Management of diabetes: taking care of healthy eating, weight control, medication...

Health & Medicine

This is a proposal based on the quasi-experimental, cross sectional, pre and post study by Collins-McNeil, Edwards, Batch, Benbow, McDougald, & Sharpe (2012). According to the authors, effective self-management of diabetes T2DM typically involves a long and complex regimen of healthy eating, weight control, medications, glucose monitoring, and exercise on a long term basis. In this study, a convenience sample of 12 African American (n= 10 women, n= 2 men) was recruited from a Church. An intervention of culturally targeted self-management diabetes education was conducted over 12weeks period. The result of the study showed a statistically significant difference in perceived self-management, but there were no statistical significant in the other outcome measures. There were clinically significant difference in pre and post intervention for systolic blood pressure, level of activities and waist circumference, but there were no statistical significant changes. This proposal will be addressing one of the limitations of the study which was the small sample of mainly women. The small sample size may not be representative enough of the whole population characteristics and is subject to type II errors in which null hypothesis is accepted when it was not true.

Significance

African Americans (AA) are disproportionately affected by diabetes mellitus. The national DM T2 is 7% while prevalence among African Americans is almost twice the national average at 13% according to Center for Disease Control and Prevention (2011). Long term complication from diabetes is also higher in AA than Non-Hispanic whites. This disparity is due to a number of factors: ranging from low literacy about diabetes and high rate of poverty to limited access to health care. Many studies that have been done about

Diabetes in AA were done in urban areas of the south because this is where large number of AA resides. (Utz et al., 2008) According to the Center for Disease Control (CDC) 10. 9million Americans age 65 and older have either diagnosed or undiagnosed diabetes.

Specific Aims

The sample size of 12 (n= 10women; n= 2men) used in McNeil et al., (2012) for the study is rather small. In quantitative studies, the sample needs to be at least 30 to ensure validity and generalization of sample to the population it represents. (Melnyk and Fineout-Overholt 2011). The small sample of 12 with majority of women 55yr old and above does not allow the generalization of the sample to the target population of African Americans with type 2 diabetes and is subject to type II errors- Accepting null hypothesis when it is not true.

The purpose of this proposal is to address the limitation of the small sample in Collins-McNeil et al (2012) study. The specific aims are to:

1. Increase the sample size, thus better representation of the population it represents.
2. Allow for generalizability of the population that the sample represents.
3. Increase the precision of model parameters

Approach

Church has been a natural point of connections for both spiritual and social support for African Americans from time of slavery to the civil rights movements. Today church is still a central institution that provides a wide range of preventive and treatment oriented programs especially in the

southern part of America. Church is therefore an entity that has the potential to reach the target population of African Americans with T2DM in other to have a major impact. Hence the use of a mega church in this study, where there is potential for obtaining an adequate sample that will allow for stratification to capture the targeted characteristics that are needed in the representative sample to reflect the population. For this proposal, using three to four churches will be recommended in which small rural churches, medium sized churches plus the mega church are included. This will allow for inclusion of diverse income and level of education within AA population.

In statistics, a sample less than 20 is regarded as small, sample of 20-30 is regarded as medium and sample above 30 is regarded as adequate (Melnyk & Fineout-Overholt, 2011). This proposal is recommending sample of 60. With adequate sample of 60, it is possible to stratify the sample to capture categories of educational level, age variation and economic variations by using percentages. For example, including a percentage for illiterate, elementary, high school and college education will allow for adequate representation of a large pool of participants that look like the actual population, especially if there is a form of randomization of the actual sample or group randomization into control and intervention group. Also, making sure low income, middle income and high income people are equally represented (Keller and Kelvin 2013). Increasing the sample size gives more effect power to the study. Using Cohen model, the sample needed for this experiment will be about 160. Obtaining this amount of participants will be difficult within a short period of time and unnecessary for a pilot study.

Also, setting a more stringent alpha for example 0. 01 instead of 0. 05 with use of Bonferroni method will decrease error and increased the precision of the model parameter for analysis of the result.