

**THE KNOWLEDGE, ATTITUDE, AND PERCEPTION
OF PRECONCEPTION FOLIC ACID INTAKE FOR
PREVENTION OF BIRTH DEFECTS AMONG
SUPPORTING STAFF AT HEALTH CAMPUS
UNIVERSITI SAINS MALAYSIA**

DR LIEW MING KUANG

**DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE OF MASTER OF MEDICINE (PAEDIATRICS)**



UNIVERSITI SAINS MALAYSIA

2022

CHAPTER I

THE PRELIMINARIES

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Lists of symbols, abbreviations, and nomenclature

NTD : Neural tube defects

USMKK : Universiti Sains Malaysia, Kampus Kesihatan (Universiti Sains Malaysia Health Campus)

FA : Folic acid

KAP : Knowledge, attitude, perception

WHO : World Health Organization

ABSTRAK

Soal Selidik Kajian Atas Pengetahuan, Sikap Dan Persepsi Terhadap Pengambilan Asid Folik Sebelum Kehamilan Dalam Mencegah Kecacatan Kelahiran Dalam Kalangan Pekerja Di Kampus Kesihatan Universiti Sains Malaysia

Pengenalan: Kecacatan tiub saraf (NTD) adalah salah satu kecacatan kelahiran utama yang boleh dicegah dengan pengambilan asid folik oleh ibu yang mencukupi sebelum and semasa kehamilan. Terdapat sedikit sahaja kajian yang meneroka tahap pengetahuan, sikap, dan persepsi (KAP) dalam kalangan kakitangan sokongan hospital.

Kaedah: Ini adalah kajian keratan rentas, dilakukan dengan persampelan rawak berstrata ke atas kakitangan sokongan yang bekerja di Hospital Universiti Sains Malaysia.

Keputusan: Seramai 134 peserta telah mengambil bahagian, 96 (71.6%) perempuan dan 38 (28.4%) lelaki, 88.1% telah berkahwin dan 11.9% bujang. 93 (69.4%) peserta memperolehi sekurang-kurangnya ijazah sarjana muda. 9 orang (6.7%) daripada peserta kajian mempunyai ahli keluarga dengan kecacatan kelahiran. 125 (93.3%) peserta mempunyai pengetahuan yang mencukupi ($> 60\%$ jawapan betul. 97.8% peserta juga menjawab lebih daripada 60% soalan dengan betul dalam bahagian sikap. Hanya 33% peserta wanita akan mengambil folik asid dengan inisiatif sendiri. Secara umumnya 88.8% peserta menjawab dengan betul pada bahagian untuk persepsi. Walaubagaimanapun hanya 23% peserta menyedari bahawa makanan seimbang adalah tidak cukup untuk mencapai keperluan harian folik asid.

Kesimpulan: Tahap KAP di kawasan kajian adalah mencukupi. Walau bagaimanapun, terdapat salah tanggapan tertentu yang perlu ditangani. Pendidikan berterusan adalah penting untuk memastikan tahap KAP yang lebih baik pada masa hadapan.

Kata kunci: asid folik, pengetahuan, sikap, persepsi, sebelum mengandung

ABSTRACT

The Knowledge, Attitude, And Perception of Preconception Folic Acid Intake For Prevention of Birth Defects Among Supporting Staff In Health Campus Universiti Sains Malaysia

Introduction: Neural tube defects (NTD) are one of the major birth defects that could be prevented by adequate maternal folic acid intake peri-pregnancy. There are minimal studies exploring the level of knowledge, attitude, and perception (KAP) among healthcare workers.

Method: This is a cross-sectional study, performed with stratified random sampling on the supporting staff working in Hospital Universiti Sains Malaysia.

Results: A total of 134 participants were recruited, 96 (71.6%) female and 38 (28.4%) males, 88.1% were married and 11.9% were single. 93 (69.4%) participants acquired at least a bachelor's degree. 93.3% of participants acquired adequate knowledge (>60% correct answers). Similarly, 97.8% of participants answered more than 60% of questions correctly in the sections on attitude. Only 33% of the female participants would take folic acid on their own initiation. In general, 88.8% of participants answered correctly on the section for perception. However only 23% of participants realised that a balanced diet is not sufficient to meet the daily requirement of folic acid.

Conclusion: The level of KAP in the studied area is adequate. However, there are certain misconceptions are needed to be addressed. Ongoing education is important to ensure an improved level of KAP in the future.

Keywords: folic acid, knowledge, attitude, perception, preconception

CHAPTER II

THE TEXT

2.1 Section A:

1. INTRODUCTION

Neural tube defects (NTD) are one of the major birth defects that concern both obstetricians and paediatricians around the globe. Common neural tube defects (NTD) include spina bifida, anencephaly, encephalocele, meningoencephalocele, myelomeningocele, and congenital heart disease cleft lips, and cleft palate are well known among clinicians. It is established that maternal folic acid (FA) deficiency is associated with congenital birth defects.

World Health Organization (WHO) reported birth defects to affect an estimated 276,000(1 in 33 infants) newborn deaths yearly. The South East Asian region recorded 55-65 cases per 1000 live births. Meanwhile in Malaysia, the National Malaysia Neonatal Registry recorded a 0.42/1000 birth in a study on the prevalence of NTD in Malaysia in 2009. In addition, the mortality rate was high.

Zaganjor et al reported in a systematic review that the prevalence of NTD around the globe can be as high as 199.4 per 10,000 births in regions with lower monitoring systems. It signals to us that a better monitoring system should be implemented to reduce the disease's prevalence and burden. Preventing birth defects is therefore an essential task of any program that aims to decrease infant mortality and childhood morbidity.

Tan et al noticed from their study in 2018, that the public population from a northern state in Malaysia had general adequate knowledge regarding folic acid, but their perception of birth defects was low. This study highlighted that efforts to improve the perception and improve knowledge are still needed.

Multiple studies demonstrated that not only the public and women of childbearing age but as well as healthcare professionals. Most studies suggested that a higher level of knowledge is associated with a higher education level. Some studies also demonstrated that adequate knowledge regarding pre-conceptional folic acid intake does not necessarily translate to a good attitude and perceptions towards the practice of intake of folic acid.

Hence the study aims to explore the knowledge of folic acid, attitude, and perception in the prevention of birth defects among the supporting staff at the University Sains Malaysia health campus, Kubang Kerian (USMKK).

2.1 Section B

Study protocol

2.2.1 Documents submitted for ethical approval

STUDY PROPOSAL

**Research Title: The knowledge, attitude and perception of
Preconception Folic Acid Intake for Prevention of Birth Defects
among Supporting Staffs In Health Campus Universiti Sains
Malaysia**

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Background

Neural tube defects(NTD)are one of the major birth defects that concern both obstetricians and paediatricians around the globe. Among those are neural tube defects(NTD) i.e. spina bifida anencephaly, encephalocele, meningoencephalocele, myelomeningocele, as well as congenital heart disease, cleft lips, and cleft palate are known to be common defects.

According to WHO(2016), birth defects affect an estimated 276,000 newborn deaths yearly(1 in 33 infants). Meanwhile, in the South East Asian region, it recorded 55-65 per 1000 live births(WHO 2015).

They result in variable severity of morbidity and mortality among fetuses and babies(Czeizel, 2009, Lonescu-Ittu et al., 2009). The National Malaysia Neonatal Registry studied the prevalence of NTD in Malaysia in 2009 figuring a 0.42/1000 birth. In addition, the mortality rate was high.

It is established maternal folic acid deficiency(FA) is associated with congenital birth defects. According to a systematic review by Zaganjor et al, the prevalence of NTD around the globe can be as high as 199.4 per 10,000 births, in the regions with lower monitoring systems. It gives us a signal that a better monitoring system should be implied in order to reduce the prevalence of this disease.

Preventing NTD is therefore an essential task of any program that aims to decrease infant mortality and childhood morbidity.

Literature review

In Malaysia, there is a lack of studies which explore knowledge and perception of the preconception use of folic acid in the prevention of birth defect in Malaysia.

Tan et al highlighted in her study, public population had general adequate knowledge regarding folic acid, but their perception towards birth defects were low. Therefore, effort to improve the perception and improve knowledge are still needed.

Yeshalem conducted a cross-sectional study to examine the knowledge of health professionals on folic acid use and their prescribing practice in Northwest Ethiopia in the year 2017. He described in his study that less than half of the health professionals showed sufficient knowledge, and a minority of them prescribed it in a correct manner.

Liana et al conducted a study among physicians. This study demonstrated that physicians are lacking in knowledge regarding periconceptional FA. The majority of them were unsure of or unfamiliar with the recent guidelines. 60% of them often offer a dose much higher than the recommendation.

A study by Sun XY et al among women of childbearing age in a Chinese province showed that a good knowledge of folic acid supplementation did not necessarily translate to correct practice.

A cross-sectional study in Serbia looked into the knowledge, attitude, and counseling practice among the pharmacies and pharmacy technicians. It was conducted among the nationwide stratified sample of pharmacists and pharmacy technicians, practicing in both private and state-owned community pharmacies in Serbia. Among 730 survey participants, 96.6% correctly identified types of deformities that could be prevented by folic acid, and 77.0% recognized recommended dosage for women capable of becoming

pregnant. However, fewer were able to recognize the optimal timing for folic acid supplementation (61.1%) and the proper dose for the NTD recurrence prevention (42.9 %)

Various studies had been conducted to investigate the knowledge of childbearing age women, in the general public population, with diverse sociodemographic background including educational level. Most studies suggest higher level of knowledge associated with higher education level.

The aim of the study is to explore the knowledge of folic acid, attitude and perception in the prevention of birth defect among the supporting staffs in University Sains Malaysia health campus, Kubang Kerian(USMKK).

Objective of the Study

To explore and describe the knowledge, attitude, and perception of the supporting staff in USMKK on the preconceptional folic acid intake in preventing defects

Specific Objectives

1. To describe the level of knowledge on preconceptional folic acid intake among staff from USMKK
2. To describe the level of attitude on preconceptional folic acid intake among staff from USMKK
3. To describe the level of perception on preconceptional folic acid intake among staff from USMKK

4. To describe the association between selected socio-demographic characteristics and the level of knowledge, attitude, and perception on preconceptional folic acid intake amongst staff from USMKK.

Study Design

Cross-sectional study

Study Area

Universiti Sains Malaysia, health campus, Kubang Kerian Kelantan

Study Duration

3 months

Reference Population

Staffs working in USMKK

Source Population

Staffs working in Hospital USM

Inclusion and Exclusion Criteria

Inclusion criteria

1. Allied health professional and supporting staff working in Hospital USM *
2. Both male and females
3. Regardless of marital status

Exclusion criteria

1. Do not consent
2. Incomplete answer

Both married or unmarried individual are eligible to answer all questions, in view of these individuals may get marry in future, and they are also carrying responsibility in the well-being of their future spouse and offspring. Hence, both married or unmarried male or female are included.

* According to NHS, WHO, the allied health/supporting medical staff include non-nurse, non-physician health care providers. They include audiologists, physical therapists, occupational therapists, diagnostic medical personnel (laboratory scientists/assistants, radiographers, nutritionists, dietitians, physician assistants, health information technologists, counselors ,etc.

* The number of individual subgroups of occupation may be small to make individual analysis, in addition, the interest group is the supporting staff as a whole, we do not exclude dietitians/nutritionists who presumably may possess higher knowledge. Besides, attitude and perception may not correlate with the level of knowledge itself.

Sample size calculation

For this study, we calculated the sample size applied with independent prospective 2 proportions.

For knowledge

Variable	P ₀	P ₁	Sample size, n	Corrected sample size, n+10%	Reference
Gender	<u>Male</u> (0.26)	Female (0.43)	122	134	Sevilay Temel

Prior data indicate that the failure rate among controls is 0.26. If the true failure rate for experimental subjects is 0.43, we will need to study 122 experimental subjects and 122 control subjects to be able to reject the null hypothesis that the failure rates for experimental and control subjects are equal with probability (power) 0.8. The Type I error probability associated with this test of this null hypothesis is 0.05. We will use an uncorrected chi-squared statistic to evaluate this null hypothesis.

There are no strong and enough data on the association of other factors with knowledge of pre-conceptional folic acid intake (ethnicity, marital status, history of neural tube defect)

The expected sample size is 268 subjects, including both genders.

Sampling Method

We will apply convenient sampling method. Firstly we will approach human resources to obtain contact of the staff. The subject will be selected using stratified random

sampling. They will be contacted individually by the researcher and explained regarding the study. A link to the validated questionnaire in google form format will be given by email or whatsapp. The participants will complete and submit. The identity of the participants is anonymous, no name will be revealed.

Research Tool

1. The questionnaire consists of:

- Section 1: Socio-demographic data which elicits information on age, gender, marital status, race, academy year, marital status, number of children, children with birth defects, family member with birth defects, heard of folic acid and folic acid campaign.
- Section 2: The Folic Acid Knowledge, Attitude, Perception Questionnaire consists of 3 parts.
- Part I: Seven questions were used to measure participants' knowledge. A correct answer earned 3 points; a wrong answer added 2 points; and an answer "do not know" get 1 point. The range of the knowledge scores was 7 to 21.
- Part II: Each participant will answer 8 out of the 16 questions in the assessment of attitude, with responses on a 3-point Likert scale from "Agree", "Not Sure", "Disagree". A correct answer will be given 3-point, a wrong answer will receive 2 point, and an answer "not sure" will receive 1 point. The range of the score will be from 8 to 24 points.
- Part III: Fifteen questions were used to measure perception, with responses on a 3-point Likert scale, similar to Part II. There are from "Agree", "Not Sure", to "Disagree.". A correct answer will be given 3-point, and a wrong answer will

receive 2 point, and an answer “not sure” will receive 1 point. The range of attainable scores for perception statements was 15 to 45 points.

- Hence, the higher the score, the higher the public perceptions of preconception FA intake.
- Each item in the domain will be summed up and presented as the total score.
- Categorization for the participants’ knowledge about preconception FA intake will be as follows; inadequate if <60% of all questions were answered correctly and adequate if >60% out of all the questions were answered correctly. (Hanan et al, 2016, Tan et al 2018).
- The scoring system for perception consisted of negative if <60% of all statements were answered correctly and positive if >60 out of all the statements were answered correctly.

Data Analysis

Data will be analyzed with SPSS software.

Descriptive statistics will be used to summarize the socio-demographic characteristics of subjects. We would like to present the numerical data as mean (SD) or median (IQR) based on their normality distribution. As for categorical data, it will be presented as frequency (percentage).

For the domain of knowledge, attitude, and perception, quantitative analysis will be described as frequency and percentage in each item response.

Simple and multiple regression analysis will be applied to determine the sociodemographic factors associated knowledge, attitude and perception on the intake of preconceptional folic acid.

Expected Results

Table 1: Sociodemographic characteristic

	Number	Percentage
Gender Male Female		
Ethnic Malay Chinese Indian Others		
Age		
Education Secondary school College University degree Master Doctorate		
Marital Status Married Unmarried		
Number of children		
Family members with birth defect		

Table 2.1: Knowledge of Preconceptional intake of Folic Acid in preventing NTDs

	Statement	True No.(%)	False No.(%)	Don't know No.(%)
1	Folic acid is a B vitamin?			
2	Folic acid is a type of food supplement?			
3	Folic acid reduces the risk for birth defects?			
4	Childbearing women should take folic acid 400 micrograms (μg) daily before pregnancy and throughout the first 12 weeks.			
5	Women should take folic acid if she is capable of becoming pregnant even if she is not planning a pregnancy?			
6	Only women who had one pregnancy affected by birth defect should take folic acid before pregnancy?			
7	Only women whose family members had a pregnancy affected by birth defect should take folic acid before pregnancy?			

Table 2.2: Attitude of Preconceptional intake of Folic Acid in preventing NTDs

	Statement	Agree No.(%)	Not sure No.(%)	Disagree No.(%)
1	Taking folic acid daily is a burden			
2	Taking folic acid daily is important for health			
3	I need to know about the need of folic acid intake for a woman			
4	I would advise woman and my friends to consume folic acid before and during early pregnancy			
	QUESTION BELOW IS FOR WOMEN PARTICIPANT ONLY			
1	I have no problem taking folic acid although I'm not pregnant.			
2	I would take folic acid every day before and during early pregnancy.			
3	I would take folic acid only if recommended by health staff.			
4	I would not take folic acid if family members are not allowed.			
	QUESTION BELOW IS FOR MALE PARTICIPANT ONLY			
1	I agree with my wife taking folic acid before and during early pregnancy			
2	I agree with my wife taking folic acid even she is not pregnant.			
3	I would advise my wife to take folic acid before and during early pregnancy.			
4	I would remind my wife to take folic acid every day before and during early pregnancy			

Table 2.3: Perception of Preconceptional intake of Folic Acid in preventing NTDs

	Statement	Agree No.(%)	Not sure No.(%)	Disagree No.(%)
1	Folic acid can cause women to put on weight			
2	Folic acid use is associated with women having big babies			
3	Folic acid can cause side effect to the mother.			
4	Folic acid can cause side effect to the unborn baby.			
5	Taking a balanced diet is sufficient to meet the daily requirement of folic acid.			
6	Folic acid is easily accessible in all public hospitals/clinics			
7	Busy schedule makes consuming folic acid difficult.			
8	Having a baby with birth defects is shameful			
9	Anyone can have a birth defects child.			
10	Birth defects should be prevented as it can cause burden to the family.			
11	Birth defects should be prevented as it can cause burden to the country.			
12	Birth defects should be prevented as it can cause death to the baby.			

13	Brochures about folic acid intake among women can help me to increase my awareness in the prevention of birth defects.			
14	Having a baby with birth defects is a destiny.			
15	Having a baby with birth defects is a punishment from god.			

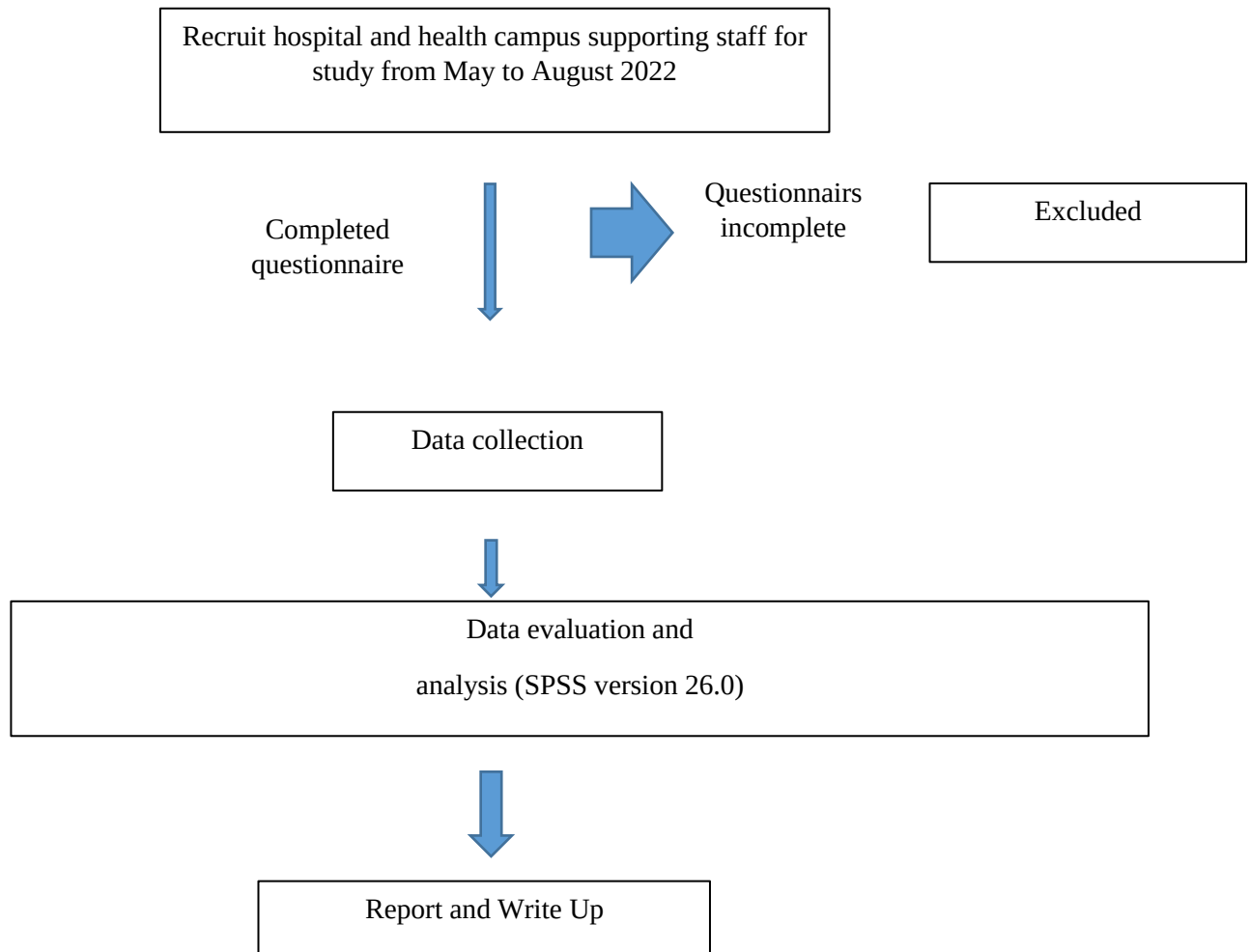
Table 3: Participants knowledge, attitude, perception score on Preconceptional intake of Folic Acid in preventing NTDs

		Percentage (%)	Standard Deviation
Knowledge	Adequate(>60%)		
	Inadequate (<60%)		
Attitude	Adequate(>60%)		
	Inadequate (<60%)		
Perception	Adequate(>60%)		
	Inadequate (<60%)		

Table 4: Factors association between socio-demographic and the supporting staff knowledge, attitude, and perception score on preconception FA use in preventing birth defects, using simple and multiple logistic regression.

Characteristics	Adequate knowledge N(%)	Inadequate knowledge N(%)	Simple logistic regression		Multiple logistic regression	
			Crude OR (95%)	P value	Adjusted OR (95%)	P value
Gender Male Female						
Age						
Ethnic Malay Chinese Indian Others						
Education Secondary school 4College University degree Master Doctorate						
Marital status Married Unmarried						
Family members with birth defect						

FLOW CHART



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Recruitment				
Data Collection				
Analysis				
Report and Submission				

Study Tool

A validated questionnaire adopted from Tan BK et al with permission, as attached at Appendix.

Subject Vulnerability

The subjects are given full freedom to participate or not. They may not benefit directly from the participating the study, however it is believed that the study may create an awareness and insight to the participating subjects regarding the study issue. Participants are given the freedom to withdraw from the study any time. The data related to the subject will be independent and will not be disclosed to the management authority to be used from any achievement assessment and a decision related to work.

All forms are anonymous and will be entered into SPSS software. Only research team members can access the data. Data will be presented as grouped data and will not identify the responders individually. Data which may disclose responders' identity will be disposed.

There is no conflict of interest. Researchers do not own or in cooperation with any company that produce and sell folic acid supplements.

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