

1996 UPDATE: THE THIRD NATIONAL HEALTH AND NUTRITION EXAMINATION SURVEY (NHANES III).

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ABSTRACT

The health and nutritional status of the U.S. population two months of age and older was assessed during NHANES III, 1988-94. NHANES III is comprised of two 3-yr phases, each of which constituted a national sample; data for the entire 6-yr time period are combined to form a larger national sample. The NHANES III sample consisted of 39,695 individuals. Of these, 33,994 persons (86%) were interviewed; 30,818 (78%) were interviewed and examined in mobile examination centers (MECs). NCHS released an Interim File for NHANES III, Phase I (1998-91) in September, 1995. Data have been released for several high priority topics including total nutrient intakes, overweight, exposure to second-hand smoke, and osteoporosis. NCHS will release all NHANES III data files later this year. The 24-hour dietary recall data release files will include data for approximately 29,000 respondents; separate files are planned for total nutrient intakes, individual foods (including brand names), and combination foods. Earlier this year, NCHS announced plans for NHANES IV, tentatively scheduled to begin in mid-1998. The sample design is similar to NHANES III (2, 3-year national cycles), but the sample itself will be linked to the National Health Interview Survey (NHIS). Under the Department of Health and Human Services' Survey Integration Plan, NHANES will become a continuous survey program. Household interviews and health examinations in MECs are planned for NHANES IV.

Introduction

This report includes a summary of NHANES III data preparation and reporting activities and a brief description of plans for NHANES IV. Data users are encouraged to check the Centers for Disease Control and Prevention (CDC) Internet Home Page for an updated listing of recent CDC publications and reports. The bibliography section of this report lists recent journal articles based on findings from NHANES III.

Background

The National Center for Health Statistics (NCHS) is the Federal Government's principal vital and health statistics agency. NCHS is part of the Centers for Disease Control and Prevention (CDC) and is located in Hyattsville, Maryland, with offices in Research Triangle Park, North Carolina and Atlanta, Georgia.

Dr. Edward J. Sondik was appointed as NCHS Director earlier this year. Dr. Sondik serves as Senior Advisor to the Secretary of Health and Human Services (HHS) on health statistics and as a member of the HHS Data Council which is responsible for developing Department-wide data collection and coordination strategies. Dr. Sondik previously served as Acting Director of the National Cancer Institute.

Major Data Collection Systems

NCHS administers two major types of data systems: systems based on information obtained directly from populations through personal interviews or health examinations, and systems which are based on vital, medical, and other types of records. The population-based surveys include:

- National Health and Nutrition Examination Survey
- National Health Interview Survey
- National Survey of Family Growth
- NHANES I Epidemiologic Follow-up Study

The National Health and Nutrition Examination Survey (NHANES) Program

Health and Nutrition Examination Surveys (HANES) are conducted to assess the health and nutritional status of the U.S. population. Data from these periodic surveys are obtained by means of interview and examination methods. Three national or "NHANES" were completed between 1971 and 1994: NHANES I (1971-75); NHANES II (1976-80); NHANES III (1988-94). Hispanic HANES, a special survey of three Hispanic subgroups, was conducted from 1982-84 to provide comprehensive health and nutrition data on three major Hispanic subgroups--Mexican Americans, Cuban Americans, and Puerto Ricans. HANES findings are published in NCHS Series 11 Reports of the *Vital and Health Statistics* series, *Advance Data from Vital and Health Statistics*, and in peer-reviewed journals. The CDC Internet Home Page includes lists of NCHS publications, including journal articles authored by NCHS staff during the past year.

NHANES data are used to:

- * Estimate the prevalence of selected diseases and risk factors
- * Prepare reference data for a wide range of nutrition and health parameters
- * Examine secular trends in the prevalences of disease, nutritional status, and health risk factors
- * Collect data to study the etiology of chronic diseases in the U.S. population

The most recent survey, NHANES III, 1988-94 was conducted in two phases. Each three-year phase constituted a national sample; data for the entire six year period may be combined to form a larger national sample.

The NHANES III sample design, interview and examination components, methods, and operations are described in proceedings from the 1989-94 National Nutrient Databank Conferences. NCHS published a manual in 1994 entitled, Plan and Operation of the Third National Health and Nutrition Examination Survey, 1988-94 which describes the overall design, methodology, and content of the Survey.

Highlights: NHANES III Reports 1995-96

Recent reports include the following:

1. Prevalence of overweight among children and adolescents
2. First national estimates on the prevalence of osteoporosis among females 50 years of age and older
3. Exposure to environmental tobacco smoke

4. Collaborative efforts with several Federal agencies to examine the iron and folate nutritional status of the U.S. population

Plans for NHANES III Data Release

The NCHS Division of Health Examination Statistics is responsible for NHANES III data editing and data file preparation. NCHS released an Interim Data File for NHANES III, Phase 1 in September, 1995. This file included household interview data, total nutrient intake data, and selected laboratory and body measurement findings.

During the past year, NCHS staff completed all remaining data processing for NHANES III. NCHS plans to release all household interview, health examination, laboratory, and dietary interview datasets this year. All NHANES III data will be available in CD-ROM and data tape format. The technical manuals for all components of the Survey were recently converted to CD-ROM format.

NHANES III 24-Hour Dietary Recall Data Files

Four NHANES III 24-hr dietary recall files will be released by NCHS. As in previous NHANES, NCHS will release a "Total Nutrient Intakes" dataset as part of the NHANES III Examination Data File. The file consists of one data record per examinee; each record reports the total grams of food consumed and total food energy and nutrient intakes from foods and beverages reported during a single 24-hr dietary recall interview. Nutrients obtained from nutritional supplement products are reported separately in the NHANES III Household Data files.

The second dietary file is the "Individual Foods" file. This file provides detailed information about all foods and beverages reported by respondents. Single item and combination foods are included in this file. The variables in the Individual Foods file include brand names for many foods, food preparation descriptions, time of eating, meal names, and food codes and food descriptions.

The third dietary file is a Combination Foods file for NHANES III, Phase 1. The file reports total gram weight, food energy and nutrient intakes, and food description data for combination foods reported during Phase 1. Fifteen combination food types were coded during the Survey and included sandwiches, salads, mixed dishes, tortilla combinations, and beverages. For example, if a sandwich combination type was reported consisting of a wheat roll, cheese, and mustard, the combination file food record would report the total grams of the sandwich combination, total nutrients from the components of the sandwich, a combination description food code for the combination, and a text descriptor associated with the combination description food code for this food. NCHS plans to add the NHANES III, Phase 2 combination foods to the NHANES III Combination Foods File.

The fourth file is an ingredients file. This file reports the ingredients used to prepare many of the foods reported during the Survey. For example, if fat was used to fry foods, respondents were asked to name the type of fat used and provide brand information if possible. Other examples of ingredients include the use of salt in food preparation and the type of meat used to prepare mixed dishes. Brand information and USDA Survey Nutrient Data Base food codes are included in the ingredients file.

Plans for Future NHANES

NHANES IV was originally scheduled to begin in mid-1997. Planning for the Survey was delayed for one year due to a lack of funding. Most of the NHANES IV sample will be drawn from the National Health Interview Survey (NHIS) sample frame. The NHIS sample will be supplemented by an area sample from each primary sampling unit (PSU). A forty minute household interview and three-hour (or less, depending on age) mobile examination center (MEC) examination is planned.

NCHS released a Request for Proposal (RFP) for NHANES IV on April 18, 1996. NHANES IV is scheduled to begin in mid-1998, if adequate funding is received. A sample size of 40,000 persons ages 2 months and older is planned for the six-year survey. At the end of three years of data collection, a national probability sample will be achieved, permitting data analysis to commence.

Other Activities Involving NCHS Staff

1. National Nutrition Monitoring and Related Research Program Activities

NCHS provides leadership within the Department of Health and Human Services (HHS) for the preparation of technical and scientific reports on the health and nutritional status of the U.S. population. NCHS Nutrition Monitoring (NM) staff represent NCHS on several interagency nutrition committees such as the Interagency Board for Nutrition Monitoring and Related Research (IBNMRR), and provide technical reviews and assistance on issues related to nutrition monitoring (e.g., Year 2000 Nutrition Objectives), nutrition policy (e.g., folate food fortification issues and use of NHANES and other NCHS nutrition-related data), and nutrition-related research. Interagency efforts to coordinate and implement high-priority activities in the Ten-Year Comprehensive Plan for the National Nutrition Monitoring and Related Research Program continue. The preparation and release of the Third Report on Nutrition Monitoring (TRONM) was the culmination of efforts by NCHS, USDA, and numerous Federal agencies to coordinate nutrition policy and program activities.

2. International Health Activities

The National Center for Health Statistics (NCHS) maintains international health statistics programs with both developed and developing countries around the world. These programs include cooperative research projects, collaborative research on analytical and methodological issues, technical assistance and consultation, training and information exchange, and joint activities with multi-national agencies. NCHS sponsors international meetings and symposia, and contributes to other international forums through scientific articles and presentations. The goal of these efforts is to improve the availability and quality of health data in both the United States and other countries.

The international research program is carried out in collaboration with other countries and with other agencies of the U.S. Public Health Service (PHS). An important part of this research is carried out by means of International Collaborative Efforts (ICE's), which bring together domestic and foreign experts to focus on specific health issues of mutual interest to the participating countries. The findings from these analytic research projects are used to provide guidance to specific PHS programs and to improve the health statistical activities of NCHS. Current topics included in these collaborative research projects are perinatal and infant mortality, health and health care of the elderly, and injuries.

Finally, NCHS provides direct support to the World Health Organization (WHO) in the area of worldwide health statistics. NCHS serves as the WHO Collaborating Center for Health and Nutrition Examination Surveys, helping to disseminate its unique capabilities in complex health survey design and health examination data collection and analysis.

Resources

1. NCHS publications

Catalogs and listings of NCHS publications and periodicals such as the *Monthly Vital Statistics Report* and *Advance Data Reports* are free of charge. Requests for National Center for Health Statistics (NCHS) information and/or products should be referred to:

Data Dissemination Branch
National Center for Health Statistics
Centers for Disease Control and Prevention
6525 Belcrest Road, Room 1064
Hyattsville, Maryland 20782
Telephone (301) 436-8500
E-mail: nchsquery@nch10a.em.cdc.gov

Printed copies of other publications, including *Vital Statistics of the United States*, *Vital and Health Statistics Series Reports*, and most miscellaneous reports, are free to libraries and selected institutions. Others may purchase these reports from the U.S. Government Printing Office (GPO) or the National Technical Information Service (NTIS). To order reports write, call or fax to the following addresses:

Superintendent of Documents
U.S. Government Printing Office
Washington, DC 20402-9325
Telephone (202) 783-3238

To order reports from the NTIS contact:

NTIS
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650 Rush service: 1-800-553-NTIS
(703) 321-8547 (fax)

2. Centers for Disease Control and Prevention Home Page:
<http://www.cdc.gov/nchswww/nchshome.htm>

Descriptive survey and CDC program descriptions, recent CDC reports, and publication lists

3. For information about NCHS' nutrition monitoring activities please send a written request to:

Nutrition Monitoring Office
NCHS, Division of Health Examination Statistics
6525 Belcrest Road, Room 1000
Hyattsville, Maryland 20782

Selected Journal Articles Published in 1995-96 which were based on NHANES III data

1996

CDC (1996): Nutritional status of children participating in the Special Supplemental Nutrition Program for Women, Infants and Children - United States, 1988-1991. *MMWR* 45(3): 65-69.

Crespo CJ, Keteyian SJ, Heath GW, Sempos CT (1996): Leisure-time physical activity among US adults - Results from the third National Health and Nutrition Examination Survey. *Arch Int Med* 156: 93-98.

Pirkle JL, Flegal KM, Bernert JT, Brody DJ, Etzel RA, Maurer KR (1996): Exposure of the US population to environmental tobacco smoke. *JAMA* 275(16): 1233-1240.

1995

Briefel RR, McDowell MA, Alaimo K, Caughman CR, Bischof AL, Carroll MD, and Johnson CL (1995): Total energy intake of the US population: the third National Health and Nutrition Examination Survey, 1988-91. *Am J Clin Nutr* 62(suppl): 1072-1080.

Burt VL, Cutler JA, Higgins M, et al (1995): Trends in the prevalence, awareness, treatment, and control of hypertension in the adult US population: data from the Health Examination Surveys, 1960 to 1991. *Hypertension* 26: 60-69.

Burt VL, Whelton P, Roccella EJ, et al (1995): Prevalence of hypertension in the US adult population: results from the third National Health and Nutrition Examination Survey, 1988-91. *Hypertension* 25: 305-313.

Carlson S, Briefel R (1995): The USDA and NHANES food sufficiency question as an indicator of hunger and food insecurity. Conference on Food Security Measurement and Research, Papers and Proceedings, pp. 48-56. Alexandria, VA: FCS/USDA.

Ezzati-Rice TM, Khare M (1995): Modeling of response propensity in the third National Health and Nutrition Examination Survey. 1994 Proceedings of the Survey Research Methods section of the American Statistical Association, pp 2: 955-959.

Flegal KM, Troiano RP, Pamuk ER, Kuczmarski RJ, Campbell SM (1995): The Influence of smoking cessation on the prevalence of overweight in the United States. *N Engl J Med* 333: 1165-1170.

Looker A, Gunter E, Johnson C (1995): Methods to assess iron status in various NHANES surveys. *Nutr Rev* 53(9): 246-254.

Looker A, Johnson C, Wahner H, Dunn W, Calvo M, Harris T, Heyse S, Lindsay R (1995): Prevalence of low femoral bone density in older US women from NHANES III. *J Bone Mineral Research* 10(5): 796-802.

Looker A, Wahner HW, Dunn WL, Calvo MS, Harris TB, Heyse SP, Johnson CC Jr, Lindsay RL (1995): Proximal femur bone mineral levels of United States adults. *Osteoporosis Int* 5: 389-409.

Sempos CT, Johnson CL, Carroll MD, Briefel RR (1995): Current levels and trends in serum total cholesterol in the United States adults 65 years of age and older. The NHANES. In: *Nutritional Assessment of Elderly Populations*. Raven Press, New York, pp. 121-134.

Troiano RP, Flegal KM, Kuczmarski RJ, Campbell SM, Johnson CL (1995): Overweight prevalence and trends for children and adolescents: The National Health and Nutrition Examination Surveys, 1963-91. *Arch Ped Adoles Med* 149: 1085-1091.