



A preliminary study on knowledge about obesity in Pulau Pinang, Malaysia

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Abstract

This preliminary study is conducted in Pulau Pinang, Malaysia to evaluate the public knowledge regarding obesity. A self-developed questionnaire was used to conduct this survey among the individuals over the age of 18 years. The questionnaire consisted of 17 questions covering socio-demographic factors and knowledge about the causes, symptoms, complications and treatment. Convenient sampling technique was utilized and data was analyzed by using SPSS version 19.0. A total number of 33 questionnaires were distributed and out of this 30 were returned. The response rate was 90.90%. Demographics show that 53.3% of them were Malay, 36.7% Indian, 6.7% Chinese and 3.3% others participated in the survey. Out of this 60.66 % were females and 40.44% were males. About 93.3% of respondents mentioned that they have heard about the obesity, 46.7% know exactly that it is endocrine and metabolic disease and 6.7% have no idea about it while 6.7% do not know either it is disease or normal condition. Regarding the information about factors and symptoms associated with the obesity, fatty food choices, sedentary lifestyle, eating habits, physical inactivity, sleep apnea, high cholesterol, shortness of breath, daytime sleepiness and pain in joints were highly stated by majority of the participants. Among the consequences of obesity, heart disease, diabetes mellitus, osteoarthritis and metabolic syndrome were mentioned mostly by the participants. People have moderate knowledge about obesity in Pulau Pinang.

Key-Words: Obesity, Knowledge, Public, Pulau Pinang, Preliminary study, Malaysia

Introduction

There is a lack of awareness about the health issues among the public as well as a gap is present among the knowledge level and behavior of the public which needs to be reduced and supportive environment and adequate infrastructure should be provided. (Ministry of Health Malaysia, 2011). There is a need to create a high level of awareness within the public about health and wellness, for example: awareness on health risk assessment, prevention of disabilities and healthy aging. There is still a wide gap between community's knowledge and their behavior. Ultimately it is communities, families and individuals who must change their behavior in order to be healthier (Ministry of Health Malaysia, 2011). The health force needs to engage community to help them to identify and ultimately overcome any barriers to sustaining health and preventing illness (Ministry of Health Malaysia, 2011).

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In a study conducted on middle-aged Malaysian women in 2006 stated that educational status, socioeconomic status and lifestyle behavior were directly proportional to knowledge level about obesity. In addition, routine physical activity, micronutrient and vitamins in diet, showed a positive correlation to educational status and knowledge level. In terms of sources of information, print media and social circle were the main providers of awareness (Pon *et al*, 2006).

Yet the perception of obesity as a medical problem is not universal still. The journalists and presumably the public do not perceive obesity in the context of a public health problem. Public perception clearly needs to be changed, if the progress is to be made (Sadler, 2003).

Occurrence of obesity in Malaysia also leads to epidemic levels. According to National Health and Morbidity Survey (NHMS) in 2006, occurrence of overweight and obesity in men in 1996 has risen from 15.1% and 2.9% accordingly to 29.7% and 10.0% and the number of obese women in 1996 has jumped from 5.7% to 17.4 % in 2006 (NHMS, 1996; NHMS, 2006).

A study conducted on adult overweight and obese patients in University Hospital Kelantan, Malaysia, concluded that there was lack of knowledge about obesity among obese patients. From total of 414 patients, 15% do not consider obesity as injurious to health, also 21% did not mentioned diet or low physical activity as risk factor of obesity and 8% claimed emotional phase of happiness as cause of obesity. Negative responses were given about the fatty food choices and sugary foods as risk factors of obesity by 11% and 40% of the respondents respectively (Jacson *et al.*, 1996). There was no study found specifically regarding the knowledge about the risk factors, symptoms and complications of obesity among the general public in Pulau Pinang, Malaysia.

Methodology

Study design and location

A preliminary study was conducted in Pulau Pinang; and convenient sampling technique was employed. Respondents were included from different age groups, socioeconomic backgrounds and educational status at USM, shopping malls, picnic spots and hospitals.

Study tool

A self-developed and validated questionnaire was used to collect the responses from the respondents. The questionnaire consisted of 17 questions. Among 17 questions, 8 were covering socio-demographic data of the respondents and 9 were covering knowledge about the causes, symptoms, complications and treatment of obesity.

Validation and Reliability

To assess content validity, the preliminary version of the questionnaire was sent to the professionals at the School of Pharmacy and health professionals at the obesity clinic in Hospital Pulau Pinang (HPP) and obesity clinic in Universiti Sains Malaysia (USM). These professionals were asked to assess the questionnaire by providing their overall opinion and by listing the questions in the order of relevance and importance. The questions of more relevance and importance were highlighted by them and kept in view of their comment. A 17 item questionnaire was finalized then. This final version of the questionnaire was translated to Malay language by using standard forward and backward method. Translation in Malay language was verified by the experts from language center in USM. To assess the face validity of the questionnaire, respondents were asked for their views on the simplicity of each question and whether questions were understandable in terms of clarity of the questions asked and Malay translation. No major discrepancies found and majority of the respondents were satisfied from the questionnaire. This

questionnaire was then distributed among general public by hand and then waiting for the respondents to answer. Reliability of the questionnaire was tested by using SPSS resulting in Cronbach's alpha value of 0.640 for all the knowledge questions.

Sample size calculation

Calculation of sample size was performed to determine the sample size that can give a correct picture of whole population in Pulau Pinang which has estimated population of 1.5 million currently. Sample size of this study was calculated by using sample size calculator at Raosoft website. The parameters that need to be considered include the margin of error, confidence interval, population size, response rate and prevalence of overweight and obesity. In this study margin of error is 5%, confidence interval is 95% and 50% probable response rate. After calculating the sample size, the minimum recommended sample size is 385 participants in order to achieve 95% of confidence level in our study. However, this preliminary study was performed by taking the responses from 30 respondents.

Inclusion and exclusion criteria

This survey was conducted among the individuals over the age of 18 years. People who can read, write and speak Malay language were included and incomplete questionnaires were excluded from the study.

Statistical analysis

Data was analyzed by using SPSS version 19. The quantitative data was summarized using frequency and cross tabulations. Chi square was used to identify any significant differences between level of knowledge and socio-demographic data. To gain an overall impression of participants' knowledge, all the knowledge statements were combined to form a total knowledge score of 53. Keeping in view the scores of respondents the knowledge was classified into 3 quartiles under poor, moderate and excellent levels.

Results and Discussion

Socio-demographics

A total number of 33 questionnaires were distributed and out of this 30 were returned. The response rate was 90.90%. Socio-demographic data of the respondents participated in the survey is shown in Table 1. According to ethnic distribution of the respondents who took part in the survey, Malay and Indians were higher in proportion than other ethnics, with Malay being the highest in proportion, more than 50%. About 60% were female and 40% were male respondents. Respondents from all age groups and with almost equal distribution among different age groups took part. About 50% of the respondents had educational background until university level, almost 30% until secondary and about 6.7% until primary level and 6.7%

have no formal education. Respondents from private and government sectors comprises 36.7% and 30.0% of the study population respectively while remaining were mostly housewives and self-employed. Respondents from different socio-economic backgrounds were present including lower, middle and higher income class. Respondents were given multiple choices to answer as many options as they like, so responses were not equal to 100%.

Nature of Obesity and Sources of Information

About 93.3% of respondents mentioned that they have heard about the obesity and when asked for the sources of information from where they have heard about obesity television (73.3%) and newspaper (66.7%) were the sources highly mentioned by the respondents (see Table 2). Least mentioned sources of information about obesity were family (30%) and teachers (10%). In the response of question asked about the nature of the obesity as disease, 46.7% stated it as metabolic and endocrine disease, 30% mentioned that they don't know about it and interestingly 13.3% claimed obesity as a mental or psychological disease and 6.7% considered it as normal condition not a disease (see Table 2).

Knowledge about the risk factors, symptoms and consequences of obesity

Regarding the knowledge about risk factors of obesity among the respondents, 66.7% selected social and behavioral, 56.7% selected genetic factors, 50% selected alcohol, 63.3% selected sedentary life style, 53.3% selected pregnancy and 83.3% selected fatty food choices as the risk factors. More than 50% of the respondents selected six out of ten risk factors of obesity asked by them (see Table 3).

When asked about the symptoms related to obesity, 93.3% stated abnormal eating habits, 93.3% stated less physical activity, 50% stated lack of sleep, 80% stated high cholesterol, 56.7% stated female fertility, 56.7% stated reduced self-esteem, 63.3% stated high blood pressure, 66.7% stated daytime sleepiness and 63.3% stated joint pain as the symptoms. It was observed that ten out of twelve symptoms asked were highly mentioned by more than 50% of the respondents (see Table 3).

Similarly for complications, 86.7% chosen diabetes mellitus type II, 63.3% chosen osteoarthritis, 63.3% chosen metabolic syndrome, 86.7% chosen breathlessness, 90% chosen heart disease, 83.3% chosen hypertension, 83.3% chosen high cholesterol, 63.3% chosen impaired fertility and 73.3% chosen gout, as the complications highly mentioned by more than 50% of the respondents (see Table 3). For

complications nine out of fourteen were extensively stated by the respondents.

Knowledge level of respondents

No significant differences were found among the level of knowledge and socio-demographic characteristics of the respondents. Majority (80.0%) of the respondents had moderate level of knowledge about obesity (see Figure 1).

This study was conducted in Pulau Pinang, Malaysia to determine the knowledge of the general public specifically about the risk factors and consequences of the obesity. Previously studies were done mostly on the perception and attitudes of the public about obesity such as Farah *et al.*, 2011; Kuan *et al.*, 2011 and Fatimah *et al.*, 1995 and most of the studies found were on the overweight and obese patients strictly like Ching *et al.*, 2009 and Jacson *et al.*, 1996.

This study found that majority of the respondents had reasonable knowledge about the causes and consequences of obesity similar to another study done in Asian region (Nepal) (Prakash *et al.*, 2011). Majority gave almost similar responses as with the study in Nepal when asked the respondents that they heard about the obesity. 93.3% gave positive answer while in case of Nepal 71.8% gave positive response. Results for the causes of obesity like abnormal eating habits 93.3%, genetic disorders 56.7% and fatty food choices 83.3% were comparable with the study in Nepal which mentioned 67.4%, 60.4% and 87.7% respectively. When asked for the health risk associated with obesity, again similar results were observed for the hypertension 83.3% and Type II diabetes mellitus 86.7%, while in Nepal hypertension, diabetes and cancer were selected by 95.2% respondents. In this study cancer was mentioned by only 40.0% of the respondents.

There is another interesting aspect noted in this study that 93.3% of the respondents claimed that they have heard about obesity but when they were asked about the nature of the obesity as a disease, only 46.7% claimed that it is metabolic and endocrine disorder, 30% stated that they don't know about it and 6.7% treated it as normal condition. Also there is a difference in the study results was observed, if we compare 46.7% of respondents knowing about the exact nature of the obesity, with the overall knowledge of the respondents about the obesity, where 80% respondents reported moderate knowledge. This difference in the results may be due to the closed-ended questions asked from respondents about the factors, symptoms, consequences and treatment of obesity, as the closed ended questions can result in suggesting responses to the respondents which he may not normally come up with on his own.

In addition, respondents having no previous knowledge about obesity were still able to respond due to closed-ended questions (Lindsey, 2005).

Television and newspaper were seems to be the only influential sources of information for increasing the awareness about obesity while least awareness was being given from the family and teachers. Interestingly, television was the highest source of information for obesity knowledge but at the same time television also increases the consumption of food by advertisements, where each hour increase in television viewing was related with an increased of 167kcal/s and also less physical activity (Kamaruzaman & Nurul, 2009). Emphasis should be given laid upon sources of information other than electronic media, as observed in this study that family and educational institutes have less influence in spreading the information about obesity. Family and educational institutes were the core source of information and for changing the cognitive approaches of the general public (Ismail *et al.*, 2005; Ministry of Health Malaysia, 2011). Also parents and teachers have great role and integral part in the behavioral therapy which is the main focus and first line of defense for combating the obesity epidemic currently (Ismail *et al.*, 2005; Ministry of Health Malaysia, 2011; Pon *et al.*, 2006).

This study finds that majority of the public have moderate knowledge and minorities lacking the knowledge about obesity as also mentioned by the (Jacson *et al.*, 1996) but his study was on overweight and obese patients. Even though public had a moderate knowledge but obesity epidemic is still rising, which gives an indication that there may be a knowledge-behavior gap as also indicated and emphasized by the Ministry of Health Malaysia in country health plan in 2011. Although previous studies have mentioned that despite of having a moderate knowledge about adverse consequences of obesity, there is no relationship was observed between the knowledge of obesity's complications and individual's respective body mass index (BMI), a study conducted on African-American women which concluded that there is a strong urge for establishing educational programs in order to change their behavior towards the consequences of obesity and also to increase their knowledge level about obesity (Stephens, 2008).

Views of the respondents about the possible treatments of obesity were mainly to focus on lifestyle therapies including both dietary control and physical activity. An individual's diet and physical activity habits are influenced by their knowledge and attitudes towards these behaviors (Roberts & Marvin, 2011). By mentioning healthy eating habits and increasing

physical activity as the priority for the obesity treatment, respondents had shown that they are aware of the treatment strategies but may be few of them know what exactly are the physical activity recommendations and healthy eating habits, which also being reported in a review report about the knowledge and attitudes towards healthy eating and physical activity by analyzing last ten years of available data on the public domains in England, where they mentioned that majority individuals have awareness about the facts, however interventions focusing on personal and social factors may be helpful in bringing about behavior change and improving the knowledge about what exactly they have to do (Roberts & Marvin, 2011).

Limitations of the study

This is only a preliminary study and has low sample size which is not representing the population of Pulau Pinang but it gives an insight into the current scenario and direction for the future research to be conducted.

Conclusion

This study concludes that there is moderate level of knowledge about the nature of disease, risk factors and health consequences of obesity in general public of Pulau Pinang.

Recommendations and future directions

Awareness programs and more studies with larger sample size representing the whole population of Pulau Pinang and also in other parts of Malaysia, should be planned for the general public specifically to make them aware about the causes, symptoms and complications associated with obesity, as this will give them motivation to change their behavior and lifestyle in order to remain healthy. About the sources of awareness, focus must be on giving awareness to parents and through the educational institutes, as these sources would not only provide the knowledge and awareness but also can force, help and motivate them with ways of changing their behavior and lifestyle. Also researchers should plan future research firstly to assess the knowledge behavior gaps and then plan interventional studies and awareness programs in order to reduce the knowledge-behavior gap.

Acknowledgement

I would like to thank to Dr. Normala, Incharge of Obesity Clinic in USM and Dr. Norazizah, Head of the Endocrine Clinic in Hospital Pulau Pinang for giving their valuable comments and suggestions in the development of the Obesity KAP questionnaire.

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Table 1: Socio-demographic characteristics of the respondents participated in the survey

Socio-demographic	N	%
Race		
Malay	16	53.3
Indian	11	36.7
Chinese	2	6.7
Others	1	3.3
Sex		
Female	18	60
Male	12	40
Age (years)		
19-27	9	30
28-37	5	16.7

38-47	8	26.7
48-57	6	20
58 above	2	6.7
Religion		
Islam	16	53.3
Hindu	9	30
Christian	2	6.7
Buddhist	2	6.7
Others	1	3.3
Marital status		
Married	23	76.7
Single	4	13.3
Widow	2	6.7
Divorced	1	3.3
Education level		
University	16	53.3
Secondary	10	33.3
Primary	2	6.7
No formal education	2	6.7
Occupation		
Private	11	36.7
Government	9	30
Own job/ business	4	13.3
Housewife	4	13.3
Semi government	1	3.3
Pensioner	1	3.3
Monthly income		
< 1000 RM	9	30
1000-2000 RM	5	16.7
2001-3500 RM	8	26.7
Over 3500 RM	5	16.7
Dependent on parents	3	10

Table 2: Respondents recognition of obesity, sources of information and knowledge about nature of obesity as a disease

	N	%
Heard about obesity	28	93.3
Sources of Information		
TV	22	73.3
News paper	20	66.7
Friends	9	30
Personal experience	9	30
Family	9	30
Teacher	3	10
Nature of Obesity as disease		
Metabolic & endocrine disease	14	46.7
Don't know	9	30
Mental disease	4	13.3
Normal condition	2	6.7
Infectious disease	1	3.3

Table 3: Respondents knowledge about risk factors, symptoms and health consequences associated with Obesity

Factors	N	%
Fatty food choices	25	83.3
Social & behavioral factors	20	66.7
Sedentary life style	19	63.3
Genetic disorders	17	56.7
Pregnancy	16	53.3
Alcohol	15	50
Drugs & hormones	12	40
Female reproductive disorder	10	33.3
Reduced thyroid hormones	7	23.3
Growth hormone deficiency	7	23.3
Liver disease	6	20.0
Symptoms		
Abnormal eating habits	28	93.3
Less physical activity	28	93.3
High cholesterol	24	80
Day time sleepiness	20	66.7
High blood pressure	19	63.3
Joints pain	19	63.3
Shortness of breath	18	60
Female infertility	17	56.7
Reduced self esteem	17	56.7
Lack of sleep	15	50
Snoring	13	43.3
Heart burn	12	40
Complications		
Heart disease	27	90
Diabetes Mellitus Type II	26	86.7
Breathlessness	26	86.7
Hypertension	25	83.3
High cholesterol	25	83.3
Gout	22	73.3
Osteoarthritis	19	63.3
Metabolic syndrome	19	63
Impaired fertility	19	63.3
Lack of sleep	13	43.3
Certain cancers	12	40
Liver disease	11	36.7
Fetal defects	9	30

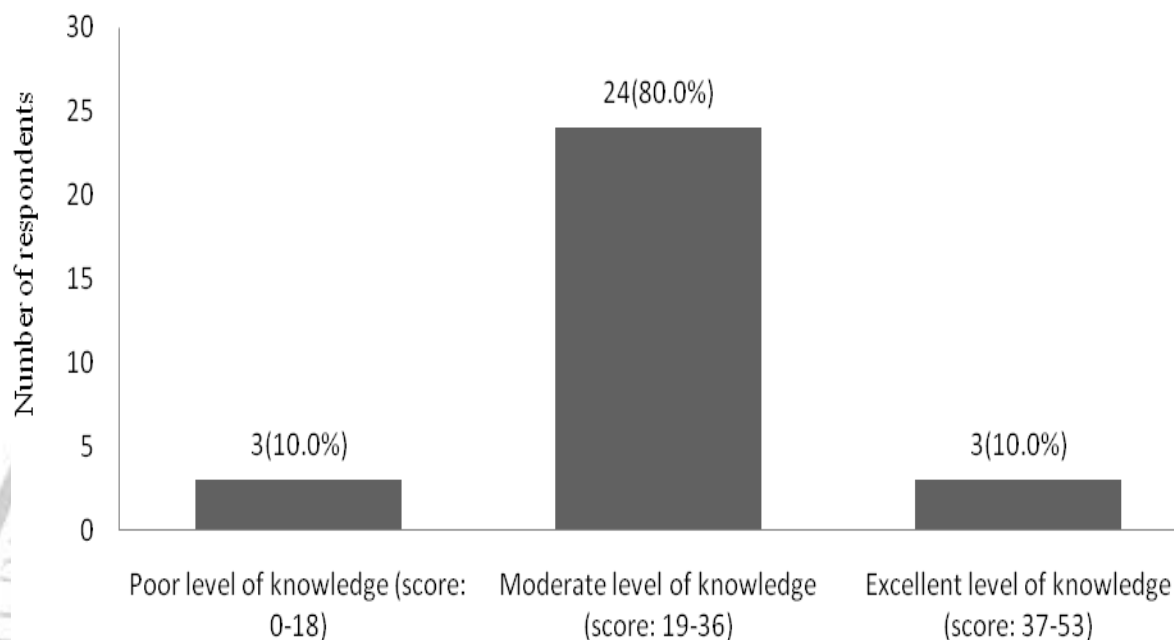


Fig. 1: Classification of knowledge level according to the score was obtained by the respondents