INFLUENCING FACTORS ON OVERNUTRITION AMONG CHILDREN IN A PRIVATE KINDERGARTEN, BANGKOK

SIRIKUNYA TORUGSA

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR
THE DEGREE OF MASTER OF SCIENCE (PUBLIC HEALTH)
MAJOR IN NUTRITION
FACULTY OF GRADUATE STUDIES
MAHIDOL UNIVERSITY
2008

COPYRIGHT OF MAHIDOL UNIVERSITY

Thesis
Entitled

INFLUENCING FACTORS ON OVERNUTRITION AMONG CHILDREN IN A PRIVATE KINDERGARTEN, BANGKOK

Sirikunya Torugsa
.....
Miss Sirikunya Torugsa
Candidate

.....
Asst. Prof. Suwat Srisorrachatr,
Ph.D. (Medical Social Sciences and Public Health)
Major-Advisor

P. Pavadhgul
.....
Lect. Patcharanee Pavadhgul,
Ph.D. (Nutrition)
Co-Advisor

Kitiphong H.
.....
Lect. Kitiphong Harncharoen,
Ph.D.(Biological Science)
Co-Advisor

B. Mahaisavariya
.....
Prof. Banchong Mahaisavariya,
M.D.
Dean
Faculty of Graduate Studies

Rewadee Chongsuwat.
.....
Asst. Prof. Rewadee Chongsuwat,
Ph.D.
Chair
Master of Science (Public Health)
Major in Nutrition
Faculty of Public Health

Thesis
Entitled

INFLUENCING FACTORS ON OVERNUTRITION AMONG CHILDREN IN A PRIVATE KINDERGARTEN, BANGKOK

was submitted to the Faculty of Graduate Studies, Mahidol University
For the degree of Master of Science (Public Health)
Major in Nutrition
on
13 May, 2008

Sirikunya Torugsa
.....
Miss Sirikunya Torugsa
Candidate

Pensri Phijaisanit
.....
Emeritus Prof. Pensri Phijaisanit,
M.D.,M.P.H., Dip Amer. Board of Pediatrics
Chair

Suwat Srisorrachatr
.....
Asst. Prof. Suwat Srisorrachatr,
Ph.D. (Medical Social Sciences and Public Health)
Member

Kitiphong H.
.....
Lect. Kitiphong Harncharoen,
Ph.D. (Biological Science)
Member

P. Pavadhgul
.....
Lect. Patcharanee Pavadhgul,
Ph.D. (Nutrition)
Member

B. Mahaisavariya
.....
Prof. Banchong Mahaisavariya,
M.D.
Dean
Faculty of Graduate Studies
Mahidol University

Phitaya Ch, M.D.
.....
Assoc. Prof.Phitaya Charupoonphol,
M.D., Dip Thai board of Epidemiology
Dean
Faculty of Public Health
Mahidol University

ACKNOWLEDGEMENTS

The success of this thesis can been attributed to the extensive support and assistance from my major advisor, Assist. Prof. Suwat Srisorrachatr and my co-advisors, Lieut. Dr. Kitipong Harncharoen and Lect. Patcharanee Chaita. I deeply thank them for their valuable advice and guidance in this research.

I would like to thank Assoc. Prof. Mandhana Pradipasen, Department of Nutrition, Faculty of Public Health, Mahidol University, Asst. Prof. Dr. Supron Apinantavech, Department of Nutrition, Faculty of Public Health, Mahidol University, and Apaporn Powwattana, Ph.D., Department of Public Health Nursing School of Public Health, Mahidol University, for their kindness in providing suggestions for improvement the questionnaire.

I would like to thank Director and teachers of Putharuksa kindergarten. Thanks also goes to all students and their parents who participated to examine quality of questionnaire in this study.

I would like to thank Director and teachers of Petcharawutwittaya School. Thanks also goes to all students and their parents who were the samples in this study for their participation.

Finally, I would like to thank my sister for supported me to corrected data. I am grateful to my parents for their cheerfulness, kind support, suggestion-advise, entire care and love.

Sirikunya Torugsa

INFLUENCING FACTORS ON OVERNUTRITION AMONG CHILDREN IN A PRIVATE KINDERGARTEN, BANGKOK

SIRIKUNYA TORUGSA 4636760 PHPH/M

M.Sc. (PUBLIC HEALTH) MAJOR IN NUTRITION

THESIS ADVISORS: SUWAT SRISORRACHATR, Ph.D. (MEDIACL SOCIAL SCIENCES AND PUBLIC HEALTH), PATCHARANEE PAVADHGUL, Ph.D. (NUTRITION), KITIPHONG HARNCHAROEN, Ph.D. (BIOLOGICAL SCIENCE)

ABSTRACT

The prevalence of obesity in young children, especially children living in urban society, has increased. Obesity in children has an impact on physical and mental health, and increases the risk of being obese in adulthood. This cross-sectional study aimed to investigate factors that might affect nutritional status among preschool children. The variables were parental factors such as education, occupation, BMI, personal ailment, factors relating to the mother such as awareness of childhood obesity behavior towards food selection (especially in regards to high-fat and high-calorie foods) and free-time management (in terms of time spent with the child). The subjects were 118 children, aged 4-5 years who were studying in a private preschool under the office of the Private Commission, Bangkok. The data was collected on February, 2007 by self administrated questionnaires which were sent to parents, and the children were measured by their weight and height by using an electronic weighing machine and a microtoise. Obtained data were analyzed using data analysis software for percentage, average, SD, Odds ratio, Pearson Chi-square, and Fisher-exact with the significant level ≤ 0.05. The results showed that 21.2% of children were of an over-nutritional status. There was significant difference between the mothers' behavior score on food selection and the children's nutritional status ($p<0.05$). Among children in the normal nutrition group, the score in food selection was evaluated as moderate and low level (66.7%, 23.7% of total normal weight, respectively), and the mothers' behavior score in free time management were evaluated as moderate and low level (65.6%, 20.4% of total normal weight, respectively). These results revealed that mother's behavior regarding food selection and free-time management were "risk" behaviors that could cause children of normal weight to become obese in the future. This research concluded that the over-nutritional weight of preschool children remains a problem in private kindergartens, and a mother's behavior concerning food selection could influence a child's nutritional status. It is necessary to promote nutritional guidelines among mothers whose children are overweight and of normal nutritional status in order to reduce risk factors and prevent obesity in preschool children.

KEY WORDS : PRESCHOOL / NUTRITIONAL STATUS / FOOD SELECTION

84 pp.

ปัจจัยที่มีอิทธิพลต่อภาวะโภชนาการเกินในเด็ก ซึ่งกำลังศึกษาในโรงเรียนอนุบาล หลักสูตรการศึกษาเอกชน กรุงเทพมหานคร (INFLUENCING FACTORS ON OVERNUTRITION AMONG CHILDREN IN A PRIVATE KINDERGARTEN, BANGKOK)

สิริกัญญา โตรักษา 4636760 PHPH/M

วท.ม. (สาธารณสุขศาสตร์) สาขาวิชาเอกโภชนวิทยา

คณะกรรมการควบคุมวิทยานิพนธ์: สุวัฒน์ ศรีสรฉัตร์, Ph.D. (Medical Social Sciences and Public Health), พัชราณี ภวัตกุล, Ph.D. (Nutrition), กิติพงษ์ หาญเจริญ, Ph.D. (Biological Science)

บทคัดย่อ

ความชุกโรคอ้วนในเด็กเล็กถูกพบมากขึ้นโดยเฉพาะอย่างยิ่งเด็กที่อาศัยอยู่ในสังคมเมือง ปัญหาโรคอ้วนในเด็กมีผลกระทบต่อภาวะสุขภาพของเด็กทั้งทางร่างกายและจิตใจ การวิจัยเชิงสำรวจนี้จัดทำเพื่อศึกษาปัจจัยที่มีอิทธิพลต่อภาวะโภชนาการเกินในเด็กวัยก่อนเรียน ได้แก่ ปัจจัยจากบิดาและมารดา เช่น การศึกษา,อาชีพ,BMI, โรคประจำตัว, รายได้เฉลี่ยต่อเดือนของครอบครัว และปัจจัยจากมารดา เช่น ประวัติการได้รับความรู้เรื่องโรคอ้วนในเด็ก, ความเชื่อด้านสุขภาพของมารดาต่อบุตร และการเลี้ยงดูด้านการเลือกชนิดของอาหารและการจัดเวลา กลุ่มตัวอย่างในการศึกษาเป็นเด็กอายุ 4-5 ปี ที่กำลังศึกษาอยู่ในโรงเรียนสังกัดการศึกษาเอกชน กรุงเทพมหานคร จำนวน 118 คน เก็บข้อมูลโดยการชั่งน้ำหนัก-วัดส่วนสูงในเด็ก และส่งแบบสอบถามในการเก็บข้อมูลทั่วไปจากบิดามารดา รวมทั้งเก็บข้อมูลด้านการรับรู้และการปฏิบัติในด้านเลี้ยงดูบุตรของมารดา วิเคราะห์ข้อมูลโดยใช้โปรแกรมคอมพิวเตอร์ ด้วยค่าความถี่ ร้อยละ ค่าเฉลี่ย ส่วนเบี่ยงเบนมาตรฐาน ค่าสถิติ Odds ratio, Pearson Chi-square, และ ค่าFisher-exact ที่ระดับค่าความเชื่อมั่นที่ 0.05 จากผลการวิจัย พบว่า เด็กกลุ่มตัวอย่างมีภาวะโภชนาการเกินอยู่มากถึงร้อยละ 21.2 ซึ่งแสดงให้เห็นว่าในเด็กวัยก่อนเรียนในโรงเรียนหลักสูตรการศึกษาเอกชนที่ทำการศึกษามีปัญหาภาวะโภชนาการเกิน จากการวิเคราะห์ปัจจัยต่างๆที่ทำการศึกษา พบว่าปัจจัยการเลี้ยงดูของมารดาด้านอาหารมีอิทธิพลต่อการเกิดภาวะโภชนาการเกินของเด็กกลุ่มนี้ ($p<0.05$) มากไปกว่านั้นเมื่อพิจารณาปัจจัยจากมารดาในด้านการเลี้ยงดูด้านอาหารและการจัดการเวลาว่างต่อบุตร จะพบว่ามารดากลุ่มที่มีบุตรน้ำหนักตัวอยู่ในเกณฑ์ปกติ มีพฤติกรรมที่ให้ค่าประเมินแล้วอยู่ในเกณฑ์ที่เสี่ยงที่บุตรอาจจะมีแนวโน้มมีภาวะน้ำหนักตัวเกินได้หากมารดายังคงพฤติกรรมเลี้ยงดูบุตรดังกล่าวต่อไป จากผลการวิจัยดังกล่าวควรหามาตราการส่งเสริมให้มารดามีพฤติกรรมการเลี้ยงดูบุตรด้านโภชนาการและการจัดการเวลาให้บุตรอย่างถูกต้องทั้งในกลุ่มมารดาที่มีบุตรน้ำหนักตัวเกินเกณฑ์และมารดาที่มีบุตรน้ำหนักตัวอยู่ในเกณฑ์ปกติเพื่อลดความชุกของโรคอ้วนในเด็กวัยก่อนเรียนและลดความเสี่ยงต่อปัญหาสุขภาพของเด็กกลุ่มนี้ในอนาคต

84 หน้า

CONTENTS

		Page
ACKNOWLEDGMENT		**iii**
ABSTRACT		**iv**
LIST OF TABLES		**viii**
LIST OF FIGURES		**x**
CHAPTER		
I	**INTRODUCTION**	
	Background	1
	General objectives	5
	Specific objectives	5
	Research hypotheses	5
	Scope of the study	6
	Variables of the study	6
	Operational definition	6
	Conceptual framework	10
II	**LITERATURE REVIEW**	
	1. Preschool children	11
	2. Mother with preschool-aged children	13
	3. Obesity in children	14
	4. Related theory: The Health Belief Model	18
	5. Related research	20
III	**MATERIALS AND METHODS**	
	1. Research design	26
	2. Population and Sample	26
	3. Instruments of the study	27
	4. Validity and reliability of instruments	31

CONTENTS (Continued)

		Page
	5. Data collection	31
	6. Ethical consideration	32
	7. Data analysis	33
IV	**RESULTS**	
	1. General characteristics of children	35
	2. General characteristics of parents	36
	3. Analytical statistics of factors influencing to children's nutritional status	49
V	**DISCUSSION**	**60**
VI	**CONCLUSION AND RECOMMENDATION**	**67**
REFERENCES		**72**
APENDIX		**77**
BIOGRAPHY		**84**

LIST OF TABLES

Table		Page
1	Prevalence of over-nutrition school-children in Bangkok, Thailand	2
2	Recommended dietary allowances for energy and protein for children	12
3	Vitamins and mineral requirement for pre-school children age	13
4	Number and percentage of children's characteristics	35
5	Number and percentage of mother's characteristics	36
6	Number and percentage of father's characteristics	37
7	Number and percentage of family monthly income (baht)	39
8	Number and percentage of mothers' personal ailment	39
9	Number and percentage of fathers' personal ailment	40
10	Number and percentage of mother obtained childhood obesity prevention knowledge from media or magazine during the past 1 year	40
11	Mother's perceptional scores toward their child	41
12	Mother's behaviors in term of food selection for children per week classify by item	46
13	Mother's behaviors towards their children in terms of time management per week classify by item. (n =118)	48
14	Association and Odds ratio (OR) between sex of children and children's nutritional status by Pearson Chi-square.	49
15	Association and Odds ratio between age of children and children's nutritional status by Pearson Chi-square. (n =118)	50
16	Association and Odds ratio between mother's factors and children's nutritional status by Pearson Chi-square. (n =118)	51
17	Association and Odds ratio between father's factors and children's nutritional status by Pearson Chi-square. (n =118)	53
18	Association between parent's BMI and children's nutritional status by Pearson Chi-square. (n =118)	54

LIST OF TABLES (CONT.)

Table		Page
19	Association and Odds ratio between children's nutritional status and family monthly incomes by Pearson Chi-square	55
20	Association between parental personal ailments and children's nutritional status by Pearson Chi-square and Fisher-exact test.	56
21	Association between having obtained childhood obesity prevention knowledge of mothers in the past 1 year and children's nutritional status	57
22	Association between mean scores of perceived levels of mothers and children's nutritional status by Pearson Chi-square	58
23	Association between mother's behaviors and children's nutritional status by Pearson Chi-square	59

LIST OF FIGURES

Figure		Page
1	Conceptual framework	10
2	Behavioral mediator of family resemblances in eating-weight status	15
3	The Health Belief Model (HBM)	18

CHAPTER I
INTRODUCTION

Background

Nutrition problem of children has been changing from under-nutrition to over-nutrition especially childhood obesity. Over the past thirty years, the prevalence of obesity in children has risen greatly worldwide. According to the several studies have examined changes in prevalence within populations over time, and the results were astound that rates of childhood obesity had increased in many countries, In the USA 1971-74, the prevalence of childhood obesity at 6-11years old were 4 percent, and in 1999 that increased to 13 percent (3.3 folds over about 25 years). The latest estimates suggested that 16 percent of children between the ages of 6 and 19 were overweight (1). In England 1984, the prevalence of childhood obesity at 4-11years old of the boy and girl were 0.6 and 1.3 percent, and it were increased to 1.7 and 2.6 percent in 1994 respectively (2.8-folds and 2.0 -folds over 10 years). In Japan 1970, the prevalence of childhood obesity at 10 years old of boys and girls were less than 4 percent, and that increased to 10 and 9 percent respectively in 1996 (1). In 1995 The World Health Organization (WHO), estimated that globally 17.6 million children under 5 years old were overweight (2).

In Thailand, The Department of Health, Ministry of Public Health (MOPH), conducted the nutritional status of school children in Bangkok by among 2,885 students grades 1-6 from 8 schools in 1992 to 1994, found that the student who study under the metropolitan Bangkok areas had an obesity prevalence rate changed from 11.2 to 14.6 percent, student who study under the private committee education offices had an obesity prevalence rate changed from 25.7 to 28.1(3,4). In 2000, The Nutrition Division, Department of Health, Ministry of Public Health, reported the prevalence of over-nutrition children in preschool and primary school student age 6-14 years old from 12 areas of Public Health Region in Thailand that showed in Table 1.

Table 1 Prevalence of over-nutrition in preschool and primary school student age 6-14 years old by 12 areas of Public Health Region in Thailand, 2000

Area	Province	Number of student	Over-nutrition (%)
1	Nonthaburi	269	19.7
2	Saraburi	396	18.4
3	Chonburi	518	16.0
4	Rachaburi	400	14.8
5	Nakhon Ratchasima	1709	11.4
6	Khon Kaen	1093	10.2
7	Ubon Ratchatani	991	12.9
8	Nakhon Sawan	502	17.7
9	Phitsanulok	616	12.3
10	Chiang Mai	708	12.7
11	Nakhon Si Thamarat	1248	15.6
12	Yala	802	13.0
	Total	**9,252**	**13.6**

From the table 1, showed the prevalence of over-nutrition among preschool and primary school student age 6-14 years old that collected from Health Promotion Center in all urban areas in Thailand, the prevalence of 9,252 children were 13.6 percent (3-7). In addition, according to fact sheet of World Heart Foundation, 2003 reported the prevalence of children obesity at ages 6-12 years in Thailand rose from 12.2 to 15.6 percent within 2 years. In regard to the data mentioned above, it could be concluded that the prevalence of obesity in children were increasing every year, This could be clearly explained that childhood obesity had been dramatically increasing and going to be the important problem in worldwide.

During the same time, many researchers explained that the obesity in childhood was associated with many health problems and it could progress to obesity in adulthood. The obesity in young can lead to bowing and overgrowth of leg bones, and recent studies suggested that overweight and obesity in childhood reduce bone mineral content. Moreover, childhood obesity, it was one of the leading causes and long-term health consequences, including of hypertension, type 2 diabetes, high blood

pressure, coronary heart disease, hyperlipidemia, sleep apnea and respiratory disease (1). Many people paid a lot of money for protection and treatment of diseases that were associated with obesity.

Impact of childhood obesity had stimulated interest to identification of early markers to predict the development fatness and factors were leading to adiposity in children. Several studies found that the many factors related to children's nutritional status such as the influence from society environment, varieties media-knowledge factors, socio-economic factors, school environment, genetic and family environmental factors. The family environmental factors were potential to develop child behaviors and eating style, and they were close factor to do with the child. Moreover, within family, the influences that interaction between parent-child especially parent's behaviors to do with the child that were lead to adiposity in children such as feeding styles, rearing behaviors, food availability within family(8, 9). Some researchers suggested the factors acting during early and middle of childhood which may have a potentially important mechanism in the developing of obesity in young children (8-10). The parent's behaviors are the interaction that takes place between parents and children during meal. Child-parent behaviors are the key contents for the development of food preferences, patterns of food intake, eating styles, and activities preferences that are developing weight status in their children, these were the importance of "the behavior relationship" its implications for obesity(8-10).

The parent's behaviors, the first question is between mother and father who care for the child. In Thailand, according to the study of Wongboonsin K. (12-13), Institute of population studies, 1996 in nurturing 3-5 years old children in city and rural areas of Thailand. From this study, it can be assumed that in Thailand mothers still takes care of their 0-5 years old children more than anyone else. The researcher used this assumption to refer that mothers are still significant for raising their preschool children more than other caregivers. However, Mother is the main person who cares for children. Her role varies a great deal according to the age of the child (less time is spent with the passing of time) and according to social, economic, cultural and family circumstances.

In Thailand, Childhood obesity is dramatically increasing. It was associated with many health problems. So, it is very important to identify the causes of obesity in a child in order to prevent health problems and reduce morbidities and mortality in adulthood. In addition, the aim of public health, we focus on health prevention and health promotion for the good health and good quality of life of people. The prevention of childhood obesity would be one of our major tasks. There are many conditions that have influence on mothers' behaviors. These include parent body mass index, educational level of parent, parent occupation. These mean that the levels of these things are special conditions of each family. For this purpose, the researcher has to identify the causes of childhood obesity clearly. Then, the researcher interested in the influence of mother's behaviors and some factors that involving with parental behaviors in family such as BMI of parent, parental education, occupation, personal aliment, monthly income of family, perceived levels of mothers in health believe model and having received childhood obesity prevention knowledge of mothers on nutritional status of preschool children especially children studying in a private kindergarten in Bangkok.

General Objective

This research with aimed to investigated factors between parental factors and mother's behaviors on nutritional status of their child who studied in a kindergarten that was under the office of the Private Commission, Bangkok.

Specific Objectives

Base on the purpose of this research, the general objective can be further classified into various types of specific purposes in order to search more information on factors on child nutritional status. Thus, this research endeavors as follows:

1. To study the nutritional status of children 4-5 years old who studied in a kindergarten under the office of the Private Commission, Bangkok

2. To study the relationship between parental factors (BMI of parent, parental education, occupation, personal aliment, family monthly incomes) on nutritional status of their children.

3. To study the relationship between having obtained childhood obesity prevention knowledge of mother, perceived levels of mothers in health believe model and mother's behaviors on nutritional status of their children.

4. To analyze the association between the parental factors, the mother's HBM and mother's practices on nutritional status of the children.

Research hypotheses

1. Parental factors regarding education level, occupation, BMI and personal aliment associated with nutritional status of their children.

2. Family monthly incomes of associated with nutritional status of their children.

3. Having obtained childhood obesity prevention knowledge of mothers associated with nutritional status of their children.

4. Perceived levels of mothers in health believe model associated with nutritional status of their children.

5. Mother's behaviors on food selection for their child associated with nutritional status of their children.

6. Mother's behaviors toward children in term of free time management associated with nutritional status of their children.

Scope of the study

Samples of this study were students, age 4-5 years old and their parents. The children were studying in a Petcharawutwittaya school (kindergarten) under the office of the Private Commission located in Bangkok Metropolitan on February, 2007.

Variables of the study

Independent variables:

1. Parent factors (BMI, education level, occupation and their personal aliment).
2. Family monthly incomes
3. Having obtained childhood obesity prevention knowledge of mothers
4. Perceived levels of mothers in Health Believe Model
5. Mother's behaviors on food selection for their child
6. Mother's behaviors toward children in term of free time management

Dependent variables:

Nutrition status of preschool children were divided into 2 group as

1. Normal group
2. Over-nutrition group

Operational definition

1. Preschool children mean children who 4-5 years of aged both male and female, and studied in a private kindergarten located Bangkok Metropolitan.

2. Over-nutritional status means a child who was assessed weight for height more than 1.5 Standards Deviation when compare with the standard weight-height by Growth Chart Development of 1 day-19 years old of Department of Health, Ministry of Public Health, 1999 (14).

3. Normal nutritional status means child who was assessed weight for height that has between the sum and remainder of -1.5 and +1.5 Standard Deviation when

compare with the standard weight-height from Growth Chart Development of 1 day - 19 years old of Department of Health, Ministry of Public Health, 1999 (14).

4. Factors affecting child rearing behavior of mothers were individual factors (level of education, occupation, average household income, parents' familiarity to obesity in children, congenital disease) and perception of mothers on health belief model theory.

5. Education level means the highest education level that was divided into 6 levels as follows:

5.1 Primary school refers to finished grade 6 in primary school.

5.2 Junior high school refers to finished grade 9 in secondary school.

5.3 Senior high school refers to finished grade 12 in secondary school.

5.4 Vocational education refers to finished vocational training or completed grade 9 and continued studied not more than three years curriculum.

5.5 University education refers to finished university education in bachelor degree or higher.

5.6 Master's or doctor's degree refers to finished university education in higher bachelor degree.

6. Occupation means the main occupation of parents that were divided into 6 groups as follows:

6.1 Government officer

6.2 State enterprise employee

6.3 Private enterprise

6.4 Trading means having Self employee own or business

6.5 Worker means working in laborer

6.6 Housewife means to keep care of her house

7. Body Mass Index (BMI) means the nutritional status of a person whose weight and body shape condition is calculated. The classification system in adult Asian is as follows:

7.1 Underweight refer to a BMI less than 18.5 kg/m2

7.2 Normal refer to a BMI between 18.5 to 22.9 kg/m2

7.3 At risk of obesity refer to a BMI between 23.0 to 24.9 kg/m2

7.4 Obese level 1 refer to a BMI between 25.0 to 29.9 kg/m2

7.5 Obese level 2 refer to a BMI equal to and more than 30 kg/m2

8. Mother's behaviors of refers to activity of mothers in nurturing their children aged between 4-5 years. The activity involves 2 issues related to weight status: type of food, high-fat and high-energy, and children free time management (fun and games/exercise/relax). The behavior is evaluated from questionnaires developed by the researcher from literature review.

9. Mother's behaviors mean nutritional practices of mothers to do with their child. In this study, researcher divides the behaviors as follows:

9.1 Mother's food selection behaviors refer to the practices of mother in selection some high fat-energy-dense foods such as snacks, sweets, high fat-carbohydrate foods (junk foods, fast foods) and soft drink on children. This practices toward to obesity risk on their children.

9.2 Mother's behavior towards children in terms of free time management spending refer to the time spending on weekends or after school of mothers for their children such as to let children watching TV, play computer games, exercise etc.

10. Perceived levels of mothers in Health Believe Model mean mothers' perception of childhood obesity in 4 aspects of Health Believe Model as follows:

10.1 Perceived Susceptibility refers to mother's perception of the risk of contracting obesity in their child or perception of risk of obesity in children..

10.2 Perceived Severity refers to mother's feelings concerning the seriousness of contracting an illness or of leaving it untreated from obesity in children.

10.3 Perceived Benefits refers to mother's believe effectiveness of strategies designed to reduce the threat of illness from obesity in children.

10.4 Perceived Barriers refers to the mother's potential negative consequences or belief that may result to health prevention from obesity on children or perception of barrier of children upbringing behavior to prevent childhood obesity

11. Heath motivation refers to caring and concerning level of mother for her child's health. The motivation to prevent obesity in child may come from mother's health concern, such as sickness that causes troubles with her body and mind. This influence affects how to raise her child. The motivation to prevent obesity in child

may be from her belief in risk, pressure, and other external forces, for example, news and doctor's advice can motivate a mother for health concern.

12. Mothers' had received childhood obesity prevention knowledge means having received childhood obesity prevention knowledge of mothers in the past 1 year from various media such as TV or magazine.

13. Family monthly incomes mean the total incomes of family per month.

14. Criteria for parents age grouping

- Young: aged between 18-25 years
- Adult: aged between 26-35 years
- Middle: aged between 40-55 years
- Elderly: aged more than 55 years

15. Criteria for average household expenditure grouping: refers to an average household expenditure of 18,860 baht (15).

Conceptual Framework

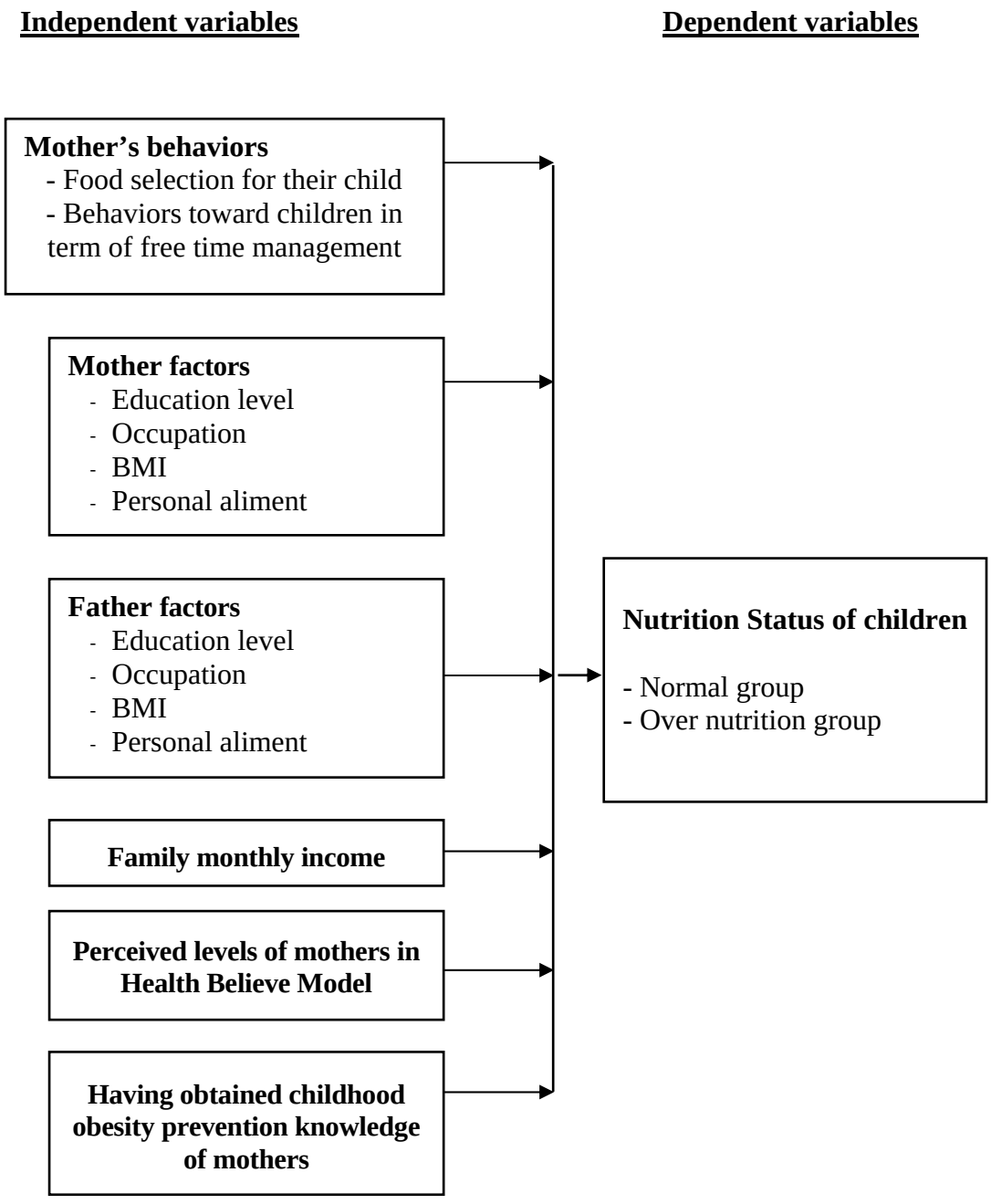

Figure 1 Conceptual framework of research

CHAPTER II
LITERATURE REVIEW

This study researcher has searched the information from various documents and relevant researches. This chapter presented the literature reviews including:

1. Preschool children
   1.1 Meaning
   1.2 Nutrient requirement of preschool children
2. Mother with preschool-aged children
3. Obesity in children
   3.1 Factors involved in obesity in children.
   3.2 Health impact of obesity in children
   3.3 Role of parents in the determination of children's food preferences and the development of obesity
4. Related theory: The Health Belief Model (HBM)
5. Related researches

1. Preschool children (kindergarten)

1.1 Meaning of preschool children

A child between two and six years of age or refers to 3-6 years old children (17), which are growing up, gradually independent, and depending on themselves. These ages are one of the most important times, when the human characters are built. Sigmund Freud believed that children's behaviors would appear in the first 5 years of their lives, which is the most important period to develop their personalities. This belief was related to Silchai's belief, which assumed that the first five years of human is the most learning time to develop the personality. After that, the basis and structure of the personality has already developed. Consequently, raising children and acting as the example are very important to children, because they will behave following their parents and close persons. Approximately ages between two

and a half and five years are for learning through exploration, experimentation and observation. This is a time when play is work and children can be successful. Pre-school children have become independent. They can walk, run, talk and manipulate objects. They are also practicing adult roles through symbolic play. Refers to children aged between 2 years and 6 months to 6 years. The early childhood period is highly significant to children brain development in order to reach its fullest potential. This is the most important period of children's learning and development of physical, mental, emotional and intellectual conditions.

1.2 Nutrient requirement of preschool

1.2.1 Energy and protein:

Dietary energy must be sufficient to ensure growth and spare protein from being used for energy without being excessive to cause obesity. Energy requirements of healthy growing children vary, mostly depending on their physical activity level and age. Energy requirements decline on age-specific basis from 102 Kcal/kg for 1-3 years old and 90 Kcal/kg for 4-6 years old. Protein needs approximately 1.2 g per kilogram or 17 g/day for children 1-3 years old and 1.1 g per kilogram or 26 g/day for children 4-6 years.

Table 2 Recommended dietary allowances for energy and protein for children

	Kcal		**Protein (g)**	
Age (Years)	Daily	Per (kg)	Daily	Per (kg)
1-3	1300	102	17	1.2
4-6	1800	90	26	1.1

Table 3 Vitamins and mineral requirement for pre-school children age

Vitamins and mineral	Pre-school children	
	1-3 years old	4-6 years old
1. Vitamin A (µg RE)	390	400
2. Vitamin D (mg)	10	10
3. Vitamin C (mg)	45	45
4. Vitamin B1 (mg)	0.7	0.9
5. Vitamin B2 (mg)	0.8	1.0
6. Niacin (mg)	9	11
7. Vitamin B6 (mg)	0.9	1.3
8. Vitamin B12 (mg)	0.7	1.0
9. Calcium (mg)	800	800
10. Phosphorus (mg)	800	800
11. Magnesium (mg)	150	200
12. Iron (mg)	10	10
13. Zinc (mg)	10	10
14. Iodine (µg)	70	90

2. Mother with preschool-aged children

In 1992, data from the project “Child care in Thailand: Determinants and health consequences for preschool-aged children. The sample in this project was children of mother in Bangkok Metropolitan. The researcher was interested in some problems in developing countries especially in metropolitan regarding caretaker problem. The fast developing countries have influences on child rearing practices. But not found the clearly result of caretaker with many factors, these included population factors, education, family system and work status that involved with child rearing

style. The results showed that children in the first three years of life were still taken care by mother. Among older pre-school children at aged 3-5 years-old, attendance at kindergartens and other early schools were as common as taking care by the mother(12-13).

The study of Wongboonsin K. (12-13), Institute of Population Studies, 1996 in nurturing 3-5 years old children of female in city and rural areas of Thailand had found that the younger the children, the more time needed to take care from their mothers. Their parents still spent their times taking care of their children more than others.

From above information, it can be assumed that in Thailand mothers still takes care of their 0-5 years old children more than anyone else. The researcher uses this assumption as references that mothers are still significant for raising their pre-school children more than other caregivers.

3. Obesity in children

3.1 Factors involved in obesity in children (9-11)

Factors involved in obesity in children had many variables such as family environment, the child (individual change: knowledge, skill and motivation), school-community based (environment change), media and social environment that had influenced during childhood. However, factors that closely influenced during early and middle of childhood may have an important mechanism in the development of childhood obesity. Concerning family factor, it is far more common for a child to be obese if one or both parents are obese than in families with normal weight and or lean parents. Nevertheless, it has been suggested that heredity does not concern only the genes, but also the inheritance of dietary habits, food intake, and lifestyle including physical activity level and spontaneous interest in exercise. Where there is a family risk of obesity, it is even more critical to pay close attention to the development of the child. Genetic factors may be the most important for the development of obesity; recessive monogenic inheritance may be involved. The aggregation of additional environmental factors at the family level may be very decisive, particularly when the family lives together. Similarly, delayed effects of the

factors influencing the growing organism in the early stages of the development may not be manifested until later periods of life. The situation is future complicated by additional factors inside and outside the family environment.

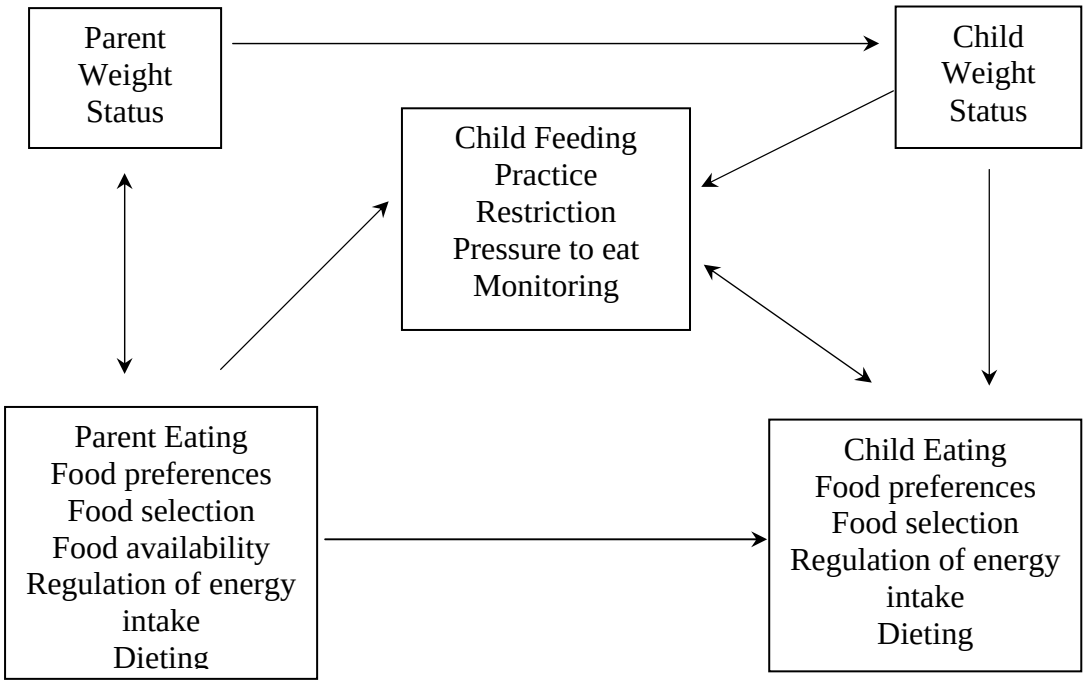

Figure 2 Behavioral mediator of family resemblances in eating-weight status

The environment around the child was also important especially in family. The family environment was a very essential part in child development both mind and physical particularly parent's own eating behaviors. Figure 2, present a conceptual model of how familial factors influence children's eating, and how these linkages mediate family resemblances in overweight. Aspects of eating behaviors that are learned by children within the family environment include children's food preferences, food selection, size and timing of meals.

In pathways that mediate familial patterns of overweight include the parent's own eating behaviors and their parenting practices, which influence the development of children's eating behaviors, and these in turn foster familial patterns of overweight. In particular, the eating behavior of parents who are overweight and who may have problems controlling their own food intake may serve as models for children's

developing eating behaviors. In addition, parents who are concerned about their child's risk of becoming overweight may adopt controlling feeding practices in attempts to reduce the risk or prevent overweight in their children. Although we have argued that behavioral mediators of family resemblances in weight status, such as disinherited or binge eating, and parenting practices in these behaviors may also have a genetic basis (27).

3.2 Health impact of obesity in children (1)

The obesity in childhood was associated with many health problems and it could progress to obesity in adulthood. In public health issue, many people paid a lot of money for the protection and treatment of diseases that were involved the obesity. Academics in public health classified the impacts of obesity in childhood into two parts: health impact and economic impact.

Health Impact

The health impacts of obesity in childhood are as follows:

- It is one of the leading causes of pediatric hypertension in children.
- It could progress to obesity in adulthood.
- It is associated with one of the leading types of diabetes (Type II diabetes mellitus).
- It increases the risk of coronary heart disease (high blood pressure is just one of the symptoms) associated with morbidity and mortality of these groups.
- It lowers the self-esteem of children and affects the relationship with the others (psychosocial disorders).
- It is associated with sleep apnea and respiratory diseases.
- It increases stress on the weight-bearing joint.
    - Among growing of youth, bone and cartilage in the process of development are not strong enough to bear excess weight. As a result, a variety of orthopedic complications occur in children and adolescents with obesity. In young children, excess weight can lead to bowing and overgrowth of leg bones.

- Increased weight on the growth plate of the hip can cause pain and limit range of motion. Between 30 to 50 % of children with this condition are overweight (50).

- It reduced bone mineral content.

- Body weight is considered to affect bones of children and adults, recent studies suggested that overweight and obesity in childhood and adolescence reduced bone mineral content. It is predicted base on weight that was associated with an increase incidence of childhood fractures (51).

3.3 Role of parents in the determination of food preferences of children and development of obesity (19)

The role of parental behavior in the development of food preferences is considered. Food preferences develop from genetically determined predispositions to like sweet and salty flavors and to dislike bitter and sour tastes. Particularly towards the second year of life, there is a tendency to avoid novel foods (neophobia). Food aversions can be learnt in one trial if consumption is followed by discomfort. There is a predisposition to learn to like foods with high-energy density. However, from birth genetic predispositions are modified by experience and in this context during the early years parents play a particularly important role. Parental style is a critical factor in the development of food preferences. Children are more likely to eat in emotionally positive atmospheres. Siblings, peers and parents can act as role models to encourage the tasting of novel foods. Repeated exposures to initially disliked foods can breakdown resistance. The offering of low-energy-dense foods allows the child to balance energy intake. Restricting access to particular foods increases rather than decreases preference. Forcing a child to eat a food will decrease the liking for that food. Traditionally, educational strategies have typically involved attempts to impart basic nutritional information. Given the limited ability of information to induce changes in behavior, an alternative strategy would be to teach parents about child development in the hope that an understanding of the characteristic innate tendencies and developmental stages can be used to teach healthy food preferences (19).

4. Related theory

The Health Belief Model (HBM)

The Health Belief Model (20) is a psychological model that attempts to explain and predict health behaviors by focusing on the attitudes and beliefs of individuals. The HBM was developed in the 1950s as part of an effort by social psychologists in the United States Public Health Service to explain the lack of public participation in health screening and prevention programs (e.g., a free and conveniently located tuberculosis screening project).

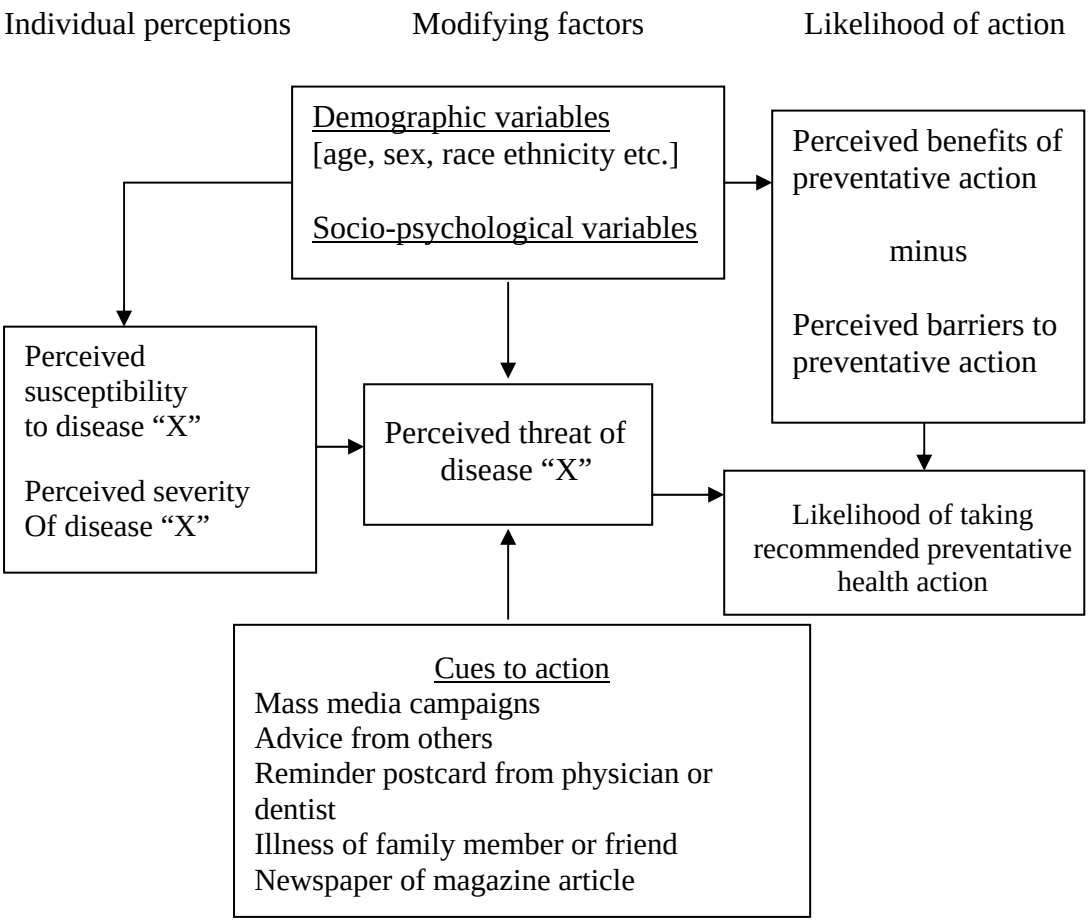

Figure 3 The Health Belief Model (HBM)

Since then, the HBM has been adapted to explore a variety of long- and short-term health behaviors, including sexual risk behaviors and the transmission of HIV/AIDS. The key variables of the HBM are as follows (Rosenstock, Strecher and Becker, 1994):

- **Perceived Threat:** Consists of two parts: perceived susceptibility and perceived severity of a health condition.
- **Perceived Susceptibility:** One's subjective perception of the risk of contracting a health condition
- **Perceived Severity:** Feelings concerning the seriousness of contracting an illness or of leaving it untreated (including evaluations of both medical and clinical consequences and possible social consequences)
- **Perceived Benefits:** The believed effectiveness of strategies designed to reduce the threat of illness
- **Perceived Barriers:** The potential negative consequences that may result from taking particular health actions, including physical, psychological, and financial demands
- **Cues to Action:** Events, either bodily (e.g., physical symptoms of a health condition) or environmental (e.g., media publicity) that motivate people to take action. A cue to actions is an aspect of the HBM that has not been systematically studied.
- **Other Variables:** Diverse demographic, socio-psychological, and structural variables that affect an individual's perceptions and thus indirectly influence health-related behavior.
- **Self-Efficacy:** The belief in being able to successfully execute the behavior required to produce the desired outcomes. (This concept was introduced by Bandura in 1977.)

“The Health Belief Model (HBM) is one of the first models that adapted theory from the behavioral sciences to health problems, and it remains one of the most widely recognized conceptual frameworks of health behavior. Researcher would like to use this theory to analyze this research.

5. Related researches

Some researchers believed childhood obesity was the result of genetics example, obese parent would have obese child. Although researches have assessed genetics link between parent and children nutritional status, there has been relative researches on the extent to which parents provide environments or parent-child interrelationship in family that promote overweight among their children. Several studies have examined the interrelationships between factors on child nutritional status as following:

Churdchaipume S. (21) studied factors related with obesity in The Matthayum 1-6 class in Chantaburi province. The sample group was 870 participants, and the number of the obese group and the normal group was equal. Results indicated that the parental obesity related to the obesity of their child, with statistical significance at $p < 0.001$.

Duangkaew C. and Apacappakul N. (22) studied the children weight status of junior high school students. Their case study in Hadyai Wittayalaisomboonkallaya School, was a cross-sectional study. The sample group was 557 children 10-13 years of aged. Result found in the study indicated that the obesity problem in the children's families had an effect on child's weight, with statistical significance at $p < 0.001$. The obesity in the children came from the obesity in their family, in which the chance of obesity was 2.23 times higher than the normal group of children who grew up in families with no records of previous obesity.

Robert C. Whitaker and et al (23) studied the association between children's adiposity and their parents' eating behavior and body mass index (BMI). The sample group was parents of 85 white children 36 months of age (49 boys and 36 girls). This study, the Three-factor Eating Questionnaire was used as evaluation tool on three dimensions of parent behavior: disinherited eating, cognitive restraint of eating, and susceptibility to hunger. Parent BMI (kg/m2) was calculated using self-reported height and weight. The children's percentage body fat was assessed by dual energy X-ray absorptiometry analysis. The results showed that there were no significant relationships between children's percentage body fat and parent eating scores, and the

correlation between children's percentage body fat and parent BMI was significant only between mothers and daughters ($r = 0.35$, $p = 0.04$).

A M Magarey and et al (24) studied the degree of tracking of adiposity from childhood to early adulthood, and the risk of overweight in early adulthood associated with overweight in childhood and parental weight status. This a longitudinal observational study and the sample group were 155 healthy boys and girls born in Adelaide, South Australia, 1975-1976 and their parents. Height and weight of subjects at 2 years, annually from 4 to 8 years, biennially from 11 to 15 years and at 20 years, and of parents when subjects were aged 8 years. Body mass index (BMI) of subjects converted to standard deviation scores and prevalence of overweight and obesity determined using worldwide definitions. Parents classified as overweight if BMI≥25 kg/m^2. The result indicated that tracking of BMI was established from 6 years onwards to 20 years at *r*-values >0.6, suggesting that BMI from 6 years is a good indicator of later BMI. Tracking was stronger for shorter intervals and for those subjects with both parents overweight compared with those with only one or neither parent overweight. Weight status at an earlier age was a more important predictor of weight status at 20 years than parental weight status, and risk of overweight at 20 years increased further with increasing weight status of parents.

LL Hui and EAS Nelson (25) studied the risk factors for overweight in Hong Kong children aged 6-7 years, which was a Case-control study. The sample was 343 Hong Kong Chinese children aged 6-7 years old setting in Student Health Service Centers, Hong Kong. The sample categorized into three groups, an overweight group, a normal middle-weight group and a normal low-weight group. Subjects and their parents/caregivers were interviewed at home. The results showed that childhood overweight was significantly associated with parental obesity (Asian reference) (paternal: OR=2.66, 95% CI=1.51-4.70; maternal: 5.07, 2.62-9.79) but not parental overweight. After adjustment for parental obesity, the odds ratio for childhood overweight was increased by birth weight and decreased by sleeping duration. Childhood overweight was also significantly associated with higher energy consumption and having a father who was a current smoker.

Hesketh K. et al (26) studied to investigate the prevalence and incidence of overweight and obesity, the frequency of overweight resolution and the influence of parental adiposity during middle childhood, which was a prospective cohort study. The sample group was 1438 children aged 5–10 years at baseline; height and weight were measured in 1997 and 2000/2001. Children were classified as non-overweight, overweight or obese based on standard international definitions. Parents self-reported height and weight, and were classified as underweight, healthy weight, overweight or obese based on World Health Organization definitions. The results showed that the prevalence of overweight and obesity increased between baseline (15.0 and 4.3% respectively) and follow-up (19.7 and 4.8%, respectively; $P<0.001$ for increase in overweight and obesity combined). There were 140 incident cases of overweight (9.7% of the cohort) and 24 of obesity (1.7% of the cohort); only 3.8% of the cohort (19.8% of overweight/obese children) resolved to a healthy weight. The stability of child adiposity as measured by BMI category (84.8% remained in the same category) and BMI *Z*-score ($r=0.84$; mean change=-0.05) was extremely high. Mean change in BMI *Z*-score decreased with age (linear trend $\beta=0.03$, 95% confidence interval 0.01–0.05). The influence of parental adiposity largely disappeared when children's baseline BMI was adjusted for.

Susan L. Johnson and Leann L. Birch (27) studied the influence of the eating practice of the parent on children’s ability to regular energy intake. This research was an experimental design, in which the sample group was children aged 3-5 years old, along with their parent. The total of 77 participants at the child care facility in Illinois University. The result found from this research was a negative relationship between the disinhibition levels of the parent and the children’s ability to regulate energy intake, with statistic significance at $p < 0.02$. Furthermore, there was also a negative relationship found between the controlling level of parent and the children’s ability to regulate energy, with statistic significance at $p < 0.01$. The result indicated that both the parent with disinhibition and controlling levels would have an important influence over the prediction of the children’s respond to calories density. The parent with no or excess controlling level would lessen the children’s respond to calories density. For example, when the child drank high energy juice before lunch, the child would have

ability to consume yet another high energy meal. This affects the collection of fat in the children's body, which maybe the case of obesity in children.

Dorte L. Jahnke and Petra A. Warschburger (28) A total of 142 mothers of children aged 3–6 years participated who examined weight-related differences in eating behaviors and nutrition of preschool-aged children, the influence of maternal eating behavior on the child's eating behavior, and sex-related differences in the transmission of eating behaviors. Maternal and child's eating behaviors as well as child's food consumption were assessed using questionnaires completed by mothers. Multiple regression analysis was used to predict eating behavior of the children by mothers' variables. Overweight children scored higher in external eating, food responsiveness, and speed of eating than normal-weight children, whereas children of overweight mothers showed higher amounts of emotional eating than children of normal-weight mothers. Maternal emotional eating (R^2 = 0.19, P < 0.001) and mother's BMI (R^2 = 0.07, P < 0.05) positively predicted emotional eating of sons. Maternal emotional eating (R^2 = 0.19, P < 0.01) completely mediated the relation between mother's BMI and emotional eating of sons. For mother–daughter dyads, no such relation was found. The tested model shows sex-related differences in the transmission of maternal eating behavior which is discussed as being related to the development and maintenance of obesity.

Hood, M Y et al. (29) studied the parent eating attitude to the development of obesity in children, by a prospective observation study. The sample group was 92 children aged 3-5 years old in Framingham children's study. The questionnaire by Stunkard and Messick was used as the evaluation tool on the parent's dietary disinhibition and restraint scores. Result showed that the children's body fat would increase, depending on the restraint level and dietary disinhibition. Parent with higher dietary disinhibition level would cause a change of the Body Mass Index and the some of skin fold of children would increase, with statistic significance at $p < 0.001$ and 0.042 respectively. Furthermore, it was found that the number of parent who permitted and those who restrained also increase the change of body fat in the children, with statistic significance at $p < 0.001$.

Amy E. Baughcum, Kathleen A. Burklow, (30) studied the maternal beliefs and practices about child feeding that are associated with the development of childhood obesity, which was a Four focus groups setting on The WIC program in the Northern Kentucky Health District. The sample group was Fifteen WIC dietitians and 14 mothers (14 to 34 years of age) with young children (12 to 36 months of age) enrolled in WIC. The results showed that the mothers in this study (1) believed that it was better to have a heavy infant because infant weight was the best marker of child health and successful parenting, (2) feared that their infants were not getting enough to eat, which led them to introduce rice cereal and other solid food to the diets before the recommended ages, and (3) used food to shape their children's behaviors (e.g., to reward good behavior or to calm fussiness). The mothers acknowledged that some of their child-feeding practices went against the advice of their WIC nutritionists and physicians. Instead, the participants relied on their mothers as their main source of information about child feeding.

Amy E. Baughcum et al.(31) studied to explore possible factors that may lead to childhood obesity. This study used two new instruments; The Infant Feeding Questionnaire (IFQ) and The Preschooler Feeding Questionnaire (PFQ). The Infant Feeding Questionnaire (IFQ) was used as the evaluation tool assesses feeding during the entire first year of life and was administered to 453 mothers of children 11 to 23 months old. The Preschooler Feeding Questionnaire (PFQ) assesses feeding of young children between the ages of 2 to 5 years and was administered to 634 mothers of children this age. Each questionnaire was factor analyzed and means factor scores were calculated and linked with the children's measured and mothers' self-reported weight and height. Mean factor scores from the IFQ and PFQ were compared between mothers who were obese (body mass index = 30 kg/m2) and those who were non obese, between those who did and those who did not have an overweight child (weight-for-height = 90th percentile), and between those who had a low income and those who had a high income. Results from this study did not suggest that there was a particular "feeding style" that was associated with overweight in young children; however, there were differences found in feeding behaviors between high and low income mothers.

Donna Spruijt-Metz and Christine H Lindquist (32) studied the relation between mothers' child-feeding practices and children's adiposity in a sample of boys and girls from 2 ethnic groups. The sample group was 74 white (25 boys and 49 girls) and 46 African American (22 boys and 24 girls) children (SD age: 11 ± 1.7 years) and their mothers participated in this study. The children's body composition was assessed by dual-energy X-ray absorptiometry. The mothers' child-feeding practices were assessed with the Child Feeding Questionnaire. Dietary intake data were based on three 24-h dietary recalls conducted by use of the multiple pass technique. Results showed that the pressure to eat and concern for child's weight, explained 15% of the variance in total fat mass (concern for child's weight was positively related to total fat mass whereas pressure to eat was negatively related to total fat mass) in both African American and white boys and girls ($P < 0.001$) And restrictive practices were highly correlated with concern for child's weight and significantly correlated with total fat mass. Ethnicity, sex, and socioeconomic status did not contribute significantly to variance in total fat mass.

Leann L Birch and Jennifer O Fisher (33) studied to evaluate the influence of maternal control in feeding, an aspect of non-shared family environment, on daughters' eating and relative weight. Study design was structural equation modeling used to test models that described maternal influences on daughters' eating and relative weight. The sample group was 197 white, non-Hispanic families with 5 years old daughters. The mothers' own dietary restraint and their perceptions of their daughters' risk of overweight were used to predict maternal control in feeding, which was used to predict the daughters' eating and weight outcomes. The results showed maternal body mass index was a modest predictor of daughters' relative weight. Maternal dietary restraints and perceptions of their daughters' risk of overweight, predicted maternal child-feeding practices, which in turn predicted daughters' eating.

CHAPTER III
MATERIALS AND METHODS

1. Research design

This research was cross sectional study, the samples were collected from 4-5 years old children study in private kindergarten, Bangkok.

2. Population and Sample

1. Population

The population of the study was the children 4-5 years old studying in private pre-school and their parents, Bangkok. The target school was under supervision of the office of the Private Education Commission, the study site was in the in the 2nd Area Education Bangkok Office responsibility.

2. Sampling technique

The sampling technique of this research used multistage random sampling method that was applied as follows:

2.1 Selection of Education Service Area

The office of the Private Education Commission located in Bangkok Metropolitan, Thailand which were separated into 3 Supervisions Education Service Area 1-3. The resulted from random sampling method, Education Service Area 2 was selected.

2.2 Selection of school

This research would like to study only one school, in the kindergarten where there were more than 224 students studying (2times of sample size). They were 6 schools in Education Service Area 2 as follows:

2.2.1 Sarasas Witaed Romklao school, 430 students

2.2.2 Petcharawutwittaya school, 280 students

2.2.3 Our Lady of Perpetual Help school, 279 students

2.2.4 Praharutaidonmung school, 270 students

2.2.5 Patai Udom Suksa school, 262 students

2.2.6 Saint. Mary school, 239 students

From random sampling method, we got Petcharawutwittaya school.

3. Sample size

The sample size is calculated from the equation as follows;

$$n = \frac{Z^2_{\alpha/2}\, pq}{d^2}$$

When n = sample size

$Z_{\alpha/2}$ = standard normal deviation = 1.96

p = Prevalence of obesity in pre-school children = 0.079
(Data from National Health Examination Survey NHES, 2001)

q = (1-p)

d = Standard error = 0.05

Then, the calculation found the sample size of the study is

$$n = \frac{(1.96^2)\,(0.079)\,(0.921)}{(0.05^2)} = 111.26$$

Thus the sample size in this study was at least 112 persons.

3. Instruments of the study

Instruments for data collection included;

4.1 Weight measurement scale, children's weight were measured by researcher, and digital weighing machine was used to instrument. This instrument standardize with standard weight of 20kgs. The instrument measured in kilograms with 1 decimal.

4.2 Height measurement scale, the microtoise was used to instrument. This instrument measured in centimeter with 1 decimal.

4.3 Children record form, this form was used to collected children's information which composes of general characteristic information of children such as weight, height and classroom.

4.4 A general questionnaire, it was a self administrated questionnaire which used to collected information from parents. The questionnaire was composes of 2 parts as follows:

- Part 1: General data of children such as name, sex and date of birth
- Part 2: General characteristics and socio-economic data of parents such as main nutritional caregivers, date of birth, marital status, education level, occupation, weight, height and monthly income of family

4.5 Mother's behaviors questionnaire, it was a self administrated questionnaire to collect mother's perceptions and nutritional behaviors towards their child. It composed of 3 parts as follows:

- Part 1: The questions in this part measured the mother's perceptions by using the HBM theory that attempts to explain and predict mother's nutritional behaviors towards their child by focusing on the attitudes and beliefs of individuals. It divided into 4 sections as follows:

1.1 Perceived susceptibility questions were items 1-5.

1.2 Perceived severity questions were items 6-10.

1.3 Perceived benefits questions were items 11-15.

1.4 Perceived barriers questions were items 16-20.

In this part, measurement scale was 5 levels as follows:

- Completely agree refers to I am satisfied with the information.
- Agree refers to I think the same with this information.
- Uncertain refers to I am not sure/do not know about the information.
- Disagree refers to I do not think of the same information.
- Completely disagree refers to I am not satisfied with the information.

Scoring assessment was as follows:

	Score for positive statement	Score for negative statement
Completely agree	5	1
Agree	4	2
Uncertain	3	3
Disagree	2	4
Completely disagree	1	5

The mean score was divided into 5 categories

Score 4.50-5.00 was defined as very high parental attitude.

Score 3.50-4.49 was defined as high parental attitude.

Score 2.50-3.49 was defined as medium parental attitude.

Score 1.50-2.49 was defined as low parental attitude.

Score 1.00-1.49 was defined as very low parental attitude.

- Part 2: The questions in this part measured mother's cues to action: Events, either bodily (e.g., physical symptoms of a health condition) that motivated mother to take action-behaviors on their child which influenced on their child to grow up with over-nutritional status. It divided into 3 items (21-23) as follows:

Item 21: During the past 1 year, mother has ever received childhood obesity prevention knowledge from media books or magazines. This item, measurement scale and score was 3 levels as follows:

Measurement scale	Score assessment
Never: refers never received within the past 1 year.	0
1-2 times: refers received 1-2 times within the past 1 year.	1
More than 2 times: refers received more than 2 times within the past 1 year.	2

Item 22-23: Parental personal aliment (mother and father). These items, measurement scale and score was 2 levels as follows:

Measurement scale	Score assessment
NO	0
YES	1

- Part 3: The questions in this part measured mother's nutritional behaviors that influenced on their child to grow up with over nutritional status. It concerned 3 issues of kind of food, quantity, and activities. It divided into 2 sections as follows:

2.1 Mother's nutritional behaviors on food selection for their child questions were 6 items (24-29).

2.2 Mother's nutritional behaviors towards their child in term of free time Management (per week) questions were 5 items (30-34).

In part 3, measurement scale was 4 levels as follows:

- Regularly means mother usually does to children 5-7 times per week.
- Often means mother does to children 3-4 times per week.
- Sometimes means mother does to children 1-2 times per week.
- Never means mother never does to children within a week.

Scoring assessment was as follows:

	Score for positive statement	Score for negative statement
Regularly	3	0
Often	2	1
Sometimes	1	2
Never	0	3

The mean score was divided into 3 categories

Score 2.01-3.00 was defined as good parental behavior.

Score 1.01-2.00 was defined as moderate parental behavior.

Score 0.00-1.00 was defined as poor parental behavior.

4. Validity and Reliability of Instruments

1. Validity testing

The all content validity of questionnaire was undertaken by 3 experts (before using the study) as follows:

1. Assoc. Prof. Mandhana Pradipasen, Department of Nutrition, Faculty of Public Health, Mahidol University.

2. Asst. Prof. Dr.Supron Apinantavech, Department of Family Health, Faculty of Public Health, Mahidol University.

3. Asst. Prof. Arpaporn Powwattana, Department of Public Health Nursing, Faculty of Public Health, Mahidol University.

2. Reliability testing

These questionnaires were tested among 43 children 4-5 years old studied in pre-school, who had similar characteristics to the sample. Then, it was analyzed for reliability by using SPSS program, Conbrach's Alpha Coefficient method. The reliability of questions in the part of mother's perceptions was 0.723.

5. Data collection

The processes of data collection were as follow:

1. Researcher sent the proposal of the study to the Ethical Committee of Mahidol University, Thailand for permission to conduct research involving human subjects.

2. The researcher requested letter of permission, via the Faculty of Graduate Studies, Mahidol University, for data collection to the pre-school director.

3. Researcher asked and contacted the master-teacher of the class for corporation in data collection. The researcher prepared instruments and questionnaires.

4. The children were measured weight by using digital weighing machine and the microtoise for measuring height of the children. The weight and height of each child were measured two times. The difference of there measurement should not be more than 0.1 kg for weight and 0.5 cm for height.

5. The questionnaires were sent to mothers who were the sample of this study. All questionnaires were sent back to researcher within 5 days.

6. The questionnaires were checked the completeness of data. Incomplete questionnaires were excluded from this study.

6. Ethical consideration

The protocol of this study was approved by the Ethical Committee of Mahidol University, Thailand.

1. Researcher should forward a letter to Graduate School Office providing the information on the data collection for the thesis. The researcher should request for the permission for the information gathering time and place from the school. The head of the Graduate School should be informed of the request directly from the researcher.

2. The researcher should provide the parents/guardians of Kindergarten 2 students with the following document:

- Letter of introduction describes project names, objectives, project details, research procedures, benefits and negative impacts of the research to the participants.

- Information sheet describes project details, all research procedures, including potential risks and psychological distress resulted from the research, benefits of the research to the participants, confidentiality nature of the research, participants' right of voluntary consent, and researcher's contact place and number to be used for any query that may arise.

3. The research should be conducted with informed consent by the participants. The sample groups both parents and students have the rights to agree or disagree to the participation in the research and have the rights to abstain from participation in the questionnaires. No pressure of any kind shall be applied in the information gathering process. The research should be conducted with full consent of the research participants.

4. The research participants have the rights to withdraw their participation from the research at any time with any reason.

5. The research participants are invited to ask questions to the researcher directly at any time and the researcher is obliged to answer the queries in person.

6. All the information received from the research participants in every procedure should not reveal the identity of the individual, to prevent negative impact on the research participants. All the information should be kept strictly confidential.

7. Data analysis

After data collection was completed, all data was analyzed by using computer program for window. Statistical methods were applied to this study as follows:

7.1 Descriptive statistics: demographic information such as parent's education level, occupation, BMI, monthly income of family, personal aliment, having received childhood obesity prevention knowledge of mothers, perceived levels of mothers in Health Belief Model, mother's behaviors on food selection and mother's behaviors towards their child in term of free time management, were reported by number, percentage, means and standard deviation.

7.2 Analytical statistics:

7.2.1 Pearson Chi-square was performed to examine the associations between each of the independent variables and dependent variable.

7.2.2 Odds ratio was performed to examine the occurrence of the independent variables that affected to the dependent variable.

CHAPTER IV
RESULTS

The total samples of this study were 118 students and their parents who sent the completed answer of the questionnaires to researcher. The student aged between 4-5 years old studying in a private kindergarten, February, 2007, they were measured weight and height for nutritional status indicator by using Standard Growth Chart from Development of Nutrition Division, Department of Health, Ministry of Public Health, 1999. The factors including education level, occupation, BMI, personal ailment of parent, monthly income of family, mother obtained childhood obesity prevention knowledge, perceived level of mother and mothers' behaviors such as food selection and free time management on their child were collected and analyzed. This part was presented into 3 sections as follows:

Part 1 General characteristics of children

Part 2 General characteristics of parents

Part 3 Analytical statistics of factors influencing to children's nutritional status

Part 1: General characteristics of children

Table 4 Number and percentage of children's characteristics of (n = 118)

Characteristics of children	Number	%
Sex		
Boy	56	47.5
Girl	62	52.5
Age of children (year)		
4	40	33.9
5	78	66.1
($\overline{X}$ ±SD = 4.71±0.45, Min = 4.01, Max = 5.10)*		
Nutritional status of children		
Normal	93	78.8
Over-nutrition	25	21.2

*Age average (years)

Table 4 showed the general characteristics of the children, there were boys 47.5% and girls 52.5%. Age of children, 66.1% was children aged 5 years. Number of children with aged 5 years was almost double of number of children with aged 4 years. The nutritional status of them was classified with the standard weight for height by Growth Chart of 1 day-19 years old, Department of Health, MOPH, 1999. After children's weight-height was measured, the weight-height data was assessed by compared with the standard weight for height by Growth Chart. If child who was assessed weight for height more than 1.5 Standards Deviation, he was classified into over-nutritional status group. Similarly, child who was assessed weight for height that has between the sum and remainder of -1.5 and +1.5 Standard Deviation, he was classified into normal nutritional status group. This study showed the percentages of normal and over-nutritional children were 78.8% and 21.2% respectively.

Part 2: General characteristics of parents

Table 5 Number and percentage of mother's characteristics (n = 118)

Mother's characteristics	Number	%
Age (years)		
20 – 35	65	55.1
36 – 55	53	44.9
$\overline{X}$ ±SD = 34.8±5.66, Min = 22, Max = 55		
Education level		
Below bachelor degree		
Primary school	14	11.9
Junior high school	8	6.8
Senior high school	30	25.4
Vocational education	26	22.0
Bachelor degree or higher	40	33.9
Occupation		
Government officer	8	6.8
State enterprise employee	2	1.7
Private enterprise	29	24.6
Trading	33	28.0
Worker	16	13.6
Housewife	30	25.4
BMI of mother		
Normal	78	66.1
Overweight	16	13.6
Obesity	24	20.3

Table 5 showed that 55.1% of mothers were between 20-35 years old. The youngest was 22 years old and the oldest was 55 years old. 33.9% were bachelor degree or higher, 25.4% and 22.0% were in senior high school and vocational education level respectively. Their occupations were trading enterprise, housewife, and private business at 28.0%, 25.4% and 24.6% respectively. Body Mass Index or BMI of mothers were classified by standardized BMI for Asia adult, majority of them were normal weight status (66.1%), 13.6% and 20.3% were overweight and obesity status.

Table 6 Number and percentage of father's characteristics (n = 118)

Father's characteristics	Number	%
Age of father (years)		
20 – 35	37	31.4
36 – 55	78	66.1
> 55	3	2.50
$\overline{X}$ ±SD = 38.92±6.93, Min = 23, Max = 65		
Education level		
Below bachelor degree		
Primary school	8	6.8
Junior high school	8	6.8
Senior high school	30	25.4
Vocational education	31	26.3
Bachelor degree or higher	41	34.7

Table 6 Number and percentage of father's characteristics (n = 118) (cont.)

Father's characteristics	Number	%
Occupation		
Government officer	42	35.6
State enterprise employee	8	6.8
Private enterprise	27	22.9
Trading	20	16.9
Worker	21	17.8
BMI of father		
Normal	50	42.4
Overweight	30	25.4
Obesity	38	32.2

Table 6 showed that 66.1% fathers in this study, their aged were between 36- 55 years old. The youngest was 23 years old and the oldest was 65 years old. 34.7% of fathers were bachelor's degree or higher, 26.3% and 25.4% were in vocational education level and senior high school respectively. Their occupation, were government officers and private businesses at 35.6% and 22.9%. The fathers' nutritional status was classified by standardized BMI for Asia adult. 42.4% were normal weight status, and 25.4% and 32.2% were classified into overweight and obesity respectively.

Table 7 Number and percentage of family monthly income (baht) (n=118)

Variable	Number	%
Monthly income of family (baht)		
≤ 10,000	22	18.64
10,001-20,000	44	37.29
20,001-30,000	26	22.03
> 30,000	26	22.03
($\overline{X}$ ±SD = 25,735.59 ± 16,857.95, Min = 1,500, Max = 100,000)		

Table 7 showed that 37.3% of family monthly income was 10,001–20,000 baht per month. The minimum and maximum of family monthly income were 1,500 baht and 100,000 baht per month.

Table 8 Number and percentage of mothers' personal ailment (n = 118)

Mothers' personal ailment		Number	%
No		**100**	**84.75**
Yes		**18**	**15.25**
	Diabetes Mellitus	3	2.54
	Hypertension	6	5.08
	High cholesterol	7	5.93
	Hypertension + Heart disease	1	0.85
	Hypertension + High cholesterol	1	0.85

Table 8 showed that majority of mothers had no personal ailment at 84.75%. Among mothers, there were only 15.25% with personal ailment. Most of them were high cholesterol and hypertension at 5.93% and 5.08% respectively.

Table 9 Number and percentage of fathers' personal ailment (n = 118)

Fathers' personal ailment		Number	%
No		**91**	**77.12**
Yes		**27**	**22.88**
	Diabetes Mellitus	5	4.24
	Hypertension	2	1.69
	High cholesterol	17	14.40
	Diabetes+ High cholesterol	1	0.85
	Hypertension + High cholesterol	2	1.69

Table 9 showed that majority of fathers 77.12% had no personal ailment. There were 22.88% of father with personal ailment. Most of them were high cholesterol and diabetes mellitus at 14.4% and 4.24% respectively. According to the table 8-9, the number of father's personal ailment with high-cholesterol was higher than mother (14.4% and 5.93% respectively).

Table 10 Number and percentage of mother obtained childhood obesity prevention knowledge from media or magazine during the past 1 year (n=118)

Variable	Number	%
Never obtained	17	14.4
Obtained	101	85.6

Table 10 showed that most of mothers at 85.6% obtained knowledge on childhood obesity or how to prevent childhood obesity from various media or magazine during the past 1 year. Only 14.4% of total mothers had not obtained in this knowledge.

Table 11 Mother's perceptional scores toward their child (n =118)

Mother's perception	CD (%)	D (%)	U (%)	A (%)	CA (%)	Mean	SD
Section 1 : Perception of risks of obesity in children.							
1. Children from both obese father and mother have risk to be obese.	1 (0.8)	11 (9.3)	21 (17.8)	68 (57.6)	17 (14.4)	3.75	0.847
2. Obesity in children comes from the excessive consumption of high food only.	7 (5.9)	35 (29.7)	16 (13.6)	47 (39.8)	13 (11.0)	2.80	1.159
3. Giving your children a lot of rice and sugar instead of fat will enable your child to have no chance for obesity.	20 (16.9)	48 (40.7)	25 (21.2)	22 (18.6)	3 (2.5)	3.51	1.060
4. Children with age 4-5 year old who a lot of time spending to watch TV or playing games have risk to be obesity.	6 (5.1)	36 (30.5)	38 (32.2)	30 (25.4)	8 (6.8)	2.98	1.021
5. It is not necessary to control weight of 4-5 year old children	7 (5.9)	55 (46.6)	17 (14.4)	30 (25.4)	9 (7.6)	3.18	1.114
Total average score			**Moderate level**			**3.24**	**0.562**
Section 2 : Perception of severity of obesity in children.							
1. It is not anxious about obesity in children with age 4-5 year	23 (19.5)	61 (51.7)	17 (14.4)	15 (12.7)	2 (1.7)	3.75	0.971
2. Obesity in children dose not causes risk of the diabetes and heart disease.	36 (30.5)	45 (38.1)	17 (14.4)	17 (14.4)	3 (2.5)	3.80	1.106

Table 11 Mother's perceptional scores toward their child (n =118) (cont.)

Mother's perception	CD (%)	D (%)	U (%)	A (%)	CA (%)	Mean	SD
3. Obesity in children dose not causes risk of growth retardation in children.	19 (16.1)	37 (31.4)	37 (31.4)	22 (18.6)	3 (2.5)	3.40	1.047
4. Obese children have the learning ability and perception lower than normal weight children.	5 (4.2)	24 (20.3)	45 (38.1)	36 (30.5)	8 (6.8)	3.15	0.966
5. Obesity in children affect on children's activities and social adjustment..	3 (2.5)	10 (8.5)	14 (11.9)	68 (57.6)	23 (19.5)	3.83	0.927
Total average score			**High level**			**3.59**	**0.618**
Section 3 : Perception of benefits of child-rearing behaviors in preventing childhood obesity							
1. Take care of children to be proper weight; the children will be good mental health and emotion.	5 (4.2)	2 (1.7)	2 (1.7)	60 (50.8)	49 (41.5)	4.24	0.912
2. Children are not obese; they will reduce the risk to be obese in adulthood.	5 (4.2)	8 (6.8)	20 (16.9)	51 (43.2)	34 (28.8)	3.86	1.048
3. Take care of children on correctly both type and quantity, children will the risk of being stunting or underweight.	30 (25.4)	39 (33.1)	14 (11.9)	24 (20.3)	11 (9.3)	3.45	1.138
4. Take care of children on correctly food consumption, it dose not reduce that risk of to be obesity in children	9 (7.6)	33 (28.0)	30 (25.4)	40 (33.9)	6 (5.1)	2.99	1.066

Table 11 Mother's perceptional scores toward their child (n =118) (cont.)

Mother's perception	CD (%)	D (%)	U (%)	A (%)	CA (%)	Mean	SD
5. Proper weight among children will save your health or household expenditure.	7 (5.9)	19 (16.1)	15 (12.7)	60 (50.8)	17 (14.4)	3.52	1.107
Total average score			**High level**			**3.61**	**0.540**
Section 4 : Perception of barrier of children upbringing behavior to prevent childhood obesity							
1. Controlling on your children's eating habit in terms of dessert or sweet food is not complicated for you.	3 (2.5)	21 (17.8)	13 (11.0)	69 (58.5)	12 (10.2)	3.56	0.983
2. Monitoring your children for proper weight and height is something you do not understand.	6 (5.1)	73 (61.9)	17 (14.4)	17 (14.4)	5 (4.2)	3.49	0.950
3. Fat children or chubby child seem like healthy children..	25 (21.2)	61 (51.7)	19 (16.1)	13 (11.0)	0 (0.0)	3.83	0.890
4. You think that you clearly understand the principle of nutrition guideline for children age 4-5 year old.	1 (0.8)	4 (3.4)	34 (28.8)	65 (55.1)	14 (11.9)	3.74	0.745
5. You think you do not have enough time to take your children to exercise.	14 (11.9)	55 (46.6)	11 (9.3)	34 (28.8)	4 (3.4)	3.35	1.120
Total average score			**High level**			**3.59**	**0.513**
Grand total average score = High Level						**3.50**	**0.348**

Health Belief Model	Mean score	Remark
Mother's perception		
Very good	4.50 - 5.00	CD = Completely disagree
Good	3.50 - 4.49	D = Disagree
Fair	2.50 - 3.49	N = Uncertain
Poor	1.50 - 2.49	A = Agree
Very poor	1.00 - 1.49	CA = Completely agree

Table 11, the results showed mother's perceptional score was evaluated from 4 aspects including perceived risk of obesity, perceived severity of obesity, perceived benefit and perceived the barriers of child-rearing behavior to prevent obesity in children.

Section 1, mother's perception about the risk of obesity in children with the total average score was in moderate level ($\overline{X}$ ±SD = 3.24±0.562). Considering by item, there were good level in maternal self-perception that the risk of childhood obesity was affected from obese parents (father and mother), and consuming much rice, starch and sugar-foods group was the risk to be obesity in children.

Section 2, mother's perception about the severity of obesity in children with the total average score was in high level ($\overline{X}$ ±SD = 3.59±0.618). Considering by item, there were good level in maternal self-perception on severity of the obesity in children and the obesity in children had an impact on child's health, activities and social adjustment.

Section 3, mother's perception about the benefit of child-rearing behavior that prevent obesity in children with the total average score was in high level ($\overline{X}$ ±SD = 3.61±0.540). Considering by item, there was good level in maternal self-perception on benefit of rearing your children to be proper weight or normal weight status, the children will be good mental and emotional health, and reduce risk of being obesity in adulthood, and save your household expenditure.

Section 4, mother's perception about the barrier of child-rearing behavior to prevent obesity in children with the total average score was in high level ($\overline{X}$ ±SD =

3.59±0.513). Considering by item, we also found that controlling the children's habits in eating dessert or sweet foods, attitude of their mother about fat children or chubby child and understanding the principle nutrition guideline for children in age 4-5 year were in good level of maternal perceived barrier of child-rearing behaviors that prevent obesity.

Finally, the overall of mother's perceptions in risk of obesity, severity of obesity, benefit and barrier of child-rearing behaviors in prevent childhood obesity were evaluated in high level with the grand total average means score 3.5 and 0.348 of standard deviation.

Table 12 Mother's behaviors in term of food selection for children per week classify by item (n=118)

Behaviors	Never (%)	Sometimes (%)	Often (%)	Always (%)	Mean	SD	Level
1. Fast foods such as fried chickens, pizza, burgers.	39 (33.1)	76 (64.4)	2 (1.7)	1 (0.8)	2.30	0.544	High
2. High fat snacks such as sausages, fried-grilled, meatball, grilled pork and chicken.	4 (3.4)	81 (68.6)	25 (21.2)	8 (6.8)	1.69	0.650	Moderate
3. Traditional Thai desserts or desserts in coconut milk	67 (56.8)	46 (39.0)	5 (4.2)	0 (0.0)	2.53	0.580	High
4. Western desserts such as cakes, chocolates, cookies, pies.	14 (11.9)	82 (69.5)	16 (13.6)	6 (5.1)	1.91	0.654	Moderate
5. Crispy snacks such as chips / snacks.	7 (5.9)	50 (42.4)	41 (34.7)	20 (16.9)	1.40	0.839	Moderate
6. Beverage and soft-drink.	13 (11.0)	74 (62.7)	22 (18.6)	9 (7.6)	1.77	0.744	Moderate
Grand Total					**1.93**	**0.413**	**Moderate**

Mother's behaviors	Mean score
Good	2.01 - 3.00
Medium	1.01 - 2.00
Poor	0.00 - 1.00

Table 12 showed the information of mother's behaviors in food selection for their children per week. There was high level in food selection about fast-foods and traditional Thai desserts or desserts in coconut milk at mean score of 2.30 and 2.53 respectively. The result showed that 64.4% of mothers who sometimes had food selection behaviors on their children with fast foods such as fried chickens, pizza, burgers and 33.1% never selected these kinds of food for. 56.8% of mothers who sometimes had food selection behaviors on their children with traditional Thai desserts or desserts in coconut milk and 39.0% never selected this kind of food.

In general the mothers in this study had behaviors of sometimes selecting high calories-food for their children such as high fat snacks, western desserts, crispy snacks, beverage and soft-drink. Therefore, the overall of mother's behaviors in food selection for their child was evaluated in moderate level at grand total average means score 1.93 and 0.413 of standard deviation.

Table 13 Mother's behaviors towards their children in terms of time management per week classify by item. (n =118)

Behaviors	Never (%)	Sometimes (%)	Often (%)	Always (%)	Mean	SD	Level
1. Teach children to have meal on time.	4 (3.4)	26 (22.0)	46 (39.0)	42 (35.6)	2.07	0.845	High
2. Spend time at weekends or after school on taking children to exercise.	2 (1.7)	47 (39.8)	30 (25.4)	39 (33.1)	1.90	0.890	Moderate
3. Spend time at weekends on having children play computer games or game console.	44 (37.3)	61 (51.7)	12 (10.2)	1 (0.8)	2.25	0.669	High
4. Spend time at weekends by let child watching TV or reading comics book.	0 (0.0)	45 (38.1)	51 (43.2)	22 (18.6)	1.19	0.731	Moderate
5. Spend time at weekend bring children to have meal outside.	7 (5.9)	84 (71.2)	22 (18.6)	5 (4.2)	1.79	0.611	Moderate
Grand Total					**1.84**	**0.416**	**Moderate**

Mother's behaviors	Mean score
Good	2.01 - 3.00
Medium	1.01 - 2.00
Poor	0.00 - 1.00

Table 13 showed mother's behaviors on time management on weekends or after school for their children. There was high level on time management in teaching children to have meal on time and spending time on weekends or after school playing computer games or game console at mean score 2.25 and 2.07 respectively.

In general the mothers in this study had not appropriate behaviors of manage free time for their children such as time for exercise, time at weekend to have meal with children outside home and especially time for watching TV or reading comics book.

Part 3: Analytical statistics of factors influencing to children's nutritional status

Table 14 Association and odds ratio (OR) between sex of children and children's nutritional status (n =118)

		Children's nutritional status		p-value	OR	95% CI for OR
		Over-nutrition (%)	Normal (%)			
Sex of children	**Boy**	12 (48.0)	44 (47.3)	0.95	1.03	0.39-2.71
	Girl	13 (52.0)	49 (52.7)		1.00	
Total		25 (100.0)	93 (100.0)			

The studied samples were 118 children who divided into over-nutritional and normal status group, and categorized by sex. Table 14 showed the result that the over-nutritional group was boys 48.0% and girls 52.0%. Normal weight status group was boys 47.3% and girls 52.7%. The statistic testing, there was not significant ($p > 0.05$), and 95% CI run between 0.39-2.71.

Table 15 Association and odds ratio between age of children and children's nutritional status (n =118)

		Children's nutritional status		p-value	OR	95% CI for OR
		Over-nutrition (%)	Normal (%)			
Age of children (year)	**4**	7(28.0)	33 (35.5)	0.48	1.00	0.24-2.04
	5	18 (72.0)	60 (64.5)		1.41	
Total		25 (100.0)	93 (100.0)			

Table 15 showed that the over-nutritional children at aged 4 years and 5 years were 28.0% and 72.0% respectively. Normal weight status group, there were children at age of 4 and 5 years were 35.5% and 64.5% respectively. It was found that odds ratio of over-nutrition in children with age at 5 years were 1.41 times greater than the younger group. However, the statistic testing, there was not significant between age and children's nutritional status ($p > 0.05$), and 95%CI run between 0.24-2.04.

Table 16 Association and odds ratio between mother's factors and children's nutritional status (n =118)

Mother's factors		Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Age (years)	≤ 35	16 (64.0)	49 (52.7)	0.312	1.6 [0.59-4.39]
	> 35	9 (36.0)	44 (47.3)		1
Education					
	Below bachelor degree	19 (76.0)	59 (63.4)	0.238	1.82 [0.61-5.69]
	Bachelor degree or higher	6 (24.0)	34 (36.6)		1.00
Occupation					
	Government officer/ Enterprise/ Private Enterprise	10 (40.0)	29 (30.5)		1.72 [0.46-6.78]
	Trading/ Worker	10 (40.0)	39 (41.1)	0.654	1.28 [0.35-4.94]
	Housewife	5 (20.0)	25 (26.9)		1.00

Table 16, the result showed children within over-nutrition group had mothers who were aged ≤ 35 and > 35 year old at 64.0% and 36.0% respectively. In normal group, the result showed mothers who were aged ≤ 35 and > 35 year old at 52.7% and 47.3% respectively. It was found that odds ratio of over-nutritional children whose mother aged ≤ 35 year were 1.6 times greater than the older group. However, the statistic testing, there was not significant between children's nutritional status and age of mother ($p > 0.05$), and 95%CI run between 0.59-4.39.

Consideration on mother's education, 76% of over-nutritional children had mother who was education level at below bachelor degree. It was found that odds

ratio of over-nutrition in children with mother who were education level below bachelor degree at 1.82 times greater than the higher degree group. However, the statistic testing, there was not significant between children's nutritional status and mother's education ($p > 0.05$), and 95%CI run between 0.61-5.69.

Mother's occupation, 40% of children within over-nutritional group had mother worked with "government/ state enterprise/ private enterprise" group and "trading/ worker" group. It was found that odds ratio of over-nutrition in children with mother who worked with "government officer/ enterprise/ private enterprise" group and "trading/ worker" group at 1.72 and 1.28 times greater than mother worked as housewife. However, the statistic testing, there was not significant between children's nutritional status and mother's occupation ($p > 0.05$).

Table 17 Association and odds ratio between father's factors and children's nutritional status. (n =118)

Father's factors		Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Age (years)	≤ 35	9 (36.0)	28 (30.1)	0.573	1.31 [0..47-3.62]
	>35	16 (64.0)	65 (69.9)		1
Education					
	Below bachelor degree	18 (72.0)	59 (63.4)	0.425	1.48 [0.52-4.38]
	Bachelor degree or higher	7 (28.0)	34 (36.6)		1.00
Occupation					
	Government officer/ Enterprise/ Private business	17 (68.0)	60 (64.52)	0.745	1.17 [0.0.42-3.33]
	Trading group and Worker	8 (32.0)	33 (35.48)		1.00

Table 17 showed the over-nutritional children in father's age group of ≤ 35 and >35 year-old were 36.0%and 64.0% respectively. Those in father's education level of below bachelor degree and bachelor degree or higher were 72.0% and 28.0% respectively. There were 68.0% of over-nutritional children in father's occupation group of "government/enterprise employee/private business", while there were 32.0% in group of "worker and self employee". However, the statistic testing, there were not significant between children's nutritional status and age, education level, and occupation of fathers ($p > 0.05$).

Table 18 Association between parent's BMI and children's nutritional status by Pearson Chi-square. (n =118)

	BMI	Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Mother	Obese	6 (24.0)	18 (19.4)	0.622	1.2 [0.36-3.88]
	Overweight	2 (8.0)	14 (15.0)		0.51 [0.07-2.75]
	Normal	17 (68.0)	61 (65.6)		1.0
Father	Obese	10 (40.0)	28 (30.1)	0.629	1.63 [0.52-5.08]
	Overweight	6 (24.0)	24 (25.8)		1.14 [0.31-4.1]
	Normal	9 (36.0)	41 (44.1)		1.0

Table 18, the result showed children within over-nutrition group had mothers who were normal, overweight and obese nutritional status at 68.0%, 8.0% and 24.0% respectively. Another group, normal group had mothers who were normal, overweight and obese nutritional status at 65.6%, 15.0% and 19.4% respectively. It was found that odds ratio of over-nutrition in children with mother's nutritional status as obesity was 1.2 times greater than mother normal weight group. It could be interpreted that children with mother was obesity status would have a risk of 1.2times in getting over-nutrition compare with those who had BMI as normal. However, the statistic testing, there was not significant between children's nutritional status and BMI of mother.

BMI of father, the result showed children within over-nutrition group had fathers who were normal, overweight and obese nutritional status at 36.0%, 24.0% and 40.0% respectively. Another group, normal group had fathers who were normal, overweight and obese nutritional status at 44.1%, 25.8% and 30.1% respectively. It was found that odds ratio of over-nutrition in children with father's nutritional status as obesity and overweight were 1.63 and 1.14 times greater than father who was

normal weight status. It could be interpreted that children with father was obesity and overweight status would have a risk of 1.63 and 1.14 times in getting over-nutrition compare with those who had BMI as normal. The statistic testing, there was not significant between children's nutritional status and BMI of father.

Table 19 Association and Odds ratio between children's nutritional status and family monthly incomes (n =118)

Variable		Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Family monthly incomes (baht)	≥ 18,660	18 (72.0)	60 (64.5)	0.483	1.41 [0.49-4.19]
	< 18,660	7 (28.0)	33 (35.5)		1.00

Table 19 showed that 72.0% of children within over-nutrition group came from families that were family monthly incomes more than and equal 18,660 baht per month, and 28.0% from family monthly incomes less than 18,660 baht per month. Another group, normal, children were normal weight status, came from families that were family monthly incomes more than and equal 18,660 baht per month at 64.5%, and less than 18,660 baht per month at 35.5%. It was found the odds ratio of children whose families had family monthly incomes per month more than and equal 18,660 baht at 1.41 times greater than the lower family monthly income group. Nevertheless, the analysis showed there was not significant between children's nutritional status and family monthly incomes ($p > 0.05$), and 95%CI run between 0.49-4.19.

Table 20 Association between parental personal ailments and children's nutritional status (n =118)

Personal ailments		Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Mother's	Yes	4 (16.0)	14 (15.1)	1.000*	1.07 [0.27-4.03]
	No	21 (84.0)	79 (84.9)		1.0
Father's	Yes	5 (20.0)	22 (23.7)	0.669	0.81 [0.23-2.64]
	No	20 (80.0)	71 (76.3)		1.0

*Fisher-exact test

The result from table 20, it was found that odds ratio of over-nutrition in children with father had personal ailment were 0.83 times less than father who was normal weight status. It could be interpreted that children with father had personal ailment would have a protecting factor that reduce the risk of getting over-nutrition compare with those who had BMI as normal. The statistic testing, there were not significant between children's nutritional status and parental personal ailments ($p > 0.05$), and 95%CI run between 0.23-2.64.

.

Table 21 Association between having obtained childhood obesity prevention knowledge of mothers in the past 1 year and children's nutritional status (n =118)

Variable		Children's nutritional status		p-value
		Over-nutrition (%)	Normal (%)	
Mothers had obtained childhood obesity prevention knowledge in the past 1 year	Yes	24 (96.0)	77 (82.8)	0.12
	No	1 (4.0)	16 (17.2)	

Table 21 showed that 96.0% of mothers whose obese children had obtained childhood obesity prevention knowledge in the past 1 year from various media such as TV or magazine. The statistic testing, there were not significant between children's nutritional status and having obtained childhood obesity prevention knowledge of mothers in the past 1 year ($p > 0.05$).

Table 22 Association between mean scores of perceived levels of mothers and children's nutritional (n =118)

Perceived levels of mothers		Children's nutritional status		p-value	OR [95% CI]
		Over-nutrition (%)	Normal (%)		
Perceived risk	High	3 (12.0)	13 (14.0)		1.54 [0.2-11.8]
	Medium	19 (76.0)	60 (64.5)	0.507	2.11 [0.51-10.04]
	Low	3 (12.0)	20 (21.5)		1.0
Perceived severity	High	3 (12.0)	15 (16.1)		0.7 [0.1-4.74]
	Medium	18 (72.0)	64 (68.8)	0.878	0.98 [0.26-4.06]
	Low	4 (16.0)	14 (15.1)		1.0
Perceived benefits	High	2 (8.0)	19 (20.4)		0.32 [0.03-2.53]
	Medium	19 (76.0)	62 (66.7)	0.350	0.92 [0.23-3.85]
	Low	4 (16.0)	12 (12.9)		1.0
Perceived barriers	High	3 (12.0)	13 (14.0)		0.74 [0.11-4.63]
	Medium	17 (68.0)	64 (68.8)	0.930	0.85 [0.24-3.10]
	Low	5 (20.0)	16 (17.2)		1.0
Total score	High	1 (4.0)	16 (17.2)		0.27 [0.0.01-3.08]
	Medium	20 (80.0)	60 (64.5)	0.208	1.42 [0.38-5.67]
	Low	4 (16.0)	17 (17.2)		1.0

From table 22, the results showed mothers perceptional that was evaluated from 4 aspects including perceived risk of obesity, perceived severity of obesity, perceived benefit and perceived the barriers of child-rearing behavior to prevent obesity in children. The statistic testing, there were not significant between children's nutritional status and perceived levels of mothers in health believed model ($p > 0.05$).

Table 23 Association between mother's behaviors and children's nutritional status (n =118)

Levels of mother' behaviors		Children's nutritional status		p-value	OR**
		Over-nutrition (%)	Normal (%)		
Food selection	High	2 (8.0)	9 (9.6)		
	Moderate	23 (92.0)	62 (66.7)	0.021*	
	Low	0 (0.0)	22 (23.7)		
Free time management	High	3 (12.0)	13 (14.0)		
	Moderate	16 (64.0)	61 (65.6)	0.913	
	Low	6 (24.0)	19 (20.4)		

* $p < 0.05$
** OR : odds ratio undefined.

According to table 23, Among children in the normal nutrition group, the score in mother's food selection was evaluated as moderate and low level (66.7%, 23.7% of total normal weight, respectively), and the mothers' behavior score in free time management were evaluated as moderate and low level (65.6%, 20.4% of total normal weight, respectively). These results revealed that mother's behavior regarding food selection and free-time management were "risk" behaviors that could cause children of normal weight to become obese in the future. The result of statistic testing found that there was not significant between children's nutritional status and mother's behaviors on free time management but it was found significant difference between children's nutritional status and mother's food selection behaviors especially in regards to high-fat and high-calorie foods. ($p < 0.05$).

CHAPTER V
DISCUSSION

The discussion of the results is divided into 2 parts, as follows:

Part 1 : Discussion on research methodology

Part 2 : Discussion on the finding

Part 1 Discussion on research methodology

Four points of research methodology aspect of this study were considered. There was sample study group, instruments, data collection and data analysis.

1.1 Sample of the study group

The samples were 118 preschool students, aged 4-5 years old and their mothers from a kindergarten under the office of the Private Education Commission at Bangkok Metropolitan, Thailand. The sampling technique was multistage random sampling method by stratification. The kindergarten under the office of the Private Education Commission separated by Area Education Bangkok Office responsibility into 3 regions, and random the regions, the resulted from random was 2nd Education Service Area responsibility. Kindergartens in this area were random, and Petcharawutwittaya school was selected. The statistic sampling method in this research, the sample was a good representation, generalize and decrease error from environmental factors in the different areas. Nevertheless, the sample was representation of a private kindergarten in this research only. It was not total representation of the population in private kindergartens in Bangkok Metropolitan since this research did not study in every areas belonging to private pre-school, Bangkok.

1.2 Instruments

Digital weighing machine and the microtoise were standardized and calibrated reliability of the measurement error before measured the sample. The Digital weighing machine, weight of each students were measured 2 times, and the weight between two measurements should not different more than 100 gram. According real situation, the student's weight were not different between two measured. However, the instrument of digital weighing machine was the unstable of the measured if the student stand on the platform before the weight machine showed the prompt sign of that was the scale showing 0.0kg. Similarly, the first height value should not be different from the second more than 0.5 centimeter. If they are not, a third measurement will be taken, and find the average information to prevent an error from the measurement.

The self administrated questionnaire made from the review of the literature and theories. This questionnaire was evaluated validity from 3 experts and reliability testing by Conbrach's Alpha Coefficient which equal to 0.723. The questionnaires in this research were the good instrument to collected information, positivists prefer closed questions, save both budget and time, and had high reliability. However, the questionnaire was not use to collect the complete and factual information. Possibly, some parents responded to answer following their knowledge and understanding more than their actual practices. The further study should be done together with interviews or observation the behaviors of mothers and children.

1.3 Data collection

Parent's information, the researcher collected data by using questionnaires which were brought to their homes by their children. From 280 questionnaires distributed to mothers but 180 questionnaires were returned to researcher. The questionnaires were recruited after excluded incomplete data, and only 118 questionnaires were completed and used for analyzed. Respond rate of returning the questionnaires was 64.3% (from total 280 questionnaires, 180 questionnaires were sent back to researcher, these were not excluding criteria).

In protecting error of collected methods from child daily activity and school environment, researcher chose the 4-5 years old students who studying in the second grade. The children's weights were measured by the researcher who collected data within one day. Similarly, children's heights were also measured.

1.4 Data analysis

From the completed questionnaires, there were independent and dependent variables to analyzed association between variables. All variables were tested normally distributed by using Kolmogorov-Smirnov Goodness-of-Fit Test. The resulted of this testing found that each factor was not normal distribution, non-parametric variables, and many factors in this research were ordinal scale. The statistic test that researcher used to test the relationship between variables was Pearson Chi-square test. This method was appropriated the objectives and hypotheses of this research. The chi-square test was used to examine the association between categorical variables by crosstabs or two by n table. According to real analyzed variables, data was analyzed by cross-table, if the number in each categories less than 5, the categories will be re-categorize form until the number in categories more than 5 cells. However, Chi-square test had limited to use statistic method to analyze the relationship between variables. It can not show the strong association between various factors.

Part 2 Discussion on the finding

2.1 Parental factor

Parental factors were consisted of mother's and father's factors (Education level, Occupation, BMI, Personal ailments). The results were discussed as follows:

1. Parental education

The result found no statistically significant between education of the mother and father with children's nutrition status. This research's result which was disagreed with Strauss and Knight found that children whose mother's education was lower than high school had 1.47 times higher risk to be obesity than the children whose mother's education was higher than high school. There were studies showing that mother's education was related to child's nutritional status. Sakamoto, Wansorn, Tontisirin. and Marul (43) had studied obesity situation in kindergarten children in Saraburi Province and found that education of parents was related to children obesity. However, this research's result agreed with Wasoontara R. (2006) who studied factors related to over-nutritional status of school children. This study found that there was no association between parents' education and children nutrition status Pannee un-em (2007). Those studies found that there was no statistically significant association between education of mother with obesity in pre-school children, Nontaburi ($p = 0.428$). Possibly, the different cut-point on mother's educational level and area of study (urban and rural areas) had influence on the result of various studies.

2. Parental occupation

Occupation of mother in this study did not statistically significant with children's nutrition status in preschool children thus the hypothesis was rejected. This study agrees with research from Wanvimol K. who studied 521 school children grade1-10 in Bangkok Metropolitan. The result showed that there was no association between BMI of mother and father with obese children (p-value > 0.05). Patima P.(2003) studied influence of parental child rearing practices on childhood obesity. There was no association between mother's occupation and obese children. Pannee UN-EM who studied influence of factors on obesity children

located in Nontaburi province. Those studies found occupation of mother of obese and normal children were not different (p-value = 0.95).

However, the results from various researches were inconsistent of mother's occupation factors on children's nutritional status due to the different standard used for separating the variables, the different in focused areas characteristics, and also the complicate of family environment such as office-hour, time to rearing children per day, caregiver and family income.

3. Parental nutritional status

Concerning Body Mass Index of parents, this study showed both mother and father's nutritional status were not statistically significant with children's nutrition status in pre-school children thus the hypothesis was rejected. The research disagreed with Wanvimol K.(1993), the result showed that overweight mother tended to have a greater number of obese children when compared to those normal weight children. In addition, Pannee UM-EM(2007) studied factors influencing on obesity in pre-school children. The result showed the mothers' BMI were positively related to obesity in children, the increase of mothers' BMI tended to increase obesity in children as well.

The results from this research were inconsistent with various other studies due to the efficiency of pre-school's environment of this research. This school has the great prevention and control food from out side the pre-school. Moreover, foods (morning-break and lunch meal) have been controlled by teachers who have nutritional knowledge. In addition, this school had received health intervention from doctors, Phramongkutklao Hospital.

However, the results from this research were inconsistent with various studies coming from the different standards used in separating the variables such as BMI Asian preference, the different focused areas characteristics (rural or urban area), and also the complicate food preference in social culture.

2.2 Monthly income of family

This study showed both mother and father's nutritional status, there were no statistically significant with children's nutrition status in pre-school children thus

the hypothesis was rejected. The research disagreed with Richard S. MD (1999), this study investigated the association between home environment and socio-economic factors. A total of 2,913 normal weight children between ages 0-8 years were followed over 6-years period. The factors including roles of race, marital status, maternal education, family income and parental occupation were measured. The result showed that household income was significant predictor of childhood obesity (OR, low income: 2.91, medium income: 2.04).

This research agrees with result from Patima P. (2003) studying influence of parental child rearing practices on childhood obesity, Bangkok. There were no association between income of family and obese children. The study of Pannee UM-EM(2007) found no statically significant association between family income and obesity in pre-school children(p=0.552).

Various researches showed the result inconsistent with family monthly income factor on children's nutritional status. This may be because of the different study design, the standard used in separating the variables, the different focused monthly income characteristics, and also scope of the study, urban- rural areas.

2.3 Mother's behaviors on their children.

Mother's rearing practices on their children were separated into 2 parts: food choice and time management that mother spent for their children. The results were discussed as follows:

1. Mothers' behaviors toward food selection for their children were associated with children's nutrition status. The result of this study found that mothers' behaviors toward food selection for their children were statistically significant associated with children's nutritional status.

Various researches showed the result inconsistent of maternal rearing factor (31,32,33) on children's nutritional status. This may be because of the different standards used in separating the variables such as parent's child rearing method, the different focused rearing characteristics, food record of family and also scope of the study, urban or rural areas.

2. Maternal health behaviors towards their children in terms of time spending were associated with children's nutrition status. The result of this study found no statistically significant between maternal health behaviors towards their children in terms of time spending with children's nutrition status. The other researches, result from Patima P. (2003) studying influence of parental child rearing practices on childhood obesity, found association between the number of hours television watching including video and computer game, and child obesity. Various researches showed the inconsistent result of maternal rearing factor on children's nutritional status. This may be because of the different standards used in separating the variables such as parent's child rearing method, the different focused rearing characteristics, the food record of family and also scope of the study, urban or rural areas.

CHAPTFR VI
CONCLUSION AND RECOMMENDATION

This research is a cross-sectional study aimed to investigate factors that affected nutritional status among preschool children, Bangkok. The studied variables were parental factors such as education, occupation, BMI, personal ailment, family monthly incomes, mother's factors such as having obtained childhood obesity prevention knowledge, perceived levels and mother's behaviors towards to their child especially concerning food selection in regards to high-fat and high calories foods and free time management in terms of time spent with the child.

The subjects were 118 children, age between 4-5 years studying in a private preschool under the office of the Private Commission, Bangkok, and their parents (mother and father). The data was collected on February, 2007 by self administrated questionnaires were sent to parents. The questionnaire, it was separated into 2 parts which used to collected general information from parents and mother's factors "mother's perception and mother's behaviors towards their child". The children in this study, they were measured weight and height by used an electronic weighing machine and a microtoise. Obtained data were analyzed using data analysis software for frequency, percentage, average, SD, Odds ratio, Pearson Chi-square, and Fisher-exact with significant level ≤ 0.05.

The results showed that there were boys 47.5% and girls 52.5%. Age of children, 66.1% was children aged 5 years old. Number of children with aged 5 years was almost double of number of children with aged 4 years. The children's nutritional status of was classified with the standard weight for height by Growth Chart of 1 day-19 years old, Department of Health, MOPH, 1999. After children's weight-height was measured, the weight-height data was assessed by compared with the standard weight for height by Growth Chart. If child who was assessed weight for height more than 1.5 Standards Deviation, he was classified into over-nutritional status group. Similarly, child whose weight for height was assessed between the sum and remainder

of -1.5 and +1.5 Standard Deviation, he was classified into normal nutritional status group. This result showed that 21.2% of children in this study over-nutritional status.

The Body Mass Index, BMI of parents was evaluated by standardized BMI for Asia adult. 66.1% of mothers were normal weight status, 13.6% and 20.3% were overweight and obesity, 42.4% of fathers were normal weight status. Fathers' BMI status was classified into overweight and obesity at 25.4% and 32.2% respectively. Majority of over-nutritional children (72.0%) came from families that had family incomes more than or equal 18,660 baht per month. Most of father and mother had no personal ailment (84.75% and 77.12% respectively), and 14.4% of fathers had personal ailment with high cholesterol.

Most of mothers (85.6%) had ever obtained knowledge on childhood obesity or how to prevent childhood obesity from various media or magazines during the past 1 year. Mothers' perception were evaluated by used HBM theory in 4 aspects included perceived risk of obesity, perceived severity of obesity, perceived benefit and perceived the barriers of child-rearing behavior to prevent obesity in children. The overall of mother's perceptions were evaluated in high level with the grand total average means score 3.5 and 0.348 of standard deviation.

The resulted from mother's behaviors on food selection for their children per week. There was high level on food selection about fast-foods and traditional Thai desserts or desserts in coconut milk at mean score of 2.30 and 2.53 respectively. The result showed that 64.4% of mothers who sometimes had food selection behaviors on their children with fast foods such as fried chickens, pizza, burgers and 33.1% never selected these kinds of food for. 56.8% of mothers who sometimes had food selection behaviors on their children with traditional Thai desserts or desserts in coconut milk and 39.0% never selected this kind of food. In general the mothers in this study had behaviors of sometimes selecting high calories-food for their children such as high fat snacks, western desserts, crispy snacks, beverage and soft-drink. Therefore, the overall of mother's behaviors on food selection for their child was evaluated in moderate level at grand total average means score 1.93 and 0.413 of standard deviation.

The resulted from mother's behaviors on time management on weekends or after school for their children. There was high level on time management in teaching

children to have meal on time and spending time on weekends or after school playing computer games or game console at mean score 2.25 and 2.07 respectively. In general the mothers in this study had not appropriate behaviors of manage free time for their children such as time for exercise, time at weekend to have meal with children outside home and especially time for watching TV or reading comics book.

In part of analytical statistics of factors influencing to children's nutritional status, mother's behaviors in food selection was only one factor that had significant difference on children's nutritional status ($p<0.05$). Among children's normal nutrition group, mother's behavior score in food selection were evaluated to moderate and low level (66.7% and 23.7% of normal weight children respectively), and mother's behaviors score in free time management were evaluated to moderate and low level (65.6% and 20.4% of total normal weight children respectively). These result revealed that mother's behavior in food selection and free time management were "risk" behaviors toward the normal weight children group to become over-nutritional status in the future. This research concluded that over-nutritional of preschool children remain a problem in private kindergarten, and mother's behavior in food selection had influence on children's nutritional status. It is necessary to promote nutrition guideline among mothers whose children were overweight and normal nutritional status in order to reduce risk factors and prevent obesity in preschool children.

Recommendations

1. Recommendation for area of research

1.1 Home and Family

According to the result of this study, it was indicated the association of mother's food-selection behaviors with the nutritional status of their children. Thus, mother's food-selection behavior should be set as primary prevention on pre-school children obesity. Moreover, the results indicated that mothers of normal weight children were also having inappropriate food selection and time management behavior. They tended to select high fat and energy foods for their children, and might cause future obesity problems. The advice given to this kind of family is to educate the mothers, of normal weight and excess weight children, on nutritional foods

selection and children's time management. The mothers could learn from various types of media, such as, books, Internet, and also the practical meetings at hospital or the meetings held by Division of Nutrition, Ministry of Public Health. With understanding, good attitude, and proper use of the knowledge gained from those media, mothers could adjust their child-rearing behavior into appropriate ways and develop into future suitable food-consumption behaviors of the grown-ups.

1.2 The school

From data collection on students' weight and height measurement and pre-school environment survey, the researcher found that the preschool of this student has continuously measured the weight and height of the students on a yearly basis. The result of the measurement is recorded in a health report which is forwarded to parents after every measurement. In addition, the researcher has noted that the environment of the school, which is situated around armed force area, has prevented food and beverage shops, trolleys and peddlers from selling their products outside the school at all times. There is only one sweet shop in Kindergarten school which is managed by the school itself. The shop sells only a few selections of snacks, sandwiches, soft-drinks (non-carbonated), UHT milk and UHT fruit juice. For this reason, consumption behaviors of students in the school are less likely to be affected by food-environment outside the school, especially from peddlers and trolleys around the areas. From the research findings mentioned above, the researcher would like to make 2 recommendations to the school on its evaluation and policy;

1. Assessment

1.1 Monitor health status to identify community health problems.

1.2 Diagnose and investigate health problems and health hazards in the community.

2. Policy development

2.1 Inform, educate and empower people about health issue especially teacher parent and children.

2.2 Identify and solve health problems.

2.3 Develop policies and plans that support individual and community health efforts.

1.3 Recommendation for Department of Nutritional, Ministry of Public Health

According to the result of this study, it was indicated the association of mother's food-selection behaviors with the nutritional status of their children. Moreover, the results indicated that mothers of normal weight children were also having inappropriate food selection and time management behavior. They tended to select high fat and energy foods for their children, and might cause future obesity problems. Thus, researcher recommends to The Department of Nutritional, Ministry of Public Health by this follow:

1. Direct programs and funds to the priority health problems and high-risk populations identified through a community needs assessment.

2. Monitor statistical data, program evaluations and consumer satisfaction survey to be certain that the public health system is responding to current and anticipated needs.

3. Research for new insights and innovative solutions to health problems.

1.4 Recommendation for other study similar topic

Carrying out other researches should be done as follow:

1. Collect other factors such as caloric intake, energy expenditure at home, school and activities out of school hours and analyze the relationship**.**

2. Collect information by using questionnaire and applying interview method to collect the data from the sample.

2.3 Study factors by using other theories or study designs.

REFERENCES

1. Cara B Ebbeling, Dorota B Pawlak, David S Ludwig. Childhood obesity: public-health crisis, common sense cure. [online] Available From : http://www.commercialalert.org/childhoodobesity.pdf [Accessed 2006 July 20].
2. World Health Organization.[online]. Global strategy on diet, physical activity and health: obesity and overweight; 2003. Available From : http://www.who.int/dietphysicalactivity/media/en/gsfs_obesity.pdf [Accessed 2006 Jan 14].
3. แสงโสม สีนะวัฒน์. สถานการณ์โรคอ้วนในประเทศไทย; ปี 2541 (กุมภาพันธ์) [online] Available From : http://advisor.anamai.moph.go.th/factsheet/nutri3-5.htm [Accessed 2006 February 14]
4. Nutrition Division, Department of Health, Ministry of Public Health. Prevalence of obesity in pre-school and primary school student age 6-14 from 12 areas. 2000.
5. กองโภชนาการ กรมอนามัย. รายงาน สถานการณ์ภาวะโภชนาการของประเทศไทยในช่วงแผนพัฒนาฉบับที่ 8 พ.ศ. 2540-2544. นนทบุรี: กรมอนามัย กระทรวงสาธารณสุข; 2545.
6. สถานการณ์ด้านโภชนาการของเด็กและเยาวชน. Available From : http://www.hiso.or.th/hiso/analystReport/picture/9_lesson1.pdf [Accessed 2006 July 20].
7. กองโภชนาการ กรมอนามัย กระทรวงสาธารณสุข. สถานการณ์ภาวะโภชนาการเกินของนักเรียนระดับอนุบาลและประถมศึกษาในประเทศไทย ; 2543.
8. การดำเนินงานโภชนาการในประเทศไทย พ.ศ. 2548. Available From : http://nutrition.anamai.moph.go.th/process.doc [Accessed 2006 July 26].
9. Nestle Nutrition Workshop Series Pediatric Program Volume49. Obesity in childhood and adolescent. Childhood overweight: Family environmental factors; 2001: 28-29.
10. Nestle Nutrition Workshop Series Pediatric Program Volume49. Obesity in childhood and adolescent. Natural history of obesity; 2001: 20-21.

11. Nestle Nutrition Workshop Series Pediatric Program Volume49. Obesity in childhood and adolescent. Early origins of obesity; 2001: 14-15.
12. เกื้อวงศ์ บุญสิน, อัจฉรา เอนซ์. ผู้ดูแลบุตรวัย 3-5 ปี ของสตรีในเขตเมืองและเขตชนบทของประเทศไทย. กรุงเทพฯ: สถาบันวิจัยประชากรศาสตร์ จุฬาลงกรณ์มหาวิทยาลัย; 2539.
13. เกื้อวงศ์ บุญสิน, การดูแลเด็กในประเทศไทย : ตัวกำหนดและผลกระทบต่อสุขภาพอนามัยของเด็กวัยก่อนเข้าโรงเรียน = Child care in Thailand : determinants and health consequences for preschool-aged children. กรุงเทพฯ : จุฬาลงกรณ์มหาวิทยาลัย; 2535.
14. กรมอนามัย กระทรวงสาธารณสุข.รายงานเกณฑ์อ้างอิงน้ำหนัก ส่วนสูงและเครื่องชี้วัดภาวะโภชนาการของประชาชนไทย อายุ 1 วัน-19 ปี 2542. นนทบุรี: กรมอนามัย กระทรวงสาธารณสุข; 2542.
15. Household Expenditure Survey 2007 by Household Socio-economic Survey: National Statistics Office)
16. ร้อยละของปัญหาโภชนาการจากการสำรวจสภาวะสุขภาพประชากรไทยครั้งที่2 พ.ศ.2540 และการสำรวจในโครงการวิจัยพัฒนาการวิจัยแบบองค์รวมของเด็กไทย
17. จารุณี อรัญภูมิ. ความสัมพันธ์ระหว่างปัจจัยบางประการและการรับรู้บทบาทการเป็นบิดากับการปฏิบัติตามบทบาทของบิดาในการอบรมเลี้ยงดูบุตรวัยก่อนเรียน. [วิทยานิพนธ์การศึกษาวิทยาศาสตรมหาบัณฑิต ภาควิชาอนามัยครอบครัว]. กรุงเทพฯ: บัณฑิตวิทยาลัย มหาวิทยาลัยมหิดล, 2542.
18. โภชนาการสำหรับวัยทารกและเด็กก่อนวัยเรียน. Available From : http://www.nmc.ac.th/database/file_science/ph.nutrition.dek1ppt [Accessed 2006 July 18]
19. Benton D. Role of parents in the determination of the food preferences of children and the development of obesity. Int J Obes Relat Metab Disord.; 2004 Jul; 28(7):858-69.
20. Health Belief Model. Communication and Community Development for Health Information: Constructs and Models for Evaluation' by John E. Bowes, Review prepared for the National Network of Libraries of Medicine, Pacific Northwest Region, Seattle, December 1997.
21. สุภาพรณ์ เชิดชัยภูมิ. ปัจจัยที่มีความเกี่ยวข้องกับภาวะอ้วนในกลุ่มเด็กนักเรียนชั้นมัธนมศึกษาปีที่ 1-6 อ.เมือง จ.จันทบุรี [วิทยานิพนธ์ปริญญาวิทยาศาสตรมหาบัณฑิต

สาขาเวชศาสตร์ชุมชน]. กรุงเทพฯ: บัณฑิตวิทยาลัย จุฬาลงกรณ์มหาวิยาลัย; 2542.

22. จันทิมา ดวงแก้ว และนวลตา อาภาคัพภะกุล. น้ำหนักเด็กนักเรียนมัธยมศึกษาตอนต้น : กรณีศึกษาโรงเรียนหาดใหญ่วิทยาลัยสมบูรณ์กัลยา. วารสารวิชาการสาธารณสุข 2543; 2: 228-31.
23. Robert C. Whitaker, Cindy M. Deeks, Amy E. Baughcum and Bonny L. Specker. The Relationship of Childhood Adiposity to Parent Body Mass Index and Eating Behavior. Obesity Research journal 2000: 234–240.
24. Magarey AM, Daniels LA, Boulton TJ, Cockington RA. Predicting obesity in early adulthood from childhood and parental obesity. Int J Obes Relat Metab Disord. 2003; 27(4):505-13.
25. LL Hui, EAS Nelson. Dietary characteristics of Hong Kong young children: Implications for Nutrition Education. HK J Paediatr 2006;11:255-262
26. Kylie Hesketh, Melissa Wake, Elizabeth Waters, John Carlin and David Crawford. Stability of body mass index in Australian children: a prospective cohort study across the middle childhood years. Public Health Nutrition 2003; 7(2): 303–309.
27. Susan L.Johnson and Leann L.Birch. Parents' and children's adiposity and eating style. Pediatrics 1994: 653-661.
28. Dorte L. Jahnke and Petra A. Warschburger. Familial transmission of eating behaviors in preschool-aged children. Obesity a research journal 2008; 16(8): 821–1825.
29. Hood, M Y , Moore, L L, Sundarajan Ramamurti, Ellison, R C. Parental eating attitudes and the development of obesity in children. The Framingham children's study. Int J Obes Relat Metab Disord. 2000; 24(10): 1319-25
30. Amy E. Baughcum, Kathleen A.Burklow.Maternal. Feeding practices and childhood obesity: A focus group study of low-income mothers. Arch Pediatr Adolesc Med.1998;152:1010-14.
31. Amy E. Baughcum, Scott Power, Suzanne Bennett Johnson, Leigh A. Chamberlin, Cindy M. Deeks, Anjalijain, Robert C. Whitaker. Maternal feeding practices and beliefs and their relationships to overweight in early childhood. Develop. and Behavioral Pediatrics 2001.

32. Donna Spruijt-Metz, Christine H Lindquis. Relation between mothers' child-feeding practices and children's adiposity. Am J Clin Nutr 2002.
33. Leann L Birch and Jennifer O Fisher. Mothers' child-feeding practices influence daughters' eating and weight Amer. Journal of Clinical Nutrition 2000; 1054-61.
34. Patima Pornpojamarn. The influence of parental child rearing practices on childhood obesity in primary school in urban Bangkok. [M.Sc. (Public Health) Major in Nutrition]. Bangkok: Graduate Mahidol University; 2003.
35. Misaki Akasaka Ueda. Child feeding and caring behavior of mothers with 1-3 year oil children of urban poor communities in Bangkok: A Social-Behavioral perspective . [M.Sc. Primary Health Care Management]. Bangkok: Graduate Mahidol University; 1997.
36. Prangthong Chitdumrong. Feeding practice and nutritional status of preschoolchildren in ONNUJ, Bangkok.[M.Sc. (Nutrition)]. Bangkok: Graduate Mahidol University; 1990.
37. Sumruay Yotawichit. Parental practice of parental role responsibilities in child care and child rearing [M.Sc. (Public Health)]. Bangkok: Graduate Mahidol University; 1988.
38. Sumruay Yotawichit. Parental practice of parental role responsibilities in child care and child rearing [M.Sc. (Public Health)]. Bangkok: Graduate Mahidol University; 1988.
39. ศิริพร หาขุน. แบบแผนการบริโภคอาหารว่างของเด็กอ้วนและเด็กปกติอายุ 7-9 ปี โรงเรียนเอกชน กรุงเทพมหานคร. [ปริญญาวิทยาศาสตรมหาบัณฑิต สาขาเอกโภชนวิทยา]. กรุงเทพฯ : มหาวิทยาลัยมหิดล, 2536.
40. อนุกรรมการเฉพาะกิจเรื่องการดูแลและอบรม. การอบรมเลี้ยงดูเด็กไทย. กรุงเทพฯ: เจริญผล; 2536.
41. อรัญญา ศิริธรรมวัฒน์. อาหารเลี้ยงลูก. กรุงเทพมหานคร : โรงพิมพ์รุ่งเรืองรัตน์
42. วันเพ็ญ พิศาลพงษ์. การศึกษาวิธีการอบรมเลี้ยงดู พัฒนาการทางร่างกายและความพร้อมทางการเรียนของเด็กวัยก่อนเรียนในกรุงเทพมหานคร. กรุงเทพฯ: สถาบันวิจัยพฤติกรรมศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ ประสานมิตร: 2526
43. Sakamoto, N., Wansorn, S., Tontisirin, K., Marui, E. A social epidemiologic

study of obesity among preschool children in Thailand. International Journal of Obesity, 2001; 25 (3): 389-394.

44. Strauss RS, Knight J. Influence of the home environment on the development of obesity in children. Pediatrics. Jun 1999; 103(6) : 85.
45. Prepared for the National Institute for Health Care Management Foundation Forum. Childhood Obesity – Advancing effective prevention and treatment. available From : http://www.nihcm.org/ChildObesity Overview.pdf [accessed Aug 12, 2004].
46. American Journal of Clinical Nutrition. November 2000 ;Vol. 72, No. 5, 1285S-1290s
47. Larry Axmaker, EdD, PhD. Childhood obesity should be taken seriously. Available From : http://vanderbiltowc.wellsource.com/dh/content.asp?ID=8 [accessed July 25, 2004]
48. Richard S.Strauss and Judith Knight. Influence of the home environment on the development of obesity in children. Pedia. June 1999.

APPENDIX

APPENDIX A

No. MU 2006-206

Documentary Proof of Ethical Clearance
The Committee on Human Rights Related to
Human Experimentation
Mahidol University, Bangkok

Title of Project: Influence of Mother Rearing Practices on Obesity in Children 4-5 Years Old Studying in a Privacy Preschool, Bangkok
(Thesis for Master Degree)

Principle Investigator: Miss Sirikunya Torugsa

Name of Institution: Faculty of Public Health

Approved by the Committee on Human Rights Related to Human Experimentation

Signature of Chairman: .....
(Professor Dr.Srisin Khusmith)

Signature of Head of the Institute: .....
(Professor Dr.Porntip Matangkasombut)

Date of Approval: - 8 NOV 2006

Date of Expiration: - 7 NOV 2007

APPENDIX B

ภาควิชาโภชนวิทยา คณะสาธารณสุขศาสตร์
มหาวิทยาลัยมหิดล ถนนราชวิถี
กรุงเทพ 10400 โทร 0-23548539

16 กุมภาพันธ์ พ.ศ.2550

เรื่อง ขอความอนุเคราะห์ตอบแบบสอบถาม

เรียน ผู้ปกครองเด็กนักเรียนอนุบาล 2

ดิฉันนางสาวสิริกัญญา โตรักษา นักศึกษาระดับปริญญาโท ภาควิชาโภชนวิทยา คณะสาธารณสุขศาสตร์ มหาวิทยาลัยมหิดล ได้รับอนุมัติให้ทำวิทยานิพนธ์เรื่อง "อิทธิพลการเลี้ยงดูของมารดาต่อโรคอ้วนในเด็กวัย 4-5 ปี ที่กำลังศึกษาอยู่ในโรงเรียนอนุบาลหลักสูตรเอกชน กรุงเทพมหานคร" มีวัตถุประสงค์การวิจัยเพื่อหาปัจจัยที่มีอิทธิพลต่อการเกิดโรคอ้วนในเด็กวัยก่อนเรียน โดยเก็บข้อมูลจากบิดามารดาของนักเรียนที่กำลังศึกษาอยู่ชั้นอนุบาล 2 โดยใช้วิธีฝากแบบสอบถามไปกับเด็กนักเรียน

แบบสอบถามฉบับนี้ เพียงต้องการสอบถามข้อมูลเกี่ยวกับตัวท่านและการเลี้ยงดูด้านโภชนาการต่อบุตรของท่าน โดยท่านสามารถเลือกที่จะตอบและไม่ตอบแบบสอบถามฉบับนี้ได้ ในแต่ละข้อคำถามท่านสามารถตอบแบบสอบถามได้ด้วยความสบายใจ ทุกข้อคำถามในแบบสอบถาม ไม่มีคำตอบใดถือว่าถูกหรือผิด คำตอบที่ท่านตอบจะไม่มีผลกระทบต่อตัวท่าน บุตรของท่านและครอบครัวของท่านแต่ประการใด ผู้วิจัยจะนำข้อมูลที่ได้ไปวิเคราะห์ในภาพรวมและจะเก็บรักษาข้อมูลทั้งสองส่วนที่ท่านตอบไว้เป็นความลับอย่างที่สุด

คำตอบของท่านมีคุณค่าอย่างยิ่งต่องานวิจัย จึงใคร่ขอความอนุเคราะห์จากท่านผู้ปกครองในการตอบแบบสอบถามฉบับนี้ เพื่อที่ผู้วิจัยจะได้นำองค์ความรู้ที่ได้ไปใช้ในการพัฒนาด้านโภชนาการในงานสาธารณสุขต่อไป

ขอขอบคุณพระคุณอย่างสูง

สิริกัญญา โตรักษา(ผู้วิจัย)

ท่านผู้ปกครองที่ตอบแบบสอบถาม ผู้วิจัยขอความกรุณาท่านโปรดส่งแบบสอบถามกลับไปยังคุณครูประจำชั้นของบุตรของท่าน
ภายในวัน พุธ ที่ 21 กุมภาพันธ์ 2550 *ขอขอบพระคุณในความกรุณาของท่าน มา ณ โอกาสนี้*

ตอนที่ 1 : แบบสอบถามบิดามารดาเกี่ยวกับข้อมูลทั่วไป ขอความกรุณาท่านตอบข้อมูลให้ครบทุกข้อ

คำชี้แจง บิดามารดาในข้อคำถาม คือ พ่อแม่ของเด็กนักเรียน และบุตรคือเด็กนักเรียนที่นำแบบสอบถามมาให้ท่าน

1. ท่านเป็นผู้ปกครองของ(ด.ช.)(ด.ญ.) .....นามสกุล.....ชั้นอนุบาล..... /.....
2. บุตรของท่าน เกิดวันที่..... เดือน .....พ.ศ. .....
3. ผู้ที่ทำหน้าที่หลักในการเลี้ยงดูบุตร(ในข้อ 1)ในปัจจุบันนี้ ด้านโภชนาการ/การรับประทานอาหารและกิจวัตรประจำวัน **(เลือกตอบเพียงข้อเดียว) ****

( ) บิดา ( ) มารดา ( ) ญาติ ระบุ.....

( ) พี่เลี้ยง ( ) อื่นๆ ระบุ .....

4. สถานภาพสมรสของท่าน

( ) คู่ ( ) แยกกันอยู่ ( ) หย่า ( ) หม้าย

5. รายได้ของครบครัวเฉลี่ยต่อเดือนโดยประมาณ คือ ..... บาท

ข้อมูลทั่วไปของบิดา (ข้อมูลปัจจุบัน)

- น้ำหนักของบิดา ..... กิโลกรัม ส่วนสูงของบิดา ..... เซนติเมตร
- ท่านเกิดวันที่ ..... เดือน ..... พ.ศ. ..... ปัจจุบันท่านอายุ ..... ปี
- วุฒิการศึกษา [ ] ชั้นประถมศึกษา [ ] ชั้นมัธยมศึกษาตอนต้น
  [ ] ชั้นมัธยมศึกษาตอนปลาย [ ] อนุปริญญา, ปวช. , ปวส.
  [ ] ปริญญาตรี [ ] ปริญญาโท - เอก
  [ ] อื่นๆ โปรดระบุ.....
- การประกอบอาชีพ [ ] รับราชการ [ ] รัฐวิสาหกิจ
  [ ] บริษัทเอกชน [ ] ประกอบธุรกิจส่วนตัว/ค้าขาย
  [ ] รับจ้าง [ ] อื่นๆ โปรดระบุ.....

ข้อมูลทั่วไปของมารดา (ข้อมูลปัจจุบัน)

- น้ำหนักของมารดา ..... กิโลกรัม ส่วนสูงของมารดา ..... เซนติเมตร
- ท่านเกิดวันที่ ..... เดือน ..... พ.ศ. ..... ปัจจุบันท่านอายุ ..... ปี
- วุฒิการศึกษา [ ] ชั้นประถมศึกษา [ ] ชั้นมัธยมศึกษาตอนต้น
  [ ] ชั้นมัธยมศึกษาตอนปลาย [ ] อนุปริญญา, ปวช. , ปวส.
  [ ] ปริญญาตรี [ ] ปริญญาโท - เอก
  [ ] อื่นๆ ระบุ.....
- การประกอบอาชีพ [ ] รับราชการ [ ] รัฐวิสาหกิจ
  [ ] บริษัทเอกชน [ ] ประกอบธุรกิจส่วนตัว/ค้าขาย
  [ ] รับจ้าง [ ] อื่นๆ ระบุ.....

<u>แบบสอบถามตอนที่ 2 ทั้งหมด ขอความกรุณามารดาของเด็ก (ผู้ที่นำแบบสอบถามมาให้ท่าน) เป็นผู้ตอบเท่านั้น</u>**

<u>ตอนที่ 2</u> : *2.1คำชี้แจง กรุณาเขียนเครื่องหมายถูก(✓) ลงในช่องที่ท่านต้องการตอบมากที่สุด*

ไม่เห็นด้วยอย่างยิ่ง หมายถึง ท่านไม่เห็นด้วยกับข้อความดังกล่าวอย่างที่สุด
ไม่เห็นด้วย หมายถึง ท่านไม่เห็นด้วยกับข้อความดังกล่าว
ไม่แน่ใจ หมายถึง ท่านไม่แน่ใจกับข้อความดังกล่าว
เห็นด้วย หมายถึง ท่านเห็นด้วยกับข้อความดังกล่าว
เห็นด้วยอย่างยิ่ง หมายถึง ท่านเห็นด้วยกับข้อความดังกล่าวอย่างมากที่สุด

ตัวแปรความเชื่อด้านสุขภาพ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
<u>หมวดที่ 1: การรับรู้เกี่ยวกับโอกาสเสี่ยงที่บุตรจะเป็นโรคอ้วน</u> 1. ครอบครัวที่มีพ่อและแม่เป็นโรคอ้วน ลูกก็จะมีโอกาสเสี่ยงที่จะเป็นโรคอ้วนเช่นกัน					
2. อาหารประเภทไขมันหรืออาหารที่ปรุงประกอบด้วยไขมัน-น้ำมันเท่านั้น ที่เมื่อเด็กกินมากเกินไปจะทำให้อ้วน					
3. เด็กสามารถกินอาหารที่มีส่วนผสมจำพวกข้าว,แป้งและน้ำตาลในปริมาณที่สูงได้ เพราะอาหารประเภทดังกล่าว ไม่ทำให้เด็กเสี่ยงที่จะเป็นโรคอ้วน					
4. เด็กวัย 4-5 ปี ที่ชอบนั่งดูทีวี-การ์ตูน หรือเล่นเกมส์ โดยนั่งเป็นเวลานานหลายชั่วโมง มีโอกาสเสี่ยงที่จะอ้วนได้					
5. เด็กวัย4-5ปี ไม่มีความจำเป็นที่ต้องไปควบคุมน้ำหนัก					
<u>หมวดที่ 2: การรับรู้ถึงความรุนแรงของโรคอ้วนในเด็ก</u> 1. เด็กวัย4-5 ปีที่มีรูปร่างอ้วน เป็นสิ่งที่ไม่ต้องกังวล					
2. โรคอ้วนในเด็ก ไม่ได้ทำให้เด็กมีความเสี่ยงที่จะเป็นโรคความดันโลหิตสูง และเบาหวาน					
3. โรคอ้วนในเด็ก ไม่ได้มีผลทำให้เด็กมีความเสี่ยงที่จะเจริญเติบโตช้าเกินเกณฑ์					
4. ความอ้วนในเด็ก อาจส่งผลทำให้การเรียนและการรับรู้ลดลงกว่าเด็กปกติ					
5. ความอ้วนในเด็ก อาจส่งผลกระทบต่อการเล่น การทำกิจกรรมและการปรับตัวในกลุ่มเพื่อน					
<u>หมวดที่ 3: การรับรู้ถึงประโยชน์ของการปฏิบัติพฤติกรรมการเลี้ยงดูเด็กเพื่อป้องกันโรคอ้วน</u> 1. การดูแลให้บุตรมีน้ำหนักเหมาะสมตามเกณฑ์ ส่งผลให้บุตรมีสุขภาพจิตและอารมณ์ที่แจ่มใส					
2. การที่ลูกไม่เป็นโรคอ้วน ทำให้ลดความเสี่ยงต่อการเป็นโรคอ้วนเมื่อเขาเจริญเติบโตเป็นผู้ใหญ่ได้					

ตัวแปรความเชื่อด้านสุขภาพ	ไม่เห็นด้วยอย่างยิ่ง	ไม่เห็นด้วย	ไม่แน่ใจ	เห็นด้วย	เห็นด้วยอย่างยิ่ง
3. หากท่านดูแลชนิดและปริมาณการทานอาหารของลูกให้ถูกต้อง จะทำให้เด็กเสี่ยงต่อการมีน้ำหนักต่ำกว่าเกณฑ์หรือแคระแกรนได้					
4. แม้ท่านจะดูแลการกินอาหารของลูก(ชนิดและปริมาณ)ให้ถูกต้องแล้ว ก็ไม่ได้ทำให้ลูกลดความเสี่ยงที่จะเป็นโรคอ้วน					
5. การดูแลให้ลูกมีน้ำหนักเหมาะสมตามเกณฑ์ส่งผลให้ท่านประหยัดรายจ่ายด้านสุขภาพได้					
<u>หมวดที่ 4: การรับรู้ถึงอุปสรรคต่อพฤติกรรมการเลี้ยงดูบุตรเพื่อป้องกันโรคอ้วนในเด็ก</u> 1. การควบคุมการรับประทานอาหารของลูก ประเภทขนมหวาน หรืออาหารที่มีรสชาติหวานมัน เป็นเรื่องที่ไม่ยุ่งยากสำหรับท่าน					
2. การติดตามดูน้ำหนักและส่วนสูงของบุตรว่ามีความเหมาะสมตามเกณฑ์เป็นเรื่องที่ท่านยังไม่เข้าใจ					
3. ท่านมีความรู้สึกว่า การที่เด็กวัย 4-5ปี มีรูปร่างอ้วน ดูเป็นเด็กที่มีสุขภาพดี					
4.ท่านคิดว่าการเลือกอาหารให้ถูกตามหลักโภชนาการของเด็กวัย 4-5ปี เป็นเรื่องที่ท่านเข้าใจดี					
5. ท่านคิดว่าท่านไม่มีเวลาเพียงพอ ที่จะพาลูกไปใช้เวลาว่างในการออกกำลังกาย					

<u>2.2 แบบสอบถามเรื่องแรงจูงใจให้เกิดพฤติกรรมการเลี้ยงดูบุตร</u> ; *กรุณาเขียนเครื่องหมายถูก(✓) ลงในช่องที่ท่านต้องการตอบ*

1. ช่วงระยะเวลา 1 ปีที่ผ่านมาจนถึงปัจจุบัน ท่านเคยได้รับความรู้เกี่ยวกับโรคอ้วนในวัยเด็ก หรือการเลี้ยงดูเด็กไม่ให้เป็นโรคอ้วนจากสื่อต่างๆ เช่น วิทยุ โทรทัศน์ หนังสือพิมพ์ บทความตามวารสาร บทความตามนิตยสารหรือไม่

( ) ไม่เคยได้รับ ( ) เคย ประมาณ 1-2ครั้ง ( ) เคยตั้งแต่ 3 ครั้งขึ้นไป

2.. มารดาของเด็กมีโรคประจำตัว (ตอบได้มากกว่า 1 ข้อ)

( ) ไม่มี ( ) เบาหวาน ( ) ความดันโลหิตสูง

( ) โรคหัวใจ ( ) คลอเรสเตอรอลในร่างกายสูง

3. บิดาของเด็กมีโรคประจำตัว (ตอบได้มากกว่า 1 ข้อ)

( ) ไม่มี ( ) เบาหวาน ( ) ความดันโลหิตสูง

( ) โรคหัวใจ ( ) คลอเรสเตอรอลในร่างกายสูง

2.3. แบบสอบถามเรื่องการเลี้ยงดูบุตร(บุตร/ลูก คือ เด็กนักเรียนที่นำแบบสอบถามมาให้ท่าน)

2.3.1. คำชี้แจง **กรุณาเขียนเครื่องหมายถูก (✓) ลงในช่องที่ท่านต้องการตอบให้ตรงกับความเป็นจริงมากที่สุด**

พฤติกรรมที่ท่านแสดงต่อลูก	ความถี่ในการปฏิบัติ / สัปดาห์			
	ไม่เคย	1-2 ครั้ง	3-4 ครั้ง	ตั้งแต่ 5 ครั้งขึ้นไป
ใน 1 สัปดาห์ เฉลี่ยแล้วท่านซื้ออาหารรายการดังต่อไปนี้ให้ลูกกินบ่อยแค่ไหน				
1. อาหารฟาสต์ฟูด เช่น ไก่ทอด, พิซซ่า, เบอร์เกอร์, เฟรนฟราย โดยการพาลูกไปกินที่ร้าน และสั่งมาให้ลูกกินที่บ้าน				
2. อาหารพวก ไส้กรอกทอด, ลูกชิ้นทอด, หมูปิ้ง, ไก่ย่าง				
3. ขนมหวานไทย เช่น ทองหยิบ, ทองหยอด, ฝอยทอง, ขนมหวานน้ำกะทิ(ลองช่อง บัวลอย ฝักทองแกงบวช) ฯลฯ				
4. ขนมหวานฝรั่ง เช่น ช็อคโกแลต, เค้ก, คุ้กกี้, พาย, แยมโรล, โดนัส ฯลฯ				
5. ขนมกรุบกรอบ เช่น ขนมถุงยี่ห้อต่างๆ มันฝรั่งทอดกรอบ (บรรจุถุงและกระป๋องที่ขายตามห้างสรรพสินค้า หรือร้านขายของชำ)				
6. น้ำอัดลม, น้ำหวานสีต่างๆ, น้ำหวานแต่งกลิ่นผลไม้				

2.3.2. **กรุณาเขียนเครื่องหมายถูก (✓) ลงในช่องที่ท่านต้องการตอบให้ตรงกับความเป็นจริงมากที่สุด**

ไม่เคย หมายถึง พฤติกรรมนั้นท่านไม่เคยปฏิบัติกับลูกเลย
บางครั้ง หมายถึง พฤติกรรมนั้นท่านปฏิบัติกับลูกไม่กี่ครั้งที่พบเหตุการณ์ดังกล่าว
ค่อนข้างบ่อย หมายถึง พฤติกรรมนั้นท่านปฏิบัติกับลูกเกือบทุกครั้งที่พบเหตุการณ์ดังกล่าว
เป็นประจำ หมายถึง พฤติกรรมนั้นท่านปฏิบัติกับลูกทุกครั้งที่พบเหตุการณ์ดังกล่าว

พฤติกรรมที่ท่านแสดงต่อลูก	ความถี่ในการปฏิบัติ			
	ไม่เคย	บางครั้ง	ค่อนข้างบ่อย	เป็นประจำ
1. ท่านฝึกหรือสอนให้ลูกกินอาหารให้เป็นเวลา				
2. ในเวลาว่างจากการเรียนหรือวันหยุด ท่านจะหากิจกรรมให้ลูกทำหรือให้ลูกออกกำลังกาย เช่น ขี่จักรยาน เตะบอล วิ่งเล่น ว่ายน้ำฯลฯ				
3. ในเวลาว่างจากการเรียนหรือวันหยุด ท่านให้ลูกใช้เวลาว่างในการเล่นเกมส์คอมพิวเตอร์ หรือเกมส์ที่ต่อกับทีวี หรือเกมส์กด				
4. ในเวลาว่างจากการเรียนหรือวันหยุด ท่านให้ลูกใช้เวลาว่างในการดูการ์ตูนทีวี หรือหนังการ์ตูนมาเปิดให้ลูกดู				
5. ในเวลาว่างจากการเรียนหรือวันหยุด ท่านจะพาลูกไปกินอาหารนอกบ้าน (ตามร้านอาหารทั่วไป หรือห้างสรรพสินค้า)				

BIOGRAPHY

NAME	Miss Sirikunya Torugsa
DATE OF BIRTH	13 February 1982
PLACE OF BIRTH	Siriraj Hospital, Bangkok Thailand
INSTITUTIONS ATTENDED	Thammasat University, 2003 Bachelor of Science (Health Science) Mahidol University, 2008 Master of Science (Public Health)
HOME ADDRESS	1684 Soi Bangkok-Nontaburi 40/1 Bangsue Bangkok-Nontaburi Rd. Bangkok, Thailand 10800 Tel. 084-0132560