

Ndetan, Harrison Tatandam, B.Sc., M.Sc., Characterization of Health Status and Modifiable Risk Behavior of United States Adults Using Chiropractic Care as Compared to General Medical Care. Masters of Public Health (Biostatistics), August 2007; 45 pp., 8 tables, 1 appendix, 49 titles.

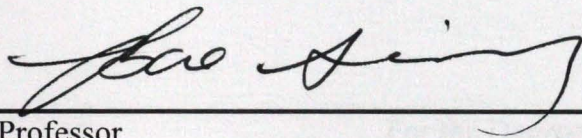
This study characterizes typical conditions of chiropractic patients and explores how chiropractic influences modifiable behavioral risk factors in the U.S. Data from the Sample Adult Core component of the 2005 National Health Interview Survey (NHIS) was analyzed using SAS9.1.2. Statistical analyses included logistic regression, chi squared, and t-test analyses.

There were 31,428 respondents. Males comprised 43.79%. Those who saw/talked to chiropractors (DC's), within the past 12 months were 8.73%. Among these 21.37% did not see the general medical doctor (MD). There was no significant difference in the smoking and alcohol consumption status of respondents who saw/talked to DC's than MDs. DC patients were more likely to be physically active [OR=1.45(1.20, 1.75)] and less likely to be obese [OR=0.74(0.59,0.92)] than MD patients. Patients with acute migraine, neck, and low back pains were more likely to see DC's but patients with arthritis and chronic conditions were more likely to see MDs

CHARACTERIZATION OF HEALTH STATUS AND MODIFIABLE RISK
BEHAVIOR OF UNITED STATES ADULTS USING
CHIROPRACTIC CARE AS COMPARED TO
GENERAL MEDICAL CARE

Harrison Tatandam Ndetan, B.Sc., M.Sc.

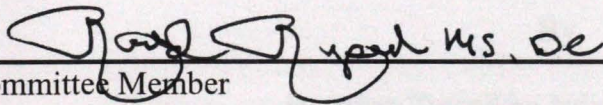
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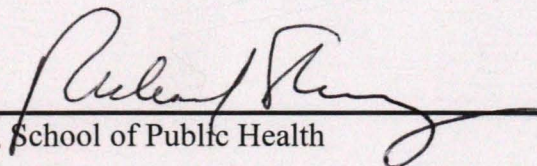
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BEHAVIOR OF UNITED STATES ADULTS USING
CHIROPRACTIC CARE AS COMPARED TO
GENERAL MEDICAL CARE

THESIS

Presented to the School of Public Health

University of North Texas
Health Science Center at Fort Worth

In Partial Fulfillment of the Requirements

For the Degree of

Master of Public Health

By

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Fort Worth, Texas

August 2007

My very special and sincere thanks go to my supervisor, Dr. Selong Bas, a devoted professor of Biostatistics who arranged time to fully engage in this work. Through his constant encouragement, I came to realize the importance and the place of scientific research in my future career. I also wish to extend a big hand of fellowship to the Department Head, Prof. Kelson Janga and all the faculty staff of the Department of Biostatistics for all the training and support accorded me during the period of my stay at UNHISE.

My greatest gratitude that goes to the management of Focher College of Chiropractic, Dallas, especially the dean, Dr. Ronald Rippen for funding this project.

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I wish to express my heartfelt appreciation to Dr. Markon William Evans, Jr., Director of Health Promotion Degree Programs, Cleveland Chiropractic College, Kansas, for all his constructive comments that help shaped and focused my thoughts during this project.

I also wish to acknowledge with gratitude my mother-in-law, Mrs. T. Joyce Uduo for harboring me in her heart and constantly waving me up to God in Prayers.

ACKNOWLEDGEMENT

My very special and sincere thanks go to my supervisor, Dr. Sejong Bae, Associate professor of Biostatistics who created time to fully supervise this work. Through his constructive criticisms, I came to realise the importance and the place of scientific research in my future career. I also wish to extend a big hand of fellowship to the departmental chair, Prof. Karan Singh and all the faculties/staff of the Department of Biostatistics for all the training and support accorded me during the period of my stay at UNTHSC.

My profound gratitude also goes to the management of Parker College of Chiropractic, Dallas, especially the dean of research, Dr. Ronald Rupert for funding this project.

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CHAPTER 1

INTRODUCTION

The actual causes of death in United States have drifted from infectious through chronic diseases to modifiable behavioral risk factors. This drift has been accompanied by a paradigm shift in health care provision with increased emphases on prevention, health promotion and education campaigns. Particularly, usage of professional complementary and alternative medicine (CAM) has increased substantially. Chiropractic care is one of the main CAM care and chiropractors in the U.S. provide a substantial portion of health care, including prevention and wellness.

However, it is still not clear whether people use chiropractic care as a stand-alone alternative therapy or as a supplement to conventional medicine. In particular, the question as to how chiropractic influences modifiable risks behavior and trends in identifiable leading causes of death in the U.S. as compared to traditional conventional medicine remains unanswered. Identifying and quantifying how health care providers of different back ground and point of emphasis affect modifiable behavioral risk factors may be very insightful in understanding trends in the leading causes of mortality in the U.S. This may also have implications on missed preventions. The spawning of mechanisms that restrict patient access to both medical specialists and non medical providers also suggest a need for additional evidence that could be used to justify the allocation of health care resources

Against the aforementioned back drops, the specific aims of this study were to: explore the distribution of musculoskeletal disorders (neck pain, low back pain, migraine, and arthritis) and emotional health problems, across race/ethnic groups, age and gender; describe the general health status and report prevalence of obesity; assess the practice of modifiable risk behaviors (tobacco use, physical inactivity and alcohol consumption); evaluate the use of chiropractic care as a stand-alone therapy for specific health conditions such as low back pain, neck pain, migraine and arthritis; and explore a possible interaction between medical and chiropractic care in impacting patient visits to portal of entrée physicians, their general health status, and attitude towards modifiable risk behavior among adult individuals living in the U.S.

Delimitations

The study used the data from the 2005 National Health Interview Survey (NHIS, 2005). NHIS 2005 data like all other years were collected from a nationally representative random sample to represent the U.S. civilian noninstitutionalized population age 18 years and over. The data set has a large sample size and provided stratum for variance estimation, stratification, and weighting factors to account for variations in the basic probability of selection among specific population subgroups. However, the response rate on one of the primary variable of interest (visit to chiropractors as health care providers with in the past 12months prior to the date of administration of the survey) was very low. This resulted in many areas with zero

responses when stratification was employed. More over, due to the nature of the original version of the main questions of interest for this report, most of the analyses that followed required a subsetting dataset. When a complex survey data is subsetted the complete design information for variance estimations are not available which tend to compromise the sample design structure. The National Center for Health Statistics (NCHS) recommends the use of the full data file and a specialized option available with complex design variance estimation software packages (such as SUBPOPN in SUDAAN) for subpopulation analyses. This was not applied in the analyses of this report. Rather, the data was used directly as a simple random sample across the U.S. For more information on the use of subsetting data refer to Appendix III on technical notes of the NHIS 2005 survey release documents (National Center for Health Statistics, 2005).

CHAPTER II

LITERATURE REVIEW

Mortality rates across the world indicate overall increase in life expectancy but health disparities continue to persist. Interestingly there has been a constant shift in the leading or actual causes of death. In the 1800s, high mortality rates were largely attributable to infectious diseases associated with sanitation, nutrition, and overcrowding problems. Before 1990, chronic diseases such as heart disease, stroke, and cancer were the main predictors of mortality in the United States (McGinnis & Foege, 1993). Due to behavioral changes, the burden on mortality shifted towards an increased prevalence of obesity and diabetes. Today, the leading causes of death in the U. S. are determined largely by modifiable behavioral risk factors such as tobacco use, poor diet, physical inactivity, and alcohol consumption (Koplan & Dietz 1999; Mokdad, Marks, Stroup, & Gerberding, 2004). These changes in trends have been accompanied by a paradigm shift in health care provision with an increased focus on prevention, health promotion, and health education campaign (United States Preventative Services Task-force, 2006; Department of Health and Human Services, 2000). The use of professional complementary and alternative medicine (CAM) health care providers increased substantially in the 1990s in the United States. Reasons such as the desire of patients to be actively involved with medical decision making and dissatisfaction with conventional (western) medicine, especially in treating many chronic diseases and debilitating pain,

have been advanced to explain this growth (Astin, 1998; Barnes, Powell-Grinder, Mcfann, & Nahin, 2004; Druss & Rosenheck, 1999; Eisenberg, Davis, Ettner, & et al., 1998; Engel & Straus, 2002; Hing & Middleton, 2004; Ni, Simile, & Hardy, 2002; Oldendick, Coker, Wieland, et al. 2000).

The classification of CAM in the U.S. covers a broad spectrum of stand-alone therapies as well as heterogeneous systems of medicines that are not usually taught in U.S. medical schools or generally available in U.S. hospitals. These may include alternative medical systems, biologically based therapies, manipulative, and body-based therapies and mind-body therapies. Although these therapies and systems have diverse origin and modes of treatment they all have a common point of focus which is an “emphasis on maximizing the body’s inherent healing ability” (Barnes et al., 2004). Manipulative and body-based therapies typically address the physical, mental, and spiritual wellbeing of the patients by adjusting (pressing, rubbing, and manipulating) body parts causing them to relax and stay in alignment, allowing pain-relieving nerve impulses, oxygen, and blood to flow to the affected area.

Chiropractic care, which can be classified as a manipulative and body-based therapy, is one of the fastest growing and most frequently used professional CAM health care in the U.S. It involves the adjustment of the spine and joints to influence the body’s nervous system and natural defense mechanisms to alleviate pain and improve general health (Barnes et al., 2004; Hawk & Dusio, 1995). A major way in which chiropractic care differs from conventional traditional medicine is on its tendency to treat the ‘whole’ person, rather than focusing on specific pathogenic conditions while relying on the

body's ability to heal itself. A growing body of evidence has demonstrated the efficacy of chiropractic care as a treatment modality for many degenerative health conditions; chronic and acute, musculoskeletal, neuromuscular as well as visceral disorders (Assendelft, Morton, Yu El, Suttorp, & Shekelle, 2003; Bronfort, Haas, Evans, & Bouter, 2004; Coulter, Hurwitz, Adams, & et al., 2002; Dagenais & Haldeman, 2002; Hawk, Long, & Boulanger, 2001; NCCAM, 2000; Gaumer & Gemmen, 2006; Woodward, Cook, Gargan, & Bannister, 1996).

Musculoskeletal conditions such as low back and neck pains, which are among the most common reasons why patients visit medical physicians in the U.S. (Druss & Rosenheck, 1999; Eisenberg et al., 1998; Haneline, 2005; Hing & Middleton, 2004; Hurwitz, Morgenstern, Kominski, Yu, & Chiang, 2006; Meeker & Haldeman, 2002; Wolsko, Eisenberg, Davis, Kessler, & Phillips, 2003) are also more frequently treated by chiropractic care. The relative efficacy and cost effectiveness of chiropractic and medical care have emerged as important issues in the broader debate on evidence-based medicine (Assendelft, 2003; Bronfort, 2004; Hurwitz & Morgenstern, 1997). Chiropractic principles also emphasize wellness, prevention, and, to a certain degree, health promotion as major public health concerns. Although there is a relative dearth of information in this regards, a few studies have documented the chiropractic approach to wellness and preventive care (Hawk & Dusio, 1995; Mitchell, 1980; Rupert, 2000; Rupert, Manello, & Sandefur, 2000).

CHAPTER III

METHODS

Data Source

The study used data from the Sample Adult Core component of the 2005 National Health Interview Survey (NHIS). The NHIS is a continuous annual health survey conducted by the National Center for Health Statistics (NCHS) at the Centers for Disease Control and Prevention (CDC). The main purpose of this survey is to collect basic information of life style and health features (health status, health care services, and behavior) of the civilian, noninstitutionalized, household population of the United States. Essentially, the NHIS consists of a stable Basic Core Module, with three components (the Family Core, the Sample Child Core, and the Sample Adult Core) and variable Supplemental Modules that change across the years. The NHIS applies a complex, multistage sample design in collecting data. This involves weighting, stratification, clustering, and oversampling to account for variations in the basic probability of selection, nonresponse, and noncoverage among specific population subgroups. The survey is conducted in a face-to-face interview format using computer-assisted personal interviewing (CAPI). From each family in the NHIS, one sample adult is randomly selected, and self-reported information is collected with the Sample Adult Core questionnaire to generate the Sample Adult data set (National Center for Health Statistics, 2005).

Information on race /ethnicity was collected by a method consistent with the procedures used by the Census Bureau to create the Modified Race Data Summary File

used for population control (Yarnall, Pollak, Ostbye, Krause, & Michener, 2003). The ASCII file of the NHIS 2005 Sample Adult dataset was down loaded from the web site (National Center for Health Statistics, 2005). The data was imported into the Statistical Analysis System (SAS) while retaining only the desired variables to answer the research questions. These included variables on: demographics (gender, age, race/ethnicity, height, and weight); modifiable behavioral risk factors (smoking status, alcohol consumption, and physical activities); musculoskeletal disorders (neck pain, low back pain, leg pain, migraine, and arthritis); depression, anxiety, and emotional problems; general health status; some specific health conditions (diabetes, obesity, and heart disease) and health care provider (chiropractor and general medical doctor). Most of the imported variables were re-categorized, re-coded with some new variables created to suit the specific purposes of this study. The complete list of imported variables, the original survey questions and the exact data code format in the original data base is provided in appendix 1.

Demographic Variables

These included gender, race/ethnicity, and age. With this method race/ethnicity was assessed through two variables: a variable that questioned specifically the Hispanic origins (Puerto Rico, Mexican, Mexican-American, Cuban/Cuban American, Dominican Republic, Central/South American, other Latin American, other Spanish, Hispanic/Latino/Spanish/nonspecific type, and not Hispanic/Spanish origin) and another variable that included all other racial groups in the United States (White only,

Black/African American only, AIAN only, Asian only, Non releasable Race group and Multiple race). These two variables were grouped and recoded into four categories: Whites (non-Hispanics), Blacks, Hispanics/Latinos, and others.

Age was a continuous variable that included entrée from zero years. This was recategorized to exclude ages below 18 years (non-adults) as follows: '18 - <40', '40 - <60' and '>=60' years. An age of above 85years was treated as an outlier.

Modifiable Behavioral Risk Factors

These included smoking status, alcohol consumption, and physical inactivities. Smoking status was assessed through several variables: a variable that queried if the respondent had ever smoked 100 cigarettes in his/her entire life, one that questioned his/her current smoking status in terms of current everyday or some days, and another that questioned the number of cigarettes per day for all current smokers. The final variable for smoking status was categorized into three variables that included 'Current smoker,' 'Former smoker,' and 'Never smoked.' Current smokers were defined as persons who have ever smoked 100 cigarettes and who currently smoke every day or some days.

Information on alcohol consumption was obtained from a number of variables that queried the number of days per week respondents drank any type of alcoholic beverage in the past year and the average number of drinks on the days drank. The original data was recoded consistent with the method employed by Mokdad et al in the paper 'Actual Causes of Death in the United States, 2000' (Mokdad, Marks, Stroup, & Gerberding, 2004) to include 'Abstinence' if respondents had 0.25 drinks or less per day;

'Light drinking' if they had more than 0.25 but not more than 2 drinks per day for females and not more than 4 for males; 'Hazardous drinking' if they had more than 2 but not more than 4 drinks per day for females, and more than 4 but not more than 6 for males, and 'Harmful drinking' if they had more than 4 drinks per day for female and more than 6 for male. For the seek of comparisons only, given small numbers, these were further recategorized in to 'Moderate drinkers' grouping those under abstinence and light drinking and 'Heavy drinkers' grouping those under hazardous and harmful drinking.

Physical inactivity was assessed through the frequency of vigorous (causing heavy sweating, large increase in breathing or heart rate), moderate, or light (causing only light sweating, slight to moderate increase in breathing or heart rate), and strengthening (designed to strengthen muscles) leisure-time physical activities that lasted for at least 10 minutes. The variables were re-grouped and the categories collapsed into 'frequent' if these activities were performed on a daily, weekly or monthly basis and as 'Never/infrequent' if respondents never engaged in such activities or did only once a year.

Health Status/Conditions

Information was obtained from the sample adult as to whether he/she has, or has had, a selected number of medical conditions. In most instances, sample adults were queried whether a doctor or other health professional had told them that they had the condition in question. The conditions of interest included obesity, depression/anxiety /emotional problems, symptoms of joint pain/aching/stiffness, arthritis, neck pain, low back pain, severe headache/migraine.

For arthritis, respondents were asked if they had been told (ever) by a doctor or other health professional that they had this condition. While for the other questions, they were asked to report their personal experiences.

Experiences of symptoms of joint pain/aching/stiffness was reported for the past 30 days while neck, low back pains, and severe headache/migraine were reported for the past 3 months.

Obesity was assessed through the body mass index which was computed from the height and weight of the sampled adult as: $BMI = [(weight)/(height)^2] \times 703$; for weight in pounds and height in inches. Obesity was defined as BMI values of 30 Kg/m^2 and above.

Depression/anxiety and emotional problems were assessed through a number of questions that asked the respondents how frequent with in the past 30 days they experienced sadness, nervousness (irritability, emotional/mental health), restlessness, hopelessness, worthlessness or felt everything was an effort.

Sampled adults were also asked to report the duration of some of the above conditions, which were recategorized in the original database as 'chronic' and 'not chronic.' They were also sampled on whether their general health was better, worse or about the same compared with 12months ago.

Health Care Provider/Access to Health Care

Respondents were asked several questions regarding access to health care. Of interest were the questions on having a usual place for sick care, routine/preventive care, change in the place of care related to insurance, and about health care provider contacts. Health care provider included questions about doctor contacts during the past 12 months. Doctor visit

probe questions allow for visits not only from medical doctors but from a variety of other health care professionals, including chiropractors.

Data Analysis

Data analyses were performed using the Statistical Analysis System (SAS) software. The final analyses included descriptive statistics, binary logistic regression, chi squared, and t-test analyses. The heterogeneity of effect of health care providers on the distribution of the health status and behavioral risk factors was assessed using the multiplicative model with stratification. To compare the health care provider respondents were more likely to see with specific health conditions, the odds ratios were adjusted for gender, age, and race/ethnicity.

CHAPTER IV

RESULTS

The NHIS 2005 Sample Adult data file had 31,428 observations. Among these 13,762 (43.79%) were adult male. About 81% of the sample adults were White, 14% Blacks, and less than one percent (0.70%) Hispanics/Latinos. Most of the respondents (37.58%) were young adults (aged 18 – 39). However, the mean age was 47.44 years, with a standard deviation of 17.83 (Table 8). Table 1 shows the demographics of the sample.

Access to Health Care

The respondents who saw/talked to a chiropractor (DC) for health care reasons, regardless of seeing/talking to a general medical doctor (MD), within the past 12 months made up 8.73% (n=2705). Among these 21.37% (n=578) did not see the MD constituting 1.8% of the entire sampled adults. Those who saw an MD, regardless of seeing a DC, made up 67.32% (n=20853). Among these 89.69% (n=18704) did not see the DC, constituting 59.51% of the entire sampled adults (Table 1). About one percent (n=404) of the respondents reported having more than one place to go to for health care (when sick) while 15% (n=4670) had none. On an average, respondents made 2-3 office visits to their health care provider(s) in the course of the past 12 months. However, a higher proportion of those who consulted with the DC but not MD's (DC-only) made more than 12 office

visits compared to those who consulted with the MD but not DC's (MD-only) (38.24% vs. 13.42%; $p < 0.0001$).

In general, the males were less likely to report seeing or talking to any of the health care providers compared to the females. However, among the males, there was a 29% increased odds of having seen or talked to DC's-only compared to MD's-only [OR (95%CI) = 1.29 (1.09, 1.52)].

Most of those who utilized the services of the health care providers were the Whites (above eighty percent for either provider). Only 6.23% of those who saw/talked to DC's-only were Blacks with a corresponding 14.59% reporting having seen/talked exclusively to MD's. However, matching the proportion of Black to White folks who saw/talked exclusively to DC's to those who saw/talked exclusive to MD's, the result showed that blacks were proportionately more likely to have seen/talked to DC's-only than to MD's-only [OR (95%CI) = 2.58 (1.84, 3.63)]. There were not enough responses to make a corresponding comparison with the Hispanics/Latinos.

The younger adults were less likely to report having seen/talked to DC's-only than MD's-only compared to the older folks [OR (95%CI) = 0.32 (0.25, 0.41)]. About a third of the respondents reported to have changed their health care providers due to insurance issues.

Modifiable Behavioral Risk Factors

Over a fifth of the entire sampled adults reported being current smokers, consuming an average of 14.01 (9.96) cigarettes per day. There was no significant

difference in current smoking status and in the number of cigarettes smoked per day among respondents who saw/talked to DC's-only compared MD's-only ($p=0.58$). Over a half of the sampled adults reported never to have smoked, and those who reported to have seen/talked to a health care provider in the past 12 months were more likely to be former smokers (Table 2, Table3, and Table 8).

On an average, respondents reported consuming 2.47 (2.89) drinks of any alcoholic beverage per day and heavy (hazardous/harmful) drinking were reported by 11.4%. The distribution of heavy drinking among respondents who consulted DC's-only and MD's-only was not statistically significant.

About two thirds of the sampled adults reported to have been physically active (did some form of leisure-time physical activity frequently with in 12 months). Those who saw/talked exclusively to DC's were 1.45 time more likely to be physically active than those who saw/talked to MD's within this time [adjusted OR (95%CI) = 1.45(1.20, 1.75)].

Health Status and Health Conditions

Obesity was reported by 21.31% of the sampled adults, and they were 0.74 times less likely to have consulted with DC's-only than MD's-only. Depression, anxiety, and emotional problems with in past 3 months were reported by 50.38% of the sampled adults. These respondents reported almost equally likely to have had a chiropractor exclusively as their health provider as an MD. About 23% of the sampled adults reported to have been told by their health care provider of having arthritis. These patients reported

less likely to have had a DC exclusively as their health care provider. The prevalence of neck pain, low back pain, and severe head ache/migraine was reported, respectively, by 23.10%, 28.90%, and 15.13%. In each case, the respondents reported more likely to have had exclusively a DC for health care than an MD [adjusted OR (95%CI) = 2.66(2.22, 2.19) for neck pain, 2.39(2.02, 2.83) for low back pain, and 1.04 (0.84, 1.30) for severe head ache/migraine]. In almost all the cases where respondents reported chronic health conditions, they were less likely to have consulted with DC's-only than MD's-only (Table 4 and Table 5).

Changes in the general health status was reported by 16.64% as being better and 9.85% as being worse compared to the past 12 months. Regarding these changes, no significant difference was reported among respondents who consulted DC's-only than DC's-only (Table 6 and Table 7)

CHAPTER V

DISCUSSION, CONCLUSIONS, AND RECOMMENDATIONS

Chiropractic Utilization

Perhaps 30% of Americans who suffer from back pain will consult a DC at some point during this episode (Meeker & Haldeman, 2002). From NHIS 2005, 8.73% reported seeing a DC within the last 12 months which is slightly less than in recent years but holding steady (Druss & Rosenheck, 1999; Eisenberg et al., 1998). Among those who stated they saw/talked to a DC, 21.37% reported that they never saw/talked to an MD in the last year. This was of interest to the investigator as there was a desire to note whether an appreciable difference exists in patients who reported seeing DC's-only within the last year compared to MD's.

The NHIS is indicative of several common denominators regarding utilization of health services. For example, whites are still much more likely to see DC's comprising 88.65% of respondents answering the question on DC utilization and race. The most active age groups also are most likely to consult a chiropractor with 32.61% of respondents falling between 18-39 and 42.33% between the ages 40-59; total (75.94%). This is sensible as the majority of respondents consulted a DC for acute neck or low back pain that may imply injury or pain of a mechanical nature. In addition, females are more likely to utilize chiropractic services than males. From a health promotion perspective this is noteworthy as females probably play a larger role in the health decision making

process across the board, even when it comes to choosing CAM therapies such as chiropractic.

The fact that most were white is further indicative of greater utilization of CAM services like chiropractic care by non-minority groups in the United States. Regardless of the numbers noted, the NHIS indicates that most people are seeing DCs for neck or back pain and this is consistent with prior studies on utilization of chiropractic services by Astin (1998) and the National Board of Chiropractic Examiners (Christensen, Kollasch, & Ward, 2005).

Chiropractors and Health Promotion

In reviewing the results of this data analysis the investigator found several correlations that are of interest when taking into account the existing chiropractic literature on the topic of wellness and health promotion or health education. It was of interest to explore the existence of any patterns among respondents who stated the only health provider they saw in the last year was a DC versus those who only reported seeing an MD, particularly whether there would be identifiable patterns of information on health promotion with the respondents.

The largest trade associations, the American Chiropractic Association and the Association of Chiropractic Colleges state that DCs should do health promotion and further, that they should promote “wellness” with patients (ACA, 2003). This is important since so many acute neck and back pain patients consult DC and since a minority of medical patients report having been counseled on health-related behavioral

change (Spangler, George, Foley, & Crandall, 2002; Yarnall et al., 2003). Further, that those patients who develop chronic spine problems tend to have higher degrees of comorbid health conditions than the general public in aggregate (Fanuele, Birkmeyer, Abdu, Tosteson, & Weinstein, 2000; Von Korff, Crance, Lane, et al., 2005).

Several studies have investigated whether DCs do health promotion in their practices and most report doing something (Hawk, Long, Perillo, & Boulanger, 2004; Jamison, 2004; Evans & Rupert, 2006; Evans, Hawk, & Strasser, 2006). Therefore, questions were of interest when respondents who reported seeing a DC in the last 12 months but not an MD, might report a statistically significant degree of health promoting activities being delivered when compared to those having seen an MD but not a DC in the last year. At times, this did not present an ideal assessment of the data set.

Smoking and Drinking

Regarding smoking status, about 21% of DC-Only respondents smoked and around 19% of MD-Only respondents smoked. Studies of chiropractic teaching clinics indicate about as many patients have been told by their intern that they should quit as are reported by smoking patients seeing MD providers (Hawk & Evans, 2005; Mojica, Suttorp, Sherman, & et al., 2000). These numbers within both groups also mirror the national prevalence of smokers which is currently at 20.9% (Morbidity and Mortality Weekly Report, 2005). However, at least one study at a chiropractic teaching clinic found smoking prevalence at about half the national average (Evans, Hawk, & Boyd, 2006)

Interestingly, a study by Jamison in Australia gives some indication as to what kinds of health information DCs are most comfortable providing from a self-reported self-efficacy perspective (Jamison, 2002). Her study suggests DCs are very comfortable with giving advice on exercise for instance, but much less comfortable with advise on other “wellness” topics. While 91% said they felt comfortable with giving advice on exercise, only 13% felt comfortable giving advice on alcohol use and only 12% regarding substance abuse. The NHIS respondents who reported seeing a DC and not MD in the last year were more likely to report “heavy drinking” compared to those seeing an MD only when response categories were made dichotomous with “heavy” versus “moderate/non-drinking.”

Exercise Levels

When exercise variables were re-coded to evaluate those who reported “frequent” versus “never or infrequent exercise habits,” patients of DCs-only were more likely than patients of MDs-only to report “frequent exercise” habits. It is worth reemphasizing here that 72.16% of respondents seeing DCs only stated they “frequently” exercise with a 45% increase in adjusted odds compared to MDs- only. Thus, patients who saw only a DC gained some health promotional benefits on exercise by doing so. However, caution must be taken not to assume that this is a sole influence of chiropractic care. Other factors, such as the fact that healthy people may be more attracted to health promotion conservative care, may be responsible.

Obesity

Overall, the proportion of respondents who were obese was 21.31%. Thus, in support to the evaluation of exercise habits, those seeing DCs only were less likely to be obese.

Arthritis, Coronary Heart Disease, and Diabetes

Respondents reporting these conditions were more likely to be seeing MD-only rather than DC-only. This is interesting as it is fairly certain that any back and neck conditions they may experience would likely be treated with medications and chiropractic care may represent a drugless option for these respondents less likely to interfere with treatment of these other comorbidities.

Depression and Emotional and Anxiety Issues

Mental health problems are often comorbid with chronic spine patients and the investigators tried to examine this relationship with the variables within the survey. However, there was no significant difference in the depression, emotional or anxiety levels of those who saw DC-only or MD-only. It is interesting to the investigators to note however, that 76.25% of respondents answering the question on this topic reported emotional, depression or anxiety problems when they also reported chronic neck or back conditions.

Chronic Neck or Back Conditions and Migraine

Although it seems rational that those choosing to see a DC would do so for chronic as well as acute back or neck problems and migraine headaches, the survey did not indicate this. Among respondents who reported chronic neck or back problems they were more likely to have seen only an MD rather than only a DC. Among those with severe headaches or migraines which have traditionally seen chiropractors at a high rate of utilization, on the contrary this analysis indicated these respondents less likely to have seen a DC-only.

A few limitations could be identified with this study. The report is based on secondary data that were not collected specifically for this purpose. Most of the questions within the NHIS2005 data set, particularly those dealing with health care providers, prevention/ health promotion were not well delineated. This resulted in the use of a subsetted dataset for the analyses. As such the complete design information for variance estimations were not available that compromised the sample design structure. The low response rate on the use of chiropractic care limited the number of comparisons that could be made as well as the strength of statistical tests on effect measures to detect statistical significance in some cases, especially for chronic conditions. There is also the possibility of recall bias and misclassifications.

Conclusion and Recommendations

A review of literature indicates CAM providers and specifically DC's are doing some health promotion and addressing modifiable risk factors with some of the patient they

serve. These providers are in many cases considered to be performing primary care and at least are portal of entry providers in the US. The NHIS 2005 adult sample public use data is indicative of several health promotion issues among users of chiropractic care:

Chiropractic care is being utilized for acute headache/migraine, neck and low back pains; mostly by the whites, males, and younger adults. There is no marked difference in the health promotion gains by patients using chiropractic care compared to general medical care.

Questions that deal with prevention and health promotion are not well delineated within the 2005 data set. While the 2006 data set may be better formatted it is of interest to note a growing number of Americans utilizing CAM providers including DC's. More specific questions on what CAM providers; among them, DC's are doing with patients should be in the primary interests of the NHIS and its developers. Future research with health promotion specific questions among CAM providers is recommended.

TABLES

Table 1

Frequency (n) and Percentage (%) of the Distribution of Demographic Variables for the NHIS 2005 Adult Sample

		Overall	*DC with or without MD	**MD with or without DC	DC with out	MD with out
Sampled adult	Total	31428	2705(8.73)	20853 (67.32)	578 (1.8) ¹	18704(59.51) ²
Gender	Male	13762 (43.79)	1104(40.81)	8390(40.23)	269(46.54)	7547(40.35)
	Female	17666(56.21)	1601(59.19)	12463(59.77)	309(53.46)	11157(59.65)
Racial Group	Whites	25408(80.85)	2398(88.65)	16991(81.48)	514(88.93)	15094(80.70)
	Blacks	4407(14.02)	183(6.77)	2883(13.83)	36(6.23)	2728(14.59)
	Hispanics/Latinos	219(0.70)	13(0.48)	116(0.56)	2(0.35)	105(0.56)
	others	1394(4.44)	111(4.10)	863(4.14)	26(4.50)	777(4.15)
Age	18-<40Yrs	11810(37.58)	882(32.61)	6436(30.86)	257(44.46)	5808(31.05)
	40-<60Yrs	11502(36.60)	1145(42.33)	7677 (36.81)	233(40.31)	6758(36.13)
	60+Yrs	8116(25.82)	678(25.06)	6740(32.32)	88(15.22)	6138(32.82)

Notes. * DC = doctor of chiropractic: this refers to the respondents who saw/talked to a chiropractor; **MD = medical doctor: this refers to the respondents who saw/ talked to a general medical doctor; ¹21.37% among those who saw/talked to a DC; ²89.69% among those who saw/talked to an MD.

Table 2

Frequency (n) and Percentage (%) of the Distribution of Modifiable Behavioral Risks Factors for the NHIS 2005 Adult Sample

		Overall	DC with or without MD	MD with or without DC	DC Only without MD	MD without DC
Smoking	Current smoker	6511 (20.91)	524(19.41)	3989(19.20/61.88)	118(20.52)	3576(19.19)
	Former	6774 (21.76)	702(26.00)	5083(24.47/	138(24.00)	4519(24.24)
	Never	17847 (57.33)	1474(54.59)	11702(56.33/	319(55.48)	10544(56.57)
Alcohol 1	Abstinence	13476 (42.88)	842(31.13)	8837(42.38/	184(31.83)	8157(43.61)
	Light	14482 (46.08)	1551(57.34)	9936(47.65)	328(56.75)	8712(46.58)
	Hazardous	2438 (7.76)	230(8.50)	1488(7.14)	46(7.96)	1305(6.98)
Alcohol 2	Harmful	1032 (3.28)	82(3.03)	592(2.84)	20(3.46)	530(2.83)
	moderate	27958(88.96)	2393(88.47)	18773(68.21)	512(88.58/	16869(90.19)
Alcohol 2	Heavy	3470 (11.04)	312(11.53)	2080(60.25)	66(11.42)	1835(9.81)
	Exercise 1	0 Never	11932 (39.75)	737(28.34)	7576(38.11)	153(27.13)
Exercise 1	1 per day	4461 (14.86)	429(16.49)	2975(14.97)	113(20.04)	2657(14.90)
	2 per week	12818 (42.71)	1360(52.29)	8781(44.18)	283(50.18)	7706(43.21)
	3 per month	677 (2.26)	61(2.35)	458(2.30)	11(1.95)	408(2.29)
	4 Per Year	126 (0.42)	14(0.54)	87(0.44/	4(0.71)	77(0.43)
Exercise 2	Frequent	17956 (59.83)	1850(71.13)	12214(61.45)	407(72.16)	10771(60.40)
	Never/ infrequent	12058 (40.17)	751(28.87)	7663(38.55)	157(27.84)	7061(39.60)

Table 3

Odds Ratio (95% Confidence Interval) for the Distribution of Modifiable Behavioral Risks Factors Variables for the NHIS 2005 Adult Sample

		DC with or without MD	MD with or without DC	DC compared to MD	Adjusted OR
Smoking status	Current smoker	0.97(0.88,1.08)	0.83(0.78,0.88)	0.92(0.74,1.14)	1.03(0.83,1.28)
	Former	1.28(1.16,1.41)	1.58(1.48,1.68)	0.99(0.81,1.21)	0.84(0.68,1.03)
	Never	Referent	Referent	Referent	Referent
Alcohol	moderate	Referent	Referent	Referent	Referent
	Heavy	1.04(0.92,1.18)	0.70(0.66,0.76)	1.19(0.91,1.54)	0.86(0.66, 1.12)
Exercise	frequent	1.73(1.58,1.88)	1.22(1.16,1.28)	1.70(1.41,2.05)	1.45(1.20, 1.75)
	Never/infrequent	Referent	Referent	Referent	Referent

Table 4

Frequency (n) and Percentage (%) of the Distribution of Acute and Chronic Health Condition for the NHIS 2005 Adults Sampled

Acute conditions	Overall	DC with or without MD	MD with or without DC	DC Only without MD	MD without DC
Obesity	6697(21.31)	621(22.96)	4843(23.22)	101(17.47)	4320(23.10)
Dep/emot/anxiety probs. /past 3 months	15632(50.38)	1606(59.81)	11078(53.65)	304(52.87)	9771(52.74)
Arthritis	7243(23.10)	873(32.36)	6211(29.86)	106(18.34)	5439(29.14)
neck pain	4759 (15.17)	957(35.44)	3675(17.65)	186(32.18)	2903(15.54)
LB pain	9067 (28.90)	1453(53.79)	6845(32.87)	287(49.65)	5674(30.37)
severe headache/migraine	4749 (15.13)	568(21.03)	3492(16.77)	108(18.69)	3031(16.22)
Chronic conditions					
Back or neck condition status	2815 (97.40)	502(96.72)	2268(97.30)	76(96.20)	1842(97.41)
Depression/emotion condition	800 (98.52)	88(98.88)	640(98.77)	13(92.86)	565(98.60)
Chronic back/neck pain w/depression problem	2135(76.25)	-	-	-	-
Weight problem	552 (99.10)	59(100.00)	431(99.08)	2(100.00)	374(98.94)

Table 5

Odds Ratio (95% Confidence Interval) for the Distribution of Acute and Chronic Health Conditions for the NHIS 2005 Adult Sample

Acute conditions	DC with or without MD	MD with or without DC	DC compared to MD	Adjusted OR
Obesity	1.10(1.00,1.21)	1.39(1.30,1.47)	0.71(0.57,0.88)	0.74(0.59, 0.92)
Dep/emot problem 3month	1.51(1.39,1.64)	1.47(1.40,1.54)	1.01(0.85,1.19)	0.97(0.82,1.14)
Arthritis	1.67(1.53,1.82)	4.12(3.83,4.43)	0.55(0.44,0.68)	0.77(0.61,0.96)
Neck pain	3.59(3.29,3.91)	1.89(1.75,2.03)	2.58(2.16,2.67)	2.66(2.22,3.19)
LB pain	3.21(2.96,3.48)	1.84(1.74,1.94)	2.26(1.91,2.67)	2.39(2.02,2.83)
Severe headache/migraine	1.56(1.41,1.72)	1.49(1.39,1.60)	1.19(0.96,1.47)	1.04(0.84,1.30)
Chronic conditions				
Back or neck condition status	0.74(0.42,1.28)	0.76(0.40,1.46)	0.67(0.21,2.21)	0.82(0.25,2.74)
Depression/emotion condition	1.37(0.17,10.75)	2.09(0.62,7.04)	0.18(0.02,1.58)	0.26(0.03,2.28)
Weight problem		0.99(0.98,1.00)	0.99(0.99,1.00)	
Chronic back/neck pain with Depression/emotional	1.03(0.60,1.77)			1.17(0.68, 2.02)

Table 6

Frequency(n) and Percentage (%) of Doctor's Visit Changes Related to Insurance and Changes to General Health Status with in the Past 12 Months for the NHIS 2005 Adult Sample

		Overall	DC with or without MD	MD with or without DC	DC Only without MD	MD without DC
Total # office visits, 3 m	None	5721 (18.58)	51(5.63)	466(2.25)	127(22.01)	142(2.38)
	1	5083 (16.51)	43(9.06)	3225(15.60)	79(13.69)	3059(16.49)
	2-3	7605 (24.70)	37(20.02)	6150(29.75)	103(17.85)	5711(30.78)
	4-5	4343 (14.11)	22(15.73)	3798(18.37)	62(10.75)	3438(18.53)
	6-7	2202 (7.15)	56(9.55)	1923(9.30)	40(6.93)	1706(9.19)
	8-9	1150 (3.74)	50(5.59)	994(4.81)	29(5.03)	373(4.70)
	10-12	1852 (6.02)	53(9.43)	1616(7.82)	44(7.63)	1406(7.58)
	13-15	716 (2.33)	38(5.15)	621(3.00)	19(3.29)	502(2.71)
	16 or more	2114 (6.87)	32(19.84)	1881(9.10)	74(12.82)	1418(7.64)
3 category doctor visit	1-5 visits	17031 (54.19)	202(44.44)	13173(63.17)	244(42.21)	12208(65.27)
	6-12 visits	5204 (16.56)	59(24.36)	4533(21.74)	113(19.55)	3985(21.31)
	> 12	9193 (29.25)	44(31.20)	3147(15.09)	221(38.24)	2511(13.42)
Change related to insurance		638 (30.29)	7(29.50)	510(29.19)	12(37.50)	145(29.31)
Changes in general health	Better	5216 (16.64)	55(20.56)	3648(17.52)	99(17.13)	3191(17.08)
	worse	3087 (9.85)	52(13.04)	2479(11.91)	50(8.65)	2172(11.63)
	about same	23035 (73.51)	793(66.41)	14691(70.57)	429(74.22)	13316(71.29)

Table 7

Odds Ratio (95%Confidence Interval) of the Distribution of Doctor's Visit Changes Related to Insurance and Changes to General Health Status with in Past 12 Months: NHIS 2005 Adult Sample

		DC with or without MD	MD with or without DC	DC vs. MD	Adjusted OR
Changes in general health	Better	1.41(1.27,1.56)	1.32(1.24,1.41)	1.04(0.83,1.30)	1.09(0.87,1.37)
	worse	1.53(1.35,1.72)	2.40(2.18,2.64)	1.40(1.40,1.88)	1.27(0.94,1.71)
	about same	referent	referent	referent	
Change related to insurance		0.96(0.72,1.28)	0.74(0.58,0.95)	1.45(0.70,2.98)	1.35(0.65,2.81)
3 category doctor visit	1-5 visits	referent	referent	referent	
	6-12 visits	1.91(1.73,2.11)	1.96(1.81,2.17)	0.71(0.56,0.88)	
	> 12	1.40(1.28,1.53)	0.15(0.15,0.17)	0.23(0.19,0.27)	

Table 8

Mean (Standard Deviation) and p-Value of Work Day Missed, Number of Cigarettes Smoked and Drinks of Alcoholic Beverage Consumed with in the Past 12 Months, and Body Mass Index (BMI) for the NHIS 2005 Adult Sample

	Overall	DC without MD	MD without DC	P-value
Work days missed	4.35 (18.73)	4.95 (24.12)	5.25 (20.34)	<0.0001
No of cigarettes per day	14.01 (9.96)	14.39 (10.52)	14.15 (10.17)	0.58
Drinks of alcoholic beverage	2.47 (2.89)	2.39 (2.10)	2.29 (1.99)	0.13
BMI	26.90 (5.01)	25.85 (4.80)	27.13 (5.08)	0.08

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APPENDIX

APPENDIX

Health Status and Modifiable Behavioral Risk Factors Questionnaire and Data Code Extract:

NHIS2005 Sample Adult

VARIABLE NAME	ORIGINAL SURVEY QUESTIONS/KEYWORDS*	DATA CODE IN THE ORIGINAL DATASET
SEX	Are/Is you/person male or female?	1 Male 2 Female
HISPAN_I:	Please give me the number of the group that represents [your/ person's] Hispanic origin or ancestry.	1 Puerto Rico 2 Mexican 3 Mexican-American 4 Cuban/Cuban American 5 Dominican (Republic) 6 Central or South American 7 Other Latin American, type not specified 8 Other Spanish 9 Hispanic/Latino/Spanish, non-specific type 10 Hispanic/Latino/Spanish, type refused 11 Hispanic/Latino/Spanish, type not ascertained 12 Not Hispanic/Spanish origin
RACERPI2:	Key words: ethnicity; national origin; ancestry OMB ¹ groups w/multiple race Recode of full detail race groups	RECODE 01 White only 02 Black/African American only 03 AIAN only 04 Asian only 05 Race group not releasable 06 Multiple race ²
AGE_P ³	What is your birth date?; enter month of birth, day of birth and year of birth]: Key words: age	00 Under 1 year 01-84 1-84 years 85 85+ years
CHDEV:	Have you EVER been told by a doctor or other health professional that you had ... Coronary heart disease? Keywords: coronary; ischemic; heart disease; myocardial infarction; angina	1 Yes 2 No 3 Refused 4 Not ascertained 5 Don't know
MIEV:	Have you EVER been told by a doctor or other health professional that you had ...A heart attack (also called myocardial infarction)? Key words: coronary; ischemic; heart disease; myocardial infarction; heart attack	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
HRTEV:	Have you EVER been told by a doctor or other health professional that you had ...Any kind of heart condition or heart disease (other than the ones I just asked about)? Key words: circulatory disease; heart disease; heart rhythm disorders	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know

DIBEV:	Have you EVER been told by a doctor or health professional that you have diabetes or sugar diabetes [If Female, Other than during pregnancy]?	1 Yes 2 No 3 Borderline 7 Refused 8 Not ascertained 9 Don't know
JNTSYMP	Key words: endocrine; sugar; diabetes Symptoms of joint pain/aching/stiffness past 30 d The next questions refer to your joints. Please do NOT include the back or neck. DURING THE PAST 30 DAYS, have you had any symptoms of pain, aching, or stiffness in or around a joint?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
ARTH1:	Key words: arthritis; rheumatism; musculo-skeletal disease; diseased joints Have you EVER been told by a doctor or other health professional that you have some form of arthritis, rheumatoid arthritis, gout, lupus, or fibromyalgia?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
PAINECK	Key words: (arthritis; rheumatoid arthritis; gout; lupus; fibromyalgia) During the PAST THREE MONTHS, did you have ...Neck pain?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
PAINLB	Key words: neck pain; neck arthritis During the PAST THREE MONTHS, did you have ...Low back pain?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
PAINLEG	Key words: low back pain; sciatica; inter vertebral disc disorder Did this pain spread down either leg to areas below the knees?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
AMIGR	Key words: back pain; lower leg pain; sciatica; inter vertebral disc disorder During the PAST THREE MONTHS, did you have ... Severe headache or migraine?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
SAD	Key words: severe headache; migraine headache; head pain During the PAST 30 DAYS, how often did you feel so sad that nothing could cheer you up?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: depression; sadness; low feeling; morose; emotional/mental health	8 Not ascertained 9 Don't know

NERVOUS	During the PAST 30 DAYS, how often did you feel nervous?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: nervous; irritable; emotional/mental health	
RESTLESS	During the PAST 30 DAYS, how often did you feel restless or fidgety?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: restless; fidgety; emotional/mental health	
HOPELESS	During the PAST 30 DAYS, how often did you feel hopeless?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: depression, hopeless; emotional/mental health	
EFFORT	During the PAST 30 DAYS, how often did you feel that everything was an effort?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: lack vitality; disinterest; stress; emotional/mental health	
WORTHLS	During the PAST 30 DAYS, how often did you feel worthless?	1 ALL of the time 2 MOST of the time 3 SOME of the time 4 A LITTLE of the time 5 NONE of the time 7 Refused 8 Not ascertained 9 Don't know
	Key words: worthless; depressed; suicidal; emotional/mental health	
WKDAYR	During the PAST 12 MONTHS, that is, since {12-month ref. date}, ABOUT how many days did you miss work at a job or business because of illness or injury (do not include maternity leave)?	000 None 001-3661-366 days 997 Refused 998 Not ascertained 999 Don't know
	Key words: health indicators; illness; injury; work loss days	
AHSTATYR	Compared with 12 MONTHS AGO, would you say your health is better, worse, or about the same?	1 Better 2 Worse 3 About the same 7 Refused 8 Not ascertained 9 Don't know
	Key words: health indicators; health status	

ALDURB3	How long have you had arthritis or rheumatism?	RECODE 1 Less than 3 months 2 3-5 months 3 6-12 months 4 More than 1 year 7 Refused 8 Not ascertained 9 Don't know
ALCHRC3	Key words: functional limitation; arthritis/rheumatism Arthritis or rheumatism problem condition status How long {fill have/has} {person} had {fill condition}?	RECODE 1 Chronic 2 Not chronic 9 Unknown if chronic
ALDURB4	How long have you had a back or neck problem?	RECODE 1 Less than 3 months 2 3-5 months 3 6-12 months 4 More than 1 year 7 Refused 8 Not ascertained 9 Don't know
ALCHRC4	Key words: functional limitation; back/neck problem Back or neck condition status How long {fill have/has} {person} had {fill condition}?	RECODE 1 Chronic 2 Not chronic 9 Unknown if chronic
ALDURB17	How long have you had depression, anxiety, or an emotional problem?	RECODE 1 Less than 3 months 2 3-5 months 3 6-12 months 4 More than 1 year 7 Refused 8 Not ascertained 9 Don't know
ALCHRC17	Key words: functional limitation; depression; anxiety; emotional problem Depression/anxiety/emotional problem condition status How long {fill have/has} {person} had {fill condition}?	RECODE 1 Chronic 2 Not chronic 9 Unknown if chronic
ALDURB18	How long have you had a weight problem?	RECODE 1 Less than 3 months 2 3-5 months 3 6-12 months 4 More than 1 year 7 Refused 8 Not ascertained 9 Don't know
	Key words: functional limitation; weight problem; overweight; obesity	

ALCHRC18	Weight problem condition status How long {fill have/has} {person} had {fill condition}?	RECODE 1 Chronic 2 Not chronic 9 Unknown if chronic
ALDURB20	Duration of musculoskeletal problem recode 2 How long {have you/has ALIAS} had a musculoskeletal problem?	RECODE 1 Less than 3 months 2 3-5 months 3 6-12 months 4 More than 1 year 7 Refused 8 Not ascertained 9 Don't know
ALCHRC20	Key words: functional limitation; musculoskeletal system; connective tissue Musculoskeletal problem condition status How long {have you/has ALIAS} had a musculoskeletal problem?	RECODE 1 Chronic 2 Not chronic 9 Unknown if chronic
SMKEV	Ever smoked 100 cigarettes Have you smoked at least 100 cigarettes in your ENTIRE LIFE?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
SMKNOW	Key words: smoke; smoking; cigarettes; tobacco Do you NOW smoke cigarettes every day, some days or not at all?	1 Every day 2 Some days 3 Not at all 7 Refused 8 Not ascertained 9 Don't know
SMKSTAT2	Smoking Status: Recode	RECODE 1 Current every day smoker 2 Current some day smoker 3 Former smoker 4 Never smoker 5 Smoker, current status unknown 9 Unknown if ever smoked
CIGSDA1	Number cigs per day (daily smokers) On the average, how many cigarettes do you now smoke a day?	01-94 1 - 94 cigarettes 95 95+ cigarettes 97 Refused 98 Not ascertained 99 Don't know
CIGSDAY	Number of cigarettes a day (all current smokers)	0 1-94 1-94 cigarettes 95 95+ cigarettes 97 Refused 98 Not ascertained 99 Don't know

VIGNO	How often do you do VIGOROUS leisure-time physical activities for AT LEAST 10 MINUTES that cause HEAVY sweating or LARGE increases in breathing or heart rate? Key words: physical activity; exercise; vigorous activity	000 Never 001-9951-995 time(s) 996 Unable to do this type activity 997 Refused 998 Not ascertained 999 Don't know
VIGTP	How often do you do VIGOROUS leisure-time physical activities for AT LEAST 10 MINUTES that cause HEAVY sweating or LARGE increases in breathing or heart rate?	0 Never 1 Per day 2 Per week 3 Per month 4 Per year 6 Unable to do this activity 7 Refused 8 Not ascertained 9 Don't know
VIGMIN:	Duration vigorous activity (in minutes) About how long do you do these vigorous activities each time?	RECODE 010-72010-720 minutes 997 Refused 998 Not ascertained 999 Don't know
MODTP	How often do you do LIGHT OR MODERATE leisure-time physical activities for AT LEAST 10 MINUTES that cause ONLY LIGHT sweating or a SLIGHT to MODERATE increase in breathing or heart rate? Key words: physical activity; exercise; light activity; moderate activity	0 Never 1 Per day 2 Per week 3 Per month 4 Per year 6 Unable to do this activity 7 Refused 8 Not ascertained 9 Don't know
MODMIN	Duration light/moderate activity (in minutes) About how long do you do these light or moderate activities each time?	RECODE 010-72010-720 minutes 997 Refused 998 Not ascertained 999 Don't know
STRNGTP	How often do you do leisure-time physical activities specifically designed to STRENGTHEN your muscles such as lifting weights or doing calisthenics? (Include all such activities even if you have mentioned them before.) Key words: physical activity; exercise; strength; strengthening	0 Never 1 Per day 2 Per week 3 Per month 4 Per year 6 Unable to do this activity 7 Refused 8 Not ascertained 9 Don't know

STRFREQW	How often do you do physical activities specifically designed to STRENGTHEN your muscles such as lifting weights or doing calisthenics? (Include all such activities even if you have mentioned them before.)	RECODE 00 Less than once per week 01-28 1-28 times per week 95 Never 96 Unable to do strength activity 97 Refused 98 Not ascertained 99 Don't know
ALC12MWK	In the PAST YEAR, how often did you drink any type of alcoholic beverage?	RECODE 00 Less than one day per week 01-07 1-7 days per week 95 Did not drink in past year 97 Refused 98 Not ascertained 99 Don't know
ALC12MYR	Key words: alcohol consumption; drinking frequency Freq drank alcohol: Days in past year In the PAST YEAR, how often did you drink any type of alcoholic beverage?	RECODE 000 Never/none 001-365 1-365 days 997 Refused 998 Not ascertained 999 Don't know
ALCAMT	In the PAST YEAR, on those days that you drank alcoholic beverages, on the average, how many drinks did you have?	01-94 1-94 drinks 95 95+ drinks 97 Refused 98 Not ascertained 99 Don't know
ALCSTAT	Alcohol drinking status: Recode	RECODE 01 Lifetime abstainer 02 Former infrequent 03 Former regular 04 Former, unknown frequency 05 Current infrequent 06 Current light 07 Current moderate 08 Current heavier 09 Current drinker, frequency/level unk 10 Drinking status unknown
AHEIGHT	How tall are you without shoes [Total height in inches] ?	RECODE 59-76 59-76 inches 96 Not available 97 Refused 98 Not ascertained 99 Don't know
	Key words: Height	

AWEIGHTP	How much do you weigh without shoes?	RECODE 099-28599-285 pounds 996 Not available 997 Refused 998 Not ascertained 999 Don't know
AUSUALPL	Key: body weight Place USUALLY go when sick Is there a place that you USUALLY go to when you are sick or need advice about your health?	1 Yes 2 There is NO place 3 There is MORE THAN ONE place 7 Refused 8 Not ascertained 9 Don't know
AHCCHGYR	Key words: access; source; health care provider At any time in the PAST 12 MONTHS did you CHANGE the place(s) to which you USUALLY go for health care?	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
AHCCHGHI	Was this change for a reason related to health insurance? Key words: access; source; health care provider; health insurance	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
AHCSYR4	DURING THE PAST 12 MONTHS, that is since {12 month ref. date}, have you seen or talked to any of the following health care providers about your own health? A chiropractor	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
AHCSYR9	Key words: access; source; dr. visit/contact; medical advice; chiropractor DURING THE PAST 12 MONTHS, that is since {12 month ref. date}, have you seen or talked to any of the following health care providers about your own health? A general doctor who treats a variety of illnesses (a doctor in general practice, family medicine, or internal medicine)	1 Yes 2 No 7 Refused 8 Not ascertained 9 Don't know
	Key words: access; source; dr. visit/contact; general practitioner; internist; family doctor	

AHCNOYR2	DURING THE PAST 12 MONTHS, HOW MANY	00 None
	TIMES have you seen a doctor or other health care	01 1
	professional about your own health at a	02 2-3
	DOCTOR'S OFFICE, A CLINIC, OR SOME	03 4-5
	OTHER PLACE? DO NOT INCLUDE TIMES YOU	04 6-7
	WERE HOSPITALIZED OVERNIGHT, VISITS TO	05 8-9
	HOSPITAL EMERGENCY ROOMS, HOME	06 10-12
	VISITS, DENTAL VISITS, OR TELEPHONE	07 13-15
	CALLS.	08 16 or more
		97 Refused
	Key words: access; source; doctor visit; office	98 Not ascertained
	visit	99 Don't know

Notes. *Key words are descriptive words/phrases relevant to the topic of the variable; they can be used for word searches. ¹This recode contains detail for the 5 OMB race groups, and a multiple race group. This recode does not include information provided in HHC.220 for multiple race mentions (the "primary" race). "Other Race" and "Unspecified Multiple race" are no longer available as separate race responses. These response categories are treated as missing, and the race is imputed if these are the only race responses. ²Data not releasable due to respondent confidentiality or for other reasons. ³In most cases, data on age came from HHC.120, because age is an important variable for instrument check items and in developing the weights, all respondents must have data on age. A series of questions in the instrument from HHC.124 through HHC.165 attempted to collect data on age when age was not given in HHC.120.

