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2nd Place Contest Entry: Physician Visits for Patients with Diabetes by Gender, Age and Race in the United States

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Research Strategies and Utilization of Library Resources: Investigating Physician Visits for Patients with Diabetes by Gender, Age and Race in the United States

(TRENDS BETWEEN 2005 AND 2019)

By

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Introduction

In our quest to comprehend Physician visits for patients with diabetes in the United States, we recognize the necessity of extensive research methods and the efficient utilization of library services and resources.[1] This essay delves into the research methods employed for this topic, highlighting our emphasis on utilizing Chapman University Leatherby Library databases, services, and libraries to obtain pertinent data, analyze it, and derive comprehensible findings.

Setting the primary research questions and objectives was an essential initial step in our investigation of the prevalence of diabetes in line with physician visits in the United States.[2] We understand these questions will direct our selection of appropriate research methodology and data collection strategies,[3] making effective use of the Leatherby Library available at Chapman University. Examining the prevalence of diabetes, we find several study questions that need to be taken into account:

- What is the United States' current reported case of diabetes prevalence rate?
- What is the United States' current reported case of diabetes prevalence rate in line with documented physician visits?
- The answer to this query provided an essential foundation for comprehending the extent and significance of the nation's diabetes pandemic. We can evaluate the scope of the issue and how it affects public health by finding the prevalence rate from 2005 to 2019.
- What are the changes in the prevalence of diabetes in line with physician visit throughout time ?
- Finding trends and patterns requires monitoring changes in the prevalence of diabetes over time factoring gender, age and race. We can learn more about the course of the illness and how it affects treatment planning and intervention techniques.[4]
- What demographic variables affect the prevalence of diabetes and patient weight visits?
- Comprehending the demographic variables linked to the incidence of diabetes is essential for focusing intervention efforts and resolving health inequities.[5] By analyzing age, gender, ethnicity, and geography, we may pinpoint more vulnerable populations and appropriately adjust prevention and treatment plans.[5,6]

Search Method

Qualitative and quantitative research methods were used to answer these issues. Statistical data from reputable sources, such as scholarly journals, government health organizations, and epidemiological studies, is a prerequisite for quantitative data analysis.[7] Through literature reviews, interviews, and case studies, qualitative research investigates the socioeconomic, cultural, and environmental factors impacting diabetes prevalence.[8]

During this research on the prevalence of diabetes in the United States from 2005 to 2019, the Leatherby Library at Chapman University was an invaluable resource. Essential online Chapman Leatherby library resources and services used in this study include the following:

- Academic journals which provided valuable peer-reviewed articles and research studies on diabetes prevalence, risk factors, and trends in the United States. Databases such as PubMed, 5MinuteConsult, MEDLINE, and International Pharmaceutical Abstracts were extensively used to search for relevant articles and studies published in diabetes epidemiology.

Assistance from the Leatherby Library Service

Specifically in the context of researching the prevalence of diabetes, attending David Carson's online conference at the Leatherby Library on the Rinker campus on searching PubMed with MeSH (Medical Subject Headings) gave me invaluable practical experience in navigating and utilizing this robust database. I learned personally throughout the conference how to use MeSH terms associated with diabetes prevalence to focus search queries, find pertinent material, and keep up with the most recent findings in this area of study. Thanks to Carson's wise advice and helpful examples, I now know and can search PubMed thoroughly and precisely. This helped me quickly find relevant articles and resources about the prevalence of diabetes. This hands-on experience has improved my ability to utilize PubMed's extensive.

Search Techniques

We used the strategies I picked up at the virtual conference to perform a thorough PubMed literature search for this most recent research project, which examined the prevalence of diabetes in the United States. We created a search query using MeSH phrases like "Diabetes Mellitus," "Prevalence," "Adolescent," and "United States" to find pertinent publications. Also, using the search terms "Blood Glucose"[MAJR] OR "Diabetes Mellitus"[MAJR:NoExp] OR "Diabetes Mellitus, Type 2"[MAJR:NoExp] OR "Diabetes Mellitus, Type 1"[MAJR:NoExp] OR "Prediabetic state"[MAJR] OR "Hyperglycemia"[MAJR] OR "Hemoglobin A, Glycosylated"[MAJR] AND ("Humans"[Mesh]), we looked for articles published between January 1, 1999 and December 2006. We found several articles that offered insightful information about the prevalence rates of diabetes among adolescents in various parts of the United States by using this search query and closely examining the search results. Attending David Carson's online event and using the knowledge I learned to conduct research on PubMed has greatly improved my research abilities and given me the confidence to contribute substantially to diabetes epidemiology.

After gaining access to the full-text publications, We examined the research findings done in the past to comprehend the demographic variables affecting the prevalence of diabetes,[9] long-term trends, and other pertinent data, Type 1 diabetes and Type 2 diabetes to help guide the analysis we plan to conduct with the available data from the National Ambulatory Medical Care Survey (NAMCS). My comprehension of the nuances of the prevalence of diabetes among different age groups in the United States has been enhanced by this process, helping the research team conduct the study effectively which in turn would have significant ramifications for policy initiatives and public health measures.

Evaluation of Information Source

We assessed the reliability of the sources by taking into account the professional background and standing of the researchers' writers and their affiliated organizations. Peer-reviewed publications and federal health organizations like the Department of Health and Human Services (HHS)-affiliated Center for Disease Control and Prevention (CDC) which provided the data for the National Ambulatory Medical Care Survey (NAMCS). Its main goal is to prevent and control illness, injury, and disability in order to safeguard public health and safety.

Also, the publication date of the sources was carefully examined to ensure it aligns with the prevalence of diabetes period of 2005 to 2019 we considered during the study. Data on the use and delivery of ambulatory care services in hospital emergency and outpatient departments and ambulatory surgery locations are intended to be gathered by the National Ambulatory Medical Care Survey (NAMCS).[10] The results are from a nationwide sample of visits to non-institutional general and short-stay hospitals' ambulatory surgery centers, outpatient departments, and emergency rooms.

Analysis Method

We identified multiple steps in the research process that determine the prevalence of diabetes in the US, including the literature evaluation, data gathering, analysis, and synthesis of findings and carried out a thorough literature analysis on the prevalence of diabetes and documented physician visits in the US during the first stage of our study. Obtaining pertinent information and insights on diabetes trends, risk factors, and population demographics required gaining access to scholarly journals made available by the Leatherby Libraries, official government reports from the Centre for Disease Control (CDC), and epidemiological research.

To perform the quantitative data analysis, my research team and I used IBM SPSS Statistics 29.0.0.0, Rstudio and GraphPad PRISM to analyse and plot the line graph, statistically analyze diabetes prevalence data to find trends, patterns, and correlations.

The Takeaway from the Learning Curve

The range of resources and services offered by Chapman University's Leatherby Library and the application of effective research procedures were necessary to examine the prevalence of diabetes by physician visits for gender, race and age in the United States. Utilizing a blend of quantitative and qualitative research techniques, along with reliable databases and materials from the Leatherby Library, we gathered a great deal of data and scrutinized patterns in diabetes prevalence in line with physician visits in the United States. We arrived at significant findings that will direct public health programs and policies addressing the nation's diabetes pandemic. The research skills obtained from this approach will be utilized in my future academic pursuits, such as writing articles, performing literature reviews, and pursuing advanced studies. I plan to explore new topics, address complex questions, and contribute original insights to my fields of study in pharmaceutical sciences.

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Summary of the study: Physician Visits for Patients with Diabetes in the United States by Gender, Age and Race from 2005- 2019

By

Umoru O. Daniel, Bakare Adeola, Olajide Adekunle and Lawrence Brown PhD.

Note: This research is still on going

The study titled "Physician Visits for Patients with Diabetes by Gender, Race, and Age in the United States from 2005-2019," conducted by Umoru, Bakare, Adekunle, and Brown from Chapman University's School of Pharmacy, investigating the complex demographic landscape of diabetes prevalence in the United States.

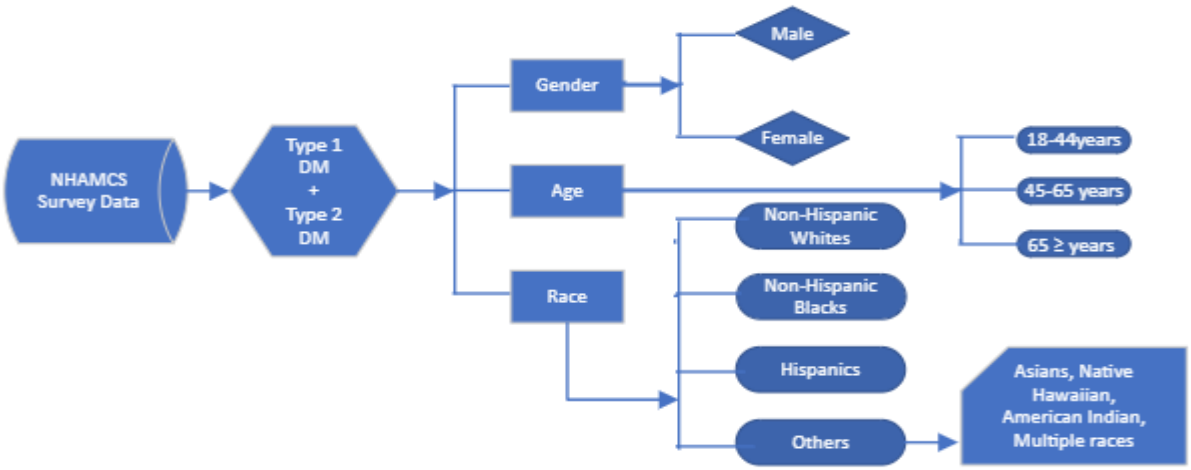
Diabetes is a chronic metabolic disease recognized as a significant public health challenge due to its severe health implications and economic burden[1]. In recent decades, the prevalence of diabetes in the United States has been rising, reflecting global trends.[2] This increase can be attributed to lifestyle changes, genetic predispositions, and disparities in healthcare access, among other factors.[2]

The NAMCS dataset available through the CDC database is the main source of data for this investigation. This dataset contains anonymized patient visit data from hospitals and outpatient clinics across the United States. Access to the CDC databases was facilitated to locate and retrieve the NAMCS dataset. Navigation through the databases was conducted to ensure access to the most recent and comprehensive dataset available for analysis.

Variable Definition

Key variables related to diabetes prevalence were defined, including patient demographics (age, gender, ethnicity), diabetes diagnosis codes, Type 1 Diabetes and Type 2 Diabetes temporal information. Parameters such as age group for 18-44 years, 45-64 years and 65 ≥ were established. The races were also recoded to Non-Hispanic White, Non-Hispanic Black, Hispanic, and Others (Asians, Native Hawaiian, American Indian, and Multiple races) to delineate the scope of data collection, ensuring the inclusion of relevant information pertaining to diabetes prevalence trends from 2005 to 2019. The NAMCS dataset was queried using specific variables and parameters to retrieve relevant data required for diabetes prevalence study. The formulated queries were executed to extract the necessary information from the NAMCS dataset, retrieving patient visit data relevant to diabetes prevalence. The extracted data underwent rigorous cleaning procedures to ensure accuracy, completeness, and consistency. This involved identification and rectification of errors, handling missing data, and validation against predefined criteria.

Figure 1. A flow chart showing the variables were defined



Data Analysis

Data obtained from persons diagnosed with Type 1 diabetes and Type 2 diabetes as reported by NAMCS between 2005 and 2019 were analysed using crosstabulation procedures in IBM SPSS Statistics 29.0.0.0. Gender (male, female), age groups (18-44, 45-64, 65≥), and race categories (Non-Hispanic White, Non-Hispanic Black, Hispanic, Others) were selected as variables of interest. The cross summary for the patient weight visits was also accounted for. Crosstabulation tables were generated to examine the distribution of gender, age, and race within each type of diabetes. Descriptive statistics was done for the crosstabulation output of race versus age group and gender versus race. Percentages within age groups and counts were calculated to elucidate the demographic characteristics of diabetes cases across the specified time period

Part of our findings highlighted that the Non-Hispanic White males aged 65 years and above exhibited a peak prevalence of 23.5% in 2014, demonstrating a steady trend over the studied years. Conversely, females of the same age group and race peaked at a lower rate of 18.1% in 2013.

This study has shown indications that demographic factors such as age, gender, and race are critical predictors of diabetes prevalence in the U.S. The analysis provided a detailed view of how diabetes prevalence varied significantly across different demographic groups, revealing a complicated interplay of variables affecting the distribution of diabetes.

Subsequently, there was a slight decrease in 2011, with the prevalence dropping to 13.2%. However, this reduction was transient as the prevalence ascended to 14.2% in 2012 and maintained a plateau with marginal year-to-year variations until 2014. In 2014, the prevalence attained its zenith at 14.9%. Thereafter, a notable downturn occurred, with the prevalence falling to 13.4% in 2015.

Afterwards, there was a gradual increase, with the prevalence reaching approximately 14.1% by 2018. The final year of the study, 2019, indicated a slight decrease to 14.5%. The trajectory of diabetes prevalence over the examined period suggests an overarching increase with a tendency towards stabilization towards the end of the period. Notwithstanding the overarching trend, the annual percentage changes illustrate the dynamic nature of diabetes prevalence over time, with intervals of both increases and decreases observed across the 15-year span.

The findings underscore the necessity for targeted public health interventions that consider the specific needs of different demographic groups. Strategies focusing on prevention, early detection, and management could significantly impact the diabetes epidemic

In conclusion, our research has shown progress and presents a comprehensive analysis of physician visits for patients with diabetes by gender, race and age in the United States from 2005 to 2019, highlighting critical trends and demographic disparities. The study's detailed findings can inform future research and public health policies aimed at mitigating the impact of diabetes across diverse populations.

Figure 2. A line graph showing the trend of diabetes patients based on physician visits from 2005-2019

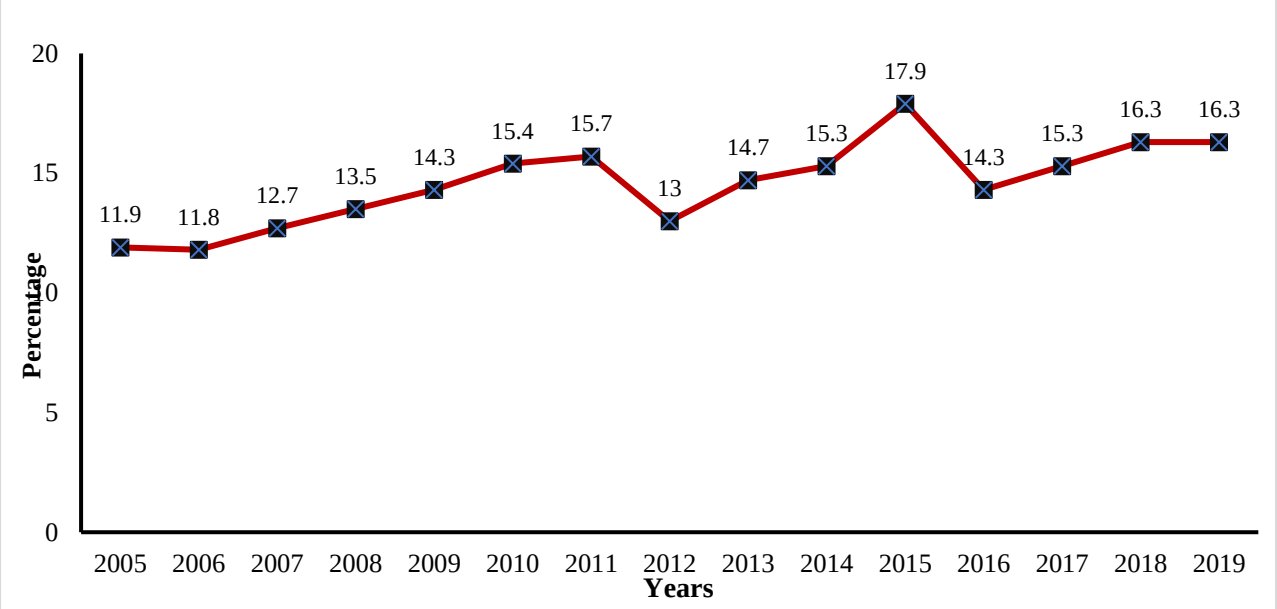


Figure 3. A line graph showing the trend of diabetes patients based on physician visits for Gender from 2005-2019

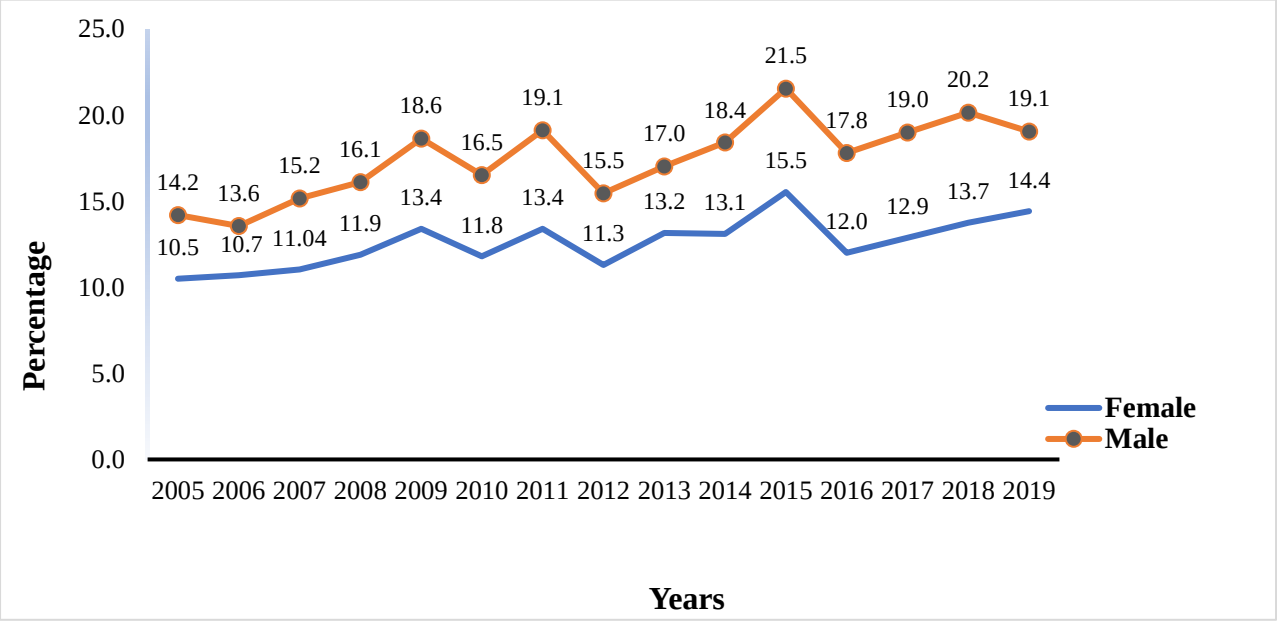


Figure 4. Trends based on physician visits by race and age-group

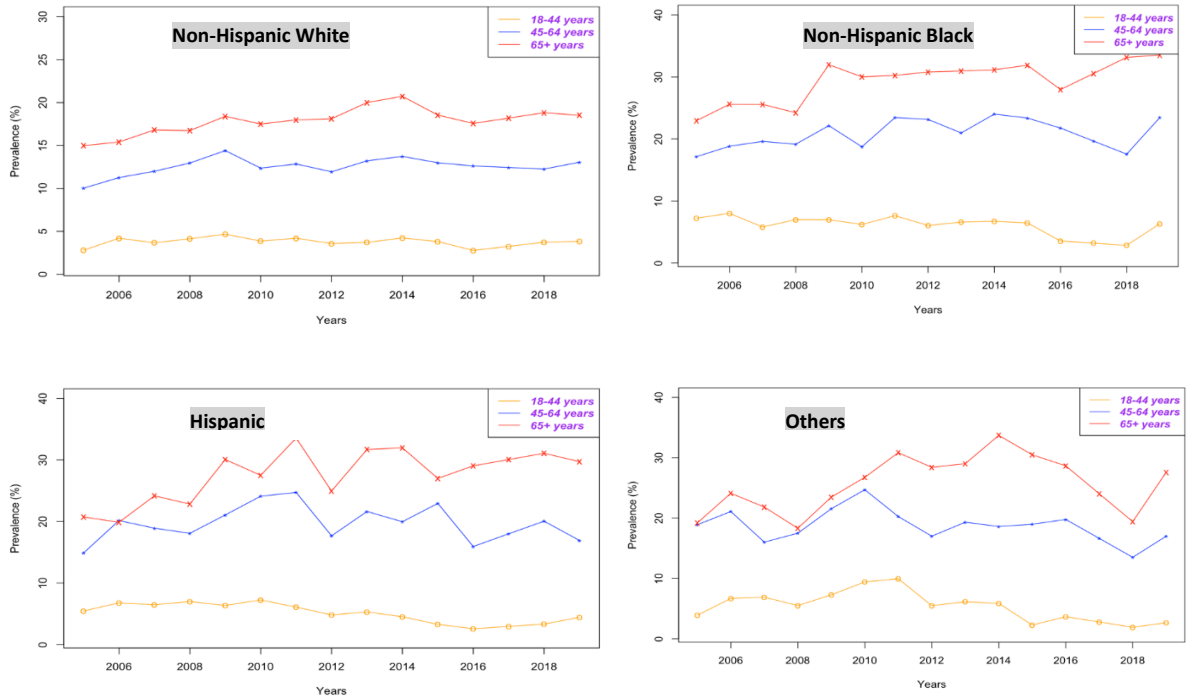
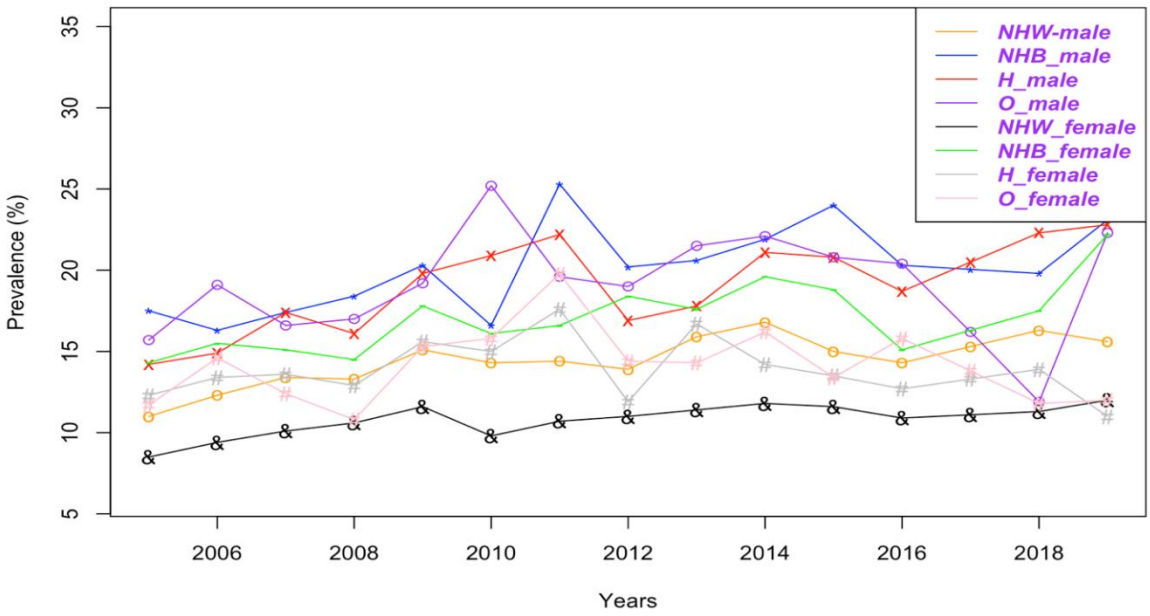


Figure 5. Trends based on Gender and Race



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