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Rates of hypertension in the United States have been rising over the past twenty years. Unfortunately, African Americans are at higher risk for early-onset hypertension, placing African American young adults at increased health risk. Healthy eating and physical activity behaviors have been associated with increased blood pressure control and could serve as areas for intervention for the prevention of early-onset hypertension in young adults. Parents have been shown to influence the development of their children's health risk behaviors, thus providing a possible point of entry for these interventions.

The purpose of this study was to investigate the eating and exercise behaviors of mothers in relation to the eating and exercise behaviors, gender, and hypertension risk category of their African American young adult children (n=56 dyads, youth ages 17-20y). Mother and child took part separately in in-depth semi-structured interviews designed to elicit information about eating and physical activity behaviors. In addition, data was collected through descriptive questionnaire, diet history questionnaire (DHQ), and measures of height, weight, and blood pressure. Maternal eating behaviors were categorized into themes, and mothers were coded for each theme (1: reported behavior, 0: did not report behavior). Maternal and child DHQ output was assessed and scores were assigned to reflect adherence to the Dietary Approaches to Stop Hypertension (DASH) diet.

Reported physical activity behaviors of mothers and children were assessed and categorized into themes. Physical activity scores were assigned based on participation in

purposeful exercise. Results showed that mothers of high-risk children were more likely to report consuming sweetened beverages ( $p=0.0030$ ). Mothers of low-risk males were the least likely to report skipping meals, eating fast food, drinking sweetened beverages, and eating out more than once weekly ( $p=0.042$ ,  $0.013$ ,  $0.0021$ ,  $0.0017$ , and  $0.056$ , respectively). Mothers of males were more likely to report walking for exercise ( $p=0.0204$ ), while mothers of high-risk females were more likely to report being unable to exercise due to chronic medical conditions ( $p=0.015$ ). Eight maternal eating behaviors were associated with DHQ output. Comparisons of mother and child behaviors showed strong inverse relationships between the number of reported eating behaviors of mothers and the intake of their high-risk or female children. In addition, active mothers of males were more likely to have active sons ( $p=0.033$ ). These results suggest weak associations between maternal eating behaviors and child intake in this age group. Mothers of males, however, seem to have stronger influence over the physical activity levels of their male young adult children. Further research is necessary in order to better understand these relationships for the creation of effective interventions to prevent early-onset hypertension in African American young adults.

THE RELATIONSHIP BETWEEN MOTHERS' LIFESTYLES AND THE  
LIFESTYLES AND GENDER-HYPERTENSION RISK CATEGORIES  
OF THEIR AFRICAN AMERICAN YOUNG ADULT CHILDREN

by

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## CHAPTER I

### INTRODUCTION

Rates of hypertension (HTN) in the United States have been increasing over the past two decades and reached 32% for adults over 20 years of age between 2003 and 2006 (1). African American adults in this age range experience even higher rates of HTN (females: 43.5%, males: 40.6%) compared to whites (females: 28.6%, males: 27.6%) (1). Unfortunately, HTN also affects African Americans at younger ages, with African American youth having a higher relative risk of pre-HTN and HTN (1.81 and 1.33, respectively) compared to white youth (2). In addition, African American youth experience higher measures of systolic blood pressure (SBP) as early as 14 years of age in males and 9 years of age in females (3). As African American youth move into adulthood, they experience disproportionate rates of heart failure that have been associated with high measures of diastolic blood pressure (DBP) (4). These findings suggest that African American youth are at an increased risk for early-onset HTN as well as life-threatening co-morbidities associated with uncontrolled high blood pressure (HBP).

Although several risk factors for HTN are non-modifiable (such as older age, male gender, and African American race), health behaviors play a strong role in controlling blood pressure (BP) and preventing the onset of HTN. Modifiable risk factors for HTN include but are not limited to physical inactivity, obesity, excessive sodium

consumption, low potassium intake, cigarette smoking, high blood cholesterol levels, and high caffeine intake (5, 6). Ultimately, risk factors related to exercise and eating habits are modifiable, and may serve as potential areas for the focus of efforts for the prevention of early-onset HTN. Unfortunately, little research has focused on the health risk behaviors of African American young adults as they enter adulthood.

The theory of intergenerational transmission of health risk behaviors postulates that parents communicate attitudes about health behaviors and model health-related behaviors, resulting in the transmission of health-promoting or health-risk behaviors to their children. Multiple studies have shown that mothers, in particular, influence the health behaviors of their children, including exercise, eating, and smoking habits (7-16). Mothers, therefore, may serve as a point of entry for influencing the health risk behaviors of African American young adults. Learning about the relationships between the exercise, eating, and smoking behaviors of mothers and their adolescent children may provide insight into the formation of health behaviors of these young adults. Ultimately, information regarding the influence of maternal health behaviors on their adolescent child's health behaviors could contribute to the development of tailored interventions for high-risk African American youth.

This study, therefore, aimed to investigate the relationship between the health behaviors of mothers and their African American young adult children with respect to their gender and HTN risk category. The specific aims of this project were:

1. To determine associations between mothers' self reported behaviors related to diet and physical activity and the gender and HTN risk category of their African American young adult children.
2. To assess associations between maternal self-reported eating behaviors and DASH diet indices and select nutrient intakes.
3. To compare eating and physical activity behaviors of mothers to the dietary intake and physical activity of their African American young adult children and consider differences across adolescent gender and/or HTN risk category.

## CHAPTER II

### REVIEW OF THE LITERATURE

This study centers on the relationship between health behaviors of mothers and their African American children with respect to their child's gender and HTN risk category. It is pertinent, therefore, to provide background regarding the etiology and pathophysiology of HTN. As this research is based on the theory of intergenerational transmission of health behaviors, this review of literature will also focus on current research regarding the relationships between maternal lifestyles and child health behaviors.

#### **Hypertension**

Blood pressure by definition is the force exerted on the walls of the arteries as the heart contracts (SBP) and relaxes (DBP). Normal BP is a classification defined as consistent BP measurements less than 120/80 mmHg. When an individual's systolic or diastolic BP falls within the ranges 120-139mmHg or 80-89mmHg, respectively, an individual is classified as pre-hypertensive. Stage I HTN is diagnosed by SBP measures of 140-159mmHg and/or DBP measures of 90-99mmHg, while Stage II HTN is diagnosed as a SBP over 160mmHg and/or DBP over 100mmHg.

*Clinical and Financial Consequences* If uncontrolled, HTN can lead to increased risk of death due to increased risk of heart failure, myocardial infarction,

angina, atrial fibrillation, left ventricular hypertrophy, aneurysm, stroke, cerebral hemorrhage, hypertensive encephalopathy, pre-eclampsia/eclampsia, kidney failure, decreased blood flow, and gangrene of the lower extremities (5). Hypertensive patients who smoke, are obese, or have diabetes mellitus, hypercholesterolemia, or atherosclerosis are even more likely to develop cardiovascular problems (5). Unfortunately, rates of this condition have been rising recently in the United States, with nearly 32% of adults over 20 years of age experiencing HTN between 2003 and 2006. In 2005, nearly 25,000 people in the United States died as a result of complications resulting from uncontrolled HBP (1). In addition, in 2006 HTN was the primary diagnosis for 35.7 million primary-care office visits and 3.9 million visits to hospital outpatient departments (1). As such, HTN poses a significant burden on the healthcare system. Financial consequences of HTN are apparent as well, as Balu showed that the approximate annual cost of HTN in the United States is \$55 billion dollars, representing a substantial economic burden on the health care system (17).

***Risk Factors*** One's individual risk for HTN is influenced by both non-modifiable and modifiable risk factors (5). Non-modifiable risk factors include older age, male gender, and African American race. Modifiable risk factors for HTN include physical inactivity, obesity, excessive alcohol consumption, excessive sodium consumption, low dietary potassium, stress, cigarette smoking, increased blood cholesterol, type 2 diabetes, and excess caffeine intake (5, 6). Modifiable risk factors can by definition be either altered or avoided in an effort to prevent the onset of HTN. As

many of these modifiable risk factors are behaviors, they have the potential to serve as points of investigation for the development on interventions in this field.

***Prevalence*** As mentioned previously, rates of HTN in adults have increased to 32% in the United States (1). According to data collected from the National Health and Nutrition Examination Survey (1988-2006), HTN rates differ according to race, sex, age, and socioeconomic status (SES). Overall, 30.3% of females and 31.8% of males aged 20 years or older experienced HTN between 2003 and 2006 (1). Rates of HTN were much higher in African Americans (42.2% in females, 44.1% in males) than in whites (28.3% in females, 31.2% in males), exemplifying the increased risk of HTN in the African American population. Prevalence of HTN decreases with increasing socio-economic status, with those at 200% of the poverty line or higher experiencing lower rates of HTN (31.1%) compared to those below 200% of the poverty line (1). Increasing age is also associated with increasing prevalence of HTN, with those persons 75 years or older experiencing the highest prevalence of HTN (65.0% in males and 80.2% in females). Overall, risk of HTN has increased over the last 20 years in the United States, with age-adjusted prevalence at 25.5% in the years 1988-1994, and 31.3% in 2003-2006 (1).

***Prevalence in African American Youth*** In addition to a higher prevalence of HTN, African Americans also see an earlier onset of HTN and higher measures of BP in youth (2, 3, 18, 19). Unfortunately, control rates among African Americans are also lower compared to control rates among whites (20). The combination of early onset and poor control of hypertension in African Americans can lead to increased risk of complications and death at earlier ages. Increased rates may be due in part to genetics,

higher rates of obesity, or additional correlates such as physical activity and diet.

Although some studies have found no association between race and increased risk of HTN in children, most studies have found additional correlates to HTN prevalence in African American children including gender, SES, and BMI (2, 3, 19, 21, 22).

McNeice et al., for example, investigated a sample of 6790 school age (11-17y) children in the Houston, TX area (51% male, 28% African American) for the prevalence of HTN (2). After three screenings, 81.1% of participants were classified as normotensive, with 15.7% pre-hypertensive and 3.2% hypertensive. Results confirmed a significant increase in the prevalence of both pre-HTN and HTN with increasing BMI ( $p < 0.001$ ). Males and African Americans were more likely to have pre-HTN and HTN compared to females and whites, respectively. This study highlights the increased risk of HTN for African American, male, and overweight youth.

Dekkers et al. also found differences in BP with respect to ethnicity in participants ages 4.9-27.5y (n=745) (3). Participants with a family history of cardiovascular disease were assessed for blood pressure and anthropometric measures annually over ten years. Results showed that African American participants had higher measures of SBP and DSP than white participants from youth (males: 14y, females: 9y) onward. Associations between ethnicity and SBP remained significant even after controlling for growth, adiposity, and SES. Dekkers' findings also confirmed an increase in BP with increasing BMI.

Ultimately, current research shows higher rates of HBP, pre-HTN, and HTN in African American youth when compared to white youth. Higher measures of BP have

also been directly associated with weight or weight status. Unfortunately, research has not focused on determining associations between measures of BP or HTN risk and health risk behaviors of African American youth such as eating and exercise habits. If these health risk behaviors are related to measures of BP or HTN risk, they may serve as points for intervention for the prevention of the early-onset of HTN.

***Gender Differences In African American Youth*** As mentioned previously, African American youth are at increased risk of higher measures of BP and higher rates of HBP, pre-HTN, and HTN when compared to white youth. Within African American youth, gender differences exist both with regard to measures of BP and HTN risk factors such as eating and exercise behaviors.

Hediger et al. found differences in measures of BP by gender within an African American youth sample population. In a three-year longitudinal investigation of urban African American youth (ages 12-17), Hediger aimed to compile resting blood pressure and heart rate distributions for African American adolescents. Resting blood pressure and heart rate were measured annually in 1408 adolescents (all African American, males n=737). Researchers found significantly higher measures of SBP in African American boys as compared to African American girls ( $p < 0.001$ ) after 15 years of age (19). Hediger also confirmed a significant, positive correlation between weight and SBP, with a stronger correlation in boys (age 12-16:  $p < 0.01$ , age 17y:  $p < 0.05$ ). These data confirm an increased resting BP within African American adolescent populations, even in normal weight individuals.

African American youth have also been shown to exhibit lower levels of fitness when compared to white youth (23). Shaibi et al. investigated aerobic fitness levels among 73 youth of varying ethnicity ages 7-14 years.  $VO_{2peak}$  was measured for each participant via treadmill test to exhaustion with open circuit spirometry. Results showed that Caucasian youth had significantly higher measures of  $VO_{2peak}$  compared to African American and Latino youth. In addition, African American youth exhibited lower  $VO_{2peak}$  scores relative to fat free mass compared to white youth. Overall, these findings suggest that African American youth may have poorer fitness levels when compared to white youth. Decreased levels of physical fitness, which may imply lower physical activity levels, put African American youth at risk for HBP and other morbidities associated with poor exercise habits.

Several studies have elucidated differences in physical activity levels based on gender, especially in youth (24, 25). Kurc et al. investigated the effects of social support on sports involvement and physical activity in 25,416 youth between grades 9 and 12(24). Participants completed surveys estimating minutes of vigorous and moderate physical activity completed in the last week. A comparison by gender revealed that males were more likely to participate in intramural, varsity, or community sports teams and were less likely to take part in sedentary behaviors (such as watching television or playing video games) when compared to females ( $p<0.0001$ ).

While these results do not take race or ethnicity into account, several additional studies have found similar statistics in samples of African American youth only. Whitt-Glover et al. investigated disparities in PA behaviors based on accelerometer data from

the National Health and Nutrition Examination Survey for 2,531 participants ages 6-19y (25). Anthropometric data were also assessed including weight and height, as well as demographic data such as gender and ethnicity. Whitt-Glover found that African American females in particular had significantly more hours of sedentary activities (5.88h) compared to Caucasian females (5.61h). Clear differences in achievement of the moderate-intensity physical activity recommendations existed between African American males and females across all age groups, with males being more likely to meet recommendations.

Wang et al. found similar results in comparing obesity-related risk factors among low SES, urban African American students (26). Participants (n=498, males n=218) provided data from demographic surveys, physical examination, and the Youth and Adolescent Questionnaire Food Frequency Questionnaire (FFQ). Results showed clear differences in obesity risk factors in relation to gender. Males, for example, were less likely to be overweight and were more likely to have exercised for at least twenty minutes in the last week (p=0.064).

With regard to eating behaviors, males were significantly less likely to choose unfamiliar fruits compared to females (p=0.016). Females, on the other hand, were more likely to report eating under stress (p=0.052). Overall, both males and females exhibited poor dietary behaviors.

These studies suggest that gender differences exist with regard to eating and exercise behaviors in African American youth. These differences call for tailored

interventions to meet gender-specific needs and therefore further investigation into the gender-based differences in eating and exercise behaviors are necessary.

***Lifestyle Changes That Lower Blood Pressure*** Lifestyle changes such as weight loss, reduced fat, alcohol, and sodium intake, increased potassium intake and physical activity, smoking cessation, and stress management are often suggested to aid in BP management (27-36).

Several investigations have shown significant relationships between exercise and weight loss and decreases in BP (32-36). Several longitudinal studies have shown an inverse relationship between fitness level and measures of BP in predominantly white samples (32, 34-36). Bond et al. recently confirmed these associations in African American males with a family history of HTN (33). Georgiades et al. conducted a study to assess the effects of exercise and weight loss on cardiovascular responses in hypertensive, overweight participants (34). Results showed that subjects participating in aerobic exercise alone or in combination with a behavioral weight loss program had lower SBP and DBP compared to controls. These results express the importance of both exercise and weight loss as part of a plan to lower BP in hypertensive, overweight patients.

With respect to diet, the Dietary Approaches to Stop Hypertension (DASH) diet, developed by Sacks et al., has been documented as being successful in significantly lowering measures of BP when compared to the typical American diet (37-40). The DASH diet is high in fruits and vegetables, whole grains, low-fat dairy, and fiber, and low in saturated fat and cholesterol (41). The BP lowering effects of this diet have been

confirmed in African Americans, including low-income groups (29, 42, 43). In addition, several studies have shown stronger BP-lowering effects of the DASH diet in African Americans compared to other groups (44, 45). The DASH diet has also been suggested for African American youth to prevent the early onset of HTN (46).

Several studies have investigated adherence to the DASH diet in relation to incidence of disease (28, 31, 47, 48). These investigations have utilized novel approaches to determining concordance between subject diets and the DASH diet. Most commonly, diet is assessed by FFQ (in one assessment, multiple-pass 24-hour recall is utilized for data collection), and questionnaire responses are compared to target intake levels. While Mellen et al. utilized nine nutrient targets (saturated fat, total fat, protein, cholesterol, fiber, magnesium, calcium, potassium, and sodium) for the basis of creating a DASH score, the more common approach involves the assessment of daily food intake such as servings of fruits, vegetables, whole grains, meat, nuts, seeds, and legumes, sweets or added sugars, dairy, and alcohol (31, 47, 48). In each investigation, subjects are assigned a score based on their intake that describes how closely their intake resembles the DASH diet targets. Assessment techniques such as these serve as useful tools for investigating the healthfulness of diets based on DASH standards. Interestingly, no qualitative approaches to assessing diet adherence have been investigated.

Multiple lifestyle changes have also been studied for their role in decreasing measures of BP. Appel et al. conducted a clinical trial to determine the effects of simultaneous implementation of lifestyle changes (weight loss, sodium intake reduction, increased physical activity, and limited alcohol intake) to lower BP (27). Results showed

significant reductions in SBP for participants who took part in a behavioral intervention (3.7mmHg) and those who received the intervention and followed the DASH diet (4.3mmHg) versus advice-only controls ( $p<0.001$ ). These findings further support the influence of multiple health behavior changes on decreasing BP in hypertensive patients.

### **Intergenerational Transmission of Health Risk Behaviors**

The theory of intergenerational transmission of health risk behaviors postulates that parents model health behaviors and convey attitudes about health and health behaviors to their children. Subsequently, parents transmit either health promoting or health risk behaviors to their children, and therefore maintain a strong influence over their future health.

Wickrama et al. proposed a theoretical model for the transmission of health risk behaviors from parents to adolescent that proposed that adolescents' health-risk lifestyles are directly influenced by their parents' health risk lifestyles, ultimately influencing the development of adolescent health-risk behaviors(49). In addition, Wickrama proposed that aspects of parents' health behaviors directly affect the health behaviors of their adolescent children. It was hypothesized that adolescents would begin to adopt not only specific modeled behaviors, but a general health risk lifestyle (for example, risky or healthy). Adolescents ( $n=330$ , grade 7 upon first assessment) and their parents were assessed over five years via self-reports of eating, exercise, smoking, drinking, and sleeping habits. Results showed that parental health risk behaviors related to eating, exercise, smoking, and drinking were significantly correlated with corresponding behaviors in adolescents ( $p<0.05$ ).

Several studies have investigated parental influence over these health risk behaviors individually (7, 8, 12, 13, 15, 16, 49-60). Mothers, specifically, have been found to have a strong influence over the health risk behaviors of their children with regard to eating and exercising habits, obesity, and other health risk behaviors such as smoking and alcohol use.

*Maternal Influence and Child Eating Behaviors* Neumark-Sztainer et al. investigated adolescents to determine influences over their food choices (15). Results showed that parents' eating and cooking behaviors, foods purchased by parents, eating and food rules enforced by parents, parental concerns over their child's diet, family meal patterns, and the culture and religion of the family were all influences over adolescent food choices. These findings highlight the multiple roles that parents play in the formulation of eating behaviors in their children.

Baker et al. also investigated the intergenerational transmission of eating attitudes and behaviors through assessments of college-age men and women (n=91) and their parents (14). Young adults' attitudes and behaviors were strongly correlated with their perception of their parents' attitudes, and not self-reports by parents. Interestingly, the single exception to this observation was related to self-reported criticism of daughters' eating and/or appearance by mothers which was directly associated with higher frequency of weight loss behavior in daughters. This finding highlights the strength of maternal influence and how this influence differs depending on the gender of their child.

Ultimately, research suggests that parents, and more specifically mothers, may serve as an opportunity for intervention in order to alter adolescent eating behaviors and

therefore alter their HTN risk. These studies, however, were conducted in predominantly white samples. Unfortunately, few studies have focused on the relationship between the eating habits of mothers and their African American children (60). Wang et al. conducted one such study by investigating 121 mother-child dyads from a low-income inner-city community (60). Adolescent African American children and their mothers were assessed for dietary intake (via FFQ) and anthropometric measures. Results showed weak associations between the diets of mothers and their adolescent children. Interestingly, adolescents with mothers who were current smokers had stronger associations with maternal poor eating habits. These findings suggest a minimal influence of maternal eating habits over the eating habits of African American adolescents. This study, however, is weakened by the use of FFQ as the sole method of collecting dietary data as this sample was from a group that often suffers from low literacy levels. This may have confounded results and could have been avoided by collecting additional dietary data via interview. Interestingly, research investigating maternal influence over child eating behaviors has largely relied on data collection via questionnaire and has yet to be investigated qualitatively via interview. A semi-structured interview could be utilized to assess maternal and child eating behaviors, and may allow subjects to freely share their views of and attitudes toward their dietary habits, including what they consider negative behaviors. The assessment of relationships between self-reported negative health behaviors of mother and child is a novel approach to investigating maternal influence that has yet to be utilized. Overall, recent studies suggest that a relationship does exist between maternal lifestyle and child eating

behavior. Additional research is required to determine if these findings hold true in African American populations.

***Maternal Influence and Child Physical Activity*** Physical inactivity is related to both risk of obesity and HTN risk. Several investigations have found that parents maintain influence over their child's physical activity level (11, 12, 25, 50, 56, 58, 59, 61). Trost et al., for example, investigated the determinants of physical activity levels in African American middle school youth by comparing active and low-active participants (n=110) (12). Perceived physical activity levels of parents and access to sporting equipment at home were both variables related to physical activity. Clear differences between boys and girls were evident, as boys were more likely to participate in moderate to vigorous physical activity. These active boys were also more likely to perceive their mothers as physically active. Mother's physical activity was not, however, influential in active girls. This study expresses the important influence that mothers have over their adolescent child's health behaviors.

Sallis et al. also found that familial influence significantly affected child physical activity levels in his investigation of children and adolescents (grades 4-12, n=1504) (11). Family support predicted physical activity across all age groups, while parental physical activity predicted physical activity in grades 4-6 ( $p<0.01$ ). Parental payment of fees also predicted physical activity in grades 7-12 ( $p<0.01$ ).

Overall, studies suggest that mothers play a significant role in the development of their children's exercising habits. Specifically, maternal physical activity and support of child's physical activity seem to be associated with higher levels of child physical

activity. Strong differences between sexes are also apparent, suggesting the need for tailored interventions to increase levels of physical activity in youth and adolescents.

***Maternal Influence and Child Obesity*** Overweight and obesity have been implicated as correlates of HBP and HTN. Several investigators have studied the associations between the home environment and parent's eating behaviors and the development of childhood obesity (2, 19, 22, 62). Johannsen et al. investigated the influence of parental eating habits on the eating habits and weight status of their children. Results showed a significant positive relationship between maternal BMI and child weight. Strauss et al. also found a strong relationship between maternal weight and child weight status (16). Results showed that children (age 0-8, normal BMI at baseline) of obese mothers were 3.62 times more likely to be obese compared to children of normal weight mothers. African American children or children of single moms, moms who did not finish high school, non-working parents, or non-professional parents were also more likely to develop obesity. These results again suggest a strong maternal influence over the development of childhood obesity as mothers who create a home environment supportive of low activity levels and overeating put their children at risk for developing obesity.

Brownell et al. also assessed the strength of maternal influence, but through interventions with youth by evaluating the effects of a program centered on behavior modification, social support, nutrition, and exercise on weight and BP over a 16-month period (54). Groups in which mother and child took part separately in the program were most successful, losing 8.4kg compared to groups in which only the child participated

(3.3kg) and in which mother and child participated together (5.3kg). One year later, this group was still the most successful with 7.7kg weight loss compared to approximately 3kg for the other two groups. These results elucidate the importance of maternal involvement, but may suggest limiting this involvement in adolescent interventions.

Current research suggests that maternal weight status has a strong influence over the weight status of children. The risk of obesity related to maternal obesity increases for children who are African American or from low-income or single-parent families. These findings suggest a need for interventions to prevent the development of obesity in low-income, African American populations, which could subsequently lower risk of HTN.

***Maternal Influence and Other Child Health Risk Behaviors*** Research suggests that parents also have influence over other child health risk behaviors such as tobacco and alcohol use (9, 10, 51). Beal et al. investigated the influence of parents and peers over health risk behaviors in adolescents, and found that parental influences were solely associated with alcohol use (51). Other researchers have found relationships between smoking and substance use and parental factors in older adolescents (9, 10). Distefan et al. found that parental smoking and parental disapproval of alcohol and cigarette use were inversely associated with health risk behaviors (10). Unfortunately, these studies were conducted in samples that consisted largely of white participants. Further research is warranted in order to determine parental influences over African American adolescent health behaviors.

These studies elucidate the power of maternal influence in the transmission of health beliefs and behaviors. In addition, gender differences are made apparent,

revealing variations in the influence of the mother-child relationship based on sex.

Additional research is necessary in order to further investigate the role that mothers play in the formation of their child's health risk behaviors and how these health lifestyles are related to their African American child's HTN risk category with respect to gender.

### **Conclusion**

Current research suggests that parents exercise influence over their adolescent child's health behaviors, and that health risk behaviors such as poor dietary habits, inactivity, and smoking are related to increased risk of HTN. The implications of parental influence on the risk of chronic disease in African American adolescents have not been investigated. In addition, research efforts have not focused on the investigation of African American adolescents with varying risks for hypertension (63). A qualitative approach, therefore, is the most appropriate method of investigation within this group (63). Qualitative investigations provide an opportunity for rich data collection that may not be possible through alternate quantitative methods with limited cultural suitability or unconfirmed effectiveness within the group of interest (64). Ultimately, qualitative methods such as interviews provide insight not only into the practices of subjects, but their views of and attitudes towards concepts of interest such as health behaviors.

The increased risk of HBP and early-onset HTN in African American adolescents, therefore, calls for a qualitative investigation into maternal influences that may be associated with HTN risk. The roles that mothers play in the development of their adolescent's health-risk behaviors and subsequent HTN risk is of particular interest. Information regarding these influences and relationships can help to inform the formation

of tailored interventions to reduce HTN risk in adolescents and young adults through behavior modification.

## CHAPTER III

### METHODS

#### **Participants**

Mothers in this investigation were parents of African American young adults who were previously participants in studies investigating the characterization of hemodynamic response to stress (65-67). At the time of initial assessment, participants (n=419) were 14-17 years of age. The dataset available from this study included measures of BP, weight, height, and change in sodium excretion in response to a video stressor for young adult participants (63).

Children were selected for the current investigation based on HTN risk (high or low), ethnicity (African American), and age (17-20y). Participants qualified as at high risk for early-onset HTN if they met two of three criteria, including a SBP within the top quartile of African American subjects, a gender-specific BMI-for-age >85<sup>th</sup> percentile, and/or a change in sodium excretion from baseline to stress  $\leq 0$ . Alternately, subjects with measures of SBP within the lowest half of all African American subjects, a gender specific BMI-for-age >15<sup>th</sup> percentile, and a change in sodium excretion from baseline to stress  $> 0$  were classified as low risk. Of the 130 participants who met these criteria, 56 were contacted and eligible. Consent was obtained from participants 18 years and older, and parental consent and child assent were obtained for participants under the age of 18 (Appendices A, B, C).

## **Data Collection**

Four methods of data collection were utilized: a semi-structured interview (Appendices D, E), the National Institutes of Health National Cancer Institute Diet History Questionnaire (DHQ, Appendix F), a descriptive questionnaire (Appendices G, H), and measures of height, weight, and BP. Young adults and their mothers took part separately in in-depth, semi-structured interviews (45-75min) designed in part to collect information concerning lifestyle behaviors related to eating and exercise. Participants were asked to describe when and where their meals took place and what they typically consumed. In addition, participants were asked specific questions regarding vegetable intake (Do you make an effort to include vegetables in your meals? How often do you consume vegetables?) and cooking practices (How many evening meals are prepared at home?). Participants were also asked to describe their level of physical activity during the day, their exercise practices, and exercise history. Interviews were conducted privately by either the Principal Investigator or a Research Assistant.

The DHQ, a 124-item FFQ, is a dietary assessment tool that assesses frequency, portion size, and supplement use. This assessment tool, which requires approximately one hour to complete, utilizes food lists and nutrient databases from the Continuing Survey of Food Intakes by Individuals. DHQ output provides information regarding estimated daily macro- and micronutrient intakes, food group intakes in servings, and added sugar intake in teaspoons.

The descriptive questionnaire was created by the Principal Investigator and Research Assistant and collected the following data: family history of disease and causes

of death, household size, household income, parent education levels, and child high school GPA.

Height and weight were assessed via a digital eye-level scale with a height rod. BP was assessed as the average of three readings using a mercury manometer. Both procedures were performed according to standard protocols (66, 68).

## **Measures**

*Identification of Eating and Exercise Behaviors* Interviews were audio-taped and transcribed verbatim by medical transcriptions and research assistants. A code book was created based on interview questions and typical participant responses. Interview transcripts were coded using Atlas.ti.5.1.12 qualitative software based on this reference. Text lines coded for eating and physical activity were extracted and summarized for each participant. Behavior summaries were assessed for common themes in eating and exercise behaviors. Participant summaries were reviewed and all participant behaviors were categorized according to these themes. Participants were coded a 1 for a particular theme if their described behaviors were consistent with that theme. Participants were coded a 0 if they described an alternative behavior or did not mention behaviors related to a particular theme in their interview.

*DASH Diet Indices* DASH scores were assigned to each dyad member to describe diet quality in relation to DASH diet guidance based on three published reports (28, 31, 48).

First, a DASH score was created based on the work of Mellen et al. (28). DHQ responses were assessed for daily percent kcal from total fat, saturated fat, and protein, as

well as daily consumption (per 1000kcal) of cholesterol (mg), fiber (g), magnesium (mg), calcium (mg), sodium (mg), and potassium (mg). Intake levels for these key DASH nutrients were compared to previously determined DASH diet and control diet targets (41). For each nutrient, participants were assigned 1 point if the DASH target was met, 0.5 points if intake was between DASH targets and standard American diet controls, and 0.0 points if intake fell at or below target intakes for the standard American diet (Table 1). Resulting scores can range from 0 (completely non-compliant with the DASH diet) to 9 (completely compliant with the DASH diet).

**Table 1.** Point assignment criteria for calculation of DASH score based on the research of Mellen et al.

<b>Nutrient</b>	<b>1 Point</b>	<b>0.5 Points</b>
Fat	≤27% total kcal	27.1-32% total kcal
Saturated Fat	≤6% total kcal	6.1-11% total kcal
Protein	≥18% total kcal	16.5-17.9% total kcal
Cholesterol	≤71.4mg/1000kcal	71.5-107.1mg/1000kcal
Fiber	≥14.8g/1000kcal	9.5-14.7g/1000kcal
Magnesium	≥238mg/1000kcal	158-237.9mg/1000kcal
Calcium	≥590mg/1000kcal	402-589.9mg/1000kcal
Sodium	≤1143mg/1000kcal	1143.1-1286mg/1000kcal
Potassium	≥2238mg/1000kcal	1534-2237.9mg/1000kcal

Alternately, DASH diet adherence was also assessed based on daily food group intake for each participant, as exhibited by Fung et al. (31). Daily servings of fruits (including juices), vegetables (excluding potatoes and legumes), nuts and legumes, whole grains, dairy, sodium, red or processed meats, and sweetened beverages were assessed. As DHQ output reports added sugar in teaspoons rather than servings, this value was divided by 10 teaspoons per serving in order to estimate the average number of regular sodas consumed. For each food group or nutrient, participants were categorized into quintiles and assigned a score (1-5) based on their quintile. For intake of fruits, vegetables, nuts and legumes, whole grains, and dairy, the number of assigned points were equal to the assigned quintile (one point for quintile one, five points for quintile five). For sodium, red or processed meats, and sweetened beverages, scoring was reversed (five points for quintile one, one point for quintile five), as lower intakes of these foods and nutrients are typically assumed to be associated with improved quality of diet. Resulting scores potentially range from 7 to 35, with 35 points being assigned to the most compliant of the participants.

A third approach to assessment of DASH diet adherence, documented by Folsom et al., also utilized an assessment of food group intake. Participant intake was assessed for total grain, whole grain, vegetable, fruit, dairy, meat (including poultry and fish), added sugar, and nut, seed and legume intakes (servings per day). In addition, DHQ responses were assessed for percent total kcal from fat and saturated fat as well as sodium intake. Points were assigned for each food group or nutrient based on intake (Table 2).

**Table 2.** Point assignment criteria for calculation of DASH score based on the research of Folsom et al.

<b>Food Group of Nutrient</b>	<b>Guidelines For 1 Point</b>	<b>Guidelines For 0.5 Points</b>	<b>Guidelines For 0 Points</b>
Total grains	≥7 servings per day	5-6 servings per day	<5 servings per day
Whole grains	≥2 servings per day	1 servings per day	<1 servings per day
Vegetables	≥4 servings per day	2-3 servings per day	<2 servings per day
Fruits	≥4 servings per day	2-3 servings per day	<2 servings per day
Dairy foods	≥2 servings per day	1 servings per day	<1 servings per day
Meats, poultry, and fish	≤2 servings per day	3 servings per day	≥4 servings per day
Nuts, seeds, and legumes	≥4 servings per day	2-3 servings per day	<2 servings per day
Sweets	≤5 servings per week	6-7 servings per week	≥ 8 servings per week
Sodium	≥1500 mg per day	1501-2400 mg per day	≥2401 mg per day
% kcal from fat	≤30%	31-32%	≥33%
% kcal from saturated fat	≤10%	11-12%	≥13%

***Dyad Concordance*** In order to compare the eating and exercise behaviors of mothers and young adults, additional variables were created to represent dietary intake and physical activity behaviors. Previously mentioned maternal eating behaviors statistically related to nutrient or food group intakes used to quantify the DASH indices were used as a basis for comparison of maternal and young adult DASH indices scores.

These behaviors were summed to create a total eating behavior score for mothers.

Maternal behavior scores were compared to young adult scores on three DASH indices as previously described based on gender and risk group.

Young adults physical activity behaviors were categorized using the same method described for the mothers: behaviors were categorized according to themes and children were coded (1 or 0) for each theme. The physical activity behaviors of mothers and young adults were divided into three categories: 3 – most active (more than one form of purposeful exercise reported), 2 – moderately active (one form of purposeful exercise reported), and 1 – least active (no purposeful exercise reported). Exercise categories of mother and child were compared based on young adult gender and hypertension risk.

### **Statistical Analysis**

Logistic regression analysis was utilized to assess the main effects of gender, risk, and their interaction with the mothers' eating and physical activity behaviors (Aim 1). Relationships between mother's eating behaviors and DASH indices were assessed using analysis of variance (Aim 2). Relationships between maternal eating behaviors and young adults DASH indices were assessed using analysis of variance, while maternal and young adult physical activity behaviors were assessed using logistic regression (Aim 3). Small sample size prevented adjusting for covariates. All statistical analyses were carried out using JMP 7.0 and differences were considered statistically significant at  $p < 0.05$ .

## CHAPTER IV

### RESULTS

#### **Participants**

There were no differences in maternal age, systolic blood pressure, or diastolic blood pressure based on child risk and gender category (Table 3). Mothers of high risk children were more likely to have higher measures of BMI and were more likely to be diagnosed with HTN when compared to mothers of low risk children ( $p=0.0004$  and  $p=0.024$ , respectively). Mothers of females were least likely to have a college degree or more ( $p=0.017$ ), make at least \$50,000 per year ( $p=0.02$ ), or be married ( $p=0.015$ ).

Across gender and risk groups, young adults did not differ significantly in age. High risk young adults, as expected, experienced higher measures of SBP (118.9mmHg versus 108.2mmHg,  $p=0.0002$ ), DBP (73.3mmHg versus 67.4mmHg,  $p=0.0024$ ), and BMI ( $33.2\text{kg/m}^2$  versus  $21.9\text{kg/m}^2$ ,  $p<0.0001$ ) when compared to low risk young adults (Table 4).

#### **Aim 1: Maternal Behaviors by Young Adult Risk and Gender**

*Eating* As mentioned previously, common themes in maternal eating behaviors arose. These eating behaviors included: skips meals, skips more than one meal daily, eats fast food, drinks sweetened beverages, reports low vegetable intake, eats out more than once per week, fries foods at home, eats high-calorie, low nutrient-dense foods (snack foods) between meals, eats sweet snack foods between meals (sweet snacks), and

**Table 3.** Descriptive characteristics of maternal participants.

	Mothers of Males		Mothers of Females	
	High Risk (n= 15)	Low Risk (n=13)	High Risk (n=12)	Low Risk (n=16)
Age (mean ± SD)	45.05 ± 5.32	45.64 ± 5.31	44.36 ± 5.10	46.04 ± 5.64
BMI (mean ± SD)	37.03 ± 6.95	31.14 ± 5.37	40.19 ± 8.21	31.74 ± 7.39
Systolic Blood Pressure (mm Hg, mean ± SD)	133.27 ± 14.45	133.64 ± 15.80	132.05 ± 16.11	127.11 ± 10.00
Diastolic Blood Pressure (mm Hg, mean ± SD)	80.49 ± 8.00	81.21 ± 9.85	81.20 ± 9.85	77.44 ± 8.26
Diagnosed as Hypertensive	53%	45%	67%	37%
Education (%)				
Less than high school	0	8.33	0	0
High school degree	20	16.67	58.33	25.0
Some college	46.67	41.67	41.67	56.25
College degree or more	33.34	33.33	0	18.75
Income (%)				
<\$30,000	53.33	25	80	56.25
\$30,000 - <\$50,000	0	25	10	37.50
≥\$50,000	46.67	50	10	6.25
Married (%)	60	84.62	50	31.25

**Table 4.** Descriptive characteristics of young adult participants.

	Males		Females	
	High Risk (n= 15)	Low Risk (n=13)	High Risk (n=14)	Low Risk (n=16)
Age (mean ± SD)	17.3 ± 4.9	18.4 ± 1.3	19.3 ± 1.28	18.2 ± 0.9
BMI (mean ± SD)	31.9 ± 5.4	22.3 ± 2.8	34.6 ± 7.6	21.7 ± 2.8
Systolic Blood Pressure (mm Hg, mean ± SD)	120.7 ± 12.4	108.4 ± 7.9	116.9 ± 10.2	108.4 ± 7.9
Diastolic Blood Pressure (mm Hg, mean ± SD)	74.7 ± 6.9	67.8 ± 6.3	71.9 ± 7.6	67.8 ± 6.3

eats salty snack foods between meals (salty snacks). Table 5 provides examples of participant comments for each eating behavior category.

There was no difference in mothers' eating behaviors based on the gender of their child. There was, however, an effect of child risk category on sweetened beverage consumption as mothers of high risk children were more likely to consume these drinks ( $p=0.0030$ ).

There were statistically significant interactions for risk and gender for several eating behaviors including: skips meals, eats fast food, drinks sweetened beverages, eats out more than once weekly, and low vegetable intake (Table 6). Mothers of low risk males were the least likely to take part in these behaviors (skips meals:  $p=0.042$ , eats fast food:  $p=0.013$ , drinks sweetened beverages:  $p=0.0021$ , eats out  $>1$  weekly:  $p=0.0017$ , low vegetable intake:  $p=0.056$ ). Alternately, mothers of high risk males were the most likely to skip meals, consume fast food, drink sweetened beverages, and eat out more than once per week.

**Table 5.** Examples of comments for maternal eating behavior categories.

<b>Behavior</b>	<b>Qualifications or Common Answers</b>
Skips meals	Skips one of three main meals
Skips >1 meal	Skips at least two meals of three main meals
Eats fast food	Eats food from a fast food establishment at or between meals
Drinks sweetened beverages	Drinks sweet tea, regular soda, sports beverages (e.g. Gatorade or Powerade), or fruit drinks (e.g. Kool-Aid or Hawaiian Punch)
Low vegetable intake	Doesn't make an effort to include vegetables in meals, doesn't like vegetables, or eats vegetables less than five times weekly
Eats out >1 time weekly	Eats more than one evening meal (e.g. dinner) out each week
Fries foods at home	Deep fries foods at home
Eats snack foods	The following low-nutrient dense, high calorie foods were consumed by mothers and categorized as low nutrient-dense foods: Ice cream, cake, vanilla wafers, candy, cookies, candy bars, honey buns, snack cakes, muffins, pecan twirls, moon pies, doughnuts, sweets, chips, fried bologna sandwiches, pork rinds, packs of crackers, and fast food.
Eats sweet snack foods	The following low-nutrient dense, high calorie foods were consumed by mothers and categorized as sweet snack foods: ice cream, cake, vanilla wafers, candy, cookies, candy bars, honey buns, snack cakes, muffins, pecan twirls, moon pies, doughnuts, and sweets.
Eats salty snack foods	The following low-nutrient dense, high calorie foods were consumed by mothers and categorized as salty snack foods: chips, fried bologna sandwiches, pork rinds, packs of crackers, and fast food.

**Table 6.** Maternal eating behaviors stratified by child risk-gender category.

Behavior	Males		Females		p
	High Risk (n=15)	Low Risk (n=13)	High Risk (n=14)	Low Risk (n=16)	
Skips meals	13 (86.7%)	5 (38.5%)	6 (50.0%)	9 (56.2%)	0.0427
Skips >1 meal	5 (33.3%)	1 (7.7%)	5 (41.7%)	5 (31.3%)	0.1964
Eats fast food	10 (66.7%)	2 (15.4%)	4 (33.3%)	10 (62.5%)	0.0138
Drinks sweetened beverages	11 (73.3%)	1 (7.7%)	7 (58.3%)	7 (43.7%)	0.0021
Eats out >1 time weekly	13 (86.7%)	3 (23.1%)	8 (66.7%)	13 (81.3%)	0.0017
Low vegetable intake	4 (26.7%)	0 (0.0%)	4 (33.3%)	4 (25.0%)	0.0569
Fries foods at home	7 (46.7%)	2 (15.4%)	2 (16.7%)	7 (43.8%)	0.1274
Eats snack foods	7 (46.7%)	5 (38.5%)	7 (58.3%)	8 (50.0%)	0.7943
Eats sweet snack foods	3 (20.0%)	4 (30.7%)	7 (58.3%)	6 (37.5%)	0.2154
Eats salty snack foods	6 (40.0%)	4 (30.8%)	2 (16.7%)	5 (31.3%)	0.6094

**Exercise** Common exercise behaviors included: walks for exercise, active at work, taking part in strenuous daily activities, strength training, or cardiovascular training, never exercises, or formerly exercised. Table 7 provides examples of activities that fit into each exercise category.

**Table 7.** Examples of behaviors for maternal exercise categories.

<b>Exercise Behavior Category</b>	<b>Qualifying Behaviors</b>
Walks for exercise	Walking 30 minutes at lunch, walking 3-4 times each week, walking the track, talking 30 minutes 5 times each week, walking 30 minutes daily, walking 2 miles twice a week, walking 35 minutes, walking, walking one hour daily, walking 45-50 minutes 3-4 times each week, or walking during the summer
Active at work	Walks at work, active at work, takes the stairs, stands at work, on feet at work
Strenuous daily activities	Yard work, housework, playing with grandchild, niece, or other children, laundry, active during the day, cleans, shopping, fishing, participating in praise team, or moving around a lot
Strength training	Abs, sit ups, using an in-home machine, leg exercises, push-ups, stretching, or resistance training
Cardio	Exercise tape, treadmill, gym, jogging, jazzercise, biking, basketball, dancing, or cardio
Doesn't exercise	Does not currently exercise
Formerly Exercised	Previously took part in an exercise program, but does not currently exercise
Unable to exercise	Unable to exercise due to chronic medical issues

Mothers' exercise behaviors did not differ between risk groups, but when behaviors were compared based on child gender, mothers of males were more likely to walk for exercise (46.4% compared to 18.9%,  $p=0.0204$ ). Mothers of females were more likely to report being former exercisers (53.6% versus 21.4%,  $p=0.0119$ ).

There was a statistically significant interaction for risk and gender for inability to exercise (Table 8). Mothers of high risk females were the most likely to report being unable to exercise, while none of the mothers of low risk males reported being unable to exercise ( $p=0.0153$ ).

Ultimately, several eating behaviors were common among all mothers. Reports of these eating behaviors differed by child risk category and well as by risk:gender category, but not by gender alone. Similarly, several physical activity behaviors were common among these mothers. These behaviors differed by child gender and risk:gender group, but not risk category alone.

**Table 8.** Maternal exercise behaviors stratified by child risk-gender category.

Behavior	Males		Females		p
	High Risk (n=15)	Low Risk (n=13)	High Risk (n=14)	Low Risk (n=16)	
Walks For Exercise	5 (33.3%)	8 (61.5%)	3 (25.0%)	2 (12.5%)	0.1119
Active at Work	7 (46.7%)	6 (46.2%)	2 (16.7%)	10 (62.5%)	0.0965
Strenuous Daily Activities	4 (26.7%)	8 (61.5%)	4 (33.3%)	5 (31.3%)	0.2383
Strength Training	3 (20.0%)	1 (7.69%)	0 (0.0%)	1 (6.25%)	0.2453
Cardio	5 (33.3%)	3 (23.1%)	1 (8.3%)	2 (12.5%)	0.3333
Never Exercises	6 (40.0%)	5 (38.5%)	8 (66.7%)	7 (43.8%)	0.4529
Formerly Exercised	4 (26.7%)	2 (15.4%)	5 (41.7%)	10 (62.5%)	0.2065
Cannot Exercise	2 (13.3%)	3 (23.1%)	5 (41.7%)	0 (0.0%)	0.0153

## **Aim 2: Maternal Eating Behaviors by DASH Indices**

Validity of maternal eating behaviors was assessed by comparison with DASH nutrient indices as reported by Melen, Folsom, and Fung (28, 31, 48). Three maternal eating behaviors were associated with Folsom, Fung, and/or Mellen DASH scores: skips meals, eats out more than once weekly, and fries foods at home (Table 9). Mothers who skipped meals tended to have lower Folsom and Fung DASH indices compared to mothers who did not report skipping meals ( $p=0.0009$  and  $p=0.0035$ , respectively).

Eating out more than once per week was associated with lower scores for all three indices (Mellen  $p=0.0030$ , Folsom  $p=0.0199$ , and Fung  $p=0.0050$ ). Mothers who reported frying foods at home on average had lower Fung scores compared to mothers who did not report this behavior ( $p=0.0237$ ).

**Table 9.** Associations between maternal DASH scores and reported eating behaviors.

Behavior	DASH Index	Mean Scores $\pm$ SD Among Participants		p
		Reporting Behavior	Not Reporting Behavior	
Skips meals	Mellen	1.5 $\pm$ 0.2	1.8 $\pm$ 0.3	0.3527
	Folsom	4.7 $\pm$ 1.2	6.0 $\pm$ 1.6	0.0009
	Fung	20.0 $\pm$ 3.2	22.7 $\pm$ 3.4	0.0035
Skips >1 meal	Mellen	1.7 $\pm$ 0.3	1.6 $\pm$ 0.2	0.8114
	Folsom	4.9 $\pm$ 0.4	5.4 $\pm$ 0.2	0.2889
	Fung	20.4 $\pm$ 0.9	21.3 $\pm$ 0.5	0.3868
Eats fast food	Mellen	1.4 $\pm$ 0.2	1.8 $\pm$ 0.2	0.3915
	Folsom	5.2 $\pm$ 0.3	5.3 $\pm$ 0.3	0.7651
	Fung	21.1 $\pm$ 0.7	21.1 $\pm$ 0.7	0.9808
Drinks sweetened beverages	Mellen	1.3 $\pm$ 0.3	1.8 $\pm$ 0.2	0.1810
	Folsom	5.3 $\pm$ 0.3	5.2 $\pm$ 0.3	0.8875
	Fung	20.8 $\pm$ 0.7	21.4 $\pm$ 0.6	0.5323
Low vegetable intake	Mellen	1.1 $\pm$ 0.4	1.8 $\pm$ 0.2	0.1378
	Folsom	5.0 $\pm$ 0.4	5.3 $\pm$ 0.2	0.4763
	Fung	20.3 $\pm$ 1.0	21.3 $\pm$ 0.5	0.4073
Eats out >1 time weekly	Mellen	1.2 $\pm$ 1.1	2.4 $\pm$ 1.6	0.0030
	Folsom	4.9 $\pm$ 1.2	5.9 $\pm$ 1.8	0.0199
	Fung	20.2 $\pm$ 3.5	22.9 $\pm$ 2.9	0.0050
Fries foods at home	Mellen	1.5 $\pm$ 0.3	1.7 $\pm$ 0.2	0.6730
	Folsom	4.9 $\pm$ 0.3	5.4 $\pm$ 0.2	0.2198
	Fung	19.5 $\pm$ 2.9	21.8 $\pm$ 3.6	0.0237
Eats snack foods	Mellen	1.4 $\pm$ 0.3	1.8 $\pm$ 0.2	0.2442
	Folsom	5.0 $\pm$ 0.3	5.5 $\pm$ 0.3	0.1574
	Fung	20.6 $\pm$ 0.7	21.5 $\pm$ 0.6	0.3515
Eats sweet snack foods	Mellen	1.5 $\pm$ 0.2	1.7 $\pm$ 0.2	0.6475
	Folsom	5.2 $\pm$ 0.3	5.3 $\pm$ 0.2	0.7783
	Fun	20.8 $\pm$ 0.8	21.2 $\pm$ 0.6	0.7089
Eats salty snack foods	Mellen	1.6 $\pm$ 0.3	1.6 $\pm$ 0.2	0.9140
	Folsom	4.9 $\pm$ 0.4	5.4 $\pm$ 0.2	0.2330
	Fung	20.1 $\pm$ 0.8	21.5 $\pm$ 0.6	0.1759

In addition to examining the relationship between each eating behavior and DASH index, eating behaviors were examined relative to DASH-related nutrient and food group intakes (Table 10). Eight behaviors were significantly related to one or more of these nutrients or food groups (Table 11). Two behaviors (skips more than one meal and eats salty snack foods between meals) were not associated with DASH-related intakes. Behaviors related to intake include skips meals, eats fast food, drinks sweetened beverages, low vegetable intake, eats out more than once weekly, fries foods at home, eats snack foods, and eats sweet snack foods.

**Table 10.** Intake levels assessed for associations with reported eating behaviors.

	<b>Intake Levels Assessed</b>	
<b>Nutrient Intakes</b>	kcal/1000kcal	g Fiber/1000kcal
	% Protein/1000kcal	mg Calcium/1000kcal
	% Fat/1000kcal	mg Magnesium/1000kcal
	% Saturated fat/1000kcal	mg Sodium/1000kcal
	mg Cholesterol /1000kcal	mg Potassium/1000kcal
<b>Food Group Intakes</b>	Total number of grain servings	Dairy servings
	Whole grain servings	Total meat servings
	Vegetable servings	Nut/seed/legume servings
	Fruit servings	Added Sugars

The sum of the number of reported eating behaviors related to intake was determined for each mother. Total number of eating behaviors was significantly related to all three DASH indices (Mellen:  $p=0.0141$ , Folsom:  $p=0.0163$ , Fung:  $p=0.0059$ ) such that mothers who reported more eating behaviors were more likely to have lower

**Table 11.** Directional relationships between maternal eating behaviors and nutrient or food intakes and associated p values. \* Trending association

	Skips meals	Eats fast food	Drinks sweetened beverages	Low vegetable intake	Eats out >1 time weekly	Fries foods at home	Eats snack foods	Eats sweet snack foods
Energy	↓ 0.0208	0.4598	↑ 0.0307	0.7359	0.8253	0.8742	0.3984	↑ 0.0198
% kcal from Protein	0.7589	↓ 0.0026	↓ 0.0112	0.4731	0.3420	0.1417	0.2926	0.6473
Fiber	↓ 0.0492	↓* 0.0658	↓ 0.0365	0.5570	↓ 0.0065	0.2691	↓* 0.0578	0.3525
Calcium	0.6956	0.1631	↓ 0.0452	↓ 0.0286	↓ 0.0258	↓ 0.0164	0.2161	0.2362
Magnesium	0.2765	↓* 0.0898	↓ 0.0326	↓ 0.0455	↓ 0.0074	↓* 0.0538	0.3279	0.1999
Potassium	0.6224	↓ 0.0223	0.1726	↓ 0.0184	↓ 0.0074	0.1015	↓* 0.0573	↓ 0.0279
Grains Servings	↓ 0.0167	0.1877	↑* 0.0684	0.6643	0.7858	0.7951	0.7709	0.1021
Whole Grains Servings	↓ 0.0107	0.4810	0.7383	0.6686	0.2259	0.2751	0.9072	0.5071
Vegetable Servings	↓ 0.0319	0.2841	0.4228	0.4840	0.2479	0.5761	0.9114	↑* 0.0549
Total Meat	0.1980	0.5816	0.1862	0.5862	0.5523	0.6828	0.5089	↑ 0.0119
Nuts, Seeds, and Legumes	↓ 0.0007	0.5240	0.7654	0.6645	↓ 0.0223	↓ 0.0300	0.7367	0.5927
Sweets Servings	↓ 0.0300	↑ 0.0200	↑* 0.0917	0.1825	0.4182	0.4709	0.4211	↑* 0.0565

DASH indices and therefore less adherence to the DASH diet. No interactions were found regarding young adult gender or risk group.

Ultimately, reported maternal eating behaviors were significantly associated with DASH adherence indices as well as selected DASH-related nutrient and food group intakes.

### **Aim 3: Dyad Comparisons**

Mothers eating behavior scores were compared to the DASH adherence indices for their children. While no statistically significant relationship existed, a trend was demonstrated suggesting that as the number of maternal eating behaviors increased, the DASH adherence indices for their children decreased (Mellen:  $p=0.1680$ , Folsom:  $p=0.1339$ , Fung:  $p=0.1235$ ). A significant relationship exists between the eating behaviors of mothers of high risk children and the intake of their children according to the Mellen index ( $p=0.0235$ ) such that as the Mellen DASH score of a high risk child decreased, his or her mother reported a greater number of poor eating behaviors. This relationship between maternal eating behaviors and Mellen scores was also evident in mothers of female young adults ( $p=0.0127$ ). No other relationships were evident based on risk and gender group (Table 12).

**Table 12.** Child DASH indices and mother eating behavior sum by child risk and gender category.

Measure	Males		Females	
	High Risk (n=15)	Low Risk (n=13)	High Risk (n=12)	Low Risk (n=16)
<b>Mellen Index (Child, mean ± SD)</b>	1.27 ± 1.18	0.85 ± 1.19	1.58 ± 1.79	1.22 ± 1.21
<b>Folsom Index (Child, mean ± SD)</b>	5.67 ± 1.28	5.58 ± 1.80	4.79 ± 1.51	5.19 ± 1.38
<b>Fung Index (Child, mean ± SD)</b>	23.40 ± 3.81	24.46 ± 4.12	22.83 ± 3.16	24.56 ± 3.22
<b>Eating Sum (Mother, mean ± SD)</b>	4.53 ± 1.41	1.69 ± 1.49	3.75 ± 2.22	4.00 ± 1.32

With respect to physical activity, mothers were categorized into three groups: 3 – most active (more than one form of purposeful exercise reported), 2 – moderately active (one form of purposeful exercise reported), and 1 – least active (no purposeful exercise reported). Purposeful exercise included the following categories: walking for exercise, strength training, cardiovascular training, or active daily activities (Table 7).

Child physical activity was also assessed in order to compare maternal and child exercise behaviors. As described previously, young adult physical activities were identified from interview narratives and divided into categories based on themes (Table 13). Themes that arose included participation in strength training, cardiovascular training, sports teams, strenuous school activities, active jobs, strenuous activities at home, typical school activities, or walking. Many children also reported no participation in exercise. Like their mothers, the children were divided into three categories based on level of physical

activity. For young adults, categories qualifying as purposeful exercise included: strength training, cardiovascular training, sports teams, or physically exerting activities at school. Male young adults were more likely to be active when compared to females (average PA score =  $2.78 \pm 0.09$  versus  $2.42 \pm 0.09$ ,  $p=0.010$ ).

**Table 13.** Qualifying young adult physical activity behaviors for exercise categories.

<b>Exercise Behavior Category</b>	<b>Qualifying Behaviors</b>
Strength Training	Abdominal exercises, push-ups, “little exercises,” curl-ups, squats, weights, lifts, pilates, yoga
Cardiovascular Training	Biking, football, exercise class, running, basketball, Tae-Bo, kickball, gym, trampoline, treadmill, jumping jacks, one hour cardio daily, walking 3-4 miles, dancing, wheeling around
Sports Teams	Taking part in organized school sports: volleyball, basketball, football, wrestling, track, soccer
Active School Activities	Taking part in active school activities such as band, physical education class, flag squad, ROTC, weight lifting class
Active at Work	Walking, standing, lifting, or taking the stairs at work
Active at Home	Playing with children, cleaning, or caring for disabled mother
Typical School Activities	Walking to class, taking the stairs, walking around campus
Walks	Walking to get from one place to another or out of necessity rather than for purposeful exercise: walking down the street, around the mall, to the bus stop, home, to the car, or walking the dog
Does Not Exercise	Reports no exercise

Maternal physical activity was significantly related to the physical activity of their sons ( $p=0.0332$ ). Sons reporting low levels of physical activity were more likely to have mothers who also reported low levels of physical activity.

Ultimately, statistically significant relationships between maternal eating behaviors and child intake existed only between mothers of high risk children and mothers of females. Relationships between maternal and child physical activity behaviors were only significant in dyads with sons, with no differences based on risk or risk:gender groups.

## CHAPTER V

### CONCLUSIONS

#### **Discussion**

This study is the first to investigate the relationship between young adult risk for the development of a chronic disease and the eating and exercise behaviors of their mothers. While this analysis cannot denote causality, this work is based on the model of intergenerational transmission of health risk behaviors. Ultimately, these results elucidate the need to consider maternal behaviors when trying to understand the establishment of lifestyle behaviors among children and when developing interventions to promote healthy lifestyles in African American youth.

***Aim 1: Maternal Behaviors by Young Adult Risk and Gender*** Mothers of low risk males stood out as exhibiting the most healthful behaviors among all other risk:gender groups. These mothers were the least likely to report eating behaviors associated with poor DASH diet adherence such as skipping meals, consuming fast foods, drinking sweetened beverages, eating out more than once weekly, and consuming few vegetables. In addition, these mothers were more likely to have higher Folsom and Fung DASH indices, indicating a diet more aligned with DASH directives. These results suggest that mothers with low risk sons may exhibit eating behaviors that influence the behaviors of their sons. Further research is warranted regarding the preventative effects

of positive maternal eating behaviors on the hypertension risk category of African American young adult children.

With regards to physical activity, these results suggest that mothers of daughters are more likely to be former exercisers and not currently exercise. Mothers of high risk daughters, in particular, were more likely to report being unable to exercise. This trend also extended to young adult participants, as daughters were likely to be less active than sons. Previous research efforts have also revealed lower levels of physical activity in female young adults compared to males (12, 24, 26). Having an exercising maternal role model may aid in the development of positive physical activity behaviors in young adult daughters, and could provide an area for intervention for the reduced risk of hypertension in these young adult females. While a statistically significant relationship between maternal and young adult physical activity level did not exist across all groups, potential still remains for investigation into the relationships between maternal physical activity and the exercise habits of their children. Ultimately, these results suggest the need for and potential benefit of interventions to provide positive role models for young adults, especially females with physically challenged mothers, in an effort to increase the physical activity levels of these young adults.

Previous research has shown that increased physical activity levels can lead to decreased weight and BMI (20, 27, 29, 69). In addition, physical activity has been shown to have a significant influence on blood pressure control (20, 69). As maternal exercise and eating behaviors were related to gender and hypertension risk categories of young

adults, these behaviors may provide a platform for intervention to not only improve the risk status of African American young adults, but their mothers as well.

*Aim 2: Maternal Eating Behaviors by DASH Indices* Comparison of food frequency measures and eating behaviors demonstrated the link between nutrient intake and eating behaviors. Several maternal eating behaviors were statistically associated with DHQ outcomes, supporting the validity of reports of these behaviors as indicators of dietary quality. Mothers' total eating behaviors were associated with all three DASH indices, indicating that the combined effects of meal patterns and food choices are related to overall adherence to DASH guidance.

Over-reporting of perceived positive eating behaviors is a common phenomenon, especially in females or overweight individuals, and even in adolescents (70, 71). Because socially acceptable responses can lead to a poor understanding of an individual's intake, an alternate approach may be to focus on self-reported negative eating behaviors as areas for intervention. Working with individuals on their admitted poor eating behaviors could allow for the formulation of small, achievable, and tailored goals (such as limiting how often foods are fried at home or how often fast food is eaten) to alter behavior and therefore intake. The findings here suggest that most negative eating behaviors reported by mothers were associated with DASH-related intakes. Reports of negative eating behaviors, therefore, may provide a rapid assessment of dietary quality, and may provide starting points for intervention efforts. Additional research with a larger group is necessary in order to determine if these associations remain statistically significant.

This was an exploratory investigation composed largely of open-ended questions regarding general intake and meal patterns. As mentioned previously, behaviors such as vegetable consumption and eating out practices were questioned directly, while other behaviors such as consumption of sweetened beverages, fast food intake, and frying foods at home were not directly addressed, but rather were brought up by the participants as they described their typical intake. While this may result in under-reporting of some behaviors that participants neglected to mention, the purpose of the open-ended questioning was to allow participants to talk about food in their own language. Without direct questioning of most behaviors, responses may have been less shaped by desire for social acceptability, resulting in the collection of more reliable information regarding eating behaviors, as many reported behaviors were shared based on unsolicited free will of the participants.

While negative behaviors may be under-reported, these results suggest that those negative behaviors that are, in fact, reported are significantly related to the intake of mothers and their African American young adults, and may represent only a small portion of the negative dietary behaviors of the individual.

The DASH indices used in this investigation were chosen to provide a broad picture of the intake of the participants. The indices selected vary in how participant intake is rated. Both the Mellen and Folsom indices compare an individual's intake to predetermined standards, while the Fung index ranks individuals based on intake. Although both the Mellen and Folsom indices compare intakes to standard goals, the scores differ from one another in the sources of DASH standards used, resulting in

different cut-off levels for point assignment. The indices also vary in which intake values are assessed. Although the Mellen index focuses on assessing nutrient intake, the Folsom and Fung indices also include components assessing DASH-related food group intakes. Each index, therefore, describes the sample population differently. Mellen scores across all participants in this study were low, while Fung scores allowed participants to be ranked, resulting in a wider distribution of scores. As mentioned previously, when maternal eating behaviors were compared to DASH indices, a low Fung score was associated with reports of three different eating behaviors, while the Mellen score was only statistically related to one behavior. These findings may suggest that the utilization of a DASH index that describes adherence to strict standards may not be appropriate when assessing this population. Alternately, ranking individuals within this population may be a more appropriate approach to assessing DASH adherence and describing the intake of individuals.

***Aim 3: Dyad Comparisons*** Few relationships between mother and child with respect to eating and exercise behaviors were found. With regards to eating behaviors, only a weak relationship existed between the eating behaviors of mothers and the DASH indices of their children. This relationship is significant, however, in dyads with high risk young adults or female young adults. Overall, this data may indicate that by early adulthood there is a weaker link between mother and child diet and that the effects of maternal diet are more pronounced during childhood.

The strongest relationship was regarding physical activity in that inactive sons were more likely to have mothers who were also inactive. These results are similar to the

findings of Trost et al., who found that perceived maternal physical activity level correlated directly with the activity levels of their male, but not female, children (12). While Trost focused on African American youth, the sample population was younger ( $11.4 \pm 0.5$  years) than the population in the current study ( $18.6 \pm 1.2$  years). These findings support past findings that male and female young adults differ in influence over physical activity and may further describe the relationship between mothers and young adult sons with respect to exercise behaviors.

Efforts to provide interventions to decrease risk of hypertension in African American young adult populations through improved exercise behaviors may find benefit from the inclusion of male participants as well as their mothers. Previous investigations have also found benefit to the inclusion of maternal role models. Brownell et al. found success in the inclusion of mothers in adolescent weight loss interventions (54). Interventions that involved both mother and adolescent (although in separate classes) boasted significantly more weight loss compared to other groups (adolescent alone or mother and adolescent in the same class), even at one year follow-up. These results suggest that interventions addressing exercise habits of African American young adult males to reduce hypertension risk could benefit from the inclusion of their mothers.

## **Conclusions**

Overall, this study suggests that maternal eating and exercise behaviors are related to the gender and hypertension risk categories of their African American young adult children. It is clear, however, that separate strategies are needed based on young adult gender and hypertension risk category.

Additional research is necessary in order to determine the nature of relationships between the eating and exercise behaviors of mothers and daughters. The presence of a relationship between maternal eating behaviors and Mellen DASH indices suggests that a link may exist between mother and young adult daughter eating. Further research is needed to determine if this relationship holds up, and to investigate the best way to take advantage of this relationship in the development of interventions to prevent the early onset of HTN.

It is important to note that complex dynamics of gender, income, marital status, and stress influence the lives of these mothers, therefore influencing their eating and physical activity behaviors. It was shown here that the eating behaviors of mothers were associated with the intakes of their daughters. Physical activity behaviors of mothers were not, however, related to the physical activity of their daughters, highlighting clear differences between groups. In addition, mothers of females were more likely to report being former exercisers. These differences may arise from the differences in income level, marital status, and education levels among mothers of daughters and mothers of sons. Mothers of daughters within this sample tended to be less educated, unmarried, and of lower socioeconomic status, putting them at risk for poor nutrition status. In addition, these mothers may be less likely to have time for exercise, influencing their physical activity behaviors. These differences again highlight the need to tailor interventions with young adults according to gender.

Interestingly, the relationship between the eating behaviors of mothers and the intake of their children were strong within dyads containing high risk youth. This

relationship may provide an opportunity to strongly influence the eating behaviors of at-risk young adults through mother-daughter or mother-son interventions.

Limited interactions related to eating behaviors in this study may suggest that young adults are more independent at this age. Investigations of younger age groups are necessary in order to determine if stronger relationships between mother and child health behaviors exist earlier. In addition, research into the ways in which the lifestyles of mothers and daughters overlap compared to mothers and sons is necessary to provide insight into these relationships or lack thereof. Ultimately, investigations such as these would aid in the determination of strategies for intervention with this group.

Interventions to decrease hypertension risk through physical activity in this young adult population may be more beneficial when focusing on mother and son, as relationships between exercise behaviors within these dyads were stronger within this sample. Interventions taking advantage of the relationships between mothers behaviors and the gender and hypertension risk factors of their African American children may prove to be more effective in decreasing hypertension risk in these young adults. Additional research is required in order to investigate these relationships further and determine the most appropriate ages and topics for mother- and child-based interventions.

## CHAPTER VI

### EPILOGUE

Qualitative research provides an opportunity to learn about others in their own language. Having the opportunity to work on this project and develop my qualitative research skills has been valuable and greatly rewarding. In planning and writing this project, I have learned a great deal about the research process. The skills I have developed are invaluable and will serve me well as I begin my career in dietetics. The planning and implementation of this project have given me insight into the analysis of qualitative data as well as an appreciation for the rich story that qualitative research can provide.

This experience has allowed me to expand my skill set dramatically. I feel confident in my ability to critically assess current literature not only for conclusions and applications of findings, but for strengths and weaknesses in methodology and analysis that could affect these applications. With regards to data analyses, I feel comfortable assessing narratives for common and relevant themes. I have developed the skills necessary to navigate the qualitative analysis program Atlas.ti.5.1.12 as well as the statistical analysis program JMP 7.0. The use of these tools has enabled me to develop analysis skills related to qualitative data analysis and statistics. I have improved dramatically in my ability to perform and interpret statistical analyses while working on

this project. The writing process has also provided me with ample writing experience and has allowed for the expansion and development of my writing skills. Finally, this experience has helped me to improve my skills associated with professionalism and professional communication. I have developed a larger appreciation for the importance of collaboration within the professional community. This experience has taught me to appreciate the input and work of others.

I greatly value the opportunity to have worked on this project. I have developed skills that will continue to benefit me professionally. I would like to take this opportunity to again thank my mentor, Dr. Margaret Savoca, for her support and guidance throughout this process. It is because of her experience and willingness to teach that I was able to take advantage of this amazing opportunity for growth. I would also like to thank my committee members, Dr. Martha Taylor and Dr. Tracy Nichols, for their input, guidance, and willingness to devote their time and energy to this project, which has had such a large impact on my education and career.

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APPENDIX A. YOUNG ADULT CONSENT DOCUMENT

Subject's Name: \_\_\_\_\_



Georgia Institute for the  
Prevention of Human Disease and Accidents  
Department of Pediatrics

Subject's Name: \_\_\_\_\_

**YOUNG ADULT CONSENT DOCUMENT**

**Risk of HTN: Young Adult Lifestyles & Parental Influence**

Principal Investigator: Margaret R. Savoca, Ph.D.  
Sub-Investigator: Gregory Harshfield, Ph.D.  
Frank Treiber, Ph.D.  
Conner Evans

**INVITATION TO PARTICIPATE:**

I have been invited to participate in a research study. This study will look at how young adults and their mothers understand hypertension (high blood pressure) and lifestyle activities, such as eating and exercise. I have been asked to take part in this study because I am African-American between 17-20 years of age, and a past participant in one of Dr. Harshfield's studies at the Georgia Prevention Institute. I will be one of 60 young adults to participate in this study.

**PROCEDURES:**

If I participate, I would meet with the researcher, Dr. Savoca. This meeting will last about two hours. Dr. Savoca and the research assistant will measure my blood pressure, weight, and height. Then the researcher will take me into a private room to interview me. She will ask me some questions about my views about high blood pressure and its development. She will also ask me about my current and past activities, such as eating and exercise. The interview will take about one hour. In addition to the interview, there will be a questionnaire session that will last one hour. During this time, a research assistant will ask me questions about my family health history and academic grades and complete a diet history questionnaire. At any time during the interview or the questionnaire session, I can refuse to answer any of the questions. Dr. Savoca or the research assistant will skip that question and move to the next topic or question. Similar information will be obtained from my mother. However, none of the information that I provide will be shared with my mother and my mother's information will not be shared with me.

Our interviews with the researcher will be recorded on audio cassette tapes that only Dr. Savoca and the research assistant (RA) will get to hear. At any point during taping, I can

HAC FILE # 04-04-345  
Version Date: 4/1/04, 5/3/04 HAC APPROVED INFORMED CONSENT DOCUMENT Subject's Initials \_\_\_\_\_  
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Subject's Name: \_\_\_\_\_

ask that the taping be stopped. The tape recorder will not be turned back on unless I give permission to do so.

Dr. Savoca and the RA will transcribe (write down) all of the information that they collect on each tape. I will not be identified by name in these transcripts. Dr. Savoca will destroy our cassette tapes as soon as she has finished the transcripts. Other researchers will not listen to the tapes or read the transcripts. The transcripts will only be used to learn about how all the young adults and their parents answered the questions. A general summary of the results for all participants will be prepared. Only this general summary will be provided to other researchers.

Sometimes when people are interviewed for a research project, short summaries of the interviews are used to help people understand the results. If the interviews of my mother and me are summarized, any information that might identify us will be changed. That means names, occupations, or events will be changed so that a reader will not recognize us from what is written.

**COSTS:**

I will be responsible for the costs of transportation to GPI and MCG.

**SUBJECT PAYMENT:**

I will each receive a \$50.00 check in the mail after I complete the interview and the background/diet history questionnaires.

**RISKS AND/OR DISCOMFORTS:**

There are no risks or discomforts involved in this study. I do not have to answer any questions that make us feel uncomfortable.

**POSSIBLE BENEFITS:**

I may not personally benefit from this study. My participation in this study may provide important information regarding future prevention and treatment of hypertension in African American teenagers.

**ALTERNATIVE TREATMENTS:**

The only alternative for this study is to not participate.

**COMPENSATION:**

While no harm should be expected from my participation in the study, I understand that the Medical College of Georgia assumes no obligation to pay any money or provide free medical care in case this project results in any harm to me.

**QUESTIONS:**

If I have any questions about the study procedures or about my participation in this study, I may contact Dr. Margaret Savoca at (706) 721-5426. If I have any questions or concerns about the "rights of research subjects", I may contact the Chairman of the Human Assurance Committee, Dr. George S. Schuster at (706) 721-2991.

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 SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

**VOLUNTARY PARTICIPATION:**

My participation in this study is voluntary. I may revoke my consent and withdraw from the study now or at any time in the future without penalty or loss of care or other benefits to which I am otherwise entitled. I can do this by telling a member of the study team that I want to stop participating. I understand that my refusal to participate in this study will not prevent me from participating in other studies at this institution.

**PRIVACY NOTICE:**

The researchers are asking for my written authorization before using my health information or sharing it with others in order to conduct the research described. However, under certain circumstances, the researchers may use and disclose my health information without my written authorization if they obtain approval through a special process to ensure that research without my written authorization poses minimal risk to my privacy. Under no circumstances, however, would the researchers allow others to use my name or identity me publicly.

The researchers may also disclose my health information without my written authorization to people who are planning a future research project, so long as any information identifying me does not leave our facility.

Information about people who have died may be shared with researchers using the information of the deceased person, as long as the researchers agree not to remove from our facility any information that identifies these individuals.

**CONFIDENTIALITY:**

Only the investigator, members of the research team, authorized officials from state and federal governments and authorized representatives from of the Medical College of Georgia or MCG Health Inc. will have access to confidential data which could identify me, unless specifically required to be disclosed by state or federal law. I will not be identified by name in any report or publications resulting from this study.

**AUTHORIZATION TO USE AND DISCLOSE HEALTH INFORMATION:**

If I sign this document, I give permission to Dr. Savoca, Dr. Treiber and/or Dr. Harshfield at MCG/MCGHI to use or disclose (release) my health information that identifies me for the research study described above. The researchers may use and share my protected health information only to conduct the research and must remove from my protected health information any disclosure that could be used to identify my child or me.

The protected health information that the investigator(s) may use or disclose (release) for this research includes:

- From the interviews, information about my views of hypertension, its causes, and treatment.
- My blood pressure, weight, and height.
- The following background information:  
Family history: My recollection of the history of hypertension (high blood pressure), diabetes, and heart disease of my parents and my grandparents. If any

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Subject's Name: \_\_\_\_\_

of these family members are deceased, it will include our memory of the cause of death and the age of death.

Academic Performance: The overall average grades during my most recent academic experiences.

Diet History Questionnaire: A history of the foods that I have most often eaten over the past year.

The health information listed above may be used by and/or disclosed to the study's research assistant.

MCG/MCGHI is required by law to protect my health information. By signing this document, I authorize MCG/MCGHI to use and/or disclose my health information for this research. Those people who receive my health information may not be required by Federal privacy law (such as the Privacy Rule) to protect it and may share the information with others without my permission, if permitted by laws governing them.

If all information that does or can identify me is removed from my health information, the remaining information will no longer be subject to this authorization and may be used or disclosed for other purposes.

MCG/MCGHI may not refuse to treat me whether or not I sign this Authorization.

I may change my mind and revoke (take back) this Authorization at any time. Even if I revoke this Authorization, Dr. Savoca may still use or disclose health information they already have obtained about me as necessary to maintain the integrity or reliability of the current research. To revoke this Authorization, I must write to:  
MCG/MCGHI, Dr. Margaret Savoca, 1120 15<sup>th</sup> Street, HS-1640, Augusta, GA 30912

This Authorization does not have an expiration date.

I have read this form that serves as an informed consent document and an authorization and have been given the opportunity to ask questions. If I have questions later, I can contact Dr. Savoca at (706) 721-5426. I will be given a signed copy of this document for my records. I authorize the use of my identifiable information as described in this document.

The risks and benefits to me if I participate in this study have been explained. I am encouraged to and will have the chance to ask questions and these questions will be answered. I voluntarily agree to participate and to authorize the use of my protected health information in this study.

\_\_\_\_\_  
Subject's Name

\_\_\_\_\_  
Subject's Signature

\_\_\_\_\_  
Date

Version Date: 4/1/04, 5/3/04

HAC FILE # 04-04-345  
HAC APPROVED INFORMED CONSENT DOCUMENT  
APPROVAL FROM 5/10/04 TO 4/25/05  
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SUBJECTS AFTER THIS DATE.

\_\_\_\_\_  
Subject's Initials

Subject's Name: \_\_\_\_\_

\_\_\_\_\_  
Witness' Name (print)

\_\_\_\_\_  
Signature of Witness  
to the informed consent process and to the  
signature of the subject and/or subject's  
parent and/or legal guardian

\_\_\_\_\_  
Date

**INVESTIGATOR'S STATEMENT:**

I acknowledge that I have discussed the above study with this participant and answered all of his/her questions. They have voluntarily agreed to participate. I have documented this action in the subject's medical record or source document. A copy of this signed document will be placed in the subject's medical record or source document. A copy of this document will be given to the subject or the subject's legally authorized representative.

\_\_\_\_\_  
Printed name of investigator obtaining consent

\_\_\_\_\_  
Signature of investigator obtaining consent

\_\_\_\_\_  
Date

Version Date: 4/1/04, 5/3/04 HAC FILE # 04-04-345 Subject's Initials \_\_\_\_\_  
HAC APPROVED INFORMED CONSENT DOCUMENT  
APPROVAL FROM 5/20/04 TO 4/25/05  
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APPENDIX B. PARENTAL CONSENT DOCUMENT

Subject's Name: \_\_\_\_\_



Georgia Institute for the  
Prevention of Human Disease and Accidents  
Department of Pediatrics

**PARENTAL CONSENT DOCUMENT**

**Risk of HTN: Young Adult Lifestyles & Parental Influence**

Principal Investigator: Margaret R. Savoca, Ph.D.  
Sub-Investigator: Gregory Harshfield, Ph.D.  
Frank Treiber, Ph.D.  
Conner Evans

**INVITATION TO PARTICIPATE:**

My child and I have been invited to participate in a research study. This study will look at how young adults and their mothers understand hypertension (high blood pressure) and lifestyle activities, such as eating and exercise. We have been asked to take part in this study because my child is African-American, 17-20 years of age, and a past participant in one of Dr. Harshfield's studies at the Georgia Prevention Institute. My child will be one of 60 young adults and I will be one of 60 mothers to participate in this study.

**PROCEDURES:**

If we participate in this study then we would meet with the researcher, Dr. Savoca. This meeting will last about two hours. During this time, the researcher will take me into a private room so that she can interview me. She will ask me some questions about my views on high blood pressure and its development. She will also ask me about our current and past activities, such as eating and exercise. The interview will take about one hour. During the interview, my child will remain in another private room so that a research assistant can ask him/her some questions about our family background and medical history. He/she will also fill-out a diet history questionnaire. When the researcher is finished talking with me then Dr. Savoca will interview my child. Dr. Savoca will ask my child the same or similar questions that she asked me. While my child is being interviewed, I will answer some questions about our background/medical history and fill-out a diet history questionnaire. At any time during the interview or the questionnaire session, my child and I can refuse to answer any of the questions. Dr. Savoca or the research assistant will skip that question and move to the next topic or question.

Before the interviews begin, Dr. Savoca and the research assistant will measure my child's and my blood pressure, weight, and height.

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HAC FILE # 04-04-345 Parent/ Guardian's Initials \_\_\_\_\_  
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Subject's Name: \_\_\_\_\_

Our interviews with the researcher will be recorded on audio cassette tapes that only Dr. Savoca and the research assistant will get to hear. At any point during taping, my child or I can ask that taping be stopped. The tape recorder will not be turned back on unless I or my child gives the permission to do so.

Dr. Savoca and the RA will transcribe (write down) all of the information that they collect on each tape. We will not be identified by name in these transcripts. Dr. Savoca will destroy our cassette tapes as soon as she has finished the transcripts. Other researchers will not listen to the tapes or read the transcripts. The transcripts will only be used to learn about how all the children and their parents answered the questions. A general summary of the results for all participants will be prepared. Only this general summary will be provided to other researchers.

Sometimes when people are interviewed for a research project, short summaries of the interviews are used to help people understand the results. If the interviews of my child and me are summarized, any information that might identify us will be changed. That is names, occupations, or events will be changed so that a reader will not recognize us from what is written.

**COSTS:**

I will be responsible for the costs of transportation to GPI and MCG.

**SUBJECT PAYMENT:**

My child and I will each receive a \$50.00 check in the mail after we complete the interview and the background/diet history questionnaires.

**RISKS AND/OR DISCOMFORTS:**

There are no risks or discomforts involved in this study. We do not have to answer any questions that make us feel uncomfortable.

**POSSIBLE BENEFITS:**

We may not personally benefit from this study. Our participation in this study may provide important information regarding future prevention and treatment of hypertension in African American teenagers.

**ALTERNATIVE TREATMENTS:**

The only alternative for this study is to not participate.

**COMPENSATION:**

While no harm should be expected from our participation in the study, I understand that the Medical College of Georgia assumes no obligation to pay any money or provide free medical care in case this project results in any harm to my child or my self.

**QUESTIONS:**

If I have any questions about the study procedures or about our participation in this study, I may contact Dr. Margaret Savoca at (706) 721-5426. If I have any questions or

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 SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

concerns about the "rights of research subjects", I may contact the Chairman of the Human Assurance Committee, Dr. George S. Schuster at (706) 721-2991.

**VOLUNTARY PARTICIPATION:**

My participation in this study is voluntary. I may revoke my consent and withdraw us from the study now or at any time in the future without penalty or loss of care or other benefits to which my child is otherwise entitled. I can do this by telling a member of the study team that I want to stop participating. I understand that my refusal to participate in this study will not prevent my participation in other studies at this institution.

**PRIVACY NOTICE:**

The researchers are asking for my written authorization before using my child's or my health information or sharing it with others in order to conduct the research described. However, under certain circumstances, the researchers may use and disclose my child's or my health information without my written authorization if they obtain approval through a special process to ensure that research without my written authorization poses minimal risk my child's or my privacy. Under no circumstances, however, would the researchers allow others to use our names or identity us publicly.

The researchers may also disclose my child's or my health information without my written authorization to people who are planning a future research project, so long as any information identifying us does not leave our facility.

Information about people who have died may be shared with researchers using the information of the deceased person, as long as the researchers agree not to remove from our facility any information that identifies these individuals.

**CONFIDENTIALITY:**

Only the investigator, members of the research team, authorized officials from state and federal governments and authorized representatives from of the Medical College of Georgia or MCG Health Inc. will have access to confidential data which could identify my child or my self, unless specifically required to be disclosed by state or federal law. We will not be identified by name in any report or publications resulting from this study.

**AUTHORIZATION TO USE AND DISCLOSE HEALTH INFORMATION:**

If I sign this document, I give permission to Dr. Savoca, Dr. Treiber and/or Dr. Harshfield at MCG/MCGHI to use or disclose (release) our health information that identifies us for the research study described above. The researchers may use and share my child's and my protected health information only conduct the research and must remove from my child's and my protected health information any disclosure that could be used to identify my child or me.

The protected health information that the investigator(s) may use or disclose (release) for this research includes:

- From the interviews, information about my child's or my views of hypertension, its causes, and treatment.
- My child's and my blood pressure, weight, and height.

Version Date: 4/1/04, 5/3/04

HAC FILE # 04-04-385 Parent/ Guardian's  
 HAC APPROVED INFORMED CONSENT DOCUMENT Initials \_\_\_\_\_  
 APPROVAL FROM 5/12/04 TO 4/23/05  
 THIS DOCUMENT IS NO LONGER VALID TO ENROLL  
 SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

- The following background information:  
Family history: My child's and my recollection of the history of hypertension (high blood pressure), diabetes, and heart disease of my parents and the parents of my child's father. If any of these family members are deceased, it will include our memory of the cause of death and the age of death.  
Socioeconomic Information: I will be asked to provide my age, education level and the age and educational level of my child's father.  
Academic Performance: The overall average grades of my child.  
Diet History Questionnaire: A history of the foods that we have most often eaten over the past year.

The health information listed above may be used by and/or disclosed to the study's research assistant.

MCG/MCGHI is required by law to protect our health information. By signing this document, I authorize MCG/MCGHI to use and/or disclose our health information for this research. Those people who receive our health information may not be required by Federal privacy law (such as the Privacy Rule) to protect it and may share the information with others without my permission, if permitted by laws governing them.

If all information that does or can identify me or my child is removed from our health information, the remaining information will no longer be subject to this authorization and may be used or disclosed for other purposes.

MCG/MCGHI may not refuse to treat us whether or not I sign this Authorization.

I may change my mind and revoke (take back) this Authorization at any time. Even if I revoke this Authorization, Dr. Savoca may still use or disclose health information they already have obtained about me and my child as necessary to maintain the integrity or reliability of the current research. To revoke this Authorization, I must write to: MCG/MCGHI, Dr. Margaret Savoca, 1120 15<sup>th</sup> Street, HS-1640, Augusta, GA 30912

This Authorization does not have an expiration date.

I have read this form that serves as an informed consent document and an authorization and have been given the opportunity to ask questions. If I have questions later, I can contact Dr. Savoca at (706) 721-5426. I will be given a signed copy of this document for my records. I authorize the use of my and my child's identifiable information as described in this document.

The risks and benefits to us if we participate in this study have been explained. I am encouraged to and will have the chance to ask questions and these questions will be answered. I voluntarily agree to participate and to authorize the use of our protected health information in this study.

Version Date: 4/1/04, 5/3/04

HAC FILE # 04-04-3K5 Parent/ Guardian's  
 HAC APPROVED INFORMED CONSENT DOCUMENT Initials \_\_\_\_\_  
 APPROVAL FROM 5/10/04 TO 4/25/05  
 THIS DOCUMENT IS NO LONGER VALID TO ENROLL  
 SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

\_\_\_\_\_  
Subject's Name (print)

\_\_\_\_\_  
\* Parent or Guardian's Name (print)

\_\_\_\_\_  
\*Parent or Guardian's Signature

\_\_\_\_\_  
Date

\*The individual above verifies that he/she is the natural parent and/or legal guardian of \_\_\_\_\_ and as such as has the legal authority to consent to the study outlined above.

\_\_\_\_\_  
Witness' Name (print)

\_\_\_\_\_  
Signature of Witness  
to the informed consent process and to the signature of the subject and/or subject's parent and/or legal guardian

\_\_\_\_\_  
Date

**INVESTIGATOR'S STATEMENT:**

I acknowledge that I have discussed the above study with this participant and answered all of his/her questions. They have voluntarily agreed to participate. I have documented this action in the subject's medical record or source document. A copy of this signed document will be placed in the subject's medical record or source document. A copy of this document will be given to the subject or the subject's legally authorized representative.

\_\_\_\_\_  
Printed name of investigator obtaining consent

\_\_\_\_\_  
Signature of investigator obtaining consent

\_\_\_\_\_  
Date

Version Date: 4/1/04, 5/3/04

HAC FILE # 04-04-345  
HAC APPROVED INFORMED CONSENT DOCUMENT  
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SUBJECTS AFTER THIS DATE.

Parent/ Guardian's  
Initials \_\_\_\_\_

APPENDIX C. CHILDREN'S ASSENT

Subject's Name: \_\_\_\_\_



Georgia Institute for the  
Prevention of Human Disease and Accidents  
Department of Pediatrics

**CHILDREN'S ASSENT**

**Risk of HTN: Young Adult Lifestyles & Parental Influence**

Principal Investigator: Margaret R. Savoca, Ph.D.

Sub-Investigator: Gregory Harshfield, Ph.D.  
Frank Treiber, Ph.D.  
Conner Evans

**INVITATION TO PARTICIPATE:**

I have been invited to participate in a research study. This study will look at how young adults and their mothers understand hypertension (high blood pressure) and the way that health-related behaviors (like eating and exercise) can help or hurt them. I have been asked to take part in this study because I am an African-American between the ages of 17 to 20 years old who has participated in one of Dr. Harshfield's past studies at the Georgia Prevention Institute. I will be one of 60 young adults to participate in this study.

**PROCEDURES:**

If I participate in this study then my mother and I will meet with the researcher, Dr. Savoca. This meeting will last about two hours. During this time, the researcher will take my mother into a private room so that she can ask her some questions about blood pressure and lifestyle activities, such as eating and exercise. I will stay in another private room so that a research assistant can ask me some questions about our family background and medical history. I will also fill-out a diet history questionnaire. When the researcher is finished talking with my mother then she will interview me. The researcher will ask me some of the same questions she asked my mother and some that might be different. I should try and be as honest as I can when I answer her questions. I do not need to answer any questions that make me feel uncomfortable. If I do not want to answer a question, I will tell Dr. Savoca and she will ask me the next question. Dr. Savoca will not share my answers with my mother at any time. My mother will wait in the other room while I am with the researcher. She will answer the same questions I did about our family background and medical history. She will also fill-out a diet history questionnaire.

Our interviews with the researcher will be recorded on audio cassette tapes that only Dr. Savoca and the research assistant (RA) will get to hear. At any time, I can ask Dr. Savoca

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THIS DOCUMENT IS NO LONGER VALID TO ENROLL  
SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

to turn the taped recorder off. The tape recorder will not be turned back on unless I tell Dr. Savoca to begin taping again.

Dr. Savoca and the RA will transcribe (write down) all of the information that they collect on each tape. My name will not in these transcripts. Dr. Savoca will destroy our cassette tapes as soon as she has finished the transcripts. No other researchers will listen to the tapes or read the transcripts. The transcripts will only be used to learn about how all the children and their parents answered the questions. One report that describes how the children and their parents answered these questions will be written. Only this report will be read by other researchers.

Sometimes when people are interviewed for a research project, short summaries of their interviews are used to help people understand the results. If my and my mother's interviews are summarized, any information that could identify us will be changed. That means any names, types of jobs, school activities, or family events will be changed so that someone who reads the summary can not tell who are from what is written.

**SUBJECT PAYMENT:**

I will receive a \$50.00 check in the mail after I complete the interview and the diet history questionnaires.

**RISKS AND/OR DISCOMFORTS:**

There are no risks or discomforts involved in this study. I do not have to answer any questions that make me feel uncomfortable.

**POSSIBLE BENEFITS:**

I may not personally benefit from this study. My participation in this study may provide important information regarding future prevention and treatment of hypertension in African American teens.

**ALTERNATIVE TREATMENTS:**

The only alternative for this study is to not participate.

**QUESTIONS:**

If I have any questions about the study procedures or about my participation in this study, I may contact Dr. Savoca at (706) 721-5426. If I have any questions or concerns about the "rights of research subjects", I may contact the Chairman of the Human Assurance Committee, Dr. George S. Schuster at (706) 721-2991.

**VOLUNTARY PARTICIPATION:**

I do not have to be in this study. I can stop any time I want to. If I do stop or if I do not want to be in the study, it's okay. No one will be mad at me. I understand that if I decide not to be in this study, I can still be in other studies at MCG if I meet their standards.

I read this paper. They will explain it to me. I will have the chance to ask questions. They will answer the questions so that I can understand. If I have more questions, my parents or I can call Dr. Savoca at (706) 721-5426. I will be in the study.

Version Date: 4/1/04 HAC FILE # 04-04-345 Subject's Initials \_\_\_\_\_

HAC APPROVED INFORMED CONSENT DOCUMENT

APPROVAL FROM 5/10/04 TO 4/25/05

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SUBJECTS AFTER THIS DATE.

Subject's Name: \_\_\_\_\_

\_\_\_\_\_  
Subject's Name (print)

\_\_\_\_\_  
Subject's Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
\* Parent or Guardian's Name (print)

\_\_\_\_\_  
\*Parent or Guardian's Signature

\_\_\_\_\_  
Date

\*The individual above verifies that he/she is the natural parent and/or legal guardian of \_\_\_\_\_ and as such as has the legal authority to consent to the study outlined above.

\_\_\_\_\_  
Witness' Name (print)

\_\_\_\_\_  
Signature of Witness  
to the informed consent process and to the  
signature of the subject and/or subject's  
parent and/or legal guardian

\_\_\_\_\_  
Date

**INVESTIGATOR'S STATEMENT:**

I acknowledge that I have discussed the above study with this participant and answered all of his/her questions. They have voluntarily agreed to participate. I have documented this action in the subject's medical record or source document. A copy of this signed document will be placed in the subject's medical record or source document. A copy of this document will be given to the subject or the subject's legally authorized representative.

\_\_\_\_\_  
Printed name of investigator obtaining consent

\_\_\_\_\_  
Signature of investigator obtaining consent

\_\_\_\_\_  
Date

Version Date: 4/1/04

HAC FILE # 04-04-345 Subject's Initials \_\_\_\_\_  
HAC APPROVED INFORMED CONSENT DOCUMENT  
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SUBJECTS AFTER THIS DATE.

## APPENDIX D. MOTHER INTERVIEW

11/02/2004

Mother

8

### Introduction to the Interview

I appreciate the opportunity to talk with you. Understanding the views about health of mothers and their young adult children is the purpose of this research. The best way I know to learn about people's experiences and views is to hear it in their own words. We want to provide people who are trying to improve the health of young adults with an honest view of how young adults and their parents view high blood pressure or hypertension and their lifestyle behaviors, such as exercise and diet. Our goal is to ensure that when doctors and other health educators provide advice, they base it on what you tell us - not what they think goes on in your life or your family.

The interview will last about one hour. I will be asking you questions about hypertension, your daily activities, as well as your views about daily activities that can affect your health. There are no right or wrong answers. This is not a test of what you know about hypertension or health habits. We just want you to share your own opinions, ideas, and experiences.

Each of you will be asked similar questions. Based upon your answers, I may ask you additional questions that will help me to better understand what you are telling me. If at any time you don't feel comfortable answering something- just let me know and we will move to another question. If you have thoughts that you think are important for me to know, I encourage you to share these with me.

I will tape record our session so that I can do a better job of listening to you. I will use the tapes only to review our conversation and record your answers. You will not be identified by name in our database only by ID number. I will destroy the tapes after I complete collecting and analyzing data. If at any time, you have concerns about the taping let me know and I will turn off the recorder. This recording will not be shared with your parent (child) or any other researcher. The only people who will listen to these tapes are me and the research assistant who is working with me.

Do you have any questions or concerns about the interview or taping?

I want to thank you in advance for your time and effort to help with this important work.

Part I (MOTHER): Hypertension: Views and Experiences

*In the first part of the interview, I'll ask you some questions about hypertension. Remember this is not a test. I just want your honest answers to these questions.*

**Hypertension**

1. What do you think hypertension or high blood pressure is? What do the numbers mean to you?
2. What do you believe causes it? Are there any symptoms that people have with hypertension?
3. What do think may happen to people who have hypertension?
4. How is hypertension usually treated? Do you think it can be cured?
5. Do you think there is anything that can prevent it?
6. Why do you think it is that some people get it and some do not?

**Family History**

1. We will be asking this question again but I'd like you to tell me if anyone in your family has hypertension? How old were they when they found out they had hypertension?
2. How has (or did) hypertension affected them?
3. Were their daily habits changed because they had hypertension?
4. Has anyone else who you know well had hypertension? How have their experiences compared to those of your family members?
6. Do you think anyone else in your family is at risk for hypertension? Why or why not?

***If Mother has Hypertension***

7. When were you diagnosed with hypertension? What was going on that lead to your diagnosis?
8. How did you react to the diagnosis?
9. Have you changed anything about your daily life because you have hypertension?
10. How easy do you think it is to control your blood pressure?

**Doctor Information**

1. How often do you visit the doctor?
2. What usually is the reason that you see a doctor?
3. Do you mind seeing doctor?
4. Has the number of doctor's visits changed over time?
5. Do you ask question when you visit the doctor?
6. How often does your child visit the doctor?
7. Do you talk to the doctor with your child?
8. How are your doctor's bills paid fro? Health insurance?
9. How are your child's health bills paid for? Health Insurance?
10. Is health coverage something that you are concerned about?

**Other sources of health information**

1. Are there other ways that you receive information about your health?
2. Where do you learn about health and conditions like hypertension?
3. Where would you go if you wanted to know more about health or had any questions about your health?
4. Any ideas on how to provide health education to young people? Or their mothers?

*Before we move on to other questions, do you have any other thoughts on hypertension or anything else you would like to share that I may not have asked?*

Part II (MOTHER): Health and Lifestyle: Behaviors and Influences

*Any questions so far about the interview so far?*

**Overall Health**

*Now I would like to find out more about how you feel about your own health as well as learn more about your daily activities.*

1. Do you have any concerns about your health today?
2. How do you feel most days?
3. Do you have any concerns about health conditions that might appear as you get older?
4. Are you taking any medications either regularly or as needed?
5. Do you have any concerns about your child's health or the health of any members of your immediate family (e.g. husband, children, parents)

*Now we will talk about your daily activities.*

**Household makeup**

To help us learn how these activities fit into your everyday habits, tell me who lives in your household. Has this changed in the past few years?

**Eating**

*Eating is our first topic. We will ask you more questions following the interview about what you eat. Now we will talk about eating in a more general way.*

1. Tell me how you eat during a typical weekday. That is when and where you eat and generally what you would have. Beginning with the first thing you eat in the morning and going through to the last time you eat each day. Ask *"What kind of beverages do you normally drink and why?"*
2. What did you have for dinner last night?
3. Does your eating differ on the weekends?
4. How many meals would you usually eat at home? Who usually eats at home?
5. Who shops and prepares the meals at home? Do you shop with a list?
6. How often do you eat out? What are the places where you most frequently eat out?
7. What affects how and what you eat?

8. People are always interested in hearing about how and why people eat vegetables. What do you consider a vegetable? Tell me about it and how you include vegetables in meals.
9. Do you like vegetables? Have you always?
10. What kinds of eating habits do you think are healthy? Which habits are not?
11. Does your child cook for him or herself?
13. How much does your child know about foods and cooking? Where did he/she learn this ?
14. How did you learn how to cook?

#### **Physical Activity**

*Now we'll talk about being active. I'd like to talk about all types of activity not just exercise.*

1. How active are you during the day? When are you most active? When are you the least active?
2. Does work require you to be very active?
3. How much time do you spend watching TV, playing video games, or working on a computer at home?
4. Do you exercise on a regular basis? How often do you exercise? What do you like to do when you exercise?
5. Is exercising something you like to do?
6. What causes you to have more or less physical activity?
7. Was there a time when you were more or less active than you are today?
8. Is exercise or physical activity something that is important to you?
9. What kinds of physical activity habits do you think are healthy?

**Sleeping**

*My next questions are about sleeping.*

1. How much sleep do you get each weekday night or weekend?
2. What affects how much you sleep?
3. What kinds of sleep habits do you think are healthy? Which habits are not?

**Smoking**

*Now I'd like to ask you about smoking.*

1. Have you ever smoked cigarettes? Dipped or chewed? Do you now?
2. When did you start? Why do you think you started smoking?
3. How many cigarettes do you smoke in a day, month, or week? What affects how often you smoke?
4. Have you ever tried to quit?
5. Are your friends smokers?
6. Did either of your parents smoke?

**Stress**

*Finally, I'd like to get an idea if you feel your life is stressful.*

1. Do you feel you have a great deal of stress in your life? How about compared to other people you know?
2. Does stress affect you or your activities? How so?
3. What causes the stress in your life?
4. Are there things that you could do to reduce your stress?
5. Do you think that stress has an effect on health? If so, how so.

**General Questions**

*I have some general questions about all of these areas.*

1. Have you changed your daily habits (eating, physical activity, exercise, smoking, sleep, and stress) as you've gotten older? How have things changed?
2. Do you think these habits need to be different depending on your age?
3. Which of these areas is most important as far as maintaining or improving health?
4. Are there any habits you would like to change or improve?
5. Do think there is anything that would help you to improve your habits or activities?
6. Briefly, how do you think your child would answer these questions about these activities for herself, such as -
  - a. eating
  - b. exercise
  - c. sleep habits
  - d. smoking
  - e. stress
7. What influence do you think your child's friends have on his/her habits?
8. Are there any of her activities that you wish he/she would change?
9. How much influence do you have over your child's health habits? Has it changed over the years?
10. Do your children have any influence over your health habits?

**Closing**

Any other thoughts on any of the questions we have covered?

*You have been a great help. Thank you so much for your time and interest answering these questions.*

## APPENDIX E. CHILD INTERVIEW

11/02/2004

Child

1

### Introduction to the Interview

I appreciate the opportunity to talk with you. Understanding the views about health of mothers and their young adult children is the purpose of this research. The best way I know to learn about people's experiences and views is to hear it in their own words. We want to provide people who are trying to improve the health of young adults with an honest view of how young adults and their parents view high blood pressure or hypertension and their lifestyle behaviors, such as exercise and diet. Our goal is to ensure that when doctors and other health educators provide advice, they base it on what you tell us - not what they think goes on in your life or your family.

The interview will last about one hour. I will be asking you questions about hypertension, your daily activities, as well as your views about daily activities that can affect your health. There are no right or wrong answers. This is not a test of what you know about hypertension or health habits. We just want you to share your own opinions, ideas, and experiences.

Each of you will be asked similar questions. Based upon your answers, I may ask you additional questions that will help me to better understand what you are telling me. If at any time you don't feel comfortable answering something- just let me know and we will move to another question. If you have thoughts that you think are important for me to know, I encourage you to share these with me.

I will tape record our session so that I can do a better job of listening to you. I will use the tapes only to review our conversation and record your answers. You will not be identified by name in our database only by ID number. I will destroy the tapes after I complete collecting and analyzing data. If at any time, you have concerns about the taping let me know and I will turn off the recorder. This recording will not be shared with your parent (child) or any other researcher. The only people who will listen to these tapes are me and the research assistant who is working with me.

Do you have any questions or concerns about the interview or taping?

I want to thank you in advance for your time and effort to help with this important work.

Part I (CHILD): Hypertension: Views and Experiences

*In the first part of the interview, I'll ask you some questions about hypertension. Remember this is not a test. I just want your honest answers to these questions. There are no right or wrong answers.*

**Hypertension**

1. What do you think hypertension or high blood pressure is? What do the numbers mean?
2. What do you believe causes it?
3. Are there any symptoms that people with hypertension have?
4. What do think may happen to people who have hypertension?
5. How is hypertension usually treated? Do you think it can be cured?
6. Do you think there is anything that can prevent it?
7. Why do you think it is that some people get hypertension some do not?

**Family History**

1. We will be asking this question again but I'd like you to tell me if anyone in your family has hypertension? How old were they when they found out they had hypertension?
2. How has (or did) hypertension affected them?
3. Were their daily habits changed because they had hypertension?
4. Has anyone else who you know well had hypertension? How have their experiences compared to those of your family members?
5. Do you think anyone else in your family is at risk for hypertension? Why or why not?

**Doctor Information**

1. How often do you visit the doctor?
2. What usually is the reason that you see a doctor?
3. What kind of doctor do you go to see? Pediatrician?
4. Has this changed over time?
5. Do you mind seeing doctor?
6. Do you ask question when you visit the doctor?
7. Does your mother talk to the doctor with you?
8. How are your doctor bills paid for? Health insurance?

**Other sources of health information**

1. Are there other ways that you receive information about your health?
2. Where do you learn about health and conditions like hypertension?
3. Where would you go if you wanted to know more about health or had any questions about your health?
4. Any ideas on how to provide health education to young people? Or their mothers?

*Before we move on to other questions, do you have any other thoughts on hypertension or anything else you would like to share that I may not have asked?*

Part II (CHILD): Health and Lifestyle: Behaviors and Influences

*Any questions so far about the interview so far?*

**Overall Health**

*Now I would like to find out more about how you feel about your own health as well as learn more about your daily activities.*

1. Do you have any concerns about your health today?
2. How do you feel most days?
3. Do you have any concerns about health conditions that might appear as you get older?
4. Are you taking any medications either regularly or as needed?

*Now we will talk about your daily activities.*

**Household Makeup**

To help us learn how these activities fit into your everyday habits, tell me about who lives in your household. Has this changed in the past few years?

Probe the relationship with their father, if he hasn't been mentioned.

Find out if they are working, in school, between jobs, etc.

**Eating**

*Eating is our first topic. We will ask you more questions following the interview about what you eat. Now we will talk about eating in a more general way.*

1. Tell me how you eat during a typical weekday. That is when and where you eat and generally what you would have. Beginning with the first thing you eat in the morning and going through to the last time you eat each day. *Ask what kind of beverages do you normally drink and why if not mentioned.*
2. What did you have for dinner last night?
3. Does your eating differ on the weekends?
4. How many meals would you usually eat at home? Who usually eats at home?
5. Who shops and prepares the meals at home? Do you know if there is meal planning?
6. How often do you eat out? What are the places where you most frequently eat out?

7. Do you ever cook for yourself? How did you learn how to cook?
8. What affects how and what you eat?
9. People are always interested in hearing about how and why people eat vegetables. What do you consider a vegetable? Tell me if and how you include vegetables in meals.
10. Do you like vegetables? Have you always?
11. What kinds of eating habits do you think are healthy? Which habits are not?
12. How do your friends influence how you eat?

### **Physical Activity**

*Now we'll talk about being active. I'd like to talk about all types of activity not just exercise.*

1. How active are you during the day? When are you the most active? When are you the least active?
2. Does work or school require you to be very active?
3. How much time do you spend watching TV, playing video games, or working on a computer at home? *phone?*
4. Do you exercise on a regular basis? How often do you exercise? What do you like to do when you exercise?
5. Is exercising something you like to do?
6. What causes you to have more or less physical activity?
7. Was there a time when you were more or less active than you are today?
8. Is exercise or physical activity something that is important to you?
9. How much influence do your friends have on your physical activity?

**Sleeping**

*My next questions are about sleeping.*

1. How much sleep do you get each weekday night or weekend?
2. What affects how much you sleep?
3. What kinds of sleep habits do you think are healthy?

**Smoking**

*Now I'd like to ask you about smoking.*

1. Have you ever smoked cigarettes? Dipped or chewed? Do you now?
2. When did you start? Why do you think you started smoking?
3. How many cigarettes do you smoke in a day, or week? Does anything affect how often you smoke?
4. Have you ever tried to quit?
5. Are your friends smokers?
6. Do either of your parents smoke?

**Stress**

*Finally, I'd like to get an idea if you feel your life is stressful.*

1. Do you feel you have a great deal of stress in your life? How about compared to other people you know?
2. Does stress affect you or your activities? How so?
3. What causes the stress in your life?
4. Do your friends have an effect on your stress level?
5. Are there things that you could do to reduce your stress?
6. Do you think that stress has an effect on health? If so, how so.

**General Questions**

*I have some general questions about all of these areas.*

1. Have you changed your daily habits (eating, physical activity, exercise, smoking, sleep, and stress) as you've gotten older? How have things changed?
2. Which of these areas is most important as far as maintaining or improving health?
3. Are there any habits you would like to change or improve?
4. Do think there is anything that would help you to improve your habits or activities?
5. Briefly, how do you think your mother would answer these questions about these activities for herself, such as -
  - a. eating
  - b. exercise
  - c. sleep habits
  - d. smoking
  - e. stress for herself
6. Are there any of her activities that you wish she would change?
7. How much influence does your mother have over your health habits? Has it changed over the years?
8. Do you have any influence over your mother's health habits?

**Closing**

Any other thoughts about any of the questions I have asked today?

*You have been a great help. Thank you so much for your time and interest answering these questions.*



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1. Over the past 12 months, how often did you drink tomato juice or vegetable juice?
- NEVER (GO TO QUESTION 2)
- 1 time per month or less     1 time per day  
 2-3 times per month         2-3 times per day  
 1-2 times per week            4-5 times per day  
 3-4 times per week            6 or more times per day  
 5-6 times per week

- 1a. Each time you drank tomato juice or vegetable juice, how much did you usually
- Less than 3/4 cup (6 ounces)  
 3/4 to 1 1/4 cups (6 to 10 ounces)  
 More than 1 1/4 cups (10 ounces)

2. Over the past 12 months, how often did you drink orange juice or grapefruit juice?
- NEVER (GO TO QUESTION 3)
- 1 time per month or less     1 time per day  
 2-3 times per month         2-3 times per day  
 1-2 times per week            4-5 times per day  
 3-4 times per week            6 or more times per day  
 5-6 times per week

- 2a. Each time you drank orange juice or grapefruit juice, how much did you usually drink?
- Less than 3/4 cup (6 ounces)  
 3/4 to 1 1/4 cups (6 to 10 ounces)  
 More than 1 1/4 cups (10 ounces)

3. Over the past 12 months, how often did you drink other 100% fruit juice or 100% fruit juice mixtures (such as apple, grape, pineapple, or others)?
- NEVER (GO TO QUESTION 4)
- 1 time per month or less     1 time per day  
 2-3 times per month         2-3 times per day  
 1-2 times per week            4-5 times per day  
 3-4 times per week            6 or more times per day  
 5-6 times per week

- 3a. Each time you drank other fruit juice or fruit juice mixtures, how much did you usually drink?
- Less than 3/4 cup (6 ounces)  
 3/4 to 1 1/2 cups (6 to 12 ounces)  
 More than 1 1/2 cups (12 ounces)

Question 4 appears in the next column.

- Over the past 12 months...
4. How often did you drink other fruit drinks (such as cranberry cocktail, Hi-C, lemonade, or Kool-Aid, diet or regular)?

- NEVER (GO TO QUESTION 5)
- 1 time per month or less     1 time per day  
 2-3 times per month         2-3 times per day  
 1-2 times per week            4-5 times per day  
 3-4 times per week            6 or more times per day  
 5-6 times per week

- 4a. Each time you drank fruit drinks, how much did you usually drink?
- Less than 1 cup (8 ounces)  
 1 to 2 cups (8 to 16 ounces)  
 More than 2 cups (16 ounces)

- 4b. How often were your fruit drinks diet or sugar-free drinks?
- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

5. How often did you drink milk as a beverage (NOT in coffee, NOT in cereal)? (Please include chocolate milk and hot chocolate.)

- NEVER (GO TO QUESTION 6)
- 1 time per month or less     1 time per day  
 2-3 times per month         2-3 times per day  
 1-2 times per week            4-5 times per day  
 3-4 times per week            6 or more times per day  
 5-6 times per week

- 5a. Each time you drank milk as a beverage, how much did you usually drink?
- Less than 1 cup (8 ounces)  
 1 to 1 1/2 cups (8 to 12 ounces)  
 More than 1 1/2 cups (12 ounces)

- 5b. What kind of milk did you usually drink?
- Whole milk  
 2% fat milk  
 1 % fat milk  
 Skim, nonfat, or 1/2% fat milk  
 Soy milk  
 Rice milk  
 Other

Question 6 appears on the next page.

Over the past 12 months...

6. How often did you drink **meal replacement, energy, or high-protein beverages** such as Instant Breakfast, Ensure, Slimfast, Sustacal or others?

NEVER (GO TO QUESTION 7)

- |  |   |
|--|---|
| <input type="radio"/> 1 time per month or less | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month      | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 1-2 times per week       | <input type="radio"/> 4-5 times per day       |
| <input type="radio"/> 3-4 times per week       | <input type="radio"/> 6 or more times per day |
| <input type="radio"/> 5-6 times per week       |   |

- 6a. Each time you drank **meal replacement beverages**, how much did you usually drink?

- Less than 1 cup (8 ounces)  
 1 to 1 1/2 cups (8 to 12 ounces)  
 More than 1 1/2 cups (12 ounces)

7. Over the past 12 months, did you drink **soft drinks, soda, or pop**?

NO (GO TO QUESTION 8)

YES

- 7a. How often did you drink **soft drinks, soda, or pop IN THE SUMMER**?

NEVER

- |  |   |
|--|---|
| <input type="radio"/> 1 time per month or less | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month      | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 1-2 times per week       | <input type="radio"/> 4-5 times per day       |
| <input type="radio"/> 3-4 times per week       | <input type="radio"/> 6 or more times per day |
| <input type="radio"/> 5-6 times per week       |   |

- 7b. How often did you drink **soft drinks, soda, or pop DURING THE REST OF THE YEAR**?

NEVER

- |  |   |
|--|---|
| <input type="radio"/> 1 time per month or less | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month      | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 1-2 times per week       | <input type="radio"/> 4-5 times per day       |
| <input type="radio"/> 3-4 times per week       | <input type="radio"/> 6 or more times per day |
| <input type="radio"/> 5-6 times per week       |   |

- 7c. Each time you drank **soft drinks, soda, or pop**, how much did you usually drink?

- Less than 12 ounces or less than 1 can or bottle  
 12 to 16 ounces or 1 can or bottle  
 More than 16 ounces or more than 1 can or bottle

Question 8 appears in the next column.

- 7d. How often were these soft drinks, soda, or pop **diet or sugar-free**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

- 7e. How often were these soft drinks, soda, or pop **caffeine-free**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

8. Over the past 12 months, did you drink **beer**?

NO (GO TO QUESTION 9)

YES

- 8a. How often did you drink **beer IN THE SUMMER**?

NEVER

- |  |   |
|--|---|
| <input type="radio"/> 1 time per month or less | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month      | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 1-2 times per week       | <input type="radio"/> 4-5 times per day       |
| <input type="radio"/> 3-4 times per week       | <input type="radio"/> 6 or more times per day |
| <input type="radio"/> 5-6 times per week       |   |

- 8b. How often did you drink **beer DURING THE REST OF THE YEAR**?

NEVER

- |  |   |
|--|---|
| <input type="radio"/> 1 time per month or less | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month      | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 1-2 times per week       | <input type="radio"/> 4-5 times per day       |
| <input type="radio"/> 3-4 times per week       | <input type="radio"/> 6 or more times per day |
| <input type="radio"/> 5-6 times per week       |   |

- 8c. Each time you drank **beer**, how much did you usually drink?

- Less than a 12-ounce can or bottle  
 1 to 3 12-ounce cans or bottles  
 More than 3 12-ounce cans or bottles

Question 9 appears on the next page.

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Over the past 12 months...

9. How often did you drink wine or wine coolers?

- NEVER (GO TO QUESTION 10)
- 1 time per month or less
- 2-3 times per month
- 1-2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2-3 times per day
- 4-5 times per day
- 6 or more times per day

9a. Each time you drank wine or wine coolers, how much did you usually drink?

- Less than 5 ounces or less than 1 glass
- 5 to 12 ounces or 1 to 2 glasses
- More than 12 ounces or more than 2 glasses

10. How often did you drink liquor or mixed drinks?

- NEVER (GO TO QUESTION 11)
- 1 time per month or less
- 2-3 times per month
- 1-2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2-3 times per day
- 4-5 times per day
- 6 or more times per day

10a. Each time you drank liquor or mixed drinks, how much did you usually drink?

- Less than 1 shot of liquor
- 1 to 3 shots of liquor
- More than 3 shots of liquor

11. Over the past 12 months, did you eat oatmeal, grits, or other cooked cereal?

- NO (GO TO QUESTION 12)
- YES

11a. How often did you eat oatmeal, grits, or other cooked cereal IN THE WINTER?

- NEVER
- 1-6 times per winter
- 7-11 times per winter
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 12 appears in the next column

11b. How often did you eat oatmeal, grits, or other cooked cereal DURING THE REST OF THE YEAR?

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

11c. Each time you ate oatmeal, grits, or other cooked cereal, how much did you usually eat?

- Less than 3/4 cup
- 3/4 to 1 1/4 cups
- More than 1 1/4 cups

12. How often did you eat cold cereal?

- NEVER (GO TO QUESTION 13)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

12a. Each time you ate cold cereal, how much did you usually eat?

- Less than 1 cup
- 1 to 2 1/2 cups
- More than 2 1/2 cups

12b. How often was the cold cereal you ate Total, Product 19, or Right Start?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

12c. How often was the cold cereal you ate All Bran, Fiber One, 100% Bran, or Bran Buds?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 13 appears on the next page

Over the past 12 months...

12d. How often was the cold cereal you ate **some other bran or fiber cereal** (such as Cheerios, Shredded Wheat, Raisin Bran, Bran Flakes, Grape-Nuts, Granola, Wheaties, or Healthy Choice)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

12e. How often was the cold cereal you ate any **other type of cold cereal** (such as Corn Flakes, Rice Krispies, Frosted Flakes, Special K, Froot Loops, Cap'n Crunch, or others)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

12f. Was milk added to your cold cereal?

NO (GO TO QUESTION 13)

YES

12g. What kind of milk was usually added?

- Whole milk
- 2% fat milk
- 1% fat milk
- Skim, nonfat, or 1/2% fat milk
- Soy milk
- Rice milk
- Other

12h. Each time milk was added to your cold cereal, how much was usually added?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

13. How often did you eat applesauce?

NEVER (GO TO QUESTION 14)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 14 appears in the next column.

13a. Each time you ate applesauce, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

14. How often did you eat apples?

NEVER (GO TO QUESTION 15)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

14a. Each time you ate apples, how many did you usually eat?

- Less than 1 apple
- 1 apple
- More than 1 apple

15. How often did you eat pears (fresh, canned, or frozen)?

NEVER (GO TO QUESTION 16)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

15a. Each time you ate pears, how much did you usually eat?

- Less than 1 pear
- 1 pear
- More than 1 pear

16. How often did you eat bananas?

NEVER (GO TO QUESTION 17)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 17 appears on the next page.

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Over the **past 12 months**...

16a. Each time you ate **bananas**, how many did you usually eat?

- Less than 1 banana
- 1 banana
- More than 1 banana

17. How often did you eat **dried fruit**, such as prunes or raisins (not including dried apricots)?

- NEVER (GO TO QUESTION 18)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

17a. Each time you ate **dried fruit**, how much did you usually eat (not including dried apricots)?

- Less than 2 tablespoons
- 2 to 5 tablespoons
- More than 5 tablespoons

18. Over the **past 12 months**, did you eat **peaches, nectarines, or plums**?

- NO (GO TO QUESTION 19)
- YES

18a. How often did you eat **fresh peaches, nectarines, or plums** WHEN IN SEASON?

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

18b. How often did you eat **peaches, nectarines, or plums** (fresh, canned, or frozen) DURING THE REST OF THE YEAR?

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 19 appears in the next column

18c. Each time you ate **peaches, nectarines, or plums**, how much did you usually eat?

- Less than 1 fruit or less than 1/2 cup
- 1 to 2 fruits or 1/2 to 3/4 cup
- More than 2 fruits or more than 3/4 cup

19. How often did you eat **grapes**?

- NEVER (GO TO QUESTION 20)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

19a. Each time you ate **grapes**, how much did you usually eat?

- Less than 1/2 cup or less than 10 grapes
- 1/2 to 1 cup or 10 to 30 grapes
- More than 1 cup or more than 30 grapes

20. Over the **past 12 months**, did you eat **cantaloupe**?

- NO (GO TO QUESTION 21)
- YES

20a. How often did you eat **fresh cantaloupe** WHEN IN SEASON?

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

20b. How often did you eat **fresh or frozen cantaloupe** DURING THE REST OF THE YEAR?

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 21 appears on the next page.

Over the past 12 months...

20c. Each time you ate **cantaloupe**, how much did you usually eat?

- Less than 1/4 melon or less than 1/2 cup
- 1/4 melon or 1/2 to 1 cup
- More than 1/4 melon or more than 1 cup

21. Over the past 12 months, did you eat **melon, other than cantaloupe** (such as watermelon or honeydew)?

NO (GO TO QUESTION 22)

YES

21a. How often did you eat **fresh melon, other than cantaloupe**, (such as watermelon or honeydew) **WHEN IN SEASON?**

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

21b. How often did you eat **fresh or frozen melon, other than cantaloupe** (such as watermelon or honeydew) **DURING THE REST OF THE YEAR?**

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

21c. Each time you ate **melon other than cantaloupe**, how much did you usually eat?

- Less than 1/2 cup or 1 small wedge
- 1/2 to 2 cups or 1 medium wedge
- More than 2 cups or 1 large wedge

Question 22 appears in the next column

22. Over the past 12 months, did you eat strawberries?

NO (GO TO QUESTION 23)

YES

22a. How often did you eat **fresh strawberries** **WHEN IN SEASON?**

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

22b. How often did you eat **fresh or frozen strawberries** **DURING THE REST OF THE YEAR?**

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

22c. Each time you ate **strawberries**, how much did you usually eat?

- Less than 1/4 cup or less than 3 berries
- 1/4 to 3/4 cup or 3 to 8 berries
- More than 3/4 cup or more than 8 berries

23. Over the past 12 months, did you eat **oranges, tangerines, or tangelos**?

NO (GO TO QUESTION 24)

YES

23a. How often did you eat **fresh oranges, tangerines, or tangelos** **WHEN IN SEASON?**

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 24 appears on the next page.

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Over the past 12 months...

23b. How often did you eat **oranges, tangerines, or tangelos** (fresh or canned) **DURING THE REST OF THE YEAR?**

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

23c. Each time you ate **oranges, tangerines, or tangelos**, how many did you usually eat?

- Less than 1 fruit
- 1 fruit
- More than 1 fruit

24. Over the past 12 months, did you eat **grapefruit**?

- NO (GO TO QUESTION 25)
- YES

24a. How often did you eat **fresh grapefruit** **WHEN IN SEASON?**

- NEVER
- 1-6 times per season
- 7-11 times per season
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

24b. How often did you eat **grapefruit** (fresh or canned) **DURING THE REST OF THE YEAR?**

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

24c. Each time you ate **grapefruit**, how much did you usually eat?

- Less than 1/2 grapefruit
- 1/2 grapefruit
- More than 1/2 grapefruit

Question 25 appears in the next column.

25. How often did you eat **other kinds of fruit**?

- NEVER (GO TO QUESTION 26)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

25a. Each time you ate **other kinds of fruit**, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 3/4 cup
- More than 3/4 cup

26. How often did you eat **COOKED greens** (such as spinach, turnip, collard, mustard, chard, or kale)?

- NEVER (GO TO QUESTION 27)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

26a. Each time you ate **COOKED greens**, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

27. How often did you eat **RAW greens** (such as spinach, turnip, collard, mustard, chard, or kale)? (We will ask about lettuce later.)

- NEVER (GO TO QUESTION 28)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

27a. Each time you ate **RAW greens**, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

Question 28 appears on the next page.

Over the past 12 months...

28. How often did you eat **coleslaw**?

- NEVER (GO TO QUESTION 29)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

28a. Each time you ate **coleslaw**, how much did you usually eat?

- Less than 1/4 cup  
 1/4 to 3/4 cup  
 More than 3/4 cup

29. How often did you eat **sauerkraut** or **cabbage** (other than coleslaw)?

- NEVER (GO TO QUESTION 30)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

29a. Each time you ate **cabbage** or **sauerkraut**, how much did you usually eat?

- Less than 1/4 cup  
 1/4 to 1 cup  
 More than 1 cup

30. How often did you eat **carrots** (fresh, canned, or frozen)?

- NEVER (GO TO QUESTION 31)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

30a. Each time you ate **carrots**, how much did you usually eat?

- Less than 1/4 cup or less than 2 baby carrots  
 1/4 to 1/2 cup or 2 to 5 baby carrots  
 More than 1/2 cup or more than 5 baby carrots

Question 31 appears in the next column.

31. How often did you eat **string beans** or **green beans** (fresh, canned, or frozen)?

- NEVER (GO TO QUESTION 32)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

31a. Each time you ate **string beans** or **green beans**, how much did you usually eat?

- Less than 1/2 cup  
 1/2 to 1 cup  
 More than 1 cup

32. How often did you eat **peas** (fresh, canned, or frozen)?

- NEVER (GO TO QUESTION 33)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

32a. Each time you ate **peas**, how much did you usually eat?

- Less than 1/4 cup  
 1/4 to 3/4 cup  
 More than 3/4 cup

33. Over the past 12 months, did you eat **corn**?

- NO (GO TO QUESTION 34)  
 YES

33a. How often did you eat **fresh corn** WHEN IN SEASON?

- NEVER
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per season  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per season | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month      | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month   | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week       | <input type="radio"/> 2 or more times per day |

Question 34 appears on the next page.



Over the past 12 months...

33b. How often did you eat corn (fresh, canned, or frozen) DURING THE REST OF THE YEAR?

- NEVER
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

33c. Each time you ate corn, how much did you usually eat?

- Less than 1 ear or less than 1/2 cup
- 1 ear or 1/2 to 1 cup
- More than 1 ear or more than 1 cup

34. Over the past 12 months, how often did you eat broccoli (fresh or frozen)?

- NEVER (GO TO QUESTION 35)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

34a. Each time you ate broccoli, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 1 cup
- More than 1 cup

35. How often did you eat cauliflower or Brussels sprouts (fresh or frozen)?

- NEVER (GO TO QUESTION 36)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

35a. Each time you ate cauliflower or Brussels sprouts, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 1/2 cup
- More than 1/2 cup

Question 36 appears in the next column.

36. How often did you eat mixed vegetables?

- NEVER (GO TO QUESTION 37)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

36a. Each time you ate mixed vegetables, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

37. How often did you eat onions?

- NEVER (GO TO QUESTION 38)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

37a. Each time you ate onions, how much did you

- Less than 1 slice or less than 1 tablespoon
- 1 slice or 1 to 4 tablespoons
- More than 1 slice or more than 4 tablespoons

38. Now think about all the cooked vegetables you ate in the past 12 months and how they were prepared. How often were your vegetables COOKED WITH some sort of fat, including oil spray? (Please do not include potatoes.)

- NEVER (GO TO QUESTION 39)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

Question 39 appears on the next page.

Over the past 12 months...

38a. Which fats were usually added to your vegetables DURING COOKING? (Please do not include potatoes. Mark as many as apply.)

- |   |  |
|---|--|
| <input type="radio"/> Margarine (including low-fat) | <input type="radio"/> Corn oil                         |
| <input type="radio"/> Butter (including low-fat)    | <input type="radio"/> Canola or rapeseed oil           |
| <input type="radio"/> Lard, fatback, or bacon fat   | <input type="radio"/> Oil spray, such as Pam or others |
| <input type="radio"/> Olive oil                     | <input type="radio"/> Other kinds of oils              |
|   | <input type="radio"/> None of the above                |

39. Now, thinking again about all the cooked vegetables you ate in the past 12 months, how often was some sort of fat, sauce, or dressing added AFTER COOKING OR AT THE TABLE? (Please do not include potatoes.)

NEVER (GO TO QUESTION 40)

- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 2 times per day         |
| <input type="radio"/> 1-2 times per week  | <input type="radio"/> 3 or more times per day |

39a. Which fats, sauces, or dressings were usually added AFTER COOKING OR AT THE TABLE? (Please do not include potatoes. Mark as many as apply.)

- |   |                                      |
|---|--------------------------------------|
| <input type="radio"/> Margarine (including low-fat) | <input type="radio"/> Salad dressing |
| <input type="radio"/> Butter (including low-fat)    | <input type="radio"/> Cheese sauce   |
| <input type="radio"/> Lard, fatback, or bacon fat   | <input type="radio"/> White sauce    |
|   | <input type="radio"/> Other          |

39b. If margarine, butter, lard, fatback, or bacon fat was added to your cooked vegetables AFTER COOKING OR AT THE TABLE, how much did you usually add?

- Did not usually add these
- Less than 1 teaspoon
- 1 to 3 teaspoons
- More than 3 teaspoons

39c. If salad dressing, cheese sauce, or white sauce was added to your cooked vegetables AFTER COOKING OR AT THE TABLE, how much did you usually add?

- Did not usually add these
- Less than 1 tablespoon
- 1 to 3 tablespoons
- More than 3 tablespoons

Question 40 appears in the next column.

40. Over the past 12 months, how often did you eat sweet peppers (green, red, or yellow)?

NEVER (GO TO QUESTION 41)

- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

40a. Each time you ate sweet peppers, how much did you usually eat?

- Less than 1/8 pepper
- 1/8 to 1/4 pepper
- More than 1/4 pepper

41. Over the past 12 months, did you eat fresh tomatoes (including those in salads)?

NO (GO TO QUESTION 42)

YES

41a. How often did you eat fresh tomatoes (including those in salads) WHEN IN SEASON?

NEVER

- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per season  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per season | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month      | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month   | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week       | <input type="radio"/> 2 or more times per day |

41b. How often did you eat fresh tomatoes (including those in salads) DURING THE REST OF THE YEAR?

NEVER

- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

41c. Each time you ate fresh tomatoes, how much did you usually eat?

- Less than 1/4 tomato
- 1/4 to 1/2 tomato
- More than 1/2 tomato

Question 42 appears on the next page.

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Over the **past 12 months...**

42. How often did you eat **lettuce salads** (with or without other vegetables)?

NEVER (GO TO QUESTION 43)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

42a. Each time you ate **lettuce salads**, how much did you usually eat?

Less than 1/4 cup  
 1/4 to 1 1/4 cups  
 More than 1 1/4 cups

43. How often did you eat **salad dressing** (including low-fat) on salads?

NEVER (GO TO QUESTION 44)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

43a. Each time you ate **salad dressing** on salads, how much did you usually eat?

Less than 2 tablespoons  
 2 to 4 tablespoons  
 More than 4 tablespoons

44. How often did you eat **sweet potatoes or yams**?

NEVER (GO TO QUESTION 45)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

44a. Each time you ate **sweet potatoes or yams**, how much did you usually eat?

1 small potato or less than 1/4 cup  
 1 medium potato or 1/4 to 3/4 cup  
 1 large potato or more than 3/4 cup

Question 45 appears in the next column

45. How often did you eat **French fries, home fries, hash browned potatoes, or tater tots**?

NEVER (GO TO QUESTION 46)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

45a. Each time you ate **French fries, home fries, hash browned potatoes, or tater tots** how much did you usually eat?

Less than 10 fries or less than 1/2 cup  
 10 to 25 fries or 1/2 to 1 cup  
 More than 25 fries or more than 1 cup

46. How often did you eat **potato salad**?

NEVER (GO TO QUESTION 47)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

46a. Each time you ate **potato salad**, how much did you usually eat?

Less than 1/2 cup  
 1/2 to 1 cup  
 More than 1 cup

47. How often did you eat **baked, boiled, or mashed potatoes**?

NEVER (GO TO QUESTION 48)

1-6 times per year       2 times per week  
 7-11 times per year     3-4 times per week  
 1 time per month         5-6 times per week  
 2-3 times per month     1 time per day  
 1 time per week         2 or more times per day

47a. Each time you ate **baked, boiled, or mashed potatoes**, how much did you usually eat?

1 small potato or less than 1/2 cup  
 1 medium potato or 1/2 to 1 cup  
 1 large potato or more than 1 cup

Question 48 appears on the next page.

Over the past 12 months...

47b. How often was **sour cream** (including low-fat) added to your potatoes, EITHER IN COOKING OR AT THE TABLE?

- Almost never or never (GO TO QUESTION 47d)
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

47c. Each time **sour cream** was added to your potatoes, how much was usually added?

- Less than 1 tablespoon
- 1 to 3 tablespoons
- More than 3 tablespoons

47d. How often was **margarine** (including low-fat) added to your potatoes, EITHER IN COOKING OR AT THE TABLE?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

47e. How often was **butter** (including low-fat) added to your potatoes, EITHER IN COOKING OR AT THE TABLE?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

47f. Each time **margarine** or **butter** was added to your potatoes, how much was usually added?

- Never added
- Less than 1 teaspoon
- 1 to 3 teaspoons
- More than 3 teaspoons

47g. How often was **cheese** or **cheese sauce** added to your potatoes, EITHER IN COOKING OR AT THE TABLE?

- Almost never or never (GO TO QUESTION 48)
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 48 appears in the next column.

47h. Each time **cheese** or **cheese sauce** was added to your potatoes, how much was usually added?

- Less than 1 tablespoon
- 1 to 3 tablespoons
- More than 3 tablespoons

48. How often did you eat **salsa**?

NEVER (GO TO QUESTION 49)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

48a. Each time you ate **salsa**, how much did you usually eat?

- Less than 1 tablespoon
- 1 to 5 tablespoons
- More than 5 tablespoons

49. How often did you eat **catsup**?

NEVER (GO TO QUESTION 50)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

49a. Each time you ate **catsup**, how much did you usually eat?

- Less than 1 teaspoon
- 1 to 6 teaspoons
- More than 6 teaspoons

50. How often did you eat **stuffing, dressing, or dumplings**?

NEVER (GO TO QUESTION 51)

- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

50a. Each time you ate **stuffing, dressing, or dumplings**, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

Question 51 appears on the next page.

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Over the past 12 months...

51. How often did you eat chili?
- NEVER (GO TO QUESTION 52)
  - 1-6 times per year       2 times per week
  - 7-11 times per year     3-4 times per week
  - 1 time per month         5-6 times per week
  - 2-3 times per month     1 time per day
  - 1 time per week          2 or more times per day

- 51a. Each time you ate chili, how much did you usually eat?
- Less than 1/2 cup
  - 1/2 to 1 3/4 cups
  - More than 1 3/4 cups

52. How often did you eat Mexican foods (such as tacos, tostados, burritos, tamales, fajitas, enchiladas, quesadillas, and chimichangas)?

- NEVER (GO TO QUESTION 53)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week          2 or more times per day

- 52a. Each time you ate Mexican foods, how much did you usually eat?
- Less than 1 taco, burrito, etc.
  - 1 to 2 tacos, burritos, etc.
  - More than 2 tacos, burritos, etc.

53. How often did you eat cooked dried beans (such as baked beans, pintos, kidney, blackeyed peas, lima, lentils, soybeans, or refried beans)? (Please don't include bean soups or chili.)

- NEVER (GO TO QUESTION 54)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week          2 or more times per day

- 53a. Each time you ate beans, how much did you usually eat?
- Less than 1/2 cup
  - 1/2 to 1 cup
  - More than 1 cup

Question 54 appears in the next column

- 53b. How often were the beans you ate refried beans, beans prepared with any type of fat, or with meat added?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

54. How often did you eat other kinds of vegetables?

- NEVER (GO TO QUESTION 55)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week          2 or more times per day

- 54a. Each time you ate other kinds of vegetables, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 1/2 cup
- More than 1/2 cup

55. How often did you eat rice or other cooked grains (such as bulgur, cracked wheat, or millet)?

- NEVER (GO TO QUESTION 56)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week          2 or more times per day

- 55a. Each time you ate rice or other cooked grains, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 1/2 cups
- More than 1 1/2 cups

- 55b. How often was butter, margarine, or oil added to your rice IN COOKING OR AT THE TABLE?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 56 appears on the next page

Over the past 12 months...

56. How often did you eat **pancakes, waffles, or French toast**?

- NEVER (GO TO QUESTION 57)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

56a. Each time you ate **pancakes, waffles, or French toast**, how much did you usually eat?

- Less than 1 medium piece  
 1 to 3 medium pieces  
 More than 3 medium pieces

56b. How often was **margarine** (including low-fat) added to your pancakes, waffles, or French toast **AFTER COOKING OR AT THE TABLE**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

56c. How often was **butter** (including low-fat) added to your pancakes, waffles, or French toast **AFTER COOKING OR AT THE TABLE**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

56d. Each time **margarine or butter** was added to your pancakes, waffles, or French toast, how much was usually added?

- Never added  
 Less than 1 teaspoon  
 1 to 3 teaspoons  
 More than 3 teaspoons

56e. How often was **syrup** added to your pancakes, waffles, or French toast?

- NEVER (GO TO QUESTION 57)  
 Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

Question 57 appears in the next column

56f. Each time **syrup** was added to your pancakes, waffles, or French toast, how much was usually added?

- Less than 1 tablespoon  
 1 to 4 tablespoons  
 More than 4 tablespoons

57. How often did you eat **lasagna, stuffed shells, stuffed manicotti, ravioli, or tortellini**? (Please do not include spaghetti or other pasta.)

- NEVER (GO TO QUESTION 58)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

57a. Each time you ate **lasagna, stuffed shells, stuffed manicotti, ravioli, or tortellini**, how much did you usually eat?

- Less than 1 cup  
 1 to 2 cups  
 More than 2 cups

58. How often did you eat **macaroni and cheese**?

- NEVER (GO TO QUESTION 59)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

58a. Each time you ate **macaroni and cheese**, how much did you usually eat?

- Less than 1 cup  
 1 to 1 1/2 cups  
 More than 1 1/2 cups

59. How often did you eat **pasta salad or macaroni**?

- NEVER (GO TO QUESTION 60)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

Question 60 appears on the next page.

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Over the **past 12 months...**

59a. Each time you ate **pasta salad** or **macaroni salad**, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

60. Other than the pastas listed in Questions 57, 58, and 59, how often did you eat **pasta, spaghetti, or other noodles**?

- NEVER (GO TO QUESTION 61)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

60a. Each time you ate **pasta, spaghetti, or other noodles**, how much did you usually eat?

- Less than 1 cup
- 1 to 3 cups
- More than 3 cups

60b. How often did you eat your pasta, spaghetti, or other noodles with **tomato sauce** or **spaghetti sauce made WITH meat**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

60c. How often did you eat your pasta, spaghetti, or other noodles with **tomato sauce** or **spaghetti sauce made WITHOUT meat**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

60d. How often did you eat your pasta, spaghetti, or other noodles with **margarine, butter, oil, or cream sauce**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 61 appears in the next column.

61. How often did you eat **bagels** or **English muffins**?

- NEVER (GO TO INTRODUCTION TO QUESTION 62)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

61a. Each time you ate **bagels** or **English muffins**, how many did you usually eat?

- Less than 1 bagel or English muffin
- 1 bagel or English muffin
- More than 1 bagel or English muffin

61b. How often was **margarine** (including low-fat) added to your bagels or English muffins?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

61c. How often was **butter** (including low-fat) added to your bagels or English muffins?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

61d. Each time **margarine** or **butter** was added to your bagels or English muffins, how much was usually added?

- Never added
- Less than 1 teaspoon
- 1 to 2 teaspoons
- More than 2 teaspoons

61e. How often was **cream cheese** (including low-fat) spread on your bagels or English muffins?

- Almost never or never (GO TO INTRODUCTION TO QUESTION 62)
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Introduction to Question 62 appears on the next page.

Over the past 12 months...

61f. Each time **cream cheese** was added to your bagels or English muffins, how much was usually added?

- Less than 1 tablespoon
- 1 to 2 tablespoons
- More than 2 tablespoons

The next questions ask about your intake of breads other than bagels or English muffins. First, we will ask about bread you ate as part of sandwiches only. Then we will ask about all other bread you ate.

62. How often did you eat **breads or rolls AS PART OF SANDWICHES** (including burger and hot dog rolls)?

- NEVER (GO TO QUESTION 63)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

62a. Each time you ate **breads or rolls AS PART OF SANDWICHES**, how many did you usually

- 1 slice or 1/2 roll
- 2 slices or 1 roll
- More than 2 slices or more than 1 roll

62b. How often were the breads or rolls that you used for your sandwiches **white bread** (including burger and hot dog rolls)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

62c. How often was **mayonnaise or mayonnaise-type dressing** (including low-fat) added to your sandwich bread or rolls?

- Almost never or never (GO TO QUESTION 62e)
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 62e appears in the next column.  
Question 63 appears in the next column.

62d. Each time **mayonnaise or mayonnaise-type dressing** was added to your sandwich breads or rolls, how much was usually added?

- Less than 1 teaspoon
- 1 to 3 teaspoons
- More than 3 teaspoons

62e. How often was **margarine** (including low-fat) added to your sandwich bread or rolls?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

62f. How often was **butter** (including low-fat) added to your sandwich bread or rolls?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

62g. Each time **margarine or butter** was added to your sandwich breads or rolls, how much was usually added?

- Never added
- Less than 1 teaspoon
- 1 to 2 teaspoons
- More than 2 teaspoons

63. How often did you eat **breads or dinner rolls, NOT AS PART OF SANDWICHES**?

- NEVER (GO TO QUESTION 64)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

63a. Each time you ate **breads or dinner rolls, NOT AS PART OF SANDWICHES**, how much did you usually eat?

- 1 slice or 1 dinner roll
- 2 slices or 2 dinner rolls
- More than 2 slices or 2 dinner rolls

Question 64 appears on the next page.

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Over the past 12 months...

63b. How often were the breads or rolls you ate **white bread**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

63c. How often was **margarine** (including low-fat) added to your breads or rolls?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

63d. How often was **butter** (including low-fat) added to your breads or rolls?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

63e. Each time **margarine** or **butter** was added to your breads or rolls, how much was usually added?

- Never added
- Less than 1 teaspoon
- 1 to 2 teaspoons
- More than 2 teaspoons

63f. How often was **cream cheese** (including low-fat) added to your breads or rolls?

- Almost never or never (GO TO QUESTION 64)
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

63g. Each time **cream cheese** was added to your breads or rolls, how much was usually added?

- Less than 1 tablespoon
- 1 to 2 tablespoons
- More than 2 tablespoons

Question 64 appears in the next column.

64. How often did you eat **jam, jelly, or honey** on bagels, muffins, bread, rolls, or crackers?

- NEVER (GO TO QUESTION 65)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

64a. Each time you ate **jam, jelly, or honey**, how much did you usually eat?

- Less than 1 teaspoon
- 1 to 3 teaspoons
- More than 3 teaspoons

65. How often did you eat **peanut butter** or **other nut butter**?

- NEVER (GO TO QUESTION 66)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

65a. Each time you ate **peanut butter** or **other nut butter**, how much did you usually eat?

- Less than 1 tablespoon
- 1 to 2 tablespoons
- More than 2 tablespoons

66. How often did you eat **roast beef** or **steak IN SANDWICHES**?

- NEVER (GO TO QUESTION 67)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

66a. Each time you ate **roast beef** or **steak IN SANDWICHES**, how much did you usually eat?

- Less than 1 slice or less than 2 ounces
- 1 to 2 slices or 2 to 4 ounces
- More than 2 slices or more than 4 ounces

Question 67 appears on the next page.

Over the past 12 months...

67. How often did you eat **turkey or chicken cold CUTS** (such as loaf, luncheon meat, turkey ham, turkey salami, or turkey pastrami)? (We will ask about other turkey or chicken later.)

- NEVER (GO TO QUESTION 68)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

67a. Each time you ate **turkey or chicken COLD CUTS**, how much did you usually eat?

- Less than 1 slice  
 1 to 3 slices  
 More than 3 slices

68. How often did you eat **luncheon or deli-style ham**? (We will ask about other ham later.)

- NEVER (GO TO QUESTION 69)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

68a. Each time you ate **luncheon or deli-style ham**, how much did you usually eat?

- Less than 1 slice  
 1 to 3 slices  
 More than 3 slices

68b. How often was the luncheon or deli-style ham you ate **light, low-fat, or fat-free**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

Question 69 appears in the next column.

69. How often did you eat **other cold cuts or luncheon meats** (such as bologna, salami, corned beef, pastrami, or others, including low-fat)? (Please do not include ham, turkey, or chicken cold cuts.)

- NEVER (GO TO QUESTION 70)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

69a. Each time you ate **other cold cuts or luncheon meats**, how much did you usually eat?

- Less than 1 slice  
 1 to 3 slices  
 More than 3 slices

69b. How often were the other cold cuts or luncheon meats you ate **light, low-fat, or fat-free cold cuts or luncheon meats**? (Please do not include ham, turkey, or chicken cold cuts.)

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

70. How often did you eat **canned tuna** (including in salads, sandwiches, or casseroles)?

- NEVER (GO TO QUESTION 71)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

70a. Each time you ate **canned tuna**, how much did you usually eat?

- Less than 1/4 cup or less than 2 ounces  
 1/4 to 1/2 cup or 2 to 3 ounces  
 More than 1/2 cup or more than 3 ounces

70b. How often was the canned tuna you ate **water-packed tuna**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

Question 71 appears on the next page.

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Over the past 12 months...

70c. How often was the canned tuna you ate prepared with mayonnaise or other dressing (including low-fat)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

71. How often did you eat **GROUND** chicken or turkey? (We will ask about other chicken and turkey later.)

- NEVER (GO TO QUESTION 72)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

71a. Each time you ate **GROUND** chicken or turkey, how much did you usually eat?

- Less than 2 ounces or less than 1/2 cup
- 2 to 4 ounces or 1/2 to 1 cup
- More than 4 ounces or more than 1 cup

72. How often did you eat **beef hamburgers** or **cheeseburgers**?

- NEVER (GO TO QUESTION 73)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

72a. Each time you ate **beef hamburgers** or **cheeseburgers**, how much did you usually eat?

- Less than 1 patty or less than 2 ounces
- 1 patty or 2 to 4 ounces
- More than 1 patty or more than 4 ounces

72b. How often were the beef hamburgers or cheeseburgers you ate made with **lean ground beef**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 73 appears in the next column.

73. How often did you eat **ground beef** in mixtures (such as meatballs, casseroles, chili, or meatloaf)?

- NEVER (GO TO QUESTION 74)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

73a. Each time you ate **ground beef** in mixtures, how much did you usually eat?

- Less than 3 ounces or less than 1/2 cup
- 3 to 8 ounces or 1/2 to 1 cup
- More than 8 ounces or more than 1 cup

74. How often did you eat **hot dogs** or **frankfurters**? (Please do not include sausages or vegetarian hot dogs.)

- NEVER (GO TO QUESTION 75)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

74a. Each time you ate **hot dogs** or **frankfurters**, how many did you usually eat?

- Less than 1 hot dog
- 1 to 2 hot dogs
- More than 2 hot dogs

74b. How often were the hot dogs or frankfurters you ate **light** or **low-fat hot dogs**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 75 appears on the next page.

Over the past 12 months...

75. How often did you eat beef mixtures such as **beef stew, beef pot pie, beef and noodles, or beef and vegetables**?

- NEVER (GO TO QUESTION 76)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

75a. Each time you ate **beef stew, beef pot pie, beef and noodles, or beef and vegetables**, how much did you usually eat?

- Less than 1 cup  
 1 to 2 cups  
 More than 2 cups

76. How often did you eat **roast beef or pot roast**?  
(Please do not include **roast beef or pot roast in sandwiches**.)

- NEVER (GO TO QUESTION 77)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

76a. Each time you ate **roast beef or pot roast** (including in mixtures), how much did you usually eat?

- Less than 2 ounces  
 2 to 5 ounces  
 More than 5 ounces

77. How often did you eat **steak (beef)**? (Do not include **steak in sandwiches**)

- NEVER (GO TO QUESTION 78)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

77a. Each time you ate **steak (beef)**, how much did you usually eat?

- Less than 3 ounces  
 3 to 7 ounces  
 More than 7 ounces

Question 78 appears in the next column.

77b. How often was the steak you ate **lean steak**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

78. How often did you eat **pork or beef spareribs**?

- NEVER (GO TO QUESTION 79)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

78a. Each time you ate **pork or beef spareribs**, how much did you usually eat?

- Less than 4 ribs  
 4 to 12 ribs  
 More than 12 ribs

79. How often did you eat **roast turkey, turkey cutlets, or turkey nuggets** (including in sandwiches)?

- NEVER (GO TO QUESTION 80)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

79a. Each time you ate **roast turkey, turkey cutlets, or turkey nuggets**, how much did you usually eat? (Please note: 4-8 turkey nuggets = 3 ounces.)

- Less than 2 ounces  
 2 to 4 ounces  
 More than 4 ounces

80. How often did you eat **chicken as part of salads, sandwiches, casseroles, stews, or other mixtures**?

- NEVER (GO TO QUESTION 81)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

Question 81 appears on the next page.



Over the past 12 months...

80a. Each time you ate **chicken** as part of **salads, sandwiches, casseroles, stews, or other mixtures**, how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 1/2 cups
- More than 1 1/2 cups

81. How often did you eat **baked, broiled, roasted, stewed, or fried chicken** (including nuggets)?  
(Please do not include chicken in mixtures.)

- NEVER (GO TO QUESTION 82)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

81a. Each time you ate **baked, broiled, roasted, stewed, or fried chicken** (including nuggets), how much did you usually eat?

- Less than 2 drumsticks or wings, 1 breast or thigh, or less than 4 nuggets
- 2 drumsticks or wings, 1 breast or thigh, or 4 to 8 nuggets
- More than 2 drumsticks or wings, 1 breast or thigh, or more than 8 nuggets

81b. How often was the chicken you ate **fried chicken** (including deep fried) or **chicken nuggets**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

81c. How often was the chicken you ate **WHITE meat**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

81d. How often did you eat chicken **WITH skin**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 82 appears in the next column.

82. How often did you eat **baked ham or ham steak**?

- NEVER (GO TO QUESTION 83)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

82a. Each time you ate **baked ham or ham steak**, how much did you usually eat?

- Less than 1 ounce
- 1 to 3 ounces
- More than 3 ounces

83. How often did you eat **pork** (including chops, roasts, and in mixed dishes)? (Please do not include ham, ham steak, or sausage.)

- NEVER (GO TO QUESTION 84)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

83a. Each time you ate **pork**, how much did you usually eat?

- Less than 2 ounces or less than 1 chop
- 2 to 5 ounces or 1 chop
- More than 5 ounces or more than 1 chop

84. How often did you eat **gravy** on meat, chicken, potatoes, rice, etc.?

- NEVER (GO TO QUESTION 85)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

84a. Each time you ate **gravy** on meat, chicken, potatoes, or rice, etc., how much did you usually eat?

- Less than 1/8 cup
- 1/8 to 1/2 cup
- More than 1/2 cup

Question 85 appears on the next page.

Over the past 12 months...

85. How often did you eat **liver** (all kinds) or **liverwurst**?

- NEVER (GO TO QUESTION 86)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

85a. Each time you ate **liver** or **liverwurst**, how much did you usually eat?

- Less than 1 ounce  
 1 to 4 ounces  
 More than 4 ounces

86. How often did you eat **bacon** (including low-fat)?

- NEVER (GO TO QUESTION 87)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

86a. Each time you ate **bacon**, how much did you usually eat?

- Fewer than 2 slices  
 2 to 3 slices  
 More than 3 slices

86b. How often was the **bacon** you ate **light, low-fat, or lean bacon**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

87. How often did you eat **sausage** (including low-fat)?

- NEVER (GO TO QUESTION 88)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

Question 88 appears in the next column.

87a. Each time you ate **sausage**, how much did you usually eat?

- Less than 1 patty or 2 links  
 1 to 3 patties or 2 to 5 links  
 More than 3 patties or 5 links

87b. How often was the **sausage** you ate **light, low-fat, or lean sausage**?

- Almost never or never  
 About 1/4 of the time  
 About 1/2 of the time  
 About 3/4 of the time  
 Almost always or always

88. How often did you eat **fish sticks** or **fried fish** (including fried seafood or shellfish)?

- NEVER (GO TO QUESTION 89)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

88a. Each time you ate **fish sticks** or **fried fish**, how much did you usually eat?

- Less than 2 ounces or less than 1 fillet  
 2 to 7 ounces or 1 fillet  
 More than 7 ounces or more than 1 fillet

89. How often did you eat **fish** or **seafood** that was **NOT FRIED** (including shellfish)?

- NEVER (GO TO THE INTRODUCTION TO QUESTION 90)
- |   |   |
|---|---|
| <input type="radio"/> 1-6 times per year  | <input type="radio"/> 2 times per week        |
| <input type="radio"/> 7-11 times per year | <input type="radio"/> 3-4 times per week      |
| <input type="radio"/> 1 time per month    | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 2-3 times per month | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week     | <input type="radio"/> 2 or more times per day |

89a. Each time you ate **fish** or **seafood** that was **not fried**, how much did you usually eat?

- Less than 2 ounces or less than 1 fillet  
 2 to 5 ounces or 1 fillet  
 More than 5 ounces or more than 1 fillet

Introduction to Question 90 appears on the next page.

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Over the past 12 months...

Now think about all the meat, poultry, and fish you ate in the past 12 months and how they were prepared.

90. How often was oil, butter, margarine, or other fat used to FRY, SAUTE, BASTE, OR MARINATE any meat, poultry, or fish you ate? (Please do not include deep frying.)

- NEVER (GO TO QUESTION 91)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

90a. Which of the following fats were regularly used to prepare your meat, poultry, or fish? (Mark all that apply.)

- Margarine (including low-fat)
- Butter (including low-fat)
- Lard, fatback, or bacon fat
- Olive oil
- Corn oil
- Canola or rapeseed oil
- Oil spray, such as Pam or others
- Other kinds of oils
- None of the above

91. How often did you eat tofu, soy burgers, or soy meat-substitutes?

- NEVER (GO TO QUESTION 92)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

91a. Each time you ate tofu, soy burgers, or soy meat-substitutes, how much did you usually eat?

- Less than 1/4 cup or less than 2 ounces
- 1/4 to 1/2 cup or 2 to 4 ounces
- More than 1/2 cup or more than 4 ounces

Question 92 appears in the next column.

92. Over the past 12 months, did you eat soups?

NO (GO TO QUESTION 93)

YES



92a. How often did you eat soup DURING THE WINTER?

- NEVER
- 1-6 times per winter
- 7-11 times per winter
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

92b. How often did you eat soup DURING THE REST OF THE YEAR?

- NEVER
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

92c. Each time you ate soup, how much did you usually eat?

- Less than 1 cup
- 1 to 2 cups
- More than 2 cups

92d. How often were the soups you ate bean soups?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

92e. How often were the soups you ate cream soups (including chowders)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 93 appears on the next page.

Over the past 12 months...

92f. How often were the soups you ate **tomato or vegetable soups**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

92g. How often were the soups you ate **broth soups** (including chicken) **with or without noodles or rice**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

93. How often did you eat **pizza**?

- NEVER (GO TO QUESTION 94)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

93a. Each time you ate **pizza**, how much did you usually eat?

- Less than 1 slice or less than 1 mini pizza
- 1 to 3 slices or 1 mini pizza
- More than 3 slices or more than 1 mini pizza

93b. How often did you eat pizza with **pepperoni, sausage, or other meat**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

94. How often did you eat **crackers**?

- NEVER (GO TO QUESTION 95)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 95 appears in the next column.

94a. Each time you ate **crackers**, how many did you usually eat?

- Fewer than 4 crackers
- 4 to 10 crackers
- More than 10 crackers

95. How often did you eat **corn bread or corn muffins**?

- NEVER (GO TO QUESTION 96)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

95a. Each time you ate **corn bread or corn muffins**, how much did you usually eat?

- Less than 1 piece or muffin
- 1 to 2 pieces or muffins
- More than 2 pieces or muffins

96. How often did you eat **biscuits**?

- NEVER (GO TO QUESTION 97)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

96a. Each time you ate **biscuits**, how many did you usually eat?

- Fewer than 1 biscuit
- 1 to 2 biscuits
- More than 2 biscuits

97. How often did you eat **potato chips, tortilla chips, or corn chips** (including low-fat, fat-free, or low-salt)?

- NEVER (GO TO QUESTION 98)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 98 appears on the next page.

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Over the past 12 months...

97a. Each time you ate **potato chips, tortilla chips, or corn chips**, how much did you usually eat?

- Fewer than 10 chips or less than 1 cup
- 10 to 25 chips or 1 to 2 cups
- More than 25 chips or more than 2 cups

97b. How often were the chips you ate **Wow chips** or other **chips** made with fat substitute (Olean or Olestra)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

97c. How often were the chips you ate other **low-fat** or **fat-free** chips?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

98. How often did you eat **popcorn** (including low-fat)?

- NEVER (GO TO QUESTION 99)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

98a. Each time you ate **popcorn**, how much did you usually eat?

- Less than 2 cups, popped
- 2 to 5 cups, popped
- More than 5 cups, popped

99. How often did you eat **pretzels**?

- NEVER (GO TO QUESTION 100)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 100 appears in the next column.

99a. Each time you ate **pretzels**, how many did you usually eat?

- Fewer than 5 average twists
- 5 to 20 average twists
- More than 20 average twists

100. How often did you eat **peanuts, walnuts, seeds, or other nuts**?

- NEVER (GO TO QUESTION 101)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

100a. Each time you ate **peanuts, walnuts, seeds, or other nuts**, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 1/2 cup
- More than 1/2 cup

101. How often did you eat **energy, high-protein, or breakfast bars** such as **Power Bars, Balance, Cliff, or others**?

- NEVER (GO TO QUESTION 102)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

101a. Each time you ate **energy, high-protein, or breakfast bars**, how much did you usually eat?

- Less than 1 bar
- 1 bar
- More than 1 bar

102. How often did you eat **yogurt** (NOT including frozen yogurt)?

- NEVER (GO TO QUESTION 103)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 103 appears on the next page.

Over the past 12 months...

102a. Each time you ate **yogurt**, how much did you usually eat?

- Less than 1/2 cup or less than 1 container
- 1/2 to 1 cup or 1 container
- More than 1 cup or more than 1 container

103. How often did you eat **cottage cheese** (including low-fat)?

- NEVER (GO TO QUESTION 104)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

103a. Each time you ate **cottage cheese**, how much did you usually eat?

- Less than 1/4 cup
- 1/4 to 1 cup
- More than 1 cup

104. How often did you eat **cheese** (including low-fat; including on cheeseburgers or in sandwiches or subs)?

- NEVER (GO TO QUESTION 105)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

104a. Each time you ate **cheese**, how much did you usually eat?

- Less than 1/2 ounce or less than 1 slice
- 1/2 to 1 1/2 ounces or 1 slice
- More than 1 1/2 ounces or more than 1 slice

104b. How often was the cheese you ate **light or low-fat cheese**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 105 appears in the next column.

104c. How often was the **cheese** you ate **fat-free cheese**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

105. How often did you eat **frozen yogurt, sorbet, or ices** (including low-fat or fat-free)?

- NEVER (GO TO QUESTION 106)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

105a. Each time you ate **frozen yogurt, sorbet, or ices**, how much did you usually eat?

- Less than 1/2 cup or less than 1 scoop
- 1/2 to 1 cup or 1 to 2 scoops
- More than 1 cup or more than 2 scoops

106. How often did you eat **ice cream, ice cream bars, or sherbet** (including low-fat or fat-free)?

- NEVER (GO TO QUESTION 107)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

106a. Each time you ate **ice cream, ice cream bars, or sherbet**, how much did you usually eat?

- Less than 1/2 cup or less than 1 scoop
- 1/2 to 1 1/2 cups or 1 to 2 scoops
- More than 1 1/2 cups or more than 2 scoops

106b. How often was the ice cream you ate **light, low-fat, or fat-free ice cream or sherbet**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 107 appears on the next page.

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Over the past 12 months...

107. How often did you eat **cake** (including low-fat or fat-free)?

- NEVER (GO TO QUESTION 108)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

107a. Each time you ate **cake**, how much did you usually eat?

- Less than 1 medium piece
- 1 medium piece
- More than 1 medium piece

107b. How often was the **cake** you ate **light, low-fat, or fat-free cake**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

108. How often did you eat **cookies or brownies** (including low-fat or fat-free)?

- NEVER (GO TO QUESTION 109)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

108a. Each time you ate **cookies or brownies**, how much did you usually eat?

- Less than 2 cookies or 1 small brownie
- 2 to 4 cookies or 1 medium brownie
- More than 4 cookies or 1 large brownie

108b. How often were the **cookies or brownies** you ate **light, low-fat, or fat-free cookies or brownies**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 109 appears in the next column.

109. How often did you eat **doughnuts, sweet rolls, Danish, or pop-tarts**?

- NEVER (GO TO QUESTION 110)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

109a. Each time you ate **doughnuts, sweet rolls, Danish, or pop-tarts**, how much did you usually eat?

- Less than 1 piece
- 1 to 2 pieces
- More than 2 pieces

110. How often did you eat **sweet muffins or dessert breads** (including low-fat or fat-free)?

- NEVER (GO TO QUESTION 111)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

110a. Each time you ate **sweet muffins or dessert breads**, how much did you usually eat?

- Less than 1 medium piece
- 1 medium piece
- More than 1 medium piece

110b. How often were the **sweet muffins or dessert breads** you ate **light, low-fat, or fat-free sweet muffins or dessert breads**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

111. How often did you eat **fruit crisp, cobbler, or strudel**?

- NEVER (GO TO QUESTION 112)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week         2 or more times per day

Question 112 appears on the next page.

Over the past 12 months...

111a. Each time you ate **fruit crisp, cobbler, or strudel** how much did you usually eat?

- Less than 1/2 cup
- 1/2 to 1 cup
- More than 1 cup

112. How often did you eat **pie**?

- NEVER (GO TO QUESTION 113)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

112a. Each time you ate **pie**, how much did you usually eat?

- Less than 1/8 of a pie
- About 1/8 of a pie
- More than 1/8 of a pie

The next four questions ask about the kinds of pie you ate. Please read all four questions before answering.

112b. How often were the pies you ate **fruit pie** (such as apple, blueberry, others)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

112c. How often were the pies you ate **cream, pudding, custard, or meringue pie**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

112d. How often were the pies you ate **pumpkin or sweet potato pie**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 113 appears in the next column.

112e. How often were the pies you ate **pecan pie**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

113. How often did you eat **chocolate candy**?

- NEVER (GO TO QUESTION 114)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

113a. Each time you ate **chocolate candy**, how much did you usually eat?

- Less than 1 average bar or less than 1 ounce
- 1 average bar or 1 to 2 ounces
- More than 1 average bar or more than 2 ounces

114. How often did you eat **other candy**?

- NEVER (GO TO QUESTION 115)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

114a. Each time you ate **other candy**, how much did you usually eat?

- Fewer than 2 pieces
- 2 to 9 pieces
- More than 9 pieces

115. How often did you eat **eggs, egg whites, or egg substitutes** (NOT counting eggs in baked goods and desserts)? (Please include eggs in salads, quiche, and souffles.)

- NEVER (GO TO QUESTION 116)
- 1-6 times per year
- 7-11 times per year
- 1 time per month
- 2-3 times per month
- 1 time per week
- 2 times per week
- 3-4 times per week
- 5-6 times per week
- 1 time per day
- 2 or more times per day

Question 116 appears on the next page.

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Over the **past 12 months...**

115a. Each time you ate **eggs**, how many did you usually eat?

- 1 egg
- 2 eggs
- 3 or more eggs

115b. How often were the eggs you ate **egg substitutes**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

115c. How often were the eggs you ate **egg whites only**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

115d. How often were the eggs you ate **regular whole eggs**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

115e. How often were the eggs you ate **cooked in oil, butter, or margarine**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

115f. How often were the eggs you ate **part of egg salad**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 116 appears in the next column

116. How many cups of **coffee**, caffeinated or decaffeinated, did you drink?

- NONE (GO TO QUESTION 117)
- Less than 1 cup per month
- 1-3 cups per month
- 1 cup per week
- 2-4 cups per week
- 5-6 cups per week
- 1 cup per day
- 2-3 cups per day
- 4-5 cups per day
- 6 or more cups per day

116a. How often was the coffee you drank **decaffeinated**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

117. How many glasses of **ICED tea**, caffeinated or decaffeinated, did you drink?

- NONE (GO TO QUESTION 118)
- Less than 1 cup per month
- 1-3 cups per month
- 1 cup per week
- 2-4 cups per week
- 5-6 cups per week
- 1 cup per day
- 2-3 cups per day
- 4-5 cups per day
- 6 or more cups per day

117a. How often was the iced tea you drank **decaffeinated or herbal tea**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

118. How many cups of **HOT tea**, caffeinated or decaffeinated, did you drink?

- NONE (GO TO QUESTION 119)
- Less than 1 cup per month
- 1-3 cups per month
- 1 cup per week
- 2-4 cups per week
- 5-6 cups per week
- 1 cup per day
- 2-3 cups per day
- 4-5 cups per day
- 6 or more cups per day

118a. How often was the hot tea you drank **decaffeinated or herbal tea**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 119 appears on the next page.

Over the past 12 months...

119. How often did you add **sugar** or **honey** to your coffee or tea?

- NEVER (GO TO QUESTION 120)
- |  |   |
|--|---|
| <input type="radio"/> Less than 1 time per month | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1-3 times per month        | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week            | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 2-4 times per week         | <input type="radio"/> 4-5 times per day       |
|  | <input type="radio"/> 6 or more times per day |

119a. Each time **sugar** or **honey** was added to your coffee or tea, how much was usually added?

- Less than 1 teaspoon  
 1 to 3 teaspoons  
 More than 3 teaspoons

120. How often did you add **artificial sweetener** to your coffee or tea?

- NEVER (GO TO QUESTION 121)
- |  |   |
|--|---|
| <input type="radio"/> Less than 1 time per month | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1-3 times per month        | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week            | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 2-4 times per week         | <input type="radio"/> 4-5 times per day       |
|  | <input type="radio"/> 6 or more times per day |

120a. What kind of **artificial sweetener** do you usually use?

- Equal or aspartame  
 Sweet N Low or saccharin

121. How often was **non-dairy creamer** added to your coffee or tea?

- NEVER (GO TO QUESTION 122)
- |  |   |
|--|---|
| <input type="radio"/> Less than 1 time per month | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1-3 times per month        | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week            | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 2-4 times per week         | <input type="radio"/> 4-5 times per day       |
|  | <input type="radio"/> 6 or more times per day |

121a. Each time **non-dairy creamer** was added to your coffee or tea, how much was usually used?

- Less than 1 teaspoon  
 1 to 3 teaspoons  
 More than 3 teaspoons

Question 122 appears in the next column.

121b. What kind of **non-dairy creamer** did you usually use?

- Regular powdered  
 Low-fat or fat-free powdered  
 Regular liquid  
 Low-fat or fat-free liquid

122. How often was **cream** or **half and half** added to your coffee or tea?

- NEVER (GO TO QUESTION 123)
- |  |   |
|--|---|
| <input type="radio"/> Less than 1 time per month | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1-3 times per month        | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week            | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 2-4 times per week         | <input type="radio"/> 4-5 times per day       |
|  | <input type="radio"/> 6 or more times per day |

122a. Each time **cream** or **half and half** was added to your coffee or tea, how much was usually added?

- Less than 1 tablespoon  
 1 to 2 tablespoons  
 More than 2 tablespoons

123. How often was **milk** added to your coffee or tea?

- NEVER (GO TO QUESTION 124)
- |  |   |
|--|---|
| <input type="radio"/> Less than 1 time per month | <input type="radio"/> 5-6 times per week      |
| <input type="radio"/> 1-3 times per month        | <input type="radio"/> 1 time per day          |
| <input type="radio"/> 1 time per week            | <input type="radio"/> 2-3 times per day       |
| <input type="radio"/> 2-4 times per week         | <input type="radio"/> 4-5 times per day       |
|  | <input type="radio"/> 6 or more times per day |

123a. Each time **milk** was added to your coffee or tea, how much was usually added?

- Less than 1 tablespoon  
 1 to 3 tablespoons  
 More than 3 tablespoons

123b. What kind of **milk** was usually added to your coffee or tea?

- Whole milk  
 2% milk  
 1% milk  
 Skim, nonfat, or 1/2% milk  
 Evaporated or condensed (canned) milk  
 Soy milk  
 Rice milk  
 Other

Question 124 appears on the next page.

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Over the past 12 months...

124. How often was **sugar or honey** added to foods you ate? (Please do not include sugar in coffee, tea, other beverages, or baked goods.)

- NEVER (GO TO INTRODUCTION TO QUESTION 125)
- 1-6 times per year       2 times per week
- 7-11 times per year     3-4 times per week
- 1 time per month         5-6 times per week
- 2-3 times per month     1 time per day
- 1 time per week          2 or more times per day

124a. Each time **sugar or honey** was added to foods you ate, how much was usually added?

- Less than 1 teaspoon
- 1 to 3 teaspoons
- More than 3 teaspoons

The following questions are about the kinds of margarine, mayonnaise, sour cream, cream cheese, and salad dressing that you eat. If possible, please check the labels of these foods to help you answer.

125. Over the past 12 months, did you eat margarine?

- NO (GO TO QUESTION 126)
- YES

125a. How often was the margarine you ate **regular-fat margarine** (stick or tub)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

125b. How often was the margarine you ate **light or low-fat margarine** (stick or tub)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 126 appears in the next column.

125c. How often was the margarine you ate **fat-free margarine**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

126. Over the past 12 months, did you eat **butter**?

- NO (GO TO QUESTION 127)
- YES

126a. How often was the butter you ate **light or low-fat butter**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

127. Over the past 12 months, did you eat **mayonnaise or mayonnaise-type dressing**?

- NO (GO TO QUESTION 128)
- YES

127a. How often was the mayonnaise you ate **regular-fat mayonnaise**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

127b. How often was the mayonnaise you ate **light or low-fat mayonnaise**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 128 appears on the next page.

Over the past 12 months...

127c. How often was the mayonnaise you ate **fat-free mayonnaise**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

128. Over the past 12 months, did you eat **sour cream**?

NO (GO TO QUESTION 129)

YES

128a. How often was the sour cream you ate **regular-fat sour cream**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

128b. How often was the sour cream you ate **light, low-fat, or fat-free sour cream**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

129. Over the past 12 months, did you eat **cream cheese**?

NO (GO TO QUESTION 130)

YES

129a. How often was the cream cheese you ate **regular-fat cream cheese**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

Question 130 appears in the next column

129b. How often was the cream cheese you ate **light, low-fat, or fat-free cream cheese**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

130. Over the past 12 months, did you eat **salad dressing**?

NO (GO TO INTRODUCTION TO QUESTION 131)

YES

130a. How often was the salad dressing you ate **regular-fat salad dressing** (including oil and vinegar dressing)?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

130b. How often was the salad dressing you ate **light or low-fat salad dressing**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

130c. How often was the salad dressing you ate **fat-free salad dressing**?

- Almost never or never
- About 1/4 of the time
- About 1/2 of the time
- About 3/4 of the time
- Almost always or always

The following two questions ask you to summarize your usual intake of vegetables and fruits. Please do not include salads, potatoes, or juices.

131. Over the past 12 months, how many servings of **vegetables** (not including salad or potatoes) did you eat per week or per day?

- |  |   |
|--|---|
| <input type="radio"/> Less than 1 per week | <input type="radio"/> 2 per day         |
| <input type="radio"/> 1-2 per week         | <input type="radio"/> 3 per day         |
| <input type="radio"/> 3-4 per week         | <input type="radio"/> 4 per day         |
| <input type="radio"/> 5-6 per week         | <input type="radio"/> 5 or more per day |
| <input type="radio"/> 1 per day            |   |

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Over the past 12 months...

132. Over the past 12 months, how many servings of **fruit** (not including juices) did you eat per week or per day?

- Less than 1 per week
- 1–2 per week
- 3–4 per week
- 5–6 per week
- 1 per day
- 2 per day
- 3 per day
- 4 per day
- 5 or more per day

133. Over the past month, which of the following foods did you eat **AT LEAST THREE TIMES**? (*Mark as many as apply.*)

- |  |  |
|--|--|
| <input type="radio"/> Avocado, guacamole                                   | <input type="radio"/> Olives                                 |
| <input type="radio"/> Cheesecake   | <input type="radio"/> Oysters                                |
| <input type="radio"/> Chocolate, fudge, or butterscotch toppings or syrups | <input type="radio"/> Pickles or pickled vegetables or fruit |
| <input type="radio"/> Chow mein noodles                                    | <input type="radio"/> Plantains                              |
| <input type="radio"/> Croissants   | <input type="radio"/> Pork neckbones, hock, head, feet       |
| <input type="radio"/> Dried apricots                                       | <input type="radio"/> Pudding or custard                     |
| <input type="radio"/> Egg rolls  | <input type="radio"/> Veal, venison, lamb                    |
| <input type="radio"/> Granola bars   | <input type="radio"/> Whipped cream, regular                 |
| <input type="radio"/> Hot peppers  | <input type="radio"/> Whipped cream, substitute              |
| <input type="radio"/> Jello, gelatin                                       | <input type="radio"/> NONE                                   |
| <input type="radio"/> Milkshakes or ice-cream sodas                        |  |

134. For **ALL** of the past 12 months, have you followed any type of **vegetarian diet**?

- NO (GO TO INTRODUCTION TO QUESTION 135)
- YES

134a. Which of the following foods did you **TOTALLY EXCLUDE** from your diet? (*Mark all that apply.*)

- Meat (beef, pork, lamb, etc.)
- Poultry (chicken, turkey, duck)
- Fish and seafood
- Eggs
- Dairy products (milk, cheese, etc.)

Introduction to Question 135 appears in the next column.

The next questions are about your use of fiber supplements or vitamin pills.

135. Over the past 12 months, did you take any of the following types of **fiber** or **fiber supplements** on a regular basis (more than once per week for at least 6 of the last 12 months)? (*Mark all that apply.*)

- NO, didn't take any fiber supplements on a regular basis (GO TO QUESTION 136)
- YES, psyllium products (such as Metamucil, Fiberall, Serutan, Perdiem, Correctol)
- YES, methylcellulose/cellulose products (such as Citrucel, Unifiber)
- YES, Fibercon
- YES, Bran (such as wheat bran, oat bran, or bran wafers)

136. Over the past 12 months, did you take any **multivitamins**, such as One-a-Day-, Theragran-, or Centrum-type multivitamins (as pills, liquids, or packets)?

- NO (GO TO INTRODUCTION TO QUESTION 138)
- YES

137. How often did you take One-a-day-, Theragran-, or Centrum-type multivitamins?

- Less than 1 day per month
- 1–3 days per month
- 1–3 days per week
- 4–6 days per week
- Every day

137a. Does your **multivitamin** usually contain **minerals** (such as iron, zinc, etc.)?

- NO
- YES
- Don't know

137b. For how many years have you taken **multivitamins**?

- Less than 1 year
- 1–4 years
- 5–9 years
- 10 or more years

Introduction to Question 138 appears on the next page.

Over the past 12 months...

137c. Over the past 12 months, did you take any vitamins, minerals, or other herbal supplements other than your multivitamin?

NO

Thank you *very much* for completing this questionnaire! Because we want to be able to use all the information you have provided, we would greatly appreciate it if you would please take a moment to review each page making sure that you:

- Did not skip any pages,
- Completely blackened-in each answer, and
- Completely erased any changes you may have made.

YES (GO TO INTRODUCTION TO QUESTION 138.)

These last questions are about the vitamins, minerals, or herbal supplements you took that are **NOT** part of a One-a-day-, Theragran-, or Centrum-type of multivitamin.

Please include vitamins taken as part of an antioxidant supplement.

138. How often did you take Beta-carotene (NOT as part of a multivitamin in Question 137)?

NEVER (GO TO QUESTION 139)

- Less than 1 day per month
- 1-3 days per month
- 1-3 days per week
- 4-6 days per week
- Every day

138a. When you took Beta-carotene, about how much did you take in one day?

- Less than 10,000 IU
- 10,000-14,999 IU
- 15,000-19,999 IU
- 20,000-24,999 IU
- 25,000 IU or more
- Don't know

138b. For how many years have you taken Beta-carotene?

- Less than 1 year
- 1-4 years
- 5-9 years
- 10 or more years

Question 139 appears in the next column.

139. How often did you take Vitamin A (NOT as part of a multivitamin in Question 137)?

NEVER (GO TO QUESTION 140)

- Less than 1 day per month
- 1-3 days per month
- 1-3 days per week
- 4-6 days per week
- Every day

139a. When you took Vitamin A, about how much did you take in one day?

- Less than 8,000 IU
- 8,000-9,999 IU
- 10,000-14,999 IU
- 15,000-24,999 IU
- 25,000 IU or more
- Don't know

139b. For how many years have you taken Vitamin A?

- Less than 1 year
- 1-4 years
- 5-9 years
- 10 or more years

140. How often did you take Vitamin C (NOT as part of a multivitamin in Question 137)?

NEVER (GO TO QUESTION 141)

- Less than 1 day per month
- 1-3 days per month
- 1-3 days per week
- 4-6 days per week
- Every day

140a. When you took Vitamin C, about how much did you take in one day?

- Less than 500 mg
- 500-999 mg
- 1,000-1,499 mg
- 1,500-1,999 mg
- 2,000 mg or more
- Don't know

140b. For how many years have you taken Vitamin C?

- Less than 1 year
- 1-4 years
- 5-9 years
- 10 or more years

Question 141 appears on the next page.

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Over the past 12 months...

141. How often did you take **Vitamin E** (NOT as part of a multivitamin in Question 137)?

- NEVER (GO TO QUESTION 142)
- Less than 1 day per month
- 1-3 days per month
- 1-3 days per week
- 4-6 days per week
- Every day

141a. When you took **Vitamin E**, about how much did you take in one day?

- Less than 400 IU
- 400-799 IU
- 800-999 IU
- 1,000 IU or more
- Don't know

141b. For how many years have you taken **Vitamin E**?

- Less than 1 year
- 1-4 years
- 5-9 years
- 10 or more years

142. How often did you take **Calcium or Calcium-containing antacids** (NOT as part of a multivitamin in Question 137)?

- NEVER (GO TO QUESTION 143)
- Less than 1 day per month
- 1-3 days per month
- 1-3 days per week
- 4-6 days per week
- Every day

142a. When you took **Calcium or Calcium-containing antacids**, about how much elemental calcium did you take in one day? (If possible, please check the label for elemental calcium.)

- Less than 500 mg
- 500-599 mg
- 600-999 mg
- 1,000 mg or more
- Don't know

Question 143 appears in the next column.

142b. For how many years have you taken **Calcium or Calcium-containing antacids**?

- Less than 1 year
- 1-4 years
- 5-9 years
- 10 or more years

The last two questions ask you about other supplements you took more than once per week.

143. Please mark any of the following **single supplements** you took more than once per week (NOT as part of a multivitamin in Question 137):

- |   |   |
|---|---|
| <input type="radio"/> B-6                   | <input type="radio"/> Folic acid/folate       |
| <input type="radio"/> B-complex             | <input type="radio"/> Glucosamine             |
| <input type="radio"/> Brewer's yeast        | <input type="radio"/> Hydroxytryptophan (HTP) |
| <input type="radio"/> Cod liver oil         | <input type="radio"/> Iron                    |
| <input type="radio"/> Coenzyme Q            | <input type="radio"/> Niacin                  |
| <input type="radio"/> Fish oil              | <input type="radio"/> Selenium                |
| <input type="radio"/> (Omega-3 fatty acids) | <input type="radio"/> Zinc                    |

144. Please mark any of the following **herbal or botanical supplements** you took more than once per week.

- |  |   |
|--|---|
| <input type="radio"/> Aloe Vera            | <input type="radio"/> Ginger                      |
| <input type="radio"/> Astragalus           | <input type="radio"/> Ginkgo biloba               |
| <input type="radio"/> Bilberry             | <input type="radio"/> Ginseng (American or Asian) |
| <input type="radio"/> Cascara sagrada      | <input type="radio"/> Goldenseal                  |
| <input type="radio"/> Cat's claw           | <input type="radio"/> Grapeseed extract           |
| <input type="radio"/> Cayenne              | <input type="radio"/> Kava, kava                  |
| <input type="radio"/> Cranberry            | <input type="radio"/> Milk thistle                |
| <input type="radio"/> Dong Kuai (Tangkwei) | <input type="radio"/> Saw palmetto                |
| <input type="radio"/> Echinacea            | <input type="radio"/> Siberian ginseng            |
| <input type="radio"/> Evening primrose oil | <input type="radio"/> St. John's wort             |
| <input type="radio"/> Feverfew             | <input type="radio"/> Valerian                    |
| <input type="radio"/> Garlic               | <input type="radio"/> Other                       |

Thank you very much for completing this questionnaire! Because we want to be able to use all the information you have provided, we would greatly appreciate it if you would please take a moment to review each page making sure that you:

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- Completely blackened-in each answer, and
- Completely erased any changes you may have made.

APPENDIX G. MOTHER DESCRIPTIVE QUESTIONNAIRE

**Risk of HTN: Young Adult Lifestyles & Parental Influence**

**Mother Descriptive Information**

ID# \_\_\_\_\_

Date: \_\_\_\_\_

Age: \_\_\_\_\_

Comments: \_\_\_\_\_

**Family History**

Condition	Family Member					
	You	Child's Father	Your Mother	Your Father	Child's Father's Mother	Child's Father's Father
Heart Disease or High Cholesterol						
Heart Attack, if yes ask for age						
Diabetes						
Hypertension						
High Blood Pressure						
Stroke						
Kidney Disease						
Other (fill in)						
If Deceased						
Cause of Death						
Age at Death						

<p><b>Household Income</b></p> <p><input type="checkbox"/> &lt; \$10,000</p> <p><input type="checkbox"/> \$10,000 -&lt; \$20,000</p> <p><input type="checkbox"/> \$20,000 -&lt; \$30,000</p> <p><input type="checkbox"/> \$30,000 - &lt; \$50,000</p> <p><input type="checkbox"/> \$50,000 - &lt; \$75,000</p> <p><input type="checkbox"/> \$75,000 or more</p>	<p><b>Highest Level of Education</b></p> <table border="0"> <tr> <td><b>Father</b></td> <td><b>Mother</b></td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Less than high school</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> High School</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Some College</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> College Degree</td> </tr> <tr> <td><input type="checkbox"/></td> <td><input type="checkbox"/> Post college education</td> </tr> </table>	<b>Father</b>	<b>Mother</b>	<input type="checkbox"/>	<input type="checkbox"/> Less than high school	<input type="checkbox"/>	<input type="checkbox"/> High School	<input type="checkbox"/>	<input type="checkbox"/> Some College	<input type="checkbox"/>	<input type="checkbox"/> College Degree	<input type="checkbox"/>	<input type="checkbox"/> Post college education	<p><b>Child's HS Performance</b></p> <p>GPA or Letter Grade:</p> <p>_____</p>
<b>Father</b>	<b>Mother</b>													
<input type="checkbox"/>	<input type="checkbox"/> Less than high school													
<input type="checkbox"/>	<input type="checkbox"/> High School													
<input type="checkbox"/>	<input type="checkbox"/> Some College													
<input type="checkbox"/>	<input type="checkbox"/> College Degree													
<input type="checkbox"/>	<input type="checkbox"/> Post college education													

APPENDIX H. YOUNG ADULT DESCRIPTIVE QUESTIONNAIRE

**Risk of HTN: Young Adult Lifestyles & Parental Influence**

**Young Adult Descriptive Information**

ID# \_\_\_\_\_

Date: \_\_\_\_\_

Age: \_\_\_\_\_

Comments:

**Family History**

Condition	Family Member					
	Mother	Father	Mother's Mother	Mother's Father	Father's Mother	Father's Father
Heart Disease or High Cholesterol						
Heart Attack, if yes ask for age						
Diabetes						
Hypertension						
High Blood Pressure						
Stroke						
Kidney Disease						
Other (fill in)						
If Deceased						
Cause of Death						
Age at Death						

**Child's HS Performance**  
 GPA or Letter Grade: \_\_\_\_\_

Number of people living in your household \_\_\_\_\_