

NUTRITIONAL STATUS AND HEALTH PROFILE AMONG SINGLE MOTHERS IN KOTA BHARU, KELANTAN

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ABSTRACT

The objective of this cross-sectional study is to determine the nutritional status and health profile of single mothers in Kota Bharu, Kelantan. A total of 100 single mothers aged 18-59 years old were involved in this study. Assessment of blood glucose, blood pressure, height and weight and food consumption were done to each respondent. Results showed that the random blood glucose level of 82.0% single mothers was normal (within 4.4-8.0mmol/L), 18.0% exceeded 8.0mmol/L although only 10.0% of them were diagnosed with diabetes based on clinical history. Meanwhile, 46.0% had normal blood pressure level. The result showed that 33.0% of the subjects have normal BMI, 6.0% of them fall in the category of underweight, 39.0% were overweight and 22.0% were obese. It is suggested that future intervention programs should focus on preventing obesity problems related to chronic diseases.

Keywords: nutritional status; single mother; health profile; Kelantan; obesity.

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1. INTRODUCTION

Families have always been the basic unit of society but the current family landscape has changed significantly in terms of composition, size, structure, functions and relationships. In the past, the predominant family structure consisted of a heterosexual couple and their children. However, nowadays, families are characterized by greater diversity such as single-parent families, blended families, cohabiting families and step-families. Disruptions in the family system are likely to upset relationships in almost all aspects of life, particularly adaptation and changes to the old pattern of behavior and interaction. Parents and children need support and assistance when marriages dissolved or there is a death of a spouse because it can be extremely difficult for single parents to function effectively [1].

According to [2], there are 126,810 single mothers among the 11.4 million women in Malaysia with Selangor having the highest number of single mothers (16,748) in the country. The census defines single mothers as females who are head of households; widowed, divorced or permanently separated and having an unmarried child under the age of 18 years living in the same household. Thus, this implies that the number of single mothers may be much larger because those who are not head of household would be unaccounted. Besides that, it must also be noted that the census definition of single mothers excludes elderly women with grown-up children. If these group is are included, there is an estimation of 620,389 women who are widowed, divorced or permanently separated. Previously, most single mother families were created by the demise of a spouse. But, recently there is an increase in single parent families created by separation and divorce.

Meanwhile, the result from [2] indicated that the number of single mothers in Kelantan has increased to 70,000 people, comprising both divorcees and widows. The main cause of this situation is due to the irresponsibility of a husband role as a head of family who left their family to fend on their own. Another reason is some of them are still young when they got married and divorced early in life. In order to handle this problem, associations such as *Penyelaras Pembangunan Armalah DUN* and *Yayasan Pembangunan Wanita Murni Negeri Kelantan* have been formed to assist single mothers although those problems still remain unsolved. *Penyelaras Pembangunan Armalah DUN* is an association that made up of 14 parliaments in Kelantan and

registered under *Urusetia Pembangunan Wanita, Keluarga Dan Kesejahteraan Rakyat*. There are a total number of 16,344 single mothers whose aged less than 59 years old and 25,110 single mothers with the age of more than 60 years old that are registered under this association in 2014 according to the statistics given. For instance, in Kota Bharu parliamentary itself, the population of single mothers whose aged less than 59 years old was 1430 people in 2014.

In Malaysia, as well as in other countries too, one of the most significant demographic changes in recent years has been an increase in the number of single mother families. Although the number of single mothers in Malaysia is comparatively less than those in the United State and other Western countries, it should be viewed with concern as it has a great impact on the family, society and nation [1].

Undoubtedly, there are many challenges and imperatives faced by single mothers in their daily life after the absence of a husband. Issues and problems faced by single parents are not new. Almost every year the media reported various problems and challenges that include financial problems, family problems, problems of stigma and support from the community as well as emotional and psychological problems are rampant among single mothers. In Malaysia itself, most single parents reported facing financial difficulties as to survive and their children [3]. The challenges they face as a marriage comes to an end as well as afterwards are factors that generate stress, depression and other health problems. In other words, living conditions and quality of life of single mothers are very much affected.

Although single mothers have become a common theme in contemporary literature, limited studies focusing on the nutritional status or dietary adequacy of single mothers. Most of the studies carried out were aimed of either to identify issues and challenges faced by single mothers or to examine the nutritional status of their children. Besides that, there is also a shortage of data concerning how single mothers feel about the quality of their lives. The significance of each of these factors has relevance for both single mothers whose numbers continue to grow. The impact and ongoing consequences single mother families present for their children and indirectly for future generations.

In Malaysia, there is relatively little research on single mothers and information on these women is scarce. Thus, it is important to carry out this study that focusing on the nutritional

status of single mothers where such study in the local setting is still inadequate.

2. METHODOLOGY

This cross-sectional quantitative research was conducted from February to April 2015 to study the nutritional status and quality of life of single mothers in Kota Bharu, Kelantan. Kelantan was selected as the study area due to its high population of single mothers. According to [2], there are 70,000 single mothers in Kelantan. The study location was Kota Bharu parliamentary and was under *Penyelaras Pembangunan Armalah DUN*, Kelantan. This parliament has a total number of 1430 registered single mothers. The areas selected for data collection under this parliament including *Tanjong Mas* and *Bunut Payong*.

The sample size consisted of 123 single mothers who currently resided in Kota Bharu, Kelantan and from the aged 18 to 59 years old. The cutoff age of 60 years old was aimed to target women of working age and this measure excluded most women who have retired and whose children were likely to live independently. Other inclusion criteria were single mothers aged between 18-59 years old, free from mental disabilities and registered under the *Penyelaras Pembangunan Armalah DUN*. Ethical approval for the study was obtained from the Human Research Ethics Committee (HREC) of Universiti Sains Malaysia [USM/JEPeM/14110452]. This study was officially approved by *Urusetia Pembangunan Wanita, Keluarga, Kebajikan dan Kesejahteraan Rakyat*.

A set of structured questionnaire was developed to obtain information regarding socio-demographic characteristics, nutrient intakes, anthropometric measurement, biochemical measurement and clinical measurement from the respondents. The questionnaire was written in Malay language and was pilot tested among five women who were not independent and not involved in this study. Only minor modifications were made to the questionnaire after the pilot study.

Before answering the questionnaire, written information was provided and explained to the respondents. They only enrolled in this study after written informed consents were obtained. Face to face interviews were carried out from the respondents.

The information obtained included socio demographic background (nationality, ethnicity, age, house address, contact number, marital status, education level and number of dependent children). Next, the 24-hour dietary recall method was employed to assess the respondents' energy and nutrients intake. Weight was measured using a Seca weighing machine (Seca 762, Germany) whereas height was measured using a Seca body meter (Seca 206, Germany) at the same time of day to minimize diurnal variation in height [4]. Body mass index (BMI) was calculated and classified according to WHO BMI classification [5]. Random blood sugar level was measured by using blood glucose meter (ACCU-CHEK Advantage II, New Zealand). Blood pressure was measured by using the Omron HEM-7120.

Data was analyzed by using SPSS version 22.0. A p-value less than 0.05 ($p < 0.05$) was considered statistically significant. Besides, descriptive statistics were performed for socio-demographic characteristics of the respondents, such as age distribution, education level, marital status, number of dependent children, employment status and monthly income distribution.

3. RESULTS

There were a total number of 103 single mothers recruited in this study. However, 3 respondents did not meet the inclusion criteria, as their age exceeded 60 years old. Thus, the final number included in the analysis was 100 single mothers. All of them gave their consent to participate in the study.

Table 1 summarizes the socio-demographic characteristics of respondents. There is no missing data was found as all respondents were face to face interviewed using questionnaire. For the age distribution, 5 (5.0%) respondents were 19-29 years, 57 (57.0%) were 30-50 years and another 38 (38.0%) were 51-59 years. Their age range were from 25 to 59 years old (median age 48.00 years, IQR 12.00 years). For academic background, only 4.0% of the respondents never attended school while the rest received formal education (96.0%). Most of them received secondary education (81.0%), followed by primary education (10.0%) and only 5.0% received tertiary education which comprised STPM, diploma and degree.

Results of this study indicated that 51.0% of respondents were widow and another 49.0% were divorcee. From the aspect of dependent, majority of respondents (81.0%) had to support at least one of their children and only 9.0% was free of the responsibility of raising children. Meanwhile, 67.0% of respondents stayed with their children, 25.0% stayed with their parents and children and only 8.0% chose others including stayed with cousin and children, stayed with siblings and also staying alone. In relation to the living place, the result showed that 37.0% of single mothers had their own property, 31.0% stayed in dwelling which belong to their parents' property, 16.0% rented a houses and another 16.0% chose others such as staying in the house belongs to sibling or property registered under their children's name.

For employment status, majority of respondents (82.0%) were employed and only 18.0% were unemployed. In terms of monthly household income, 52.0% of respondents had income level less than RM 600, 26.0% had income between RM600-RM899 and 22.0% which an income of RM 900 or more. The median income of single mothers was (RM600.00, IQR RM400.00).

Mean body weight, height, BMI and BMI classification of respondents were presented in Table 2. Results showed that the mean body weight was $62.00\text{kg} \pm 12.61\text{kg}$, mean height was $150.97\text{cm} \pm 20.25\text{cm}$ while the mean BMI was $26.20\text{kg/m}^2 \pm 4.99\text{kg/m}^2$. Based on their BMI classification, 6.0% of the respondents were of underweight, 33.0% had normal body weight while those who were overweight and obese accounted for 39.0% and 22.0% respectively of the total sample size. Their BMI range was from 14.80kg/m^2 to 42.30kg/m^2 .

Table 3 summarized the biochemical profile of respondents. For random blood glucose level, findings of the study indicated that most of the respondents (82.0%) were normal (4.4-8.0 mmol/L) while 18.0% were exceeded 8.0 mmol/L although only 10.0% were diagnosed with diabetes based on their clinical history. The median random blood glucose level of single mothers was 5.90 mmol/L (IQR 1.80 mmol/L).

Table 1. Socio-demographic characteristics of respondents (n = 100)

Characteristics	Frequency (%)
Age	48.00(12.00) ^a
19-29 years	5(5.0)
30-50 years	57(57.0)
51-59 years	38(38.0)
Age range	25-59 years
Education Level	
Never go to school	4(4.0)
Primary school	10(10.0)
Secondary school	81(81.0)
STPM	3(3.0)
Diploma/University level	2(2.0)
Marital Status	
Divorced	49(49.0)
Widow	51(51.0)
Number of dependent children	
0	9(9.0)
1	20(20.0)
2	19(19.0)
3	25(25.0)
4	11(11.0)
5	13(13.0)
6	1(1.0)
7	2(2.0)
Living	
With children	67(67.0)
With parents and children	25(25.0)
Others	8(8.0)

Living place	
Own property	37(37.0)
Rent	16(16.0)
Parent's property	31(31.0)
Others	16(16.0)
Employment	
Unemployed	18(18.0)
Employed	82(82.0)
Monthly Income	600.00(400.00) ^a
< RM 600	52(52.0)
RM 600-RM 899	26(26.0)
≥ RM 900	22(22.0)

^aPresented as Median(IQR) due to skewed data

Table 2. Anthropometric status of respondents (n = 100)

Variable	Frequency (%)	Mean (SD)
Weight		62.00 (12.61)
Height		150.97 (20.25)
BMI (kg/m²)		26.20 (4.99)
Underweight (< 18.5)	6 (6.0)	
Normal weight (18.5-24.9)	33 (33.0)	
Overweight (25.0-29.9)	39 (39.0)	
Obese (≥ 30.0)	22 (22.0)	
BMI range		14.80-42.30

Abbreviation: BMI = Body Mass Index

Table 3. Biochemical profile of respondents (n = 100)

Variable	Frequency (%)
Random Blood Glucose	5.90(1.80) ^b
4.4-8.0 mmol/L	82(82.0)
> 8.0 mmol/L	18(18.0)
Diagnosis of diabetes	10(10.0)

^bPresented as Median(IQR) due to skewed data

The clinical profile of respondents was shown in Table 4. There were only 95 respondents involved in blood pressure measurement. For blood pressure level, 46.0% of respondents were normal, 21.0% under pre hypertension stage, 17.0% under stage 1 hypertension and another 11.0% of them under stage 2 hypertension. However, based on their clinical history, only 24.0% were diagnosed with hypertension. The mean systolic blood pressure of single mothers was 127.67 mmHg \pm 24.31 mmHg, while for diastolic blood pressure was 81.39 mmHg \pm 13.61 mmHg.

Table 5 summarized the achievement of mean energy and protein intake of respondents to RNI. The median energy intake of respondents with the age range of 19 to 29 years was 1480kcal (IQR 473 kcal) or 74.0% of RNI. For those aged between 30 to 50 years, the median energy intake was 1539kcal (IQR 629kcal) or 70.6% of RNI. The mean energy intake of those aged from 51 to 59 years was 1514kcal \pm 443 kcal or 69.5% of RNI. The energy intake of respondents from 19 to 59 years had the range of 647kcal to 2764kcal. In relation to protein intake, result of this study indicated that the mean protein intake of respondents for all ages was 58.63g \pm 24.40g or 106.6% of RNI.

Table 4. Clinical profile of respondents

Variable	Frequency (%)
Blood Pressure^a	
Systolic	127.67(24.31) ^b
Diastolic	81.39(13.61) ^b
Normal	46(46.0)
Pre hypertension	21(21.0)
Stage 1 hypertension	17(17.0)
Stage 2 hypertension	11(11.0)
Diagnosis of hypertension	24(24.0)

^aTotal number of respondents = 95

^bPresented as Mean(SD)

Table 5. Achievement of mean energy and protein intake of respondents to RNI^a

Age Group (Years)	n	Energy (kcal)	Percentage of RNI (%)	Protein (g)	Percentage of RNI (%)
Energy range		647-2764		-	-
19-29	5	1480 (473) ^b	74.0	-	-
30-50	57	1539 (629) ^b	70.6	-	-
51-59	38	1514 (443)	69.5	-	-
Protein Intake					
19-59				58.63 (24.40)	106.6

^a Data are presented in Mean(SD)

^b Presented as Median(IQR) due to skewed data

Abbreviation: RNI = Recommended Nutrient Intake

RNI of energy for women among 19-29 years: 2000 kcal; 30-59 years: 2180 kcal; protein for 19-59 years: 55g.

4. DISCUSSION

Single mothers were more likely to be unemployed than married mothers [6]. The finding of

this study was in contra with previous studies. It showed that most of the single mothers (82.0%) were employed and only 18.0% were unemployed. However, based on the income data, they were likely to be employed in lowly paid jobs.

Besides, the results of our study showed that the prevalence of overweight among single mothers was 39.0% while prevalence of obesity was 22.0%. This finding was comparable to a study in Malaysia, which reported that women who are overweight and obese make up 33.0% and 22.6% respectively [7]. The results were also comparable to a study conducted among adult Malaysians where the prevalence of overweight among female was 33.1%, while for obesity was 22.5% [8]. But, this finding was higher than finding in the Malaysian Adult Nutrition Survey (MANS) whereby the prevalence of overweight and obesity among women were 24.8% and 14.7% respectively [9]. Widespread decline in physical activity combined with the change in food habits may have an association with the rapidly rising rates of overweight and obesity among single mothers.

This study showed that the medium energy intake of single mothers aged 19-29 years was 1480kcal or 74.0% of RNI, while for those aged 30-50 years was 1539 kcal or 70.6% of RNI. For single mothers whose aged 51-59 years, the mean energy intake is 1514kcal or 69.5% of RNI. The MANS reported mean intake of energy among women that was comparable to the values found in our study. For women aged 18-19 years and 20-29 years, the mean energy intake was 1419kcal or 71.0% of RNI and 1519kcal or 76.0% of RNI respectively. Meanwhile, the mean energy intake of women aged 30-39 years and 40-49 years was 1468kcal or 67.3% of RNI and 1387kcal or 62.4% of RNI respectively while for those aged 50-59 years was 1360kcal or 62.4% of RNI [10]. In general, energy intake and percent of RNI achievement declined gradually with age was probably due to reduction in physical activity levels and poor appetite, particularly in older adults. Meanwhile, our study found that the mean protein intake of single mothers was 58.63g or 106.6% of RNI. This finding was similar to a study conducted by [11] whereby the mean intake of protein among females was 57.00g or 103.6% of RNI.

On the other hand, finding of the study reported that 18.0% of the respondents had blood glucose level higher than the recommended range. This data corresponded to a study that conducted in North-East Malaysia, where the prevalence of impaired glucose tolerance (IGT)

among females is 19.0% [12]. Another study reported that the prevalence of pre-diabetes among women was 21.9% [13]. The findings were also similar to other studies which showed that IGT was more common in females [14-15]. However, all the studies above used oral glucose tolerance test to measure blood glucose level. Thus, the figures could not be compared directly with the result above that used random blood glucose test. However, both high random blood glucose level and IGT are risk factors for future contracting diabetes among the respondents.

In addition, the overall prevalence of hypertension was 28.0%. The finding in our study was comparable to a study conducted in rural community in Selangor where the prevalence rate of hypertension among females was 23.5% [16]. However, our result was lower than the finding in a national health survey whereby the prevalence of hypertension among Malay females was 37.1% [17]. Another study conducted by [18] in rural community in Northern Malaysia reported the prevalence of hypertension among females was 36.5%. The difference in findings could be due to the smaller sample size used in our study.

5. CONCLUSION

In this study, we have found that majority of single mothers (82.0%) were employed and only 18.0% were unemployed. In relation to the nutritional status, the results showed that prevalence of overweight and obesity among single mothers were 39.0% and 22.0% respectively. Meanwhile, the median energy intake of single mothers aged 19-29 years was 1480.18 kcal or 74.0% of RNI while for those aged 30-50 years was 1539.08 kcal or 70.6% of RNI. For single mothers whose aged 51-59 years, the mean energy intake was 1514.78 kcal or 69.5% of RNI. From the aspect of random blood glucose level, 18.0% of single mothers were higher than the recommended range while for blood pressure level, the prevalence of hypertension was 28.0%.

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