyatt, "Are religiosity and spirituality associated with obesity among African Americans in the Southeastern United States (the Jackson Heart Study)?," *Journal of Religion and Health*, vol. 51, pp. 32-48, 2012. Available at: <https://doi.org/10.1007/s10943-011-9552-y>.

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