OLD DOMINION UNIVERSITY

Master of Public Health
Epidemiology- MPH746
Study Design Project

Prevalence of Diabetes in Norfolk Veteran Association Population
Cross- Sectional

John A. White

OLD DOMINION UNIVERSITY

Part IV: Abstract (Max 250 words)

The study aims to determine the extent to which Diabetes that has negatively affected the veterans living with the condition, and the general population by investigating some of the potential complications associated with living with Diabetes in Norfolk, VA, evaluating the veterans (Norfolk) understanding of Diabetes and diabetes-related complications and to the general understanding of Diabetes among veterans in Norfolk and some of the specific mortality rates associated with Diabetes. To successfully do cross-sectional study methods will be employed. In this research, data will be collected by use of structured questionnaires that will be used to measure the confounding variable concerning the study population. The research will try to gain access to the health facility data records of the selected group of people. The records serve to expose the disease's level of exposure and the extent to which it has affected various individuals suffering from the illness. The research also aims to find out the level of diabetes for those suffering from it. This will be done through medical tests with the help of available health facilities. The tests that should be conducted are glucose tolerance test, random blood sugar test and glucose screening test. The results obtained from this study will be used to design methods that will help those living with diabetes do better and also depending on the level of awareness inform others of every vital information about the disease. The outcome will be measured using prevalence and rate ratio to determine if there are a high number of cases living with veterans with diabetes.

.

Part I: Background & Objectives

Over the past few years, upsurges in the prevalence of diabetes have been witnessed in every corner of the globe. A recent study indicates that approximately 415 million people worldwide are living with diabetes (Harding *et al*, 2019). The increase in diabetes has seen the proliferation of complications associated with diabetes. Diabetes-related complications include intermittent claudication, heart disease, and death. The prevalence of diabetes increases with an increase in age. Older people have recorded higher cases of diabetes compared to the relatively younger ones. The prevalence is also expected to proliferate as the years go by (Ogurtsova *et al*, 2017). This is attributed to the increase in poor lifestyle choices, especially among adults.

In the global south, complications related to diabetes are harsher than in the global north. The harsher outcomes are attributed to the fact that developing countries do not have proper strategies in place to handle diabetes and its effects. Increased poverty acts as a barrier towards the attainment of proper healthcare. Research and studies conducted by the Department of Veteran Affairs indicate that a majority of the Veteran Affairs (VA) population suffering from diabetes are men. Due to the numerous issues and horrors affecting patients living with diabetes, most of the men in the Norfolk, VA population are amputated (Dhatariya *et al*, 2018). The number of amputees in females is relatively lower. The high predominance of diabetes in the United States of America has cost the health sector huge amounts of money in the treatment and management of the condition. A great number of deaths has also been attributed to the menace that is diabetes. This research aims at investigating the mortalities linked to diabetes in the Veteran Affairs population in Norfolk, Virginia.

Globally, Diabetes has also had substantial adverse economic impacts on different people. The estimated total financial cost of this disease is valued at about 825 billion per year, according to the largest ever diabetes study in the whole world. Millions of people across the world have indeed been economically impacted by Diabetes. Across the world, the increasing numbers of Diabetes patients account for at least 1

out of 4 dollars spared for health care. These rising numbers showcase the possible threat diabetes could have on an economy (Ministers Department of Health, 2019). In the United States of America, the costs associated with living with Diabetes are pretty expensive. Averagely, people living with Diabetes in the United States of America incur financial charges of about $16,750 per year for their medical expenditures and other accruals. Indeed, Diabetes is a significant health concern in the modern world.

Objectives:

This study aims to:

The study aims to research the extent to which Diabetes has negatively affected the people living with the condition, the family members, and the general population.

This is by broad objectives is guided by specific goals which are:

1. To investigate some of the potential complications associated with living with Diabetes in Norfolk, VA.
2. To investigate the understanding of Diabetes and diabetes-related complications among veterans with diabetes.

Part II: Methods

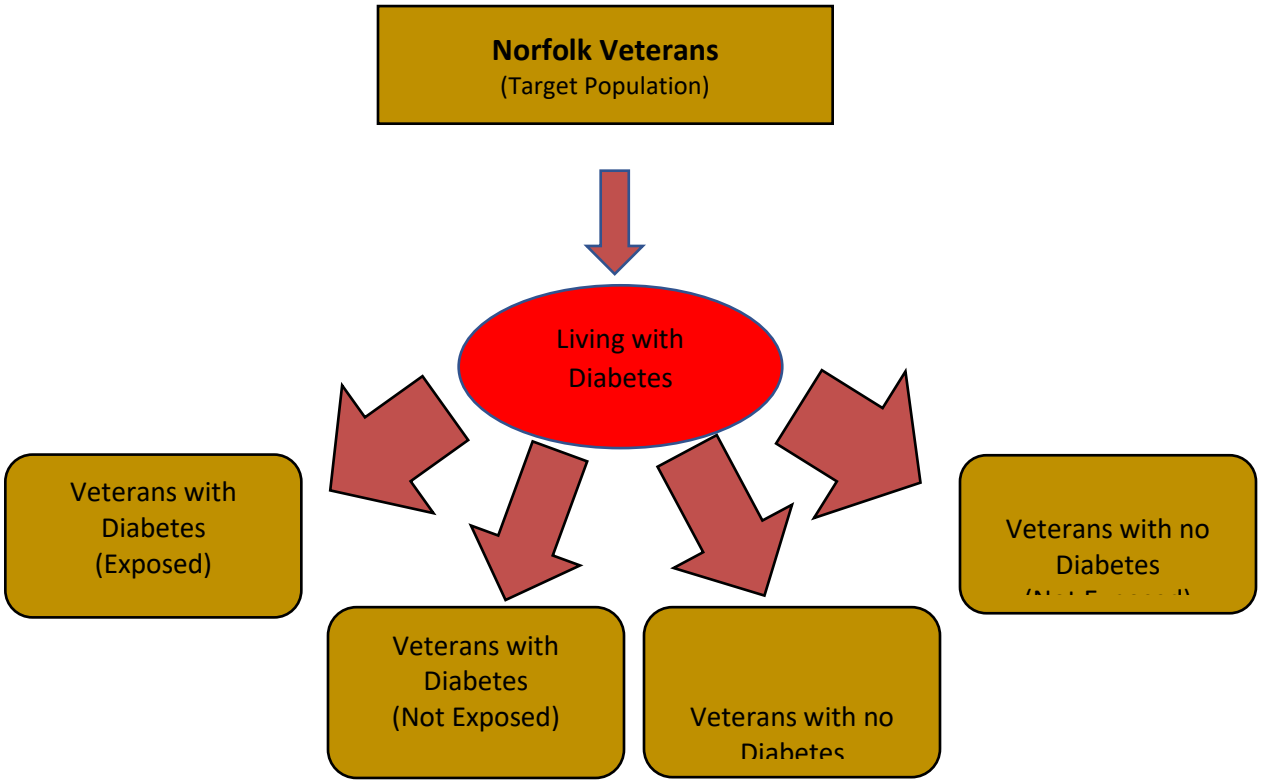
Study design:

To achieve the stated objectives of the research, there will be a need to apply a combination of methodologies. Cross-sectional study will be involved in this scenario and a selection of cases of a particular illness and studying the participants from the manifestation of the disease, the potential cause of the disease until the management they are undertaking, and how they are coping with the illness. Using this study we will be able to acquire the statistical data of the Veterans in Norfolk affected by Diabetes.

An ecological study was not selected because the scope of the study is used to measure geographical context which is huge coverage. While in this study we are only measuring Norfolk Veterans affected by diabetes.

Other methods such as Randomized Controlled Trials (RCT) and cohort studies are therefore not suitable as the research targets a specific population and how they cope with the illness (Cord et al., 2020). RCT is more effective in the testing potential treatment of a condition or management of an infection. This is done by comparing two groups of individuals' one being the control group and the other the study group. This thus makes it unnecessary for the research. On the other hand, a cohort study is suitable for studying a group of individuals and comparing their management and coping strategies to the illness (Jetton et al., 2016). Thus, the actual data on the effect of the disease is not clearly brought out. Hence, a cohort study is not an effective study method.

A summary of the methods used for the study



Study participants:

The study participants include all veterans living in Norfolk who have Diabetes. The inclusion criteria include all the individuals who are under the management of Diabetes, not specific to any age limit, and individuals living with people who have Diabetes, either family members or distant family members. The exclusion criteria involve those not suffering from the illness itself or not currently involved in-home and clinical care of the diabetic patient. In the case-controlled study, only individuals who have Diabetes will be included. The aim is to study how the illness has affected the patient. All the other members involved in the care are going to be excluded from the study.

Data collection

In this research study, the data will be collected by the use of structured self-administered questionnaires. The research project will design questionnaires and administer them to the participants who met the inclusion criteria. The questionnaires include a series of questions that needed to be answered by the study participants. The questioners will act to measure the confounding variable concerning the study population. Each of the questions will be aimed at different factors that have resulted in the individual suffering from the illness.

Moreover, the research will conduct a cross-sectional study by subjecting a large population to a simple check-box questioner. This is to get access to the details regarding their involvement in the care of

the members with Diabetes or even those who have Diabetes. This data can be a reference point on how many individuals are living with Diabetes. It can also serve as data provided to the extent of its effect on the individual living with the disease. Thus, providing information on the outcome variable of the disease.

The research will also subject the participants to an observation study, ecological study, by cross-checking the number of individuals who have Diabetes. This will work in conjunction with the health facility data records. This will serve to expose the disease's level of exposure and the extent to which it has affected various individuals suffering from the illness.

The confounding is when some veterans don't have access to care, in this cross-sectional study information is being generated from hospitals, if veterans are not getting care then it's not going to be reported therefore the information and outcome of the study could not be accurate.

Possible sources of errors

The study is limited to the individuals and veterans living with Diabetes in Norfolk, VA. This is based on the registration of the diagnosis in the health facility and the participation of the population. This means only the known diabetic patients will be subjected to the study. Thus, those who did not seek medical care and those whose diagnoses are inconclusive, or yet to be diagnosed, for some reason, did not seek medical care in the health facilities exempted from the study. The study also relies on the individuals declaring their conditions to the research, therefore depending on the principle of honesty on the participants however, failure to properly fill out a questionnaire can lead to information bias and data recorded inaccurately. Failure to achieve this will reduce the accuracy and reliability of the study findings.

Time frame

The research should take at least 10 months to ensure all the data is collected.

Ethical consideration

Gain permission from the hospital administration to access information on veterans with diabetes for this cross-sectional study; moreover, the study will inform and educate the study participants on the informed consent before they participated in the study. The study design group will need to explain the need and importance of the research study before the study participants signed the informed consent. Therefore, the principle of autonomy and confidentiality will be followed strictly.

Part III: Proposed findings and their possible impact

Prevalence, proportion of veterans who have diabetes during a particular time will be the most used method of frequency measurement that will be used in this study. Although we can calculate the incidence of the diseases, the objectives of the study will not likely be fulfilled. The study focuses on people who are already living with diabetes. Incidence seeks to find the rate of people who get the disease at a particular time. Various methods of association will be used to establish the prevalence rates of diabetes in the selected group of people. The prevalence will be calculated by dividing the number of veterans with diabetes by the total number of veterans living in Norfolk. Odds ratio is the measure of association between the exposure and outcome. It is calculated by dividing the odds of the first group by that of the second group.. The rate ratio will tell how often a particular event (prevalence of diabetes) happened in the selected group of people. It will be obtained by dividing the incidence rate in an exposed group by the incidence rate in an unexposed group.

The confounding variable in this study of diabetes in veterans is who don't have access to care which are not being reported to any hospitals. These factors will greatly affect the outcome since the relationship that will be established will not be as genuine as expected. Second, randomization in a larger

group of people to ensure that all confounding variables have almost the same average value in different groups. Another method is statistical control of confounding variables. This study is important because it will help the study design group know the relationship between prevalence and other confounding factors. This will help various health sectors take the necessary steps towards controlling the spread and impact of the disease.

If the study shows a significance in the prevalence of veterans living with diabetes vs those without, therefore we can request and show that proper healthcare is or is not being provided to veterans living with or without diabetes.

OLD DOMINION UNIVERSITY

References

Harding, J. L., Pavkov, M. E., Magliano, D. J., Shaw, J. E., & Gregg, E. W. (2019). Global trends in diabetes complications: a review of current evidence. *Diabetologia*, *62*(1), 3-16.

Dhatariya, K., Bain, S. C., Buse, J. B., Simpson, R., Tarnow, L., Kaltoft, M. S., ... & Pratley, R. E. (2018). The impact of liraglutide on diabetes-related foot ulceration and associated complications in patients with type 2 diabetes at high risk for cardiovascular events: results from the LEADER trial. *Diabetes Care*, *41*(10), 2229-2235.

Ogurtsova, K., da Rocha Fernandes, J. D., Huang, Y., Linnenkamp, U., Guariguata, L., Cho, N. H., ... & Makaroff, L. E. (2017). IDF Diabetes Atlas: Global estimates for the prevalence of diabetes for 2015 and 2040. *Diabetes research and clinical practice*, *128*, 40-50.

Barber, M., & Maher, C. (2015). *Epidemiology and outcome assessment of pelvic organ prolapse.* New York: Springers Publisher.

Ewald, H., Loannidis,, J., Ladanie, A., & Cord, K. (2020). Nonrandomized studies using causal modeling may give different answers than RCTs: a meta-epidemiological study. *Journal of Clinical Epidemiology*, 29-41.

Jacob, M. (2019). Under repair: A publication ethics and research record in the making. *Social studies of science*.

Jetton, J., Gullet, R., & Askenazi, D. (2016). Assessment of worldwide acute kidney injury epidemiology in neonates: design of a retrospective cohort study. *Internal-journal.frontiersin.org.*

Meagher, K., & Cummins, N. (2020). COVID-19 ethics and research. *Mayo Clinic.*

Ministers Department of Health. (2019). *A $2.8 million focus on Diabetes.*

Munnangi, S., & Boktor, S. (2017). Epidemiology of study design. *Europepmc.org.*

Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of business research.*

World Health Organisation. (2021). *Diabetes.*