

A Study on The Role of Parents and the Prevalence of Childhood Obesity

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Abstract

Obesity is a growing public health concern that occur all around the world. Obesity is one of the indicators of inequality influenced by socioeconomic issue. Childhood obesity may affect long term health of children's development. The role of parents is extremely important in making healthy lifestyle among the children. In Malaysia, the growing rate of obese children happen due to the parents' lifestyle shape among the family. Due to modern lifestyle, the parents are busy with their tight schedule and their behavior for selecting and preparing healthy food choices for their children is limited. This paper presents the role of parents and the prevalence of childhood obesity. This study applied quantitative approach using self-administered questionnaires involving 320 parents at Seksyen 7, Shah Alam. The findings of this study revealed that parental food selection preferences and parental self efficacy have significant influence on the prevalence of childhood obesity ($p < 0.05$, $\beta = 0.128$; $p < 0.05$, $\beta = 0.126$). Further, subjective norms of parents have found not significantly influence towards the prevalence of childhood obesity. The findings of this study found that childhood obesity crisis starts with parents. Therefore, the parents have not played an effective role within the context of providing effective strategies for healthy eating, physical activity and dietary patterns of their children. Hence, the contribution of this study is aimed to help the parents play their role effectively to prevent childhood obesity and to provide healthy eating strategies about making healthy dietary intake.

Keywords: Role of parents; Childhood Obesity; Parental self-efficacy, Parental food selection preferences, Subjective norm of the parents

Introduction

Obesity is viewed as a risk of chronic diseases and disabilities has become the epidemic causes due to world growth. Obesity is identified as a condition of excessive body fat (Washington State Department of Health, 2012). Obesity is growing global health problem that occur all around the world. Malaysia has been rated among the highest Asian countries that may have higher rates of obesity (The Star Online, 2014). In Malaysia, the growing rate of obese children tends to become overweight children. Thus, obese children may experience immediate health, disease which can lead to

overweight health problem in adulthood. Nowadays the increasing number of overweight children are happen due to lifestyle practice with the children.

In today's society, parents tend to expose their children to modern life practice that may influence unhealthy eating habits and lack of physical activity. Meanwhile, the Malaysian Government is concerned at the consequences and increasing rate of obesity issue (San *et al.*, 2013). The epidemic of childhood obesity can lead in a rising number of people who are obese. Rapid urbanization has caused a lifestyle change among the family and hence, children adapt to a more sedentary lifestyle include lack of physical activity as what they observe from their parents (Dan *et al.*, 2011 and Lau *et al.*, 2013). Parents should concern about the impact of obesity, which may bring negative effect to their children when they grow up.

Another contributing cause to childhood obesity is the availability of fast food restaurants in urban areas have made the parents can purchase food (Newman, Howlett and Burton, 2014). Fast food restaurant can be considered among the contributor that might influence parents' food selection. Due to rapid urbanization, available fast food choices can be found at various restaurant for the people living nearby. Consumption of fast food at urban setting offer varieties of food choices that may affect to children's growth and health. Parents tend to choose food service at a restaurant because it is convenient and inexpensive. Parental food selection preferences are among the important determinant that may lead to childhood obesity. In addition, parents can encourage the children to practice healthful eating habits at home by preparing and selecting them healthy foods. The origins of obesity prevalence have origins in their earliest stages of life (Pena et. Al, 2012). For example, healthy eating habits should be taught to the children from the earliest age to ensure that they are growing up healthily. As children grow up, they may become too choosy in choosing the right meal. Some of them eat a large portion of unhealthy food while some of them appear to take imbalance food.

Furthermore, the role of parents is important in combating the prevalence of childhood obesity. Parents should concern towards the children's weight. It is strongly needed for the parents to have greater awareness of the dangers of obesity and its impact of long-term health consequences. Another study conducted by The Star Online (2013) noted that obesity problem has reached increasingly at alarming proportions in Malaysia. As highlighted by Hernandez, Thompson, Cheng and Serwint (2012) illustrated that parents are still lacking in terms of providing knowledge on healthy food intake, daily physical activity and unable to act as motivators to achieve a healthy child's weight. Moreover, childhood obesity is also occurring due to physical inactivity because parents are concern of their children's safety and technological advances have made the children play computer games at home (Chin, 2015).

Overweight and obesity are known as non-communicable disease and should be the problem under control in collaboration of the government, parents and school. Children can easily get distracted from television advertising in taking food consumption. In another study, World Health Organization (2012) examined about 2.2 million of children worldwide are obese. Previous studies have reported that overweight children consume more calories per day have been found to have a high risk of cardiovascular disease (CVD) including high blood pressure, high levels of cholesterol and abnormal body function. Several studies have revealed that children from poor family background may have a high tendency of obesity as compared to children from wealthy family background (Marmot, 2010; Semmler *et al.*, 2009; Stamatakis *et al.*, 2010). Lower socioeconomic status of the family can reflect to prevalence of childhood obesity due to low level of parental education.

The prevalence of childhood obesity is associated with non-communicable diseases may result to higher risk in immediate and long-term health consequences to the health of children. This is supported by Rezali *et al.*, (2012) which reveal that in previous studies conducted on a district in Selangor stated that more than half of the children had practiced sedentary lifestyle. As highlighted by the National Health and Morbidity Survey (NHMS) in 2011 found that about 6.1% of Malaysian children and adolescents aged below 18 years were obese on a national level. As a developing country, the government of Malaysia has undergone various initiatives and policies in tackling obesity. They are many strategies and programs have been implemented by the government to nurture a healthy lifestyle among the public. The purpose of the program being conducted is aiming to maximize effectiveness healthier choices for healthy living among Malaysian.

Research Objective

The objective of this study explores three objectives: -

- i) To determine the relationship between parental self-efficacy and prevalence of obesity.
- ii) To investigate the relationship between parental food selection preferences and the prevalence of obesity.
- iii) To study the relationship between subjective norm of the parents and the prevalence of obesity.
- iv) To investigate the most dominant element towards the prevalence of obesity.

Literature Review

Parental self-efficacy

In view of parenting self-efficacy, parental self-efficacy can provide information for the parents to overcome parents' barriers to unhealthy eating and physical inactivity. Applying to Social Cognitive Theory, the context of self-efficacy can be described to parents' beliefs on his or her capability may effectively promote healthy dietary patterns and physical activity behaviors to encourage the children to prevent childhood obesity (Bohman *et al.*, 2014). Self-efficacy can provide effective treatment and prevention of childhood obesity among the family. However, the greater readiness for growing behavioral changes can be promoted to effective communication and counseling of the parents to their child. Academy of Pediatrics, American (2011) reported that children whose parents are regularly eating meals together are likely to bring positive impact to the nutrition health and weight in the children. Studies have found that the concept of parental self-efficacy is related to parental belief on how they will influence their children to healthy life and children's weight related behaviors. For example, insufficient time could be a barrier to monitor child's food intake. Many working parents should monitor their child's eating behaviors and avoid in taking low nutritional value of food.

Parental food selection preferences

Parenting practices on food selection and preferences will promote the children to imitate the behavior. Similarly, the role of parents in promoting children's food selection will determine food acceptance through food exposure. The study by Russell *et al.*, (2015) examined that parental food preferences are important to determine children's food intakes. Rewarding children to eat healthy food and purchasing food with healthy nutrient has been valuable for the parents to positively influence the children to eat. For example, children whose parents offer food as a reward and emotional regulation strategy may influence to overeating (Braden *et al.*, 2014). In this approach, the parents offer favorite foods may be influenced by the types of food-related to child dietary patterns. Previous research has shown that child feeding practices relates to parental food choices that affect children's body weight (Hurley, Cross and Hughes, 2011). In addition, the parent's decisions are affected by the children based on communicating their preferences. Parents should develop good eating habits in food selection preferences for healthful food choices during childhood.

Subjective norms of the parents

Children will imitate the behavior of their parents by adopting eating behaviors as they believe that parental norms will be a reference for them to choose what is appropriate. Children's perception on eating behaviors is modeling of their parents. According to Rosenthal *et al.*, (2013) showed that parents should act as a role model and modeling eating nutritious food at home to their children. One aspect of parental norm is parents' regulation of television viewing. Children who watch television, particularly non-educational programming such as cartoon series is related to parenting norm. However, some parents demonstrate negative norm over time, which may affect child behavior to act like their parents (Cook *et al.*, 2012 and Fuligni *et al.*, 2013). Previous studies have reported that television viewing may be related to increase energy intake and snack food. Marvicsion and Danford (2013) noted that children rely on their parents and norms displayed to guide their eating and activity behaviors. Furthermore, parents should play their role and display positive norms for children with a greater knowledge about healthy diet.

Prevalence of obesity

The rise of childhood obesity is one of the most serious public health challenges facing in worldwide. The prevalence of childhood obesity is more common to increase in the context of weight status of the children which are being followed from their parents. The study by Rosenthal *et. al* (2013) examined the children who are living in a home with late night family meals including parental style in dietary patterns will impact on childhood obesity. Researchers have studied the effect of childhood obesity is the main contributor towards serious public health disease (Ranjani *et. al*, 2014). The potential risk of childhood obesity may happen because parents are allowed their children to eat low nutritional value of calorie-dense foods. There are many factors contributing to overweight and obesity, including poor nutrition, excessive caloric intake, and a lack of physical activity (Robinson and Butler, 2011 and Wang, 2011). Most of the parents nowadays possess a career which makes them lack of time in preparing the breakfast or lunch for their children. The importance and the prevention of obesity should include the parents to promote wellness among families in Malaysia and also to raise awareness in tackling the obesity issue. All efforts should be made to reduce the increasing rate of obesity, so that the parents can change the family behavior in healthy eating. The increasing prevalence of childhood obesity can affect the children more likely to become overweight when they turn into adulthood especially in urban settings.

Research Methodology

This study adopts the quantitative study by using Cross-Sectional Design by delivering self-administered questionnaire to the respondents. A self-administered questionnaire was distributed to parents. This method is chosen as it gives an opportunity to explore the respondent's opinion in depth. The first part is to investigate the correlation between parental self-efficacy and prevalence of obesity. The second part of this study involves the relationship between parental food selection preferences and prevalence of obesity. Meanwhile, the third part is to identify the relationship between subjective norms of parents that may affect on the prevalence of obesity.

Sample Size

The primary school in Seksyen 7, Shah Alam, Selangor was chosen as the sample for this study. The selection of the location of this study is because the location of this school is nearby to a fast food restaurant at Seksyen 7 commercial area. The sample of parents was selected through stratified sampling and convenience sampling from the Petaling Perdana District Education Office (PPD Petaling Perdana). The sample is stratified by division of a population into a group of parents at Section 7 Primary School Shah Alam, Selangor. This location is located nearby in commercial business center with rapid population. In the first stage of sampling, 320 parents from the primary school of 1816 were selected. The sample size of this study was adopted using a table for a given population size (Sekaran and Bougie, 2010). A total of 320 sets of questionnaires has been distributed to the parents. Seksyen 7, Shah Alam has been chosen as sample because it is located in an urban area of the highest tendency to practice modern dietary pattern.

Findings and Analysis

This study is using a self-administered questionnaire to gather data for this study based on a Likert scale. Goodness of measure, including exploring Factor Analysis, Reliability Analysis, Normality and Linearity. According to Pallant (2005) factor analysis can be used to make a smaller number of scales by summarizing it into correlation and looking for the groups that closely related to the items. KMO measure for independent variable is 0.746 which is greater than 0.5 while Barlett's sphericity test is 0.000 smaller than 0.05. Based on this finding, the sample is adequate and significant in providing a basis for factor analysis. Apart from that, KMO measure for dependent variable is 0.673 which is greater than 0.5 while Barlett's sphericity test is 0.000. The finding shows significant result. Reliability analysis has been conducted after running the factor analysis. The finding signifies a reliable result. The questionnaire's reliability

was evaluated by the Cronbach's Alpha method. Reliability coefficient was good, as can be observed, the alpha value for the parental self-efficacy (independent variable) is $\alpha = 0.812$ while parental food selection preferences is 0.716. However, the reliability analysis of subjective norms of the parents is 0.505.

In addition, normality test is conducted to identify whether the distribution of data is normally distributed to accomplish the objectives of this study. Field (2009) analyzed that the assumptions of normality test are carried out in order to identify the distribution of skewness and kurtosis. The value of skewness and kurtosis on parental self-efficacy and prevalence of obesity are -0.432 and 0.303 while the value of parental food selection preferences towards the prevalence of obesity are -0.588 and 0.363. Hence, it indicated -0.101 and -0.04 are the value of skewness and kurtosis for subjective norms of parents and the prevalence of obesity. Based on the finding of this study shows a normal distribution within the range of -2 and +2 of skewness and kurtosis.

The result emphasizes that linearity test is conducted to identify the relationship between variables. As noted by Pallant (2005), the result obtained can be determined as linear and thus, the relationship between two variables must be linear. The finding presents the result between Prevalence of obesity (dependent variable) and Parental self-efficacy (independent variable) found that it is 0.02 where $p < 0.05$ while the F value is 9.875. Meanwhile, the result obtained for Prevalence of obesity (dependent variable) and Parental food selection preferences (independent variable) shows that $F = 9.717$ and p value is 0.02 where $p < 0.05$. Moreover, Prevalence of obesity (dependent variable) and Subjective norms of parents (independent variable) is $F = 3.298$ and p value is 0.070 where $p > 0.05$ which means that the relationship between two variables are non-linear.

This section revealed the result of analysis for this study begins with the description of the demographic profile of the respondents. The second part deliberates on the analysis of this study. They are three independent variable and one dependent variable of this study.

Demography of Respondents

Table 1
Respondents' Gender, Age, Highest Educational Attainment and Household income

Description of Items	Category	Frequency *	Percent (%)
Gender	Male	172	53.8
	Female	148	46.3
Age	<20 years	5	1.6
	21-30 years	50	15.6
	31-40 years	107	33.4
	41-50 years	94	29.4
	51-60 years	62	19.4
	>60 years	2	6
Highest Educational Attainment	Primary school	1	3
	Secondary school	54	16.9
	Certificate	57	17.8
	Diploma	50	15.6
	Degree	74	23.1
	Professional degree	28	8.8
	Masters	36	11.3
	PhD	20	6.3
Household income	<RM 1000	14	4.4
	RM 1001-RM 3000	75	23.4
	RM 3001-RM 5000	114	35.6
	RM 5001-RM 7000	72	22.5
	RM 7001- RM 9000	41	12.8
	RM 9001-RM 11 000	4	1.3
	>RM 11 000	0	0

As illustrated in Table 1, 172 respondents were male and 148 were female. Female respondents comprised 46.3% and male respondents are the remaining 53.8%. The majority of respondents are between age 31-40 indicates 33.4% (107). 29.4% (94) were aged 41-50 years while 19.4% (62) were aged between 51-60 years. Meanwhile, 15.6% (50) were 21-30 years, followed by 1.6% (5) were aged less than 20 years and 0.6% (2) more than 60 years and above. The majority of participants obtained a degree, 23.1% (74) while 17.8% (57) had a certificate. About 16.9% (54) had secondary school education attainment followed by 15.6% (50) were diploma. 11.3% (36) had Masters, 6.3% (20) possessed PhD and 3% (1) from primary school. In household income category, the findings show that 35.6% (114) were RM 3001-RM 5000, 23.4% (75) were RM 1001-RM 3000. Meanwhile, 22.5% (72) were RM 5001-RM 7000. About 12.8% (41) were RM 7001-RM 9000 followed by 4.4% (14) were less than RM 1000 and 0% (0) had more than 11 000 of household income.

Table 2: Pearson Correlation

<i>Correlations</i>			
Parental self-efficacy	Pearson Correlation	1	0.173*
	Sig. (2-tailed)		0.002
	N	320	320
Parental food selection preferences	Pearson Correlation	1	0.170*
	Sig. (2-tailed)		0.002
	N	320	320
Subjective norms of parents	Pearson Correlation	1	0.101*
	Sig. (2-tailed)		0.071
	N	320	320

It appears in Table 2, a Pearson Correlation analysis was conducted to examine whether there is a relationship between the role of parents and the prevalence of childhood obesity. A significant and positive relationship was obtained between parental self-efficacy (Independent Variable) and prevalence of obesity (Dependent variable) $r=0.173$, $p<0.01$. Higher levels of parental self-efficacy were associated with higher levels on prevalence of obesity. Based on the table, it found that $r=0.170$, $p<0.01$ has a significant and positive relationship between parental food selection preferences and prevalence of obesity. Thus, the table revealed that there was a small correlation between subjective norms of parents and the prevalence of obesity $r=0.101$, $p<0.05$.

Table 3: Multiple Regression Analysis

	β	Std. Error	β	t	Sig.
(Constant)	7.299	.769		9.498	.000
Parental self-efficacy	.051	.023	.126	2.179	.030
Parental food selection preferences	.082	.036	.128	2.240	.026
Subjective norms of parents	.053	.049	.060	1.076	.283

Note : $N=320$, $R\text{ Square}=.050$; $Adjusted\ R\ Square=.041$; $F=5.519$; $Significance\ F=.001$; $Durbin=1.630$.

As shown in Table 3, Multiple Regression Analysis was used to examine the effect of several Independent Variables on a single outcome Dependent Variable. It is shown that the predicted prevalence of obesity increased 0.051 for parental self-efficacy while 0.082 for parental food selection preferences and 0.053 for subjective norms of parents. It indicated that the parental food selection preferences has the highest Beta Value of 0.082 that most influence towards the prevalence of childhood obesity. In this study, respondents reported that their food selection preferences may affect to prevalence of

Childhood obesity. All the Independent Variables were significant predictors of Dependent Variable in this study.

Discussion

Analysis of the study discussed shows a positive relationship between independent variable and dependent variable. The result found in this study shown that $r=0.173$ and $p<0.01$. There is a positive significant relationship between parental self-efficacy and prevalence of obesity and its correlated. It can be described that parental self-efficacy provides a broader perspective on parents' ability towards their behavior. The present finding is supported by (Marvicision and Danford, 2013) reported that parents must be able to set limits and boundaries effectively with their child and thus, they could arrange eating rules and offer healthy meals at home.

The second objective of this study highlight the value of $r=0.170$ and $p<0.01$ by using correlation analysis. Based on the finding, this study shows that there is a relationship between parental food selection preferences and prevalence of childhood obesity. This study is supported by Howard, Mallan, Byrne, Magarey and Daniels (2012) noted that children's food acceptance and consumption are a key contributor of food preferences.

The third objective of this study shows a value of $r=0.101$ and $p<0.05$ by using correlation analysis. Thus, there is a positive relationship correlation between subjective norms of the parents and the prevalence of obesity. This is supported by Davies, Fitzgerald and Mousouli (2008) stated that parents are the key role models to provide healthy food intake and activity pattern.

The fourth objective of this study identified the most dominant element towards the prevalence of obesity by applying multiple regression analysis. According to the findings gained, parental self-efficacy show the result of ($\beta= 0.126$, $p> 0.05$). Meanwhile, parental food selection preferences show the result of ($\beta= 0.128$, $p>0.05$). However, subjective norms of parents obtained the result of ($\beta= 0.060$, $p>0.05$). The findings provide evidence that parental food selection preferences are gaining high beta value. In this context, it shows that parental food selection preferences are the most dominant element that may influence towards the prevalence of obesity.

Recommendation

This study suggests that parents should encourage quality of life among children. This is because the quality of life among obese children in Malaysia is low. Parents should encourage children to practice an active lifestyle such as playing outside. Moreover, parents are also responsible to structure children's food intake include to ensure how much food portions are provided for them (Larsen et. al, 2015). It is important for the parents to develop family-based programs in managing childhood

obesity. This is because the early parental involvement is necessary to cure childhood obesity.

Further research might explore in policy change by the Ministry of Health. It should be noted, the ministry concern need to facilitate and encouraging the parents to monitor their children to a healthier weight. The ministry should provide effective prevention and treatment strategies include eliminating sweetened soft drinks and vending machines in schools and creating school health guidelines for the school children. The implementation and integration of the regulation, guideline and public policy change of health promotion will ensure a healthy life and healthier weight of the children. Development of policy change in cooperation with a range of sectors can promote parental involvement in implementing the action of preventing childhood obesity. Supportive policy change and implementation by the government also will contribute to cure childhood obesity.

Furthermore, collective collaboration among the neighborhood is needed. The impact of neighborhood safety on health behaviors and health awareness can help the parents to understand neighborhood factors in promoting health behaviors. According to Opalinski (2013), community is also responsible to foster healthy behavior among the neighborhood. Thus, community action should strengthen in the aspect of perceived safety surrounding children's healthy well being. Safe neighborhood is an effective strategy in increasing physical activity of the children to play outside. As noted by Kimbro and Schachter (2011) found that children's outdoor activities can be strengthened through community action among the local community.

Conclusion

In a nutshell, parents play a vital role in childhood obesity prevention. This study not only addresses the role of parents and prevalence of childhood obesity but it also brings a parental perspective by presenting healthy dietary pattern in perspective that influence the parents to play their role effectively and prevention needed for childhood obesity. In addition, the role of parents in preventing childhood obesity may improve their child's health and healthy weight gain in children. Parental self-efficacy has the potential to contribute in tackling childhood obesity in the early years of child's life. The further development of healthy dietary food selection preferences, display by the parents may influence the children to healthy food intake. Hence, parental norms that include social norms for eating and parenting practices will determine children's food intake. In addition, children will eat more and consume food when the parents eat more and eat less when the parents eat less food portion. Therefore, parental role in children's food intake, physical activity and the amount of time spend for screen time are among

the contributors towards children's health and unhealthy food intake at home. Additionally, parents should aware of the effects of childhood obesity during early years of their children's development. Parents must play an important role because they can influence children dietary behaviors and exercise patterns. It is needed for the parents to guide interventions to early prevent unhealthy dietary behavior to practice healthy behavior. Moreover, as the children are growing older and they are exposed to a variety of foods, hence, parents must always monitor and guide them to choose the right meals.

References

- Academy of Pediatrics, American (2011). What families can do at home. Retrieved from <http://www2.aap.org>
- Braden A., Rhee K., Peterson C.B., Rydell S.A., Zucker N. and Boutelle K. (2014). Associations between child emotional eating and general parenting style, Feeding practices, and parent psychopathology. *Journal of Appetite*. Vol. 80, pp. 35-40. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>.
- Bohman B., Ghaderi A. and Rasmussen F. (2014). Training in Methods of Preventing Childhood Obesity Increases Self-Efficacy in Nurses in Child Health Services: A Randomized, Controlled Trial. *Journal of Nutrition Education and Behavior*. 46 (3), pp. 215-218. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>.
- Chin, T.S. (2015, May 10). Obesity in kids is a problem that needs a solution. *Star2.com*. Retrieved from <http://www.star2.com>
- Cook G.A., Roggman L.A. and D'zatko K. (2012). A Person-Oriented Approach to Understanding Dimensions of Parenting in Low-Income Mothers. *Early Childhood Research Quarterly*, 27 (2012), pp. 582–595. Retrieved from <http://dx.doi.org.ezaccess.library.uitm.edu.my/10.1016/j.ecresq.2012.06.001>
- Dan S.P., Mohd N.M. and Zalilah M.S. (2011). Determination of Factors Associated with Physical Activity levels among Adolescents Attending School in Kuantan, Malaysia. *Malaysia Journal Nutrition*.17 (2011), pp. 175-187.
- Davies H.D., Fitzgerald H.E. and Mousouli V. (2008). *Obesity in Childhood and Adolescence: Understanding development and prevention*. Published by Praegar Publishers in United States of America. pp. 323. Retrieved from <http://books.google.com>
- Fields. (2009). *Discovering Statistics Using SPSS (Introducing Statistical Methods Series)*. (3rd Ed.). London, England. Pp 821. Retrieved from <https://books.google.com.my>

- Hernandez R.G., Thompson D.A., Cheng T.L. and Serwint J.R. (2012). Early-Childhood Obesity: How Do Low-Income Parents of Preschoolers Rank Known Risk Factors? *Clinical Pediatrics*. 51 (7), pp. 663-670. Retrieved from <http://cpj.sagepub.com.ezaccess.library.uitm.edu.my>
- Howard A.J., Mallan K.M., Byrne R., Magarey A. and Daniels, L.A. (2012). Toddlers' Food preferences. The impact of novel food exposure, maternal preferences and Food neophobia. *Journal of Appetite*. 59 (3), pp. 818-825. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- Hurley K.M., Cross M.B. and Hughes S.O. (2011). A systematic review of responsive Feeding and child obesity in high-income countries. *Journal of Nutrition*. 141 (3), pp. 495-501. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>.
- Kimbrow R.T. And Schachter A. (2011). Neighborhood poverty and maternal fears of Children's outdoor play. *Family Relations*. 60 (2011), pp. 461-475. Retrieved From <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my> Larsen JK.
- Hermans RCJ, Sleddens EFC, Engels RCME, Fisher JO and Kremers SPJ (2015). How parental dietary behavior and food, parenting practices affect Children's dietary behavior. Interacting sources of influence? *Journal of Appetite*. Vol. 89, pp. 246-257. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- Marmot M (2010) Fair society, healthy lives: strategic review of health inequalities in England post 2010. Available at: <http://www.marmotreview.org/> (accessed 1 June 2011)
- Marvicsin D. and Danford C.A. (2013). Parenting Efficacy Related to Childhood Obesity: Comparison of Parent and Child Perceptions. *Journal of Pediatric Nursing*. 28 (5), pp. 422-429. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- National Health and Morbidity Survey (2011). Retrieved from <http://www.moh.gov.my>
- Newman C.L., Howlett E. and Burton S. (2014). Implications of fast food restaurant concentration for preschool-aged childhood obesity. *Journal of Business Research*. 67(8), pp. 1573-1580. from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- Opalinski A. (2013). Cultural Perspectives of Childhood Obesity in Haitian and Hispanic Children. *The Journal for Nurse Practitioners*. 9 (3), pp. 149-154. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- Pallant J. (2005) *SPSS Survival Manual: A Step by Step Guide to Data Analysis Using SPSS*. Retrieve from <http://books.google.com>
- Pena M.M., Dixon B. and Taveras E.M. (2012). Are You Talking to ME? The Importance of Ethnicity and Culture in Childhood Obesity Prevention and Management. *Journal of Childhood Obesity*. 8 (1), pp. 23-27. Retrieved from <http://www.ncbi.nlm.nih.gov>

- Ranjani H., Pradeepa R., Mehreen T.S., Anjana R.M., Anand K., Garg R. and Mohan V. (2014). Determinants, consequences and prevention of childhood overweight and obesity: An Indian context. *Indian Journal of Endocrinol Metabolism*. 18 (1), pp. 17-25. Retrieve from <http://www.ncbi.nlm.nih.gov>
- Rezali F.W., Chin Y.S., Yusof M., Nisak B. (2012). Obesity-related behaviors of Malaysian adolescents: A sample from Kajang district of Selangor state. *Nutrition Research Practice*. 2012;6:458–465. Retrieved from <http://doi:10.4162/nrp.2012.6.5.458>.
- Robinson K. and Butler J. (2011). Understanding the causal factors of obesity using the International Classification of Functioning, Disability and Health. *Disability and Rehabilitation*. 33(2011), pp. 643-651. Retrieved from <http://www.ncbi.nlm.nih.gov>
- Rosenthal M.S., Crowley A.A. and Curry L. (2013). Family Child Care Providers' Self-perceived Role in Obesity Prevention: Working With Children, Parents, and External Influences. *Journal of Nutrition Education and Behaviour*. 45 (6), pp. 596-601. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- Russell C.G., Worsley A. and Campbell K.J. (2015). Strategies used by parents to influence their children's food preferences. *Journal of Appetite*. 90 (2015), pp. 123-130. Retrieved from <http://www.sciencedirect.com.ezaccess.library.uitm.edu.my>
- The Star Online (2013). Obesity is preventable. Retrieved from <http://www.thestar.com.my>
- The Star Online (2014 June, 16). Malaysia's obesity rate highest in Asia. Retrieved from <http://www.thestar.com.my>
- San Y, Lim, Ho C, Tan, Ling N and Tan (2013) The Trend of Healthy Fast Food: How Malaysian' Generation Y Makes the Purchase Decision? *Australian Journal of and Applied Sciences*. 7(7), pp. 631-638
- Washington State Department of Health (2012, August) Impact of Environmental Chemicals on Childhood Obesity. DOH 334-311
- World Health Organization (2012) Available from <http://www.who.int>