

Does Nutritional Knowledge Have Relationship With Healthy Dietary Attitude and Practices during Pregnancy?

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Abstract. The main dietary goal during pregnancy is to obtain adequate nutrition to optimize health of both mother and child. The aim of present study is to investigate the association between knowledge and dietary behavior among a group of women in normal condition of pregnancy. A cross-sectional study was conducted among pregnant women who attended Obstetrics and Gynaecology clinic during their antenatal care visits. Knowledge, attitude and practice on food and nutrition (KAP) questionnaire was utilized. The mean (SD) score for nutrition knowledge, attitude and practices for pregnant women was 13.8(3.4), 14.9(2.6) and 3.7(0.8) which presented 65.7%, 57.3% and 74% correct response rate respectively. There was significant positive but not strong correlation between nutrition knowledge and practices ($r= 0.152$, $p=0.003$), knowledge and attitude ($r= 0.154$, $p=0.002$) and attitude and practice ($r=0.147$, $p=0.004$). This study showed significant differences among means of knowledge between healthy and unhealthy practices on: frequency of eating snacks, selection of food for lunch and dinner, frequency of chicken /duck intake, type of drink, first and third liking activities in free time, most important priorities when buying food and taking vitamin/mineral supplementation; and of favorable/unfavorable attitudes on: importance of physical activity, change of dietary pattern to improve health, most important priorities when buying food. Contrary, no significant mean difference was found in healthy/unhealthy practices on: frequency of taking breakfast, types of snack usually eaten, first selection of food for breakfast, frequency of fish/other sea food, meat, beef, mutton, egg, beans and products, vegetables, fruits, and milk intake; and no significant difference was shown between two groups attitude on: least important priorities when buying food and attitude about fast foods. It can be concluded that the level of nutrition knowledge (NK) is satisfactory; however the effect of NK on healthier practices and attitudes is not too powerful.

Keywords: Food practice, Health, Pregnancy, Nutritional knowledge

1. Introduction

Adequate and balanced nutrition during gestation has been accredited as a prerequisite for a healthy pregnancy and birth outcomes [1]. It is well documented that deficiency of particular nutrients during antenatal period may contribute to suboptimal embryonic and fetal nutrition, impaired intrauterine growth and development, congenital malformations, severe pregnancy complications, and preterm deliveries [2]. Maternal inadequate nutritional intake may also make fetus more prone to cardiovascular, metabolic, or endocrine disease in adult life due to alteration of fetus 'program'. Long term follow up studies showed that, men and women who were small or disproportionate at birth have more risk of coronary heart disease, hyperlipidemia, hypertension, and type 2 diabetes [3]. Therefore, following an appropriate nutritional intake and proper dietary behavior will provide the necessary quantities and diversities of nutrients to ensure an optimum health for the mother and the baby as well as future generation [4, 5]. Dietary behaviors including food choices are influenced by a numerous environmental and individual factors. Some of the individual

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factors include socio economic status (SES), and psychosocial factors such as knowledge, beliefs and perceptions about nutrition and health [6]. Food and nutritional knowledge has been demonstrated to have positive effect on the quality of dietary intake as well as healthy food purchasing behavior among adults [7]. Improvements of nutrition knowledge (NK), by exposing an individual to new information possibly arouse changes in attitude and consequently resulting in improvements in dietary behavior [8]. It was shown that, during pregnancy, expectant mothers made attempt to improve their food intake according to health advice [9]. However, another study reported that higher level of knowledge among pregnant women was not an indicator to motivate them to alter their dietary habits [5]. Given the importance of knowledge impression on attitude and practice [5], and given the presence of limited studies, our objective is to examine how dietary and other healthy lifestyle behaviours of pregnant women are associated with their knowledge about food and nutrition. The findings of this study can help to investigate whether pregnant women beliefs and nutrition information can influence their dietary behaviour.

2. Material and Method

A total of four hundred and one pregnant women attending at the Obstetrics and Gynecology antenatal clinic for routine antenatal check up, participated in this cross-sectional study. Sampling was done from a pool of pregnant women according to the numbers registered on that day. Pregnant women were eligible for the study if they had gestational age between 20th and 34th weeks, low risk pregnancy or pregnancy free from complications, of Malay ethnicity, single fetus, and ages between 18 and 44 years old. Exclusion criteria included a diagnoses of high risk pregnancy at the time of enrollment (such as: history of diabetes mellitus, a thyroid condition hyper/hypothyroidism, cervical incompetence, any gastric disorders, chronic hypertension, pre-eclampsia, placenta previa, bronchial asthma), advice from primary care members not to contribute in the study, and inability to communicate with research staff. Before involving in the study, the research purpose was explained to the subjects. Only pregnant women who gave their written consent participated in the study.

2.1. Instruments

Information on demographic characteristics, eating habits and nutritional knowledge were obtained by utilizing a standardized self-administered questionnaire of Knowledge, attitude and practice on food and nutrition (KAP). Knowledge part of KAP questionnaire was conducted by giving one mark to each correct answer whereas no mark for an incorrect or no response. Then total sum up was obtained for knowledge score. In attitude and practice part of KAP questionnaire, one point was considered for the favorable/healthy selected answer and zero for the unfavorable/unhealthy one.

2.2. Statistical Analysis

Data entry and analysis were done using SPSS version 18.0. Frequency of categorical variables and mean (\pm Standard deviation) for continuous variables were obtained through descriptive analysis. Comparisons of means of knowledge score between healthy/unhealthy nutrition practices and favorable/unfavorable attitude for normally distributed variables were performed using independent *t*-tests with a significance level of $\alpha < 0.05$.

3. Results

Table 1 shows the mean and standard deviation of some demographic and gestational characteristics of pregnant women. Participants ranged in age from 18 to 42 (M = 29.68, SD = 5.02). The majority of women were married (n = 397, 99%). For most, the current pregnancy was either their first (n = 113, 28.27%), second child (n = 82, 20.4%) or third (n= 86, 21.4%). Monthly family income value in Ringgit Malaysia (RM) was grouped into four categories: less than or equal to RM 1000 (20%); RM 1001-3000 (43.9%); RM 3001-5000 (23.2%); and more than RM 5000 (12.5%). The nutritional knowledge score had a mean of 13.8 (SD \pm 3.4), which represented 65.7% correct responses. Mean of NK scores in healthy frequency of eating snacks was significantly higher than unhealthy group (15.1 vs. 13.6; p = 0.003). Mean of NK scores for healthy vs. unhealthy selection of food for lunch was (14.0 vs. 11.8; p=0.004), for selection of food for dinner (14.1 vs. 13.0 p=0.009), frequency of chicken /duck intake(14.2 vs. 12.7; p<0.001), for type of drink(13.5 vs. 14.4; p=0.010), taking vitamin/mineral supplementation(14.1 vs. 12.0; p=0.003), first liking

activities in free time(15.0 vs. 13.7; $p=0.004$), and third liking activities in free time(14.3 vs. 13.0; $p< 0.001$). Mean of NK scores for favorable versus unfavorable nutrition attitude was significant for: importance of physical activity (14.0 vs. 12.4; $P=0.001$), change of dietary pattern to improve health (13.9 vs. 10.2; $P=0.008$) and most important priorities when buying food (14.1 vs. 13.2; $P=0.026$). Contrary, the findings of this study showed no significant difference between NK mean score between two groups of practices on: frequency of taking breakfast, types of snack usually eaten, first selection of food for breakfast, frequency of fish/other sea food, meat, beef, mutton, egg, beans and products, vegetables, fruits, and milk consumption. Also mean of NK did not show any significant difference in two group's attitude on: least important priorities when buying food; and attitude about fast foods. The mean (SD) score for nutrition attitude and practices was 14.9 ± 2.6 and 3.7 ± 0.8 which presented a 57.3% and 74% correct response rate respectively. Correlation between NK and water intake was negatively significant ($r = -0.166$; $P<0.01$). Consumption of water was (6.3 ± 2.4) glass per day.

4. Discussion

Individuals who have knowledge on the importance of adequate and balanced diet are considered to reflect this knowledge to their behaviors [10]. The present study aims to reveal the associations of nutrition knowledge of a group of pregnant women attending for their antenatal follow up with attitude and practices on food and nutrition. The association between the women's NK and their dietary behavior is investigated in order to observe the assumption that a better NK base may be associated with healthier dietary practices. Understanding this inter relationship may provide precious information for designing more efficient and effective public policies and modification of educational interventions. In this study it was shown that participants with healthy practices on: selection of foods for lunch, dinner and drink, consumption of snacks two or three times/day, and eating fast foods 2-3 times per month or less had significantly higher mean score of NK versus other group. This finding can be explained by the fact that higher knowledge of nutrition subsequently resulting in improvements in dietary behavior [10]. This study also showed no noticeable differences between NK means of two groups for frequency of taking breakfast, types of snack usually eaten, first selection of food for breakfast, frequency of fish/other sea food, meat, beef, mutton, egg, beans and products, vegetables, fruits, and milk intake. This lack of difference may be due to this fact that nutrition knowledge alone may not necessarily be sufficient to initiate behavioural application of healthy diets [10, 11]. There are many reasons why nutritional advice is not followed. It may be due to the lack of interest of making a change in one's diet, or certain perceived or encountered barriers that may prevent people from eating healthier diets such as the lack of money (cost), lack of time (too busy with work) [12] or taste[13]. This current finding is in contrast with study in which a better NK was found to be associated with a higher intake of fruit and vegetables [14]. According to the European Food Consumption Survey Methods (EFCOSUM) group, these are the two most important dietary intake for health monitoring in Europe [14]. In this study participants' water intake was negatively associated with NK. During pregnancy most of mother's added weight to 7-12 kg is because of water (6 to 9 L) [15], due to plasma and foetus with 85% and 70-90% water content respectively [16]. Adequate hydration during gestation provides successful pregnancy outcomes since water accumulation supports foetal growth and supplies maternal physiologic adjustments [16]. Although increased water intake was shown to elevate the risk of preterm delivery and low birth weight [17], another study reported its association with higher mean of foetal birth weight [18]. To ensure healthy hydration during pregnancy, the European Food Safety Authority recommends an increase of 300 ml per day compared to the normal intake for non-pregnant women, taking the total adequate water intake (from food and fluids) to 2,300 ml, or approximately 1,850 ml per day from fluids alone [19].

5. Conclusion

This study further highlights importance of nutrition knowledge with respect to healthy lifestyle over the period of gestation. It can be concluded that the level of nutrition knowledge is satisfactory; however the effect of NK on healthier practices and attitudes is not too powerful. Thus, NK seems to be unable to result in satisfied nutritional behaviors among pregnant women. The findings suggest that frequent continuing education is essential for mothers to improve their nutritional knowledge to be able to perform healthier

dietary intakes. The same study needs to be conducted in other parts of the country and other population to see if there are any similarities regarding the factors of nutritional practices that will influence on health quality.

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7. References

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Table 1: Descriptive Statistics of gestational characteristics of pregnant women

Variables	Mean (SD)*
Age	29.68 (5.02)
Gestational age	26.6(4.4)
Gravid	3 (2.04)
Parity	1.60 (1.6)
Abortion	0.4 (0.9)
Hemoglobin	11.7 (1)
Weight	60.4 (12.2)
Height	155.3 (5.8)
Household size	4 (2)

* Number may not be total 401 in each item because of missing data

Table 2: Comparison of mean knowledge between healthy/unhealthy nutritional practices/attitudes

Variable	Mean(SD) knowledge(score)		t statistic	p value*
	Healthy	Unhealthy		
Frequency of taking breakfast	14.0(3.4)	13.2(3.4)	-1.545(395)	0.123
Types of snack usually eats	14.0(3.4)	13.5(3.4)	-1.276(395)	0.203
Frequency of eating snacks	15.1(3.8)	13.6(3.1)	-2.973(395)	0.003
Frequency of eating fast food	14.1(3.4)	13.3(3.5)	-2.327(392)	0.020
First selection of food for breakfast	13.9(3.3)	13.8(3.6)	-0.097(393)	0.923
First selection of food for lunch	14.0(3.4)	11.8(4.1)	-2.896(393)	0.004
First selection of food for dinner	14.1(3.5)	13.0(3.1)	-2.624(393)	0.009
Frequency of fish/other sea food intake	13.8(3.5)	13.8(3.3)	-0.141(395)	0.888
Frequency of chicken /duck intake	14.2(3.2)	12.7(3.8)	-3.728(148.5)	<0.001
Frequency of meat, beef, mutton intake	13.9(3.3)	13.8(3.5)	-0.229(395)	0.819
Frequency of egg intake	14.0(3.3)	13.6(3.6)	-1.110(395)	0.268
Frequency of beans and products intake	13.3(3.5)	13.9(3.4)	0.802(395)	0.423
Frequency of vegetables intake	14.0(3.4)	13.4(3.6)	-1.519(395)	0.129
Frequency of fruits intake	13.9(3.5)	13.7(3.4)	-0.703(395)	0.483
Frequency of milk intake	13.7(3.4)	13.9 (3.5)	0.482 (395)	0.630
Type of drink	13.5(3.6)	14.4(3.0)	2.595(309.8)	0.010
Taking vitamin/mineral supplementation	14.1(3.3)	12.0(4.3)	-3.108(47.9)	0.003
First liking activities in free time	15.0(2.3)	13.7(3.5)	-3.030(54.942)	0.004
Third liking activities in free time	14.3(3.0)	13.0(3.9)	3.626(258.719)	< 0.001
Variable	Mean(SD) Favorable	Mean(SD) knowledge(score) Not favorable	t statistic	p value *
most important priorities when buying food	14.1(3.2)	13.2(3.8)	-2.237(197.156)	0.026
least important priorities when buying food	13.9(3.4)	12.7(3.8)	-1.431(395)	0.153
Importance of physical activity	14.0(3.4)	12.4(3.4)	-3.216(390)	0.001
Change of dietary pattern to improve health	13.9(3.4)	10.2(3.1)	-2.651(395)	0.008
Attitude about fast food	13.5(3.8)	13.9(3.4)	0.874(395)	0.383

*Independent t test