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Breastfeeding and Adult Health Indicators

Rachel Lesley Lewis

University of Tennessee - Knoxville

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UNIVERSITY HONORS PROGRAM

SENIOR PROJECT - APPROVAL

Name: Rachel Lewis

College: Nursing Department: _____

Faculty Mentor: Dr. Maureen Groër

PROJECT TITLE: Breastfeeding and Adult Health Indicators

I have reviewed this completed senior honors thesis with this student and certify that it is a project commensurate with honors level undergraduate research in this field.

Signed: Maureen Groër RN PhD, Faculty Mentor

Date: 5/3/02

Comments (Optional):

Breastfeeding and Adult Health Indicators

Rachel L. Lewis
Dr. Maureen Groer

RUNNING HEAD: Breastfeeding

Breastfeeding and Adult Health Indictors

Senior Honors Project

Rachel Lewis

Beth Dalton, RN

Dr. Maureen Groer, RN, MSN, PhD

Although there are many benefits to breastfeeding an infant, only 59.7% of women in the United States are breastfeeding their infants when they leave the hospital. This number drops to 30% during the first few months (Ryan 1997). Many reasons can factor into a mother's decision whether or not to breastfeed. Some of these include lack of knowledge about breastfeeding, concern about the process of breastfeeding, and difficulty breastfeeding in public (Gromada and Spangler 1998). The healthcare providers can more confidently provide information about the benefits of breastfeeding as more research is completed. A lot of the research has provided data on the benefits of breastfeeding for the infant and preschool age, but there is a need for research concerning breastfeeding and adulthood health.

Literature Review

Many research studies have concluded that breast milk contains unique components that greatly benefit the infant. The milk contains high levels of immunoglobins and is a source of passive immunity. Secretory IgA, found in colostrums and mature milk, is known to have antibacterial and antiviral properties (Olds, et al 2000). It also provides antibodies for many respiratory and intestinal diseases. Infants who are formula fed have a higher incidence of ear infections, pneumonia, and gastroenteritis. Breast milk also provides protection from developing immune system problems later on such as Crohn's disease and juvenile rheumatoid arthritis (Dermer and Montgomery 1997).

Research has also shown benefits of breastfeeding lasting until adolescence. One risk factor for developing cardiovascular disease is obesity. Gillman et al., (2001)

conducted a study to determine the incidence of obesity in adolescence in correlation to breastfeeding for six months as an infant. The study surveyed 15,341 boys and girls age nine to fourteen and also surveyed their mothers. The results were that adolescents who had breastfed had a lower incidence of obesity. They found breastfeeding to reduce the risk of adolescent obesity by 22%.

Dr. Atul Singhal studied teenagers age 13-16 who were born prematurely. Two main diets were given; breast milk and preterm formula. Dr. Singhal found that the breastfed participants had a lower diastolic blood pressure and lower mean arterial blood pressure. This study was significant because high blood pressure has been shown to be a factor in cardiovascular disease (Roberts 2000).

Some studies have been conducted to show the effect of breastfeeding on adulthood. A study by Ravelli, van der Meulen, and Osmond (2000) researched the medical records of 625 men and women age 48-53. They concluded that breastfeeding has an influence on blood pressure, glucose levels, body mass, and plasma lipid levels. Another study showed that breastfeeding could lead to lower arterial distensibility in adults age 20 to 28 (Lesson et al 2001). This study contradicts previous studies that breastfeeding is protective of cardiovascular disease. The conclusion is that there needs to be more studies done to determine the effects of breastfeeding on adulthood.

The purpose of this study was to investigate the occurrence of breastfeeding as an infant and the blood pressure, body mass index, total cholesterol, LDL, HDL, and glucose level as an adult. Our hypothesis is that breastfeeding is protective of adult cardiovascular disease and diabetes.

Methods

The subjects are adults who participated in Operation Health Check. A table was set up in the room where all labs were drawn. A poster promoting the study was posted above the table where we collected the information. After labs were drawn, each person was approached about participating in the study. Only those who knew if they had been breastfed or bottle-fed were considered. Many people did not know how they were fed as an infant. Out of those they were breastfed as an infant, 26 agreed to be part of the research study. These participants answered a short questionnaire, as well as questions about their blood pressure, height, weight, and telephone number so we could retrieve the results of their lipid panel and glucose. The Human Subjects Review Committee at the University of Tennessee approved the study.

From the participants' lab results, we obtained information about their total cholesterol, low-density lipoproteins (LDL), high-density lipoproteins (HDL), and glucose levels. From the information given at Operation Health Check, we calculated the Body Mass Index (BMI) for each participant. To calculate the BMI, multiply weight (in pounds) by 703, multiply height (in inches) by height (in inches). Then divide the first result by the second result (CDC 2002). We took these results and charted them on our data sheet so they could then be entered into the statistical analysis system.

Data Analysis

Before analyzing the results of the study, we first had to determine the normal levels of the total cholesterol, LDL, HDL, glucose, as well as a normal blood pressure and body mass index.

Normal Laboratory Values

| | |
|-------------------|---------------|
| Total Cholesterol | Less than 200 |
| LDL | 130-150 |
| HDL | 40-60 |
| Glucose | 60-110 |

Body Mass Index

| | |
|-------------|------------|
| Underweight | Under 18.5 |
| Healthy | 18.5-24.9 |
| Overweight | 25-29.9 |
| Obese | Over 30 |

(CDC 2002)

Blood Pressure

| Blood Pressure Category | Systolic (mmHg) | Diastolic (mmHg) |
|-------------------------|-----------------|------------------|
| Optimal | Less than 120 | Less than 80 |
| Normal | Less than 130 | Less than 85 |
| High Normal | 130-139 | 85-89 |
| High-Stage One | 140-159 | 90-99 |
| High-Stage Two | 160-179 | 100-109 |
| High-Stage Three | 180 or higher | 110 or higher |

(American Heart Association 2002)

Discussion

As the results continue to be reported, we will enter them into the statistical analysis system (SPSS). This will enable us to look at the information and determine if the results match the hypothesis that breastfeeding is protective of adult disease.

Future Study

Although the data collection and analysis of the research data is not complete, there are several areas of the research study design that could be improved upon for future study. A larger population would provide a more accurate view of the health benefits to adults. Also, obtaining a full medical and surgical history would allow researches to take into account genetic diseases and other conditions that cannot be influenced by one's feeding history. Future studies should also include a questionnaire filled out by the mother so that the data can be as accurate as possible.

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Breastfeeding and Adult Health Indicators

Rachel L. Lewis

Dr. Maureen Groer



Breastfeeding your infant

Who does it?

- 59.7% breastfeed while in the hospital nationally
- Southeast:
 - Caucasian 51.2%
 - African American 25%
- Healthy People 2010 Goal: 75%

Advantages for the Infant

- # Lower incidence of infant allergies
 - # Closer maternal/infant bond
 - # Passive immunity passed by mother
 - # Convenience
 - # Financial savings
-

Reasons People Do Not Breastfeed

- # Education
 - # Socioeconomic
 - # Maternal attitudes
 - # Workplace environment
 - # Opinions of significant others
-

Research Study

Hypothesis:

Breastfeeding is protective of adult diseases including cardiovascular disease and diabetes

Research Study



Objective: to design a study to determine if there is a correlation between breastfeeding and adult health

Literature Review

Dr. Atul Singhal study

- 216 premature babies studied
- Breastfed babies had lower blood pressures at ages 13-16 than the bottle-fed

Literature Review

- # Adolescent Obesity and Breastfeeding
 - 15,000 adolescents age 9 to 14
 - Questionnaires to both child and mother
 - Found that breastfeeding during the first 6 months of life lowered the risk of obesity of an adolescent by 22%

Literature Review

Ravelli Study

- 625 subjects age 48-53
- Data from medical records
- Concluded that breastfeeding has an influence on blood pressure, plasma lipid levels, glucose tolerance and body mass

Literature Review

- # British and Dutch Research study
 - 624 both men and women
 - Lower cholesterol levels if breast-fed

Operation Health Check

Population

- Men and women who had been breast fed as an infant
 - Agreed to have a serum lipid panel and glucose level drawn at Operation Health Check
-

Operation Health Check

Questionnaire

- Were you breastfed as an infant?
 - How long were you breastfed?
 - Blood Pressure
 - Height
 - Weight
 - Phone Number
-

Operation Health Check

Obtaining the Data

- Phone call to each participant to determine the serum levels of cholesterol, LDL, HDL, and glucose
 - BMI calculated for each participant based on height and weight
 - Blood Pressure
-

Normal Lab Values

Cholesterol Level

Less than 200

LDL

130-150

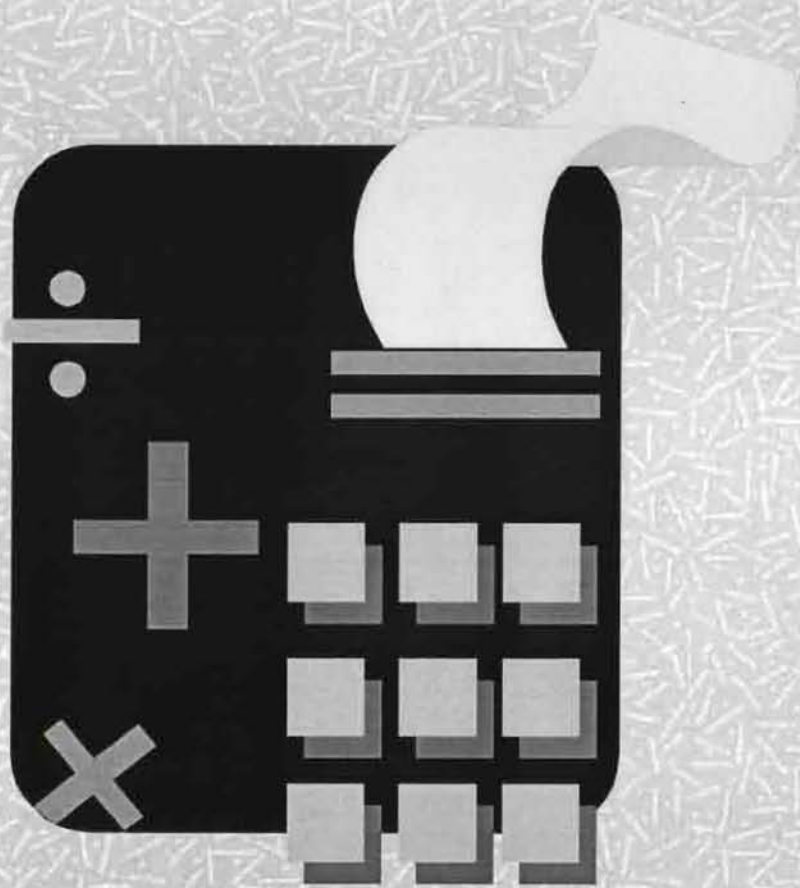
HDL

40-60

Glucose

60-110

Body Mass Index (BMI)



To calculate your BMI:

- Multiply your weight (in pounds) by 704.5
- Multiply your height (in inches) by your height (in inches)
- Divide the first result by the second result

Body Mass Index (BMI)

Example:

Client is 5'1" and weighs 116 lbs

- $116 \times 704.5 = 81722$
- $61 \times 61 = 3721$
- $81722 / 3721 = 22.0$
- **BMI = 22.0**

Blood Pressure

Normal

120/80

Borderline Hypertension

130/85

Hypertension

140/90

Preliminary Data

Participants:

- 26 men and women
 - Ages 25-75
 - Most are employees at UT
-

Analysis of Data

- # As soon as data is collected, the values will be entered into a statistical analysis system(SPSS). This will enable us to look at the information and determine if the results match the hypothesis.

Results

Compare each participants:

Blood Pressure

Lipid Panel (Cholesterol, LDL, HDL)

Glucose

Body Mass Index (BMI)

Impact

- # If the hypothesis of this study is proven by the results, it will indicate another reason why women should breastfeed their newborns.

Further Study

- # Further research is needed to prove what results we obtained at Operation Health Check

Suggestions for Future Study

- # A larger population
 - # Obtain a full medical and surgical history
 - # Observe participants over a longer period of time
 - # Include a nutritional study
 - # Interview both mother and child
 - # Include both breastfed and bottle-fed adults
-