Scores Consumption of Functional Foods based on Local Foods in Pregnant Women Buginese in the city of Makassar

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Abstract

Background Recent evidence is known that functional foods are foods that provide the latest prospects for preventing nutritional problems not only because of their macro and micro nutrient content but their bioactive components that have an effect on the methylation process at the cellular level.

Objective: the purpose of this study was to determine the consumption of functional foods based on local foods in pregnant women in Makassar City

Method: A cross sectional study design. The sample size was 647 pregnant women taken from 41 Puskesmas in Makassar City, except the Sangarrang Kepulauan Puskesmas. Functional food intake was collected using the FFQ method, Macro and micro nutrient intake with Food recall 2 x 24 hours. The data collection enumerators were 21 graduates from Nutrition III / IV graduates. Enumerators are trained for two days.

Results; showed that functional foods consumed by pregnant women based on local foods are sources of fiber, probiotics, Vitamin C, carotenoids, omega 3/9 and folifenol respectively (39.03 ± 36.78), (21.15 ± 7.74), (38.44 ± 30.9), (90.04 ± 50.53), (83.42 ± 60.42) and 166.57 ± 92.66). **Conclusion**; is that consumption of functional foods based on local foods in pregnant women is good.

Keywords: *Score Consumption of Functional Foods, Pregnant Women*

Introduction

The most serious nutritional problem in Indonesia is stunting. National stunting prevalence is 36% and South Sulawesi reaches 30.8%[1].The impact caused by stunting is low academic potential, high risk of non-communicable diseases, high cost burden on health services and low productivity. Stunting problems must be prevented, because the incidence of stunting from birth is difficult to treat. Prevention of stunting starts from the preconception. This means that starting from pre-pregnancy and pregnancy[2,3,4.]

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Prevention of stunting is most appropriate through the consumption of food with sufficient quality and quantity. Problems faced to meet the quality and quantity of food according to nutritional needs are income, preferences, availability and knowledge of nutrition[5,6,7,8.]

The fact of the income of the population of Indonesia, South Sulawesi, and Makassar City has an increasing tendency. The availability of local food varies considerably between regions and production centers both in villages and in cities. A change to the diversity of food from local food to fast food. There is a gap between supporting food potential and the emergence of serious nutritional problems in Indonesia, South Sulawesi and Makassar City. The clearest solution is to ensure that pregnant women consume enough food according to their nutritional[9,10].The most potential food to be developed is functional food based on local

food, because this intervention is sustainable and has a real impact on improving the health status of mothers and fetuses.[11,12]. The research question is how much the potential for functional food on local food, for pregnant. The objective of this study is to identify scores consumption of functional foods based on local food, for pregnant in the city of Makassar, Indonesia

Method

The study design was a cross sectional study approach. The sample is pregnant women in the city of Makassar. Sample size was 647 people by random sampling selected. The sample frame was taken from a cohort of pregnant women available at data base on center of Public Health Offices Biringkanaya Subdistric of Makassar Indonesia. Data collectors by dietisien had been training during 16 hours. Instrument used to Food Frequency Questionaire (FFQ) had been standardized the reliability and validity based on Buginese Ethnicity.

Data of functional food consumption was collected used the FFQ method. The scores of functional foods based on local foods are analyzed for their antioxidant activities. Quality control of data collection by supervisor visiting for all enumerators. Data processing is done by SPSS application, and data analysed by frequency distribution. The study was approved by the Institutionl Review Board of Health Polytehnic of Makassar and South Sulawesi Province Licensing Service No:18414/s01/PTSP/2019. We obtained written inform concent from the subject.

Results

Food Consumption Scores according to bioactive substances

Table 1. Consumption of Functional Active Food Substances

Functional Food Consumption	n	mean	Std. Deviation
Fiber	647	39.03	36.78
Prebiotics, Probiotics, and Symbiotics	647	2 1.15	7.74
Vitamin C	647	38.44	30.96
Caratoid	647	90.04	50.34
Omega 3 and 9	645	83.42	60.56
Polyfenol	647	166.57	92.66

Based on the results of data analysis, it is known that the highest score of functional food consumption in pregnant women is the source material of polyphenols, carotenoids (90.04 ± 50.34) and Omega 3 + omega 9 (83.42 ± 60.56).

Based on the survey results it is known that the categories of micronutrient intake of Fe, Zinc, Vitamin C and Vitamin A are in the 57.34%, 92.27%, 92.275 and 93.5% categories respectively. This proves that there is still attention to the adequacy of iron sources.

Discussion

This survey is intended to describe the consumption of functional food in pregnant women in Makassar City. The results are known that pregnant women have consumed functional foods based on local foods appropriately and this is evidence that the potential of local foods can be increased to support the improvement of nutrition of pregnant women. Functional food has the advantage in containing a very rich source of non -nutritional substances as antioxidants. Consumption of probiotics, symbiotics and probiotics in pregnant women in Makassar is an average of 21.15 ± 7.71 point scores. This is equivalent to consumption of almost four days a week consuming sources of probiotics. A point score of 5 means consuming a source of probiotics once a week so with a score of 21 it is estimated to consume 4 days a week.

Consumption of fiber sources is reaching a value of 39 , 03 ± 36.78 is included in the category quite good, because every day must consume a source of fiber as a functional food based on local food. Consumption of Vitamin C sources is 38 , 44 ± 30.96 which means that every day pregnant women consume foods that contain vitamin C sources. Consumption of Omega 3 and Omega 9 sources is very high, reaching 83.42 ± 60.56 which means this that in a week already every day consume sources of omega 3 and omge 9. This generally comes from sea fish. Food consumption of polyphenol sources is the highest among all other food ingredients. This consumption reached 166 , 57 ± 92.66 point scores.

There is a gap between supporting food potential and the emergence of serious nutritional problems in Indonesia, South Sulawesi and Makassar City. Which way out most obvious is to ensure that pregnant women consume enough food according to nutritional needs and ensure consumption of baby food during the first 1000 days of life.[8], The most potential food to be developed

is functional food based on local food, because this intervention is sustainable and has a real impact on improving the health status of mothers and children. The results of research on literature reviews conducted in America and Europe provide general guidelines about the causal relationship between food provided and health benefits. Nonetheless, they need to broaden the depth and scope of the guidelines given to companies that want to prove their claims and to provide precise information about functional foods.[13]

The fiber component consumed by each subject is multi-functional. In research it has been proven that pregnant women consume local food-based analytical functions, one of which is because it is a source of fiber. The emergence of a growing understanding of the structure and function of food fiber , discussed about the concept of resistance to the action of human digestive enzymes. He also said that it is not only carbohydrates (cellulose, hemicellulose, pectin etc.) which are the main components, but lignin which is a type of non-carbohydrate is also included in dietary fiber. The Canadian Ministry of Health (1988) published "Safety Guidelines and Physiological Effects of Fiber Sources and Food Products" and included non-starch polysaccharides from plants as a source of new fiber. Because it's mentioned that novelty is a source of meaningful fiber . It was only in 2001 when the Institute of Medicine (IOM) expanded the scope of the definition to even isolate and synthesize carbohydrates by categorizing them into three parts namely food fiber, functional fiber and total food fiber (IOM, 2005). In 2009, Codex categorized the definition into three parts, firstly referring to naturally edible carbohydrates, secondly obtained from food raw materials with physical, chemical or enzymatic care and the third including those synthesized artificially.[14]

Probiotics have significant benefits in improving maternal health. Improving the health status of pregnant women significantly increases the quality of pregnancy and pregnancy output such as the baby's lag weight and baby's height status. This is certainly related to efforts to improve the nutritional status of mothers and children. Scientific evidence has been found that fiber and probiotics can prevent damage to epithelial cells during an infection. Improved digestive function and immune system. So it can be believed that mothers who have a source of fiber and probiotic consumption in this research have had direct benefits for themselves and their fetuses.[15], used probiotics to prevent diarrhea in all age groups,[16]. Based on the great benefits of fiber and probiotics, in the food industry the value of probiotics and fiber have become items of concern to producers and consumers alike, including pregnant women.[16]

Conclusion

The highest consumption of functional foods based on local food is the source of polyphenols.

Ethical Clearance: This study approved ethical clearance from the Committee of Research Ethics of Health Polytechnic of Makassar, Indonesia. We followed guideline from Committee of Depertement Research Ethics of Health Polytechnic of Makassar, Indonesia for ethical clearance and informed consent. The informed consent included the research title, purpose, participants' right, confidentiality, and signature.

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Conflict of Interest: The authors declare that they have no conflict interests

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