

Factors Associated with Obesity Prevention Efforts Among the Senior High School Students in Makassar City

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ABSTRACT

The aim of this study to determine factors associated with obesity prevention efforts among the senior high school students in Makassar city. The study type was an observational cross-sectional study. The population of this study were all students of class X at six senior high schools in Makassar city. The samples sizes were 318 students by proportional random sampling. The result found relationship between parent education level ($p=0.000$), heredity ($p=0.037$), benefits perceived ($p=0.000$), barriers perceived ($p=0.000$), knowledge ($p=0.000$), parental support ($p=0.000$), peer support ($p=0.005$) and media support ($p=0.000$) with obesity prevention on the senior high school students in Makassar city.

CCS Concepts

- Social and professional topics → User characteristics

Keywords

Obesity; obesity prevention efforts; senior high school students.

1. INTRODUCTION

Non-communicable disease (NCDs) are main causes of morbidity and mortality globally [1]. Four major NCDs included stroke, cancer, diabetes, chronic obstructive pulmonary, heart disease and asthma [2]. In 2012, estimated 67% of 56 million mortality cases were due to NCDs [3].

Obesity is among risk factor of NCDs [4]. World Health Organization (WHO) classified obesity as severe disease in developed and developing countries affected adults and children [5]. In 2010, an estimation overweight and obesity prevalence in

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America among children aged between 5 years and 17 years old is 46% [6]. The obesity prevalence among school children is 7.8% in Iran, 10% in Japan, 15.6% in Thailand, 15.8% in Saudi Arabia and 20% in the UK and Australia [7]. Obesity is influenced by several factors such as genetic, environment, socioeconomic, demographic, lifestyle and culture [8, 9, 10]. Meanwhile, changing in lifestyle associated with changing nutrition to bad habits lead to overweight and obesity [11]. The lack of participation in physical activity contributed to overweight [12]. Besides, dietary such as fast food, high sugar beverages and snack food also contributed to obesity [13].

In Indonesia, obesity prevalence was increased from year by year. In 2017, prevalence of obesity on population aged ≥ 15 years old was 10.3% and adult population ≥ 18 years old was 15.4% [14,15]. South Sulawesi province is one of 15 provinces have high prevalence of adolescent obesity (16 years to 18 years). Highest of obesity prevalence. In 2014, number of obesity cases were 513 cases and there also 173 new cases of obesity had recorded in Makassar.

There is limitation of study on obesity prevention efforts in Indonesia. The aim of this study is to determine factors associated with obesity prevention efforts among the senior high school students in Makassar city.

2. METHODOLOGY

2.1 Study Type

The study type was non-experimental (observational) analytic study with cross sectional design.

2.2 Location and Time

This study was conducted from January to February 2016 at six senior high school in Makassar city.

2.3 Population and Sample

The population for this study was all students of class X on six selected senior high school. The sample sizes are 318 students by using simple random sampling technique.

2.4 Data Collection

The primary data was obtained through questionnaire and secondary data was collected in form of school profiles and number of student's data.

2.5 Data Analysis

The data was analyzed by using SPSS program version 16. The bivariate analysis was performed to determine relationship of dependent and independent variables in form of cross tabulation with chi square statistic test.

3. RESULT AND DISCUSSION

3.1 Bivariate Analysis

Based on Table 1, from 83 respondents who did not have any obesity prevention, 16 respondents (64.0%) with parent had low education level and 67 respondents with parents had high education level. Meanwhile, 9 respondents with parents had low educational and 226 respondents (77.1%) with parents had high education level for students with obesity prevention efforts. There was a significant between parent education level and obesity prevention efforts among senior high school students in Makassar city.

Table 1. Relationship between parent education level and obesity prevention efforts among senior high school students in Makassar city.

Parent education level	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
Low	16	64.0	9	36.0	25	100.0	0.000
High	67	22.9	226	77.1	293	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 2, there were 51 respondents (22.8%) who not hereditary and 32 respondents (34.0%) were hereditary for students without obesity prevention efforts. Meanwhile, 173 respondents (77.2%) were not hereditary and 62 respondents (66.0%) who were hereditary. Based on chi square result found hereditary is correlated to obesity prevention efforts.

Table 2. Relationship between hereditary and obesity prevention efforts among the senior high school students in Makassar city.

Hereditary	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
No	51	22.8	173	77.2	224	100.0	0.037
Yes	32	34.0	62	66.0	94	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Table 3. Relationship between benefit perceived and obesity prevention efforts among the senior high school students in Makassar city.

Benefits perceived	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
Negative	55	79.7	14	20.3	69	100.0	0.000
Positive	28	11.2	221	88.8	249	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 3, 55 respondents (79.7%) had negative benefits perceived and 28 respondents (11.2%) had positive benefits perceived for respondents without obesity prevention efforts. There were 14 respondents (20.3%) had negative benefits

perceived and 221 respondents (88.8%) had positive benefits perceived for respondents with obesity prevention efforts. There was a significant relationship between benefits perceived and obesity prevention efforts.

Based on Table 4, There were 70 respondents (43.2%) had positive barrier perceived and 13 respondents (8.3%) had negative barrier perceived for respondents without obesity prevention efforts. Besides, 92 respondents (56.8%) had positive barriers perceived and 143 respondents (91.7%) had negative barriers perceived for respondents with obesity prevention efforts. Based on chi square test, a significant relationship between barriers perceived obesity prevention efforts among the senior high school students in Makassar city.

Table 4. Relationship between barriers perceived and obesity prevention efforts among the senior high school students in Makassar city.

Barriers perceived	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
Positive	70	43.2	92	56.8	162	100.0	0.000
Negative	13	8.3	143	91.7	156	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 5, 51 respondents (78.5%) had low knowledge and 32 respondents (12.6%) had knowledge for respondents without obesity prevention efforts. There were 14 respondents (21.5%) had no knowledge and 221 respondents (87.4%) had knowledge for respondents without obesity prevention efforts. The result showed significant relationship between knowledge and obesity prevention efforts among the senior high school students in Makassar city.

Table 5. Relationship between knowledge and obesity prevention efforts among the senior high school students in Makassar city.

Knowledge	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
No	51	78.5	14	20.3	65	100.0	0.000
Yes	32	12.6	221	88.8	253	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 6, 50 respondents (64.9%) found received less parent support and 33 respondents (13.7%) had received parent support for respondents without obesity prevention efforts. There were 27 respondents (35.1%) had less parent support and 208 respondents (86.3%) had received parent support for no obesity prevention efforts groups. Based on chi-square test, there was a significant relationship between parent support and obesity prevention efforts among senior school students in Makassar city.

Table 6. Relationship between parent support and obesity prevention efforts among the senior high school students in Makassar city.

Parent support	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
No	50	64.9	27	35.1	77	100.0	0.000
Yes	33	13.7	208	86.3	241	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 7, 44 respondents (34.6%) had no peer support and 39 respondents (20.4%) had received peer support for respondents without obesity prevention efforts. Meanwhile, 83 respondents (65.4%) had no peer support and 152 respondents (79.6%) had peer support. The obesity prevention efforts is influenced by peer support among senior high school students in Makassar city.

Table 7. Relationship between peer support and obesity prevention efforts among the senior high school students in Makassar city.

Peer support	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
No	44	34.6	83	65.4	127	100.0	0.005
Yes	39	20.4	152	79.6	191	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

Based on Table 8, there were 56 respondents (58.9%) had positive barriers perceived and 13 respondents (12.1%) had negative barriers perceived for respondents without obesity prevention efforts. In additions, 39 respondents (41.4%) had positive barriers perceived and 196 respondents (87.9%) had negative barriers perceived for respondents with obesity prevention efforts. Based on chi square test, there was a significant relationship between barriers perceived and obesity prevention efforts among the senior high school students in Makassar city.

Table 8. Relationship between media support and obesity prevention efforts among the senior high school students in Makassar city.

Media support	Obesity prevention efforts						p-value
	Yes		No		Total		
	n	%	n	%	n	%	
No	56	58.9	39	41.1	95	100.0	0.000
Yes	27	12.1	196	87.9	223	100.0	
Total	83	26.1	235	73.9	318	100.0	

Source: Primary data, 2016

3.2 Overall Discussion

The parent education level is very influential on decision making on healthy food habit. The result found a significant relationship between parent education level and obesity prevention efforts among the senior school students in Makassar city. Higher parent education level would practice the healthy lifestyle on their children or have prevention efforts on obesity.

The obesity in children was influenced by parent's genetic. A study found correlation between parent's nutritional status and obesity among adolescent [16]. Meanwhile, adolescent with obese parent also had high risk at 70% -80% in obesity [17]. Based on chi square test showed a significant relationship between hereditary and obesity prevention efforts among the senior high school students in Makassar city. The healthy lifestyle helps in reducing in risk or prevent obesity on people who was hereditary.

In additions, the benefits and barriers perceived also influenced to obesity prevention efforts among the senior high school students in Makassar city. Even though, respondents had positive benefits

perceived but still facing difficulty to prevent obesity. The people with positive benefits perceived had effort on obesity prevention. Several studies in the United States, Australia and Europe showed a false perception of childhood obesity plays important role in determining parent actions to have preventive measurement toward obesity among children [18]. In general, people with positive barriers perceived had less prevention efforts in obesity. The people have knowledge would make good obesity prevention efforts [19]. In Jayaputra, a study found knowledge and nutritional status according to body mass index (BMI) among college students [20].

The parent support also important in obesity prevention efforts with maintained healthy diet on their family. In this study, respondents did not receive parent support tends to have less obesity prevention efforts. The result also showed significant relationship between parent support and obesity prevention efforts among senior high school students in Makassar city. Even though, study found respondents with parent support but did not have obesity prevention efforts and vice versa.

Peers are children or adolescents who have similar age or maturity levels [21]. The peer support is correlated to obesity prevention efforts among senior high school students in Makassar city. The motivation from peers also helps adolescents to make efforts in obesity prevention. The lack of information contributed to less obesity prevention efforts among adolescent. Besides, adolescents tend to get more parent support than peer support. The unhealthy dietary habit also contributed on obesity among children. Meanwhile, this study found advertisement in media had contributed in unhealthy dietary habit among respondents. The media had influenced personal decision making. A study found media factor is correlated with eating behavior among senior high school students in Padang [22].

4. CONCLUSION

In conclusions, the parent education level, heredity, benefit perceived, barriers perceived, knowledge, parental support, peer support and media support are correlated to obesity prevention among the senior high school students in Makassar city.

5. REFERENCES

- [1] Ekpenyong, C. E., Udokang, N. E., Akpan, E. E., Samson, T. K. (2012). Double burden, non-communicable diseases and risk factors evaluation in Sub-Saharan Africa: The Nigerian Experience. *European Journal of Sustainable Development*, 1(2), 249-270.
- [2] World Health Organization (WHO). (2011). *Noncommunicable diseases in the South-East Asia Region: situation and response 2011*. Retrieved from http://www.searo.who.int/nepal/mediacentre/2011_non_communicable_diseases_in_the_south_east_asia_region.pdf
- [3] Hyder, A. A. et al. (2017). Noncommunicable disease risk factors and mobile phones: a proposed research agenda. *Journal of Medical Internet Research*, 19(5), e133. doi: 10.2196/jmir.7246
- [4] Farrag, N. S. et al. (2017). A systematic review of childhood obesity in the Middle East and North Africa (MENA) region: prevalence and risk factors meta-analysis. *Advances in Pediatric Research*, 4(8). doi: 10.1271/apr.2017.4.8
- [5] Maria, P. et al. (2009). Obesity disease. *Health Science Journal*, 3(3),132-138.

- [6] Mohamed, S. M. (2015). Childhood obesity: epidemiology, determinants and prevention. *Nutritional Disorders and Therapy*, 5 (2). doi: 10.4172/2161-0509.1000156
- [7] Itagi, V. et al. (2011). Obesity in children and adolescent and its relationship with hypertension. *Turkish Journal of Medical Sciences*, 41(2), 259-266. doi: 10.3906/sag-0912-417
- [8] Dehghan, M. et al. (2005). Childhood obesity, prevalence and prevention. *Nutrition Journal*, 4(24). doi: 10.1186/1475-2891-4-24
- [9] Sidik, S. et al. (2004). Childhood obesity: contributing factors, consequences and intervention. *Malaysian Journal of Nutrition*, 10(1), 13-22.
- [10] Gius, M. P. (2011). The prevalence of obesity and overweight among young adults: an analysis using the NLSY. *International Journal of Applied Economics*, 8(1), 36-45.
- [11] Gbary, A. R. et al. (2014). Prevalence and risk factors of overweight and obesity: findings from a cross-sectional community-based survey in Benin. *Global Epidemic Obesity*. doi: 10.7243/2052-5966-2-3
- [12] Vazquez, F. L. et al. (2012). Behavioral and psychosocial factors in childhood obesity. *Childhood Obesity*. doi: 10.5772/32295
- [13] Sahoo, K. et al. (2015). Childhood obesity: causes and consequences. *Journal of Family Medicine and Primary Care*, 4(2), 187-192.
- [14] Riskesdas. (2007). Laporan hasil Riset Kesehatan Dasar 2007. Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan.
- [15] Riskesdas. (2013). Laporan Hasil Riset Kesehatan Dasar 2013. Jakarta: Badan Penelitian dan Pengembangan Kesehatan Kementerian Kesehatan.
- [16] Wahyuni, S. (2013). *Hubungan konsumsi fast food dengan obesitas pada remaja SMA di Akademi Kebidanan Muhammadiyah Banda Aceh*. Sekolah Tinggi Ilmu Kesehatan U'Budiyah.
- [17] Soegiyanto. (2007). *Penelitian status gizi dan baku antropometri WHO-NCHS*. Surabaya: Duta Prima Airlangga.
- [18] Dhyana Putri. (2011). Persepsi ibu, guru dan tenaga kesehatan tentang obesitas pada anak taman kanak-kanak. *Berita Kedokteran Masyarakat*, 27, 32-40.
- [19] Neherta, M. (2012). *Hubungan pengetahuan tentang obesitas dengan upaya pencegahannya oelh remaja di SMP 2 Padang*. Universitas Andalas.
- [20] Sada, M. (2012). Hubungan body image, pengetahuan gizi seimbang dan aktivitas fisik terhadap status gizi mahasiswa Politeknik Kesehatan Jayapura. *Media Gizi Masyarakat Indonesia*, 2, 44-48.
- [21] Santrock, J. (2007). *Psikologi Pendidikan (Edisi Kedua)*. Jakarta: Kencana.
- [22] Dila, Y. (2014). *Faktor-faktor yang berhubungan dengan perilaku makan pada remaja Putri di SMA Negeri 10 Padang tahun 2013*. Universitas Andalas.