2015

A Staff Development Program: Diabetes and TB Education and Screening

Relyndo Manalo Salcedo
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral study by

Relyndo Salcedo

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Deborah Lewis, Committee Chairperson, Health Services Faculty
Dr. Eric Anderson, Committee Member, Health Services Faculty
Dr. Faisal Aboul-Enein, University Reviewer, Health Services Faculty

Chief Academic Officer
Eric Riedel, Ph.D.

Walden University
2015

Abstract

A Staff Development Program: Diabetes and TB Education and Screening

by

Relyndo M. Salcedo

BSN, St. Jude College of Nursing, 1996

MSN-FNP, Holy Names University, 2011

DNP Study Submitted in Partial Fulfillment

of the Requirement for the Degree of

Doctor of Nursing Practice

Walden University

February 2015

Abstract

There is a growing body of evidence on the positive association between diabetes and tuberculosis (TB), especially in populations with low socioeconomic status. According to the CDC and the WHO, diabetes is increasingly seen as a global epidemic, one that poses a threat to global TB control. The goal of this DNP project was to develop a program to educate clinical staff on the importance of early identification of diabetic and TB patients. The logic model was chosen as the framework for this project because it allows the planner to rationally observe each stage of a project's development. The program design consisted of several steps: (a) assembling the planners and stakeholders, (b) conducting relevant literature review, (c) gathering educational materials, (d) creating education modules, (e) developing an evaluation method, (f) presenting the results to the organization, and (g) standardizing the modules to be implemented in each of the organization's clinics. Ten participants including nurses, physicians, educators, and administrators reviewed the program in a formative (n = 5) and summative (n = 5) round to evaluate the ease of use and content. During the summative review, participants demonstrated 92.3% agreement using the AGREE II instrument. This tool supported the stakeholders' understanding and support for the developed modules. Overall, the program serves as an important tool to educate clinical staff to better manage and decrease the spread of tuberculosis among diabetic patients, and also as a comprehensive guide for developing similar projects in community clinical settings. The resulting educational program, which could be implemented by health care providers and clinical administrators, could serve as a catalyst for improved community health outcomes.

A Staff Development Program: Diabetes and TB Education and Screening

by

Relyndo M. Salcedo

BSN, St. Jude College of Nursing, 1996

MSN-FNP, Holy Names University, 2011

DNP Study Submitted in Partial Fulfillment

of the Requirement for the Degree of

Doctor of Nursing Practice

Walden University

February 2015

Dedication

To my beloved children, Raymond Vincent T. Salcedo, RegineVielka T. Salcedo, RainzVirel T. Salcedo, Rochelle Violet T. Salcedo, to my beloved friend and partner, Maria Victoria Trinidad-Salcedo, and my mother Lydia M. Salcedo, and to all my loved ones who shared their time and infinite support in allowing me the time away from my duties and responsibilities in order to pursue my final chapter in Nursing. I also want to thank Dr. Deborah Lewis for her guiding light, wisdom, words of support and encouragement in all the trials and obstacles I have to hurdle during the course of my proposal and in perfecting my DNP project.

Table of Contents

List of Tables

Section1: Overview of the Evidence-Based Project

Introduction

Both the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) recognize diabetes as an emerging global epidemic (GBC Health, 2011). First, HIV/AIDS was associated with tuberculosis (TB); now diabetes too. The association between diabetes mellitus (DM) and TB is threatening the significant reduction in the incidence of TB in the United States over the past decade. In patients with DM, more complicated TB, with a high incidence of drug resistance, is seen (Dooley & Chaisson, 2009). A concerted effort is needed by all providers and stakeholders to prevent patients with DM from contracting TB. The proposed educational program is designed to support the U. S. government's focus on disease prevention as part of the goals and objectives of the Healthy People 2020 program (Healthy People 2020, 2010a).

The goal of this DNP Project is to develop a program to teach clinic staff about the importance of early identification of patients with diabetes and TB. It is expected that (a) the resulting program will meet the needs of the clinic staff, and increase their knowledge and ability to identify diabetic patients prone to developing TB and that, in turn; (b) staff will be able to impart this knowledge about the importance of screening for diabetes and TB to individuals.

In order to examine whether the program has met its goals and objectives and to acquaint stakeholders with its viability and sustainability, it will be continuously assessed using formative and summative assessments.

Identification of the Problem

The growing evidence of the positive association between diabetes and TB has been previously reported, especially in populations with low socio-economic status and high incidence of both diseases (Perez et al., 2007). States such as Texas, Arizona, and California have a high incidence of Tb (10.1/100,000), possibly because of their shared borders with Mexico (Perez et al., 2007).However, the condition continues to be underappreciated (Stevenson et al., 2007). According to the CDC and WHO, a rising recognition of diabetes as a global epidemic poses a threat to global TB control. The city of Blythe, CA fits the description that was mentioned and it is not exempt. In the Blythe Family Health Clinic, a clinic that operates within the Clinicasde Saluddel Pueblo, Inc. healthcare organization (hereafter referred to as clinic), a high percentage of patients are diagnosed with diabetes, which raises concern about their vulnerability to TB. This clinic does not have an education program that addresses the lack of knowledge about DM and TB, and how they complicate each other. This project was designed to address that deficiency.

Purpose Statement

The purpose of this DNP project was to develop a program to educate and train clinic staff (RNs, LVNs, MAs, lab techs, pharmacy staff) on the (a) importance of preventing the spread of TB among diabetic patients and (b) the subsequent complications. The project had two objectives:

1. To develop an effective TB and diabetes screening program for the clinic
2. To design an education program on diabetes and TB awareness for staff development, one that could later be used to educate clinic patients.

Developing a well-planned education and screening program will help alleviate the problem of delayed diagnosis and treatment of TB, a problem that can escalate and impact health outcomes for the clinic patient population. By performing formative and summative evaluations, both objectives could be assessed for their impact on both the provider and patient populations. To address the program's ability to provide effective TB and diabetes screening from a summative standpoint, the evaluator needed to assess stakeholder perceptions as well as their willingness to carry out the screening process. To appraise stakeholders' response to the program's design and quality of teaching material, a formative evaluation was required. Evaluation of the second objective included the potential to contribute to staff professional development.

Project Goals and Outcomes

The short-term goal of this project was to educate the clinic staff about diabetes and TB and how they complicate each other. While also providing training on the use of an effective screening test for both diseases. The long-term goal of this project was to implement an education and testing program for all clinics in the organization using a standardized screening test. The desired outcome for this project was (a) a clinic staff that was knowledgeable about diabetes and TB, (b) clinic staff that could help providers disseminate information to clinic patients and (c) a screening test for DM and TB that would be simple, easy to understand, practical, and cost-effective.

Significance/Relevance to Practice

Respiratory diseases are a burden to individuals and their families; they affect schools, workplaces, neighborhoods, cities, and states. Because of the cost to the health care system, the problem of respiratory diseases and diabetes falls on society; it is paid for with higher health

insurance rates, lost productivity, and tax dollars (Healthy People 2020, 2010b). While several respiratory conditions and hazards are covered in Healthy People 2020, including infectious agents and occupational and environmental exposures, TB is prominent. Although its prevalence has significantly decreased, eradication has not been accomplished, as expected by many health experts. That's because of the resurgence of diseases—such as HIV/AIDS, Ebola, foot and mouth disease, all of which lower the immune system—along with other chronic diseases, such as hepatitis, pneumonia, and diabetes (Harries et al., 2010).

Decrease in the performance of the immune system of diabetics has been blamed for various complications in the renal, cardiac, musculoskeletal, ophthalmologic, neurological, and urological systems (American Diabetes Association [ADA], 2013). A recent study of 4690 elderly diabetic patients in Hong Kong revealed that those with an HbA1c greater than 7% had a three times greater chance of developing active TB compared to those with an HbA1c of less than 7% (Dooley &Chaisson, 2009). Poor control of diabetes leads to multiple complications, including vascular disease, neuropathy, and increased susceptibility to infection. The mechanism of immune suppression is related to hyperglycemia and cellular insulinopathyon the function of the macrophages and lymphocytes, which seemed to be hindered or halted and thus weakens the ability of the cells to contain the infectious organism (Dooley &Chaisson, 2009). Diabetes is known to affect Chemotaxis, phagocytosis, activation, and antigen presentation by phagocytes in response to Tb (Dooley &Chaisson, 2009). Furthermore, the Philadelphia Diabetic Survey done by Boucot and colleagues (1952) found a two-fold increase in prevalent TB by chest radiograph in 3,106 diabetic patients compared with 70,767 controls of similar demographics. They also found that diabetic patients who needed more than 40 units of insulin per day were twice as

likely to develop TB as those using lower doses, thus linking severity of diabetes mellitus with risk of TB (Boucot et al., 1952).

Screening patients for diabetes or TB is an essential first step in addressing these critical health issues. The value of formal clinic education regarding diabetes and Tb including posters, leaflets or group talks about the links between diabetes and TB needs to be explored in terms of improving health care staff and patient awareness and for future guidelines and training materials (Harries et al., 2010). Achieving optimal health is a shared responsibility for all members of the healthcare team (Nash, Reifsnyder, Fabius, & Pracilio, 2011).

Innovations and services to ensure early access to care and treatment need to be made available. However, because of the growing population and migration in the United States, the efforts of the government and healthcare providers to decrease the incidence of diabetes are not enough. Poverty, crowding, and unemployment have further increased the burden in every state in the country. All these factors contribute significantly to the continuous existence of diabetes and TB in our Southern California community. Incomplete treatment increases the resistance of the organism, *Mycobacterium tuberculosis*. Prevention is the key to controlling these diseases. Previous studies have demonstrated that DM not only increases the risk of active TB but also puts patients affected with both diseases at increased risk for poor outcomes (Alisjahbana et al., 2007; Stevenson et al., 2007; Leung et al., 2007; Dooly et al., 2009). Cost-effective screening measures for both TB and DM increase the chances of reducing the losses incurred by these tandem epidemics. It is possible to help overcome these problems using strategic planning and developing an evidence-based program to train and educate staff in the prevention and identification of both TB and DM in the clinic setting.

Social Change Implication

An educated clinic staff can help expand the dissemination of DM and TB information to the clinic patients. This will further aide providers in the drive to teach diabetic patients how to properly manage their disease and make them aware of the risk involved in exposing themselves to tuberculosis and its complications. Once accomplished, a ripple effect will spread to the community and people will be aware of the impact of diabetes and how it is associated with tuberculosis. Through education the clinic is counting on the positive effect it might have forth diabetic patients. For example, it could encourage them to change their lifestyle; education could decrease the incidence of newly diagnosed diabetes; education could decrease the complications rate of diabetes, including the recurrence of tuberculosis, and improve the opportunity for providers to manage and treat the disease.

Besides educating patients, it is necessary to have a standard form of screening for the diabetic and TB patients. When properly implemented, it will significantly help in the prevention and early management of these two diseases. In two studies, it stated that there remains to be determined what screening algorithm and screening tools should be used and how often screening of patients with TB and DM and vice-versa should to be performed (Dooley &Chaisson, 2009; Harries et.al., 2010). The goal is to create a "screen for life" program. Upon approval by proper authorities will provide for a standard screening test, which the author aims to be implemented by the organization in the future.

Definition of Terms

In this project, certain terms will be encountered that needs to be clearly defined and will be of significance to the course of discussion of the project. These terms includes the following:

Community: group of people who have common characteristics, such as location, ethnicity, age, or occupation (Hodges &Videto, 2011).

Cost analysis: an economic evaluation technique that involves the systematic collection, categorization, and analysis of program or intervention cost and cost of illness (CDC, n.d.)

Cost of illness=value of the resources that are expended or foregone as a result of a health problem. The COI includes health sector costs, the value of lost productivity by the patient (indirect cost), and the cost of pain and suffering (intangible costs). (CDC, n.d.)

Cost of intervention= a measure of the value of all resources used in the intervention. The cost of intervention is an important part of the decision to use one intervention over another. Knowing about the costs provides clues as to whether there is too much spending on less desirable programs or too little spending on highly desirable programs (CDC, n.d.)

Evidence-based = generally refers to a program or intervention with a theoretical foundation that has been shown to be effective based on scientific evidence (Hodges &Videto, 2011).

Diabetes Mellitus = diabetes is a group of diseases characterized by high blood glucose levels that results from defects in the body's ability to produce and/ or use insulin (ADA, 2013).

Logic model= a visual depiction of the conceptual approach to describing the activities of the projected program and the relationships among its activities, theoretical foundations, goals, and objectives (Hodges, &Videto, 2011).

Tuberculosis = a common, and in many cases lethal, infectious disease caused by various strains of mycobacteria, usually Mycobacterium tuberculosis. Tuberculosis typically attacks the lungs, but can also affect other parts of the body. It is spread through the air when people who have an active TB infection cough, sneeze, or otherwise transmit respiratory fluids through the

air. Most infections are asymptomatic and latent, but about one in ten latent infections eventually progresses to active disease which, if left untreated, kills more than 50% of those so infected. The classic symptoms of active TB infection are a chronic cough with blood-tingedsputum, fever, night sweats, and weight loss (Centers for Disease Control and Prevention, 2013).

Use of Theory Model

The Logic Model was chosen for this program because this theory would fit best the problem of diabetes and its relation to TB. It is also known as a logical framework or theory of change. The concept of this model is used most often by administrators, managers and program evaluators in evaluating the effectiveness and efficiency of a program that has been or is about to be implemented. The concepts are usually presented as graphic interpretations of the logical relationships between resources, activities, outputs and outcomes of a program. (McCawley, n.d.).According to the CDC (2011), use of logic models for evaluation should be revised periodically to reflect new evidence, lessons learned, and changes in context, resources, activities, or expectations. Developing a program (screening for TB using PPD skin test and DM screening) to measure and define the relationship of diabetes with TB is a perfect fit for using the logic model. The model communicates the purpose of the program and expected results, involves the stakeholders which increases the likelihood of resources commitment and becomes a reference point for everyone involved in the program based on the expected and desired results/outcomes (CDC, 2011). This model allows the planner to see the rational flow of addressing a problem and applying a process, while maintaining a focus on the purpose of the project, effecting positive changes in the lives of clients and reducing the size and scope of a problem in a community (Kettner, Moroney,& Martin, 2013). W. K. Kellogg Foundation (2001)

emphasized that this model demonstrates how the project's activities stems from available resources and are linked to the expected outcomes. The activities approach logic model emphasized the following elements: the situation or purpose of the project that focuses on the activities of the target system that will be influenced by the project activities, the specific activities that will be implemented and the specific outputs and outcomes that will result from the work, and the measurements and data sources that will be used to determine the project's effectiveness in reaching target outcomes (W.K. Kellogg Foundation, 2001). The results from the formative and summative evaluations will also help to determine the reasonableness of choosing the logic model to guide the program's development and subsequent implementation.

Limitations of the DNP Project

The proposed program is limited to the development of the education and screening program. Implementation will not be part of this DNP Project. The limitation of an implemented education and screening program may include how the individual staff comprehend or understand the educational materials, how they will interpret the visual materials that will be incorporated in the education and training materials and cost of materials.

Strengths of the DNP Project

The strength of the DNP Project will be the staff's satisfaction of the knowledge gained from and the new skills acquired on both the process of screening for diabetes and TB incorporating the "screen for life" program in the education process (see Appendix A).

Summary

In the latter half of the 20th century, attention in the health community shifted from treatment of the disease to the prevention of the condition and recently, promotion of behaviors and attitudes i.e., proper diet, exercise, and reduction of stress to help maintain a healthy lifestyle. Health education models identified the purpose of promoting public health and the assessment of the needs of the target population in the community (Green & Rabinowitz, 2013). Following this concept of health education, developingaeducation and training program for all the staff on diabetes and TB was deemed important for the clinics. Using adjunctive activities, such as the screening program, will address the early detection of diabetes and TB and prevent complications., It is a necessary evidenced-based practice for the clinic, which will allow the staff to be more aware of the relevance of being vigilant with diabetes and TB. Such endeavors will make the clinic "whole," work more efficiently and converting all the staff to be all-around health care personnel. On this premise not only does it place the responsibility of patient education to the providers but also to all the staff involved in the delivery of quality health care. The assessment of the needs for the study will also be useful in assisting program planners to determine the topics to be included in the education program and staff development skills training. Education program will be developed based on the information that pertains to the areas of practice of each staff member (Young, 2011).

Section 2: Review of Scholarly Evidence

Introduction

This section discuss about the pertinent information and previous studies about the relationship of Diabetes Mellitus Type II and Tuberculosis. Both Diabetes Mellitus Type II and Tuberculosis are common cause and morbidity and mortality, therefore it is imperative to

cultivate a better view on how such condition can be averted. In relevance to their prevalence rate, Tuberculosis per se, has been one of the managed health condition in United States, but Diabetes Mellitus Type II is still continuously increasing; with a projected probability of reaching up to 366 million to 440 million in year 2030. In this section, we have expounded that patients with Diabetes Mellitus are on great risk of developing Tuberculosis, due to certain unique aspects which demarcate their relationship. This then delineate the need of the health care industry to manage Diabetes Mellitus Type II effectively since it could be contributing factor in the rising of Tuberculosis in United States.

In addition to this, the section also cultivate on relevant data that would clearly emphasis the relationship of Diabetes Mellitus Type II and Tuberculosis, because defining such would facilitate the health care industry to develop resolution that would delay, prevent, or halt the development and further aggravation of Diabetes Mellitus Type II and Tuberculosis.

Literature Search Strategy

The resources utilized for the research are information derived from credible website, academic articles/ journals, peer- reviewed journals, and books. Other website which are not official website of an organization or agencies are consider only for supplemental information which would not harm the facts in relevance to this health care topic, such as basic description of Likert scale. All information which entailing facts and figures relevant Diabetes Mellitus Type II and Tuberculosis are only taken from credible websites, journals, academic articles, and books. We collated all pertinent information without being very austere of the period range as to when the article was published. Since this research aims to expound all pertinent information which can demarcate the relationship between Diabetes Mellitus Type II and Tuberculosis, we have considered all reference that would help expound, and support the topic for better

comprehension. In addition to this, we have not been strict in gathering information from the website but we have only considered retrieving sources which are credible and reliable in terms of presenting statistical information.

The key words utilized for this project are Diabetes Mellitus Type II and Tuberculosis, relationship between Diabetes Mellitus Type II and Tuberculosis, influence of Diabetes Mellitus Type II to Tuberculosis development, emergence of Tuberculosis among Diabetic patients, statistic of Diabetes Mellitus Type II and Tuberculosis in United States, and incidence of Diabetes Mellitus Type II and Tuberculosis in United States.

Literature Review

Diabetes has become a global health problem due to increasing number of people affected by the disease. The number of people with diabetes, which was 171 million in 2000, is expected to grow to 366 million-440 million by 2030, with three-quarters of patients with diabetes living in low-income countries (Dooley &Chaisson, 2009). Studies from different parts of the world have shown that 5-30% of patients with TB present with concomitant diabetes (Pablos-Mendez, Blustein, Knirsch, 1997; Feleke, Abdulkadir&Aderaye, 1999; Ponce-de-Leon et al., 2004; Wang, Lee &Hseuh, 2005; Alisjahbana et al., 2006; Singla et al., 2006) and the available evidence indicates that DM acts as a risk factor for the development of TB (Ruslami, Aarnoutse, Alisjahbana, Van der Ven,& Van Crevel, 2010).

The incidence of TB is still persistent in a number of states, including Texas, Arizona, and California. Restrepo et al. (2011) have estimated that in 2007, the overall incidence of TB was 10.5 cases per 100,000 in South Texas and 38 per 100,000in northeastern Mexico (personal communications, JL Robles, Secretaria de Salud de Tamaulipas [SSA-Tamaulipas, 2000]; Brian Smith and Nita Ngo, Texas Department of State and Health Services [DSHS], 2006). The CDC

has reported that 34 states had lower rates of TB in 2011 than in 2010, 16 states and the District of Columbia had higher rates. As in 2010, four states (California, Florida, New York, and Texas) continued to report more than 500 cases each in 2011. Combined, these four states accounted for 5,299 TB cases or approximately half of all TB cases reported in 2011.

According to GBC Health (2011) studies, diabetes is not only a disease in high-income countries but is also gaining ground in the low-income countries where TB has always thrived. This is a major concern, as the increase in diabetes cases could jeopardize progress made in TB control over the last decade. Growing scientific evidence suggests that people with diabetes have a 2-3 times higher risk of TB than people without diabetes and that diabetes can worsen the clinical course of TB. The physiological causes for these risks are yet to be clarified, but appear related to control of blood-glucose levels. Conversely, TB can worsen glucose control in diabetes patients. According to Dooley and Chaisson (2009), the effect of diabetes on the development and severity of TB and the complex interrelations among nutrition, obesity, diabetes and TB have remained challenging issues in both public health and clinical medicine. The overlap of the populations at risk for both diseases, along with the combination of their devastating effects, represent a worldwide health threat.

Non-adherence to TB treatment is a big challenge. According to the CDC (2011), when medical treatment is complicated or lasts for a long time, as in TB treatment, patients often do not take their medications as instructed. This behavior has been one of the biggest problems in TB control and often leads to serious consequences: patients remain sick for a longer time and develop complications, the disease spreads to others, and patients develop drug-resistant That's because, or they die of the disease. Articles reviewed by Sen, Joshi, and Udwadia (2009) demonstrated that Type 2 diabetes is a major factor associated with TB in both Mexicans and the

Hispanic Americans. McCormick and colleagues (n.d.) in the retrospective study conducted at University of Texas School of Public Health showed that the co-morbidity tandem of TB-DM far exceeds those of the TB-HIV. These observations raised three public health concerns: the relevance of immunological impairment in DM, the importance of DM control among exposed individuals, and the control of TB in communities with a high prevalence of DM (Sen et al., 2009).

A well-designed health education and screening program could help to prevent the onset of complications and the devastating impact of these diseases. The literature has shown that diabetes education improves quality of life and reduces the onset of long-term complications resulting in better health outcomes and cost savings. In an era of extreme pressures to contain healthcare expenditures, the resultant benefit should be that of economic as well as therapeutic yield. In order to facilitate a cost-effective program, the program planners and providers are to take the lead in the education and training process. Challenges are to be expected along the course of the education and training of the staff. Among the various challenges includes the design of the education program, coordination and implementation of training that would balance the learner's needs with available teaching/ learning resources (Habel, Lassen & Rankin,1998). A good move to meet these challenges is by first clearly defining the outcomes to be achieved in the education program in terms of knowledge and competencies, then determining how these outcomes could be best achieved (Gaynor, Vancura, & Reschak, 2001). Once everything is cleared out and properly set-up, it is expected by the leaders and the team, that the education and training of the staff will go on as scheduled with little resistance or obstacles until the desired outcomes are fulfilled.

Development of health education programs requires an iterative process that

ensures stakeholder buy-in and usability by the intended audience. It is equally important that team members have to believe they can make decisions and that they have the backing to do so (Yaverbaum, & Sherman). The Center for Medicare and Medicaid Services (CMS) have developed core measures for measuring quality patient care that organizations must meet to ensure appropriate reimbursement (Donohue, 2012). In order to meet these requirements, staff education in the care of patients and the measurement of their care is necessary. The best approach to these educational needs is to have an advance plan as soon as the required criteria is known or defined (Donohue, 2012). Developing a health education program set with different learning modules for the clinic staff is a timely answer to fulfill the necessary requirements needed by CMS. Not only does the planned program fill the gap but at the same time increases the knowledge base of the clinic staff which will be beneficial in delivering quality care for the diabetic and TB patients.

Theory and Model Relevant to the Problem

The theory of logic model, also known as a logical framework or theory of change, is the most appropriate theory for the problem of diabetes and its relation to TB. Many managers and program evaluators have used this model when considering the effectiveness of a program to be implemented. It shows a vivid depiction of the logical relationships between resources, activities, outputs and outcomes of a program. (McCawley, n.d.).Use of logic model allows performance measurement that can be drawn from the program in mind and as well as the final outcomes or results of the program, because it is possible to waste money and effort (inputs) on work activities, or produce outputs without achieving the desired outcomes. This model has been used by many organizations where outcomes means profit, and for nonprofit, outcomes relates to successful operation of program and effective achievement of mission/goals. According to

the State Program Evaluation Guide by the CDC (2011), use of logic models for evaluation should be reviewed periodically to reflect new development in the field of study. Logic model is perfect model to define the relationship between diabetes and TB. The model interconnects the purpose of the program and expected results. Stakeholders' involvement increases the likelihood of resource commitment and encourages everyone involved in the program (the organization) thus support to arrive at desired results/outcomes (CDC, 2011). This model allows the planner to see the rational flow of addressing a problem and applying a process, while maintaining a focus on the purpose of the project, effecting positive changes in the lives of clients and reducing the size and magnitude of the problem in a community (Kettner et al., 2013).

The Logic model has been used in business planning, physics, psychology and in nursing programs. This model is a framework for describing the relationships between investments, activities, and expected changes (Dean-Coffey, 2007). It has been used in many business organizations such as product development, engaging in policy advocacy, building infrastructures. It uses inputs (called resources, investments), which is what you have to work with in developing and implementing your program. It involves activities (interventions, strategies, methods), what we plan to do with the resources that are available such as developing new programs that will increase staff knowledge and acquiring new skills that boost staff competency on facing inquiries and imparting information to diabetic and TB patients in the clinic, financial strategies to increase revenues in businesses. The model also has a component called outputs, the tangible products or results that came out from the activities. Output leads to outcomes e.g. program benefits for families, patients, community, organization or business, infrastructures, finished products, etc. And lastly, outcome also termed results, expected changes. This involves the impact which the program has created on the financial strength of the

company/clinic, what effect the infrastructure created for the community or the environment, and in nursing what impact has the program created for the staff, patient, their families, community, knowledge base and skills of participants and the organization as a whole. This can be measured in short term, or long-term outcomes (W. K. Kellogg Foundation, 2001). An example would be the birth defect surveillance system in Michigan, which used the Logic model for evaluation. This program enticed the participation of CDC in helping fund the project in improving the birth defect surveillance program and allowed integration in the public health prevention and intervention program. Statewide reporting began from 1999 to present with the creation of birth defect registry, genomics and genetic division section and maternal and child health development division in the Michigan Department of Public Health was implemented. In the process, this program improved the public and professional knowledge on birth defects and related service needs, increased referral to needed services which led to timely and early intervention, improved care coordination and in the long term outcome enhanced child development, increased child and family well-being and sustained systems of early detection and service referral (Bach et al., 2009).

Summary

The review of related literatures was able to demarcate the significance and vulnerability of Diabetic patients in the development of Tuberculosis. The common denominator among several resources used in this research is encapsulating the projection that Diabetes Mellitus have continuously elevating, thus, also explaining the likelihood of also increasing the development of Tuberculosis in United States. This a great and another challenge for the health sector of the country because the prevalence rate of Tuberculosis had already diminished significantly.

The literature also poses a question in the health care industry on how effective management of diabetes is today. In fact, it also help in defining the needs of the patient's affected and the improvement which can be developed to both address patients with diabetes only and patient's with complications of tuberculosis. The clear identification of the predicament emerging among Diabetes Mellitus Type II and Tuberculosis facilitated consideration of logical framework or theory of change because this can gauge the performance as well as competency of the health care providers in addressing the patients' needs particularly for these health conditions. This theoretical framework have been utilized in previous studies with similar conditions and the result manifested significance. Furthermore, the utilization of this framework in previous studies also provide profound insight of what may likely be expected and what improvements can be implemented.

Section 3: Methodology

Introduction

This section focuses on the process of how this research will be conducted and how the materials and information collated will be utilized. The focus of this study is to develop a program for nurses which would help them improve their knowledge and competency in this particularly issue, and in order to be able to established a profound program, an appraisal were conducted among different health care providers and staffs to determine how effective the program would be if applied on the targeted stakeholders.

The stakeholders who participated in this research who would also appraised the developed program are divided into formative evaluators and summative evaluators. The formative evaluators are composed of nurse supervisor, office manager, consultants, and local department of health. Summative evaluators on the other hand are composed of education

director, nursing director, chief operating officer, informatics chief, and medical directors. Each group are composed of 5 individuals.

The result of their evaluation would help demarcate if the content of the program are valuable enough to increase the awareness of its target and also is feasible to be implemented among its target. In addition to this, we also delineate the materials to be utilized in disseminating the information pertinent to the health topic, and how the program aim implement the strategy. As mentioned in this paper, coalition structure is the application to be implemented to maximize the means of dissemination of information, increase awareness, and promote better understanding among health care providers.

Project Approach

An appropriate strategy to use in order to get a good idea of the needs of the target group and their interest in the program is through application of a coalition structure, which can be accomplished by either preparing sets of teaching modules for both diabetes and TB and plan a pre and posttest evaluation competency levels for every teaching module. The results from these documents will be pretested to determine clarity and understanding. At the conclusion of development of the planned program, there will be both a summative and formative evaluation from key stakeholders who will formalize the education and screening program.

Method

This section will describe the strategies to be used to develop the education and screening program. Each component of the process will be described separately in detail.

Several steps will be employed and they include the following:

1. Assembling program planners, administrative education stakeholders, and staff representative namely the clinic manager and the nurse supervisor.

2. Review of relevant literatures about diabetes and tuberculosis by the team headed by the program instigator.
3. Gathering of significant education materials related to the topics discussed in the meetings (DM and TB) and correlating them to collected evidenced-based literatures regarding the two disease entities.
4. Specific education modules will be created by the team based on the all the data that were collected and reviewed.
5. An evaluation method will be set by the team that will help to determine how effective the education program that was created.
6. Results will be presented to the organization during major conference held in the corporate office.
7. Standardization of the education module will be sought by the team leader to be implemented in all the clinics of the organization once approval has been granted.

Development of Educational Materials

The DNP project strives to engage all clinic staff to be involved in the education process of all patients with diabetes and TB seen in the clinics, increasing public awareness on the importance of preventive measures through screening test which deters further complications of the tandem of these diseases.

Using the Logic Model approach, the resources for the DNP project will include the program planners, the staff, funding from the organization, which includes the budgetary allocation (see Appendix B), materials to be used for teaching/education, and technology with the use of the links provided for the project.

The second aspect of the model is the process, which involves the educational activities that the staff will be participating and links that will supplement the training program. Included in the process are the following:

TB Education

Education of Staff on Tuberculosis (TB) will use the education and training materials provided by Center for Disease Control and Prevention, links: http://www.cdc.gov/tb/publications/pamphlets/TB_disease_EN_rev.pdf. Other TB educational and skills training will be facilitated through guidance from the CDC using their video and educational materials from the various websites related to TB education and significant data that the staff needs to know. (see Appendix C)

This program will be an ongoing process and additional information and assistance in educating all the staff will be provided by invited experts from the local Department of Health. Program planners will arrange scheduled coordination.

Diabetes Education

As for the Diabetes education program, a continuum of care will be planned for the pre-diabetics (high risk for diabetes), newly diagnosed diabetics and those who have already been diagnosed with diabetes for the past year. Again, the following links will be used to provide additional insights about diabetes using video educational programs. These links/ websites will enhance the learning process and update the clinic staff on the basics of diabetes and the new developments that has occurred for the past years and lastly what is the future for diabetes. (see Appendix C).

The third aspect of the project using the logic model is the output. This involves the number of training hours, number of trainees who complete the course/program and receive the certificate (Kettner et al., 2013). Important aspects of the project output include the following:

Program Proper

The proposed program is divided into three modules. Module 1 will cover the theoretical aspect of Diabetes and TB. The module will include the following: definition of diabetes and TB, prevalence/ incidence, how it is acquired, processes involved, and transmission of the diseases. Module 2 will cover the clinical aspects of both diseases. This includes: signs and symptoms of the diseases, complications, treatment modalities, prevention and diagnostic/screening test. Incorporated in the education program is the introduction of the "screen for life" program for the clinic discussion of its purpose, goals and intended outcome. And lastly, Module 3 will cover the social, economic aspect of dealing with the tandem of diseases. This module includes the following: estimated health care cost of DM/TB or cost of illness, cost of intervention, cost analysis, social impact, relevance/importance of knowing the diseases how it affects our lives and the people around these patients and also the future of
diabetes and TB (projections).

Before and after each module there will be a pretest and a posttest evaluation respectively. A staff confidence survey will also be conducted, (see Appendix D). This will help determine the affectivity of the education program and will allow planners to analyze the staff's competency, knowledge retention/grasp, level of involvement and commitment to the program. The staff confidence level survey will be conducted using the Likert scale. According to Vanek (2012) this scale is useful when you want to get an overall measurement of a particular topic,

opinion, or experience and also collect specific data on contributing factors. Measuring the satisfaction (the trait) of a recent experience is a common use. For the score to have meaning, each item in the scale should to be closely related to the same topic of measurement (Vanek, 2012). The planned education program will be conducted for 1 week. There will be three groups of staff members. These groupings will be in accordance to the furlough hours being implemented by the company. Each module will consume approximately 1 hour. Included in it will be the didactics, the video presentation and the pre/posttest survey. (see Appendix B for additional information).

A formative evaluation will be conducted by a group of stakeholders to evaluate the effectiveness of the program design and instructional materials. The evaluator's task will be to review the program design and instructional materials. After analyzing the survey a summative evaluation will be conducted. It is conducted for the purpose of determining whether a program worked (Bartholomew, Parcel, Kok & Gottlieb, 2006). Its focus is on providing information for program improvement (Hodges &Videto, 2011, p.207). The summative evaluation provides a very good review of the evidence (not often presented), a need for better understanding of the areas to improve care and also provide insights to raise awareness of important issues (McNabney, Willging, Fried & Durso, 2009). With the summative evaluation, a clearer picture of the importance of diabetic and TB education can be presented and will help the clinic in focusing on those areas that need more improvement in terms of the management of both disease entities. The results of the evaluation will also guide the organization as a whole to focus on which areas of healthcare service need to be improved, strengthened and maintained.

The outcome of the program (fourth aspect of the logic model) will be demonstrated when the program is implemented. The staff will demonstrate their acquired knowledge and skills when

they start to educate and implement information dissemination to the diabetic patients and TB patients (see Appendix E).

The impact of the project/program (fifth aspect of the logic model) is defined as the measurable changes that will occur in the organization, the communities or systems as a result of the services. (Kettner et al., 2013).Although this will not be completed as part of the DNP Project, these changes could include the implementation of the project on all the clinic of the organization, the effect of the education and information dissemination to the patients which could cause a "ripple" effect to the community measured by a decrease in the number of identifiable new diabetic and TB patients using the "screen for life" program when it is instituted by the clinic.

Development of the Evaluation Plan

The development of evaluation plan aims to determine if this research were able to meet its criteria which would demarcate its effectiveness and feasibility.

1. Establishing the goals and objectives of the Evaluation program
2. Identifying the Outcomes. Answers the question: Did the program work? Use of the 4 Rs namely: Relevance of the program, Reality of the program (measurability) Reliability of data and results, and Resources (money, funds, staff appropriateness)
3. Verification of the focus of evaluation
4. Development of a Planning Model: Input, Activities, Output, Immediate, Intermediate, and Long term outcome
5. Development of an Evaluation Design: use of outcome evaluation for the program (pretest and posttest design)

6. Data Collection method: use of quantitative method (clinical statistical/census reviews, questionnaires/ surveys)
7. Presentation of Program
8. Conclusion and Recommendation

Engaging Stakeholders

Active exchange of ideas thru healthy discussions or arguments is a good sign that stakeholders are interested in the program. As with any formal convening, the most important task is getting the right people at the table. It is essential to keep in mind that the formal process is itself an outcome of continuous relationship building and personal trust. (Disa, n.d.).Strategic communication is also important to navigate through disagreements. Keep the group always informed by identifying standing meetings and forums where information can be regularly shared. Identify vehicles for conveying information that can be used by the group as well as the plans then seek approval of the parties involved (White & Dudley-Brown, 2012, p.227). These methods are always useful in order to have all the people involved in the program to come up with a common decision on which path the program will take for the benefit of the target population and the stakeholders who invest their time, resources, and knowledge in developing the program.

Reading through the stage theories of organizational change, has provided a clearer understanding of how the project can be presented to the stakeholders who would potentially influence the adaptation of the proposed program. The four basic stages of the organizational change are: (a) problem definition (scholarly inquiry and development of a program for staff education and training on the awareness of the relationship between diabetes and TB, (b) initiation of action (creation of modules that will be used to educate and train all staff on the use

of PPD screening in DM patients and DM screening for TB patients on the other hand and (c) iterative evaluation and revision of the designed education program, development of a proposal for stakeholders and (d) institutionalization (program is accepted by stakeholders for future implementation (Glanz & Rimer, 2005).

Financial Considerations

Creating any program needs budget allocation and financial assistance in order for the program to move forward. The financial control of budgeting expenses should not exceed the program's revenues. Proposed expenses should work towards the accomplishment of program plans, goals and objectives (Kettner et al., 2013). In this case, program budgets are designed and planned according to what revenues will be used to achieve program results, accomplishments or outcomes. Thus budgeting is an important pillar in any program planning systems.

In the TB screening program for diabetic patients, an estimated budget and allocations for the activities will be proposed. The proposed program will employed the use of the rational-planning model for budgeting purposes. The model views the budgetary process as a set of chronological steps who used data from the community, clinic, program itself in the budget decision making and also based results according to the needs, priorities, plans, goals and objectives of the program. (see Appendix F)

The clinical allocation for the education of the staff will be proposed and discussed with the office manager and subject for approval by the Medical Director through the Board of trustees by the organization. The organization, Clinicas de Salud del Pueblo, Inc. (CDSDP) will also provide funding for the program after approval of the proposed program. Contributions from benefactors (DME equipment, drug companies, and pharmaceuticals) are given through the organization and clinic's education program effort.

Ensuring Stakeholder Engagement

Presentations includes the use of visual aids e.g. PowerPoint presentations, slide shows, videos. Prospective investors and stakeholders will be briefed on the progress of the program. Placing investment on the program will help in increasing the competencies of the clinic staff and increase their knowledge base on diabetes and TB. It is hoped that this program will create an impact on the effectiveness and efficiency of each member of the clinic that will boost the quality of health care service that the clinic provide to the patients. In 2006, McBride in his study of a Southwest Florida hospital determined that the task of providing the clinical and financial analysis are needed for strategic planning, decision making and physician practice tracking whose responsibility falls on the hospital's decision support services team. Based on this premise, the need for complete cooperation from the office manager and clinic staff, working, as a team is needed to provide these analyses and in determine the cost-effectiveness of the proposed program. Such initiatives will provide potential investors to have confidence and trust in the program, virtues expected in any organization trying to entice investors in supporting any program (McBride, 2006).

The long-term effect will be for the community as a whole because the diabetic and TB patient population will continue to have adequate support and treatment, in the end they become healthy productive individuals, which is good for the community and the economy.

The evaluation of the planned program will done through the application of a pretest and posttest survey (see Appendix G), which will be conducted before and after finishing each module (Module I ,II, and III). In this model, a pretest is given to participants prior to starting the program to measure the variable(s) of interest, the program (or intervention) is implemented, and then a posttest is administered to measure the same variable(s) of interest again (Gall et al.,

2003). Results from this survey will be used to validate the effectiveness of the teaching modules that were set up for the staff. With measurements being collected at the beginning and end of the program, program effects are often revealed by calculating the differences between the two measures (Pratt, McGuigan & Katzev, 2000). These learning modules are intended to add more knowledge to the staff and allow them to be more competent in facing clients in the clinic, helping providers in educating the clients. The program implementation will be planned and executed on a bi-annual basis, which includes updates on DM and Tuberculosis especially on current statistical reports from CDC and local health department. This will also give program planners ample ideas to improve the program in the future and perhaps add more topics that are relevant to the practice setting and would benefit the clients in general.

Formative Evaluation

For this project, three physicians and two nurse managers have been chosen to formatively evaluate the program. The evaluators' task is to review several key elements dealing with the program's design and effectiveness, stakeholder engagement, and participation. In order address each of these areas for a formative standpoint, the evaluators examined the program's potential in terms of its relevance, measurability and reliability of results and appropriate use of resources such as funds and personnel. Although each these elements were critical to the program's success, they are all dependent on stakeholder engagement. To begin with, the reason for the staff development program must be clearly identified and stakeholders allowed fully discussing the issues and asking questions. Moreover, the stakeholders themselves must be chosen carefully and have the necessary expertise to comprehend and critically assess the various program elements.

From a strategic standpoint, gaps to understanding and mutual agreement need to be anticipated and addressed. In this way, it will be easier to negotiate barriers and foster timely decision-making. Once the evaluator has assessed the level of stakeholder engagement, the next step is to review the program budget. Areas such as cost effectiveness, allocation of specific financial resources and level of transparency need to be considered. As the project progresses, the formative evaluation must also continue and so that during the various stages development the evaluator can insure that the program design is consistent with the stated objectives.

Summative Evaluation

A separate group of medical inter-professionals have also been chosen to perform a summative assessment of how comprehensive the training materials are, quality of presentation, potential for staff development and continuing education. The group includes an informatics nurse, a nursing faculty member and a physician. Selected materials related to the program's design and development, including background research and relevant literature has been made available to the group. Drawing on their specific areas of expertise, the evaluators will assess for user-friendliness, flexibility and the potential of the material and training methodology to promote and facilitate patient teaching. The role of the informatics nurse includes evaluating how well the program will lend itself to an online venue and which technologies are most appropriate. In addition, the task of the nursing faculty member is to review the program's pedagogic aspects paying special attention to the various learning modalities involving attitudes, emotions, values and motivations. The reason for this level of assessment is because learners apply different modalities to their acquisition and retention of information. The physician's role will be to evaluate the ability of the program to engage providers' interest in the material and apply it to

their practice. As a group, the evaluators will also assess for cultural competency and the program's flexibility in terms of educating staff at various levels of professional practice.

Summary

Planning a program requires a concerted effort by all stakeholders including the people who are going to benefit from the program through their representative. Program planners should take into consideration the knowledge and experience of the people who are going to plan and subsequently make a formative and summative evaluation of the program. Getting the right people on board is essential for the successful implementation of the program. Strategic communication by giving timely information via availability of data, simplification and clarification all issues concerning the program, updating all stakeholders and or parties on the current activities will ensure smooth implementation of the program. All these factors complement each other and indirectly show a gesture of acknowledging the stakeholders' contribution to the success of the program. This will help establish trust and confidence within the planning team. Teamwork should be emphasized in program development and implementation. In the process of building the "team", proper education and increase knowledge and skills of staff is essential to provide a cohesive and cost-effective health care delivery to the patients in the clinic. It is this need that the proposed DNP project was created.

Performing and planning a budget analysis for any program (in this case TB screening program) will give a good perspective on the cost and effectiveness of the program as a whole. Honesty, clarity and trust are characteristics needed in a planned program to provide an effective and efficient diabetic and TB education and skills training program enticing potential investors and stakeholders to throw their support and allow them to review their options. A good

budgetary analysis will also help program planners to analyze during the course of the operation of the program what areas can be regulated or improve to minimize loses and save the needed

revenue for the organization.

The performance measurement and program evaluation must be properly implemented; this is essential in any program to learn the extent to which the program planners have built on existing clinical resources and are meeting the intellectual and skills needs of the clinic staff. Such an evaluation is essential for the funders and other stakeholders to help them in their decision in funding future program planning, program improvements, revisions and help the program to continuously operate.

Section 4: Discussion and Implications

Introduction

This section expounds the result of appraisal conducted among summative evaluators and formative evaluators, as well as the implication of the result. Likert scale was utilized in the method to gauge the evaluators perception about the tool prepared to be used in the staff development program. In this evaluation, number 1 to 5 have respected meaning which underscore the value of the items being evaluated.

We have utilized of Appraisal of Guidelines Research and Evaluation also known as AGREE II to gauge the quality of reporting as well as process of practice guideline development (AGREE, n.d.) on both groups of evaluators. The formative tool underscores issue on the program per se. The summative evaluation tool on the other hand, underscores the appropriateness of program's instructional materials on the program design. In this section, both the formative evaluators and summative evaluators express positive perception that this tool is

effective and equipped of pertinent factors that would help increase the awareness of the target group. The result have clearly demarcated that the program is doable, entails great potential for effectiveness, condensed with appropriate materials, appropriate theoretical framework for program development, and met the cultural competency required for education different individuals. The ability of the program to be able to implements its materials as well as contact in diverse stakeholders is one profound aspect of this research which underscored that this program can be well understood by majority of the population or target population.

Summary of Findings

Formative and summative evaluations were used with stakeholders to introduce the Staff Development Program for Diabetes and the TB Education and Screening. The stakeholders in this program were primarily health care providers, such as RNs, LVNs, MAs, lab techs, and pharmacy staff. However, this does not imply that the program will be limited to health care providers; other patients and indeed, the whole community, will be influenced by it .

The participation of the stakeholders in this program was critical to identify whether the program needed further modifications and whether they understood the need to adopt the program. Change is one of the goals of this program. Given the increasing prevalence of several diseases, such as diabetes and tuberculosis, changing the community's behavior toward health was important. In this program, there were two objectives: (a) to develop an effective TB and diabetes screening program for the clinic and (b) to design an education program for staff on diabetes and TB awareness, one that could, in turn, be used to educate clinic patients.

To determine whether the program met its goals required evaluation, which, in turn, would reveal the impact of the program? The results of these evaluations are expected to serve as

an integral tool in determining the need for potential changes to ensure that the program is congruent with the stated goals and objectives.

Protection of Human Subjects

An IRB Pre- application was completed. The site for the project was the Blythe Family Health Clinic. The clinic is one of the many clinics operating under the umbrella organization of the clinic. The clinic does not have its own IRB. Participant involvement was limited to providing feedback on materials that were developed for the project. The results of the study could serve to support improved patient care at the facility. The clinic, where the author is employed, deals with many diabetic patients many of whom has not been screened properly for TB. The purpose of this project was to develop an education program for staff to support the implementation of a TB and DM screening program. Permission was obtained from the Walden University IRB before initiation of this project.

Project Goals and Outcomes

This program was assessed through formative and summative evaluations.
The formative evaluation included five participants (three physicians and two nurse managers). They evaluated the program by measuring five items: the program's relevance to the objectives, the program's design and effectiveness, engagement of stakeholders, budget, and the program's flexibility and scope. A 5-point Likert-scale rating was used to assess the five items, from 1(*not at all*) to 5 (*fully*).

To measure the appraisal of the participants, the modified version of Appraisal of Guidelines Research and Evaluation instrument were used. This modified version, also known as AGREE II, was used to gauge the quality of reporting as well as process of practice guideline

development (AGREE, n.d.). Table 1 shows the results of the five participants' formative evaluation.

Table 1

Formative Evaluation Tool

Stakeholders	Item 1	Item 2	Item 3	Item 4	Item 5	Total
Nurse Supervisor	4	4	4	3	4	19
Office Manager	4	4	4	4	4	20
Consultant 1	4	4	3	4	4	19
Consultant 2	4	4	4	3	4	19
Local Department of Health	4	4	4	3	4	19
Total	20	20	19	17	20	96

Maximum possible score = 4 (fully) x 5 (items) x 5 (appraisers) = 100

Minimum possible score = 3 (agree) x 4 (items) x 4 (appraisers) = 48

The scale domain score calculation:

$$\frac{\text{Obtained score} - \text{Minimum possible score}}{\text{Maximum possible score} - \text{Minimum possible score}}$$

$$\frac{96 - 48 = 48}{100 - 48 = 52}$$

$$= 0.9230 \times 100$$

$$= 92.30\ \%$$

The questions provided in the formative tool underscore issue on the program per se. The stakeholders for this evaluation tool strongly agreed that the program were able to meet its objective which are to develop an effective TB and diabetes screening program for the clinic, and

to design an education program for staff development on diabetes and TB awareness that can later, in turn, be used to educate clinic patients. In terms of clarity of rationale for the program for better understanding of stakeholders, all the evaluators agreed that it was well defined.

For the third item, the formative tool assess whether the program appears to engage the interest of the stakeholders, all of the evaluators fully agreed. Almost everyone agreed and commented that the group interaction facilitated better understanding about the diseases. However, one of the consultants rated this item 3 but still recommended it. Item 4, which is about the budget of the program did not attain a perfect score, but the rating was still high. Three of the evaluators rated this item with 3. One of the consultant recommended that the budget should be more specific and itemized. The consultant also added that the program can save more budget if they will try to get sponsorship for screening materials. Finally, all evaluators strongly agreed that the program contained flexibility and scope for it future development. Overall, all five evaluators did not provided much recommendation on every items because they were significantly satisfied on how the program was created. Minor development that could be noted from the appraisal was about itemizing the budget and being more specific. Most of them agreed that the budget allocated was reasonable and feasible.

The collated result (92%) from this formative evaluation tool shows that the program per se is doable and has a great potential for effectiveness. However, as mentioned previously, the engagement of the stakeholders on this program will have a great impact on its success. The formative evaluation tool is planned to be continuously provided as the project progress for this will aid on identifying needs for changes or improvement.

The summative evaluation was conducted by the education director, informatics chief, nursing director, chief operating officer, and medical director. This evaluation tool is comprised

of four items, which assess the design of program's materials, effectiveness of the program's materials, theoretical framework, and its cultural competency. A 4 point Likert scale rating was used to assess the evaluators' perception on the program based on the five items mentioned: Not at all, 1, 2, 3, Fully.

To measure the appraisal conducted by five participants, the modified version of Appraisal of Guidelines Research and Evaluation instrument was again been used. This is utilized to gauge the quality of reporting as well as process of practice guideline development (AGREE, n.d.). Table 2 shows the results attained from formative evaluation from five participants.

Table 2

Summative Evaluation Tool

Stakeholders	Item 1	Item 2	Item 3	Item 4	Total
Education Director	4	4	4	4	20
Informatics Chief	4	4	4	4	20
Nursing Director	4	4	4	4	20
Chief Operating Officer	4	4	4	4	20
Medical Director	3	4	4	3	18
Total	19	20	20	19	78

Maximum possible score = 4 (fully) x 4 (items) x 5 (appraisers) = 80

Minimum possible score = 3 (agree) x 1 (items) x 1 (appraisers) = 3

The scale domain score calculation:

$$\frac{\text{Obtained score} - \text{Minimum possible score}}{\text{Maximum possible score} - \text{Minimum possible score}}$$

$$\frac{78 - 3 = 75}{80 - 3 = 77}$$
$$= 0.9740 \times 100$$

$$= 97.40\ \%$$

The first item tackles about the appropriateness of program's instructional materials on the program design. Almost all of the evaluators strongly agreed that the materials were appropriate. The medical director rated 3 on this item and recommended that having variety of resources for instructional materials would aid in future programs. Other evaluators commend the utilization of visual aids in increasing the interest level of stakeholders in the program. On the second item, all of the evaluator strongly agreed that the materials for the program effectively encourage staff development and continuing education. The education director also recommended encouraging individual feedback on a subject in order to determine areas, which require further improvement. On the third round, all the evaluators strongly agreed that the theoretical framework selected was successful in guiding the program development. On the final item, Most of the evaluators strongly agreed that the organization of materials and overall presentation in the program was able to meet cultural competency, which address the varying needs of the staffs. They all commended the program because it was constructed in a way that made it easily understood, considering the diversity of the stakeholders.

The data collated from this summative evaluation tool shows that the material developed can be applied to diverse stakeholders. A rate of 97% is a significantly high score, which indicates that the materials are ready for presentation. In fact, it was apparent from the results of formative evaluation tool and summative evaluation tool that the program as a whole can be presented to the stakeholders. There are no significant changes recommended by all evaluators in

both of the tools. This finding manifests the consensus of all evaluators on agreeing that this program is ready for implementation. The formative evaluation tool was answered by the nurse supervisor, office manager, Consultant 1, Consultant 2, and representatives from the local health department. The summative evolution tool answered by the education director, informatics chief, nursing director, chief operating officer, and medical director.

The results of the evaluation had been remarkable and also helpful for the program because it showed how this could be potentially effective for the target stakeholders. The health care providers are very integral in managing health of the society, and this makes it imperative for them to be equipped with profound knowledge. This program is not only an intervention to manage the spread of Tuberculosis among Diabetic patient but also to guide future programs on how its structure can be developed and implemented effectively.

Implications

The staff development program on diabetes and Tb education and screening is an evaluation tool which identify the competency of the health care providers in terms of having profound knowledge on spread of tuberculosis among diabetic patients. At the same time, it also serves as a primary prevention for it educate the health care providers such as nurses to ensuring that they are equipped with the right knowledge to also educate their patients.

Tuberculosis is one of the most common communicable diseases, but although there are already available medications, which can cure this condition, it is still not rationale to merely depend on this drug. During the onset of tuberculosis, an individual's health is compromised. This makes them vulnerable to complications. Diabetes is not a communicable diseases, however, the disease process per se puts an individual to a great risk of experiencing complications such as tuberculosis. (Dooley and Chaisson, 2009) expound that diabetes is known

to affect chemotaxis, phagocytosis, activation and antigen presentation by phagocytes in response to mycobacterium tuberculosis. This was also supported by the prevalence of tuberculosis among 3,106 diabetic patients as seen in chest radiograph. In addition to this, it was also mentioned earlier that the greater dose of insulin taken by a diabetic patient makes them more likely to develop tuberculosis. Therefore, the severity of diabetes can be directly link to the risk of development of tuberculosis. This is a serious issue, which needs to be addressed effectively because the Center for Disease Control and Prevention reported that about 9.3 percent of the total population of United States has diabetes. This rate equates to approximately 29.1 million Americans, in which 21 million were diagnosed and 8.1 million were undiagnosed. This prevalence means that there are 29.1 million Americans who are likely to develop tuberculosis, which is a great burden for health care. And what is worse from this is 8.1 million have no idea that they may be suffering two serious health conditions at the same time, and not being under any form of medical management.

The quality of one's life would be greatly affected when having diabetes and tuberculosis at the same time because they are not only suffering the diseases per se but also other complications associated to these diseases. This also implies that they can develop more diseases other than the two mentioned. The development of this program is valuable in helping the community reduce the prevalence of tuberculosis and manage diabetes better. In addition to this, it can also help the patients, their relatives and significant others, and the whole community about the fundamental information about these common diseases which makes them more equipped in regards to managing their own health.

Strengths and Limitations

This program entails valuable knowledge, which is not created in a perplexing manner and such structure give the program a profound strength. The results on the formative evaluation tool and summative evaluation tool were able to validate that the program is ready to be implemented because it was able to address the varying learning needs of diverse stakeholders. In addition to this, the consensus of participants did not only come from nurses or doctors, rather it involves other pertinent staff in the hospital that would serve as representative from other departments. Furthermore, they also hold significant position, which makes the evaluation reliable and credible, as compared to randomly distributing the evaluation tool among health care providers. The position held by the participants reflects their expertise and credibility in the industry.

Another strength of this program is that it was able to provide substantial literature review, which presents several pieces of information, which may not be well known among many nurses, particularly the novice ones. Therefore, this program will able to disseminate information that will increase the competency level of novice nurses. In line with this, the summative evaluation again validates that the instructional materials encapsulated in the program would be significantly helpful and understandable among beginners. The nurses and other health care related staff that lack clinical experience will greatly benefit from this intervention.

There is no significantly big limitation, which can influence the effectiveness of this program. However, one of the recommendations from the summative evaluation tool mentioned that making an open-ended topic to facilitate more areas for discussion would be helpful for the instructional materials of the program. One predicament that can be perceived in considering such as recommendation is the extent of facilitating open-ended topics or inquiries. It has been

mentioned earlier that this program is not limited among health care providers because it has an aim of educating patients as well as the whole community using the materials. Given this situation, it is then imperative to consider the understanding of people in terms of health condition. Certain concepts and terminologies are challenging to comprehend especially among people who do not have a medical incline or have no background to any medical allied courses. Therefore, this challenge would require the program that will provide instructional materials, which can be easily, understand even by a layperson. The novice nurses and other health care providers are not really affected much of this recommendation because it is imperative for them to improve their skills and this would require profound knowledge in many aspects of health care.

Self-Analysis

The proposal for Staff Development Program on Diabetes and TB Education and Screening its feasibility, reliability, and applicability, even in the community settings. The process of developing this doctoral nursing scholarly project had provide realization of the great need for continuous education among health care providers, because the complexity of diseases further evolved which necessitates us to be always equipped. In addition to this, the project also enlightens me of the needs to increase and update the community's awareness of common disease. Educating and consistently updating the community about the evolution of common diseases must be part of the preventive measures because preventive measures per se would not be effectively if appropriate interventions are not observed. For instance, it is frequently advised to wash hands before eating, however was the community fully aware on how to properly observe hand washing and if there are special precautions to consider if necessary.

The development of this doctoral nursing scholarly project provided me a sense of pride as a nurse, a nursing student, an educator, an executive, a scholar, and an active concerned citizen, because I know that I was able to impact a knowledge which would be valuable to many people in the community and not only professionals. This program is one product of how to effectively put knowledge into action.

Section 5: Scholarly Product for Dissemination

In 2013, 9,582 cases of tuberculosis were reported in United States. This figure implies that 3 in every 100,000 individuals develop tuberculosis (Centers for Disease Control and Prevention [CDC], 2013). As compared to other nations, the rate of this communicable disease in the United States is quite low, which manifest the successful interventions in managing the disease. However, based from the previous studies tackled above, patients who have diabetes are also vulnerable to developing Tuberculosis. Although tuberculosis is significantly low in the country, it was expound that this communicable disease has been causing 1.8 million deaths around the globe and it is highly associated with HIV and diabetes. Considering that the rate of diabetes in United States equates to 25.8 million Americans as of 2010. Therefore, a large number of the country's population is at risk (CDC, 2014).

According to several studies on the relationship diabetes and tuberculosis, the risk of developing this communicable disease is more apparent among Type II diabetic patients. Gonzales – Curiel (2012), conducted a study to further investigate the relationship of diabetes type II and tuberculosis. In their findings, they stated that, "By contrast, patients with diabetes mellitus type 2 have lower antimicrobial peptides gene expression, suggesting that the lack of its proper production in these patients contribute to enhance the risk for Tuberculosis reactivation"

(p.4). These findings are integral in enhancing the current nursing and other health care related interventions in order to avert further development of tuberculosis.

Project Dissemination

This findings presented in this DNP Project are integral to further understanding of this important clinical issue. The results of this DNP Project will be disseminated through a professional conference presentation. According to Harmsworth and Turpin (2000), conferences are an effective vehicle for disseminating. A PowerPoint presentation (see Appendix H) was developed, I opted to use a PowerPoint presentation because it is one of the most effective tools in which I can integrate different elements to present a variety of information in a multi-media format. In this presentation I will utilize texts, graphs, images, and short videos, to facilitate explanation of the results in a summarized form. The process of disseminating information will be a regional professional conference. A conference presentation is the preferred method because it can provide major benefits, particularly in being able to reach out to the target audience as well as the stakeholders in a face-to-face opportunity. The process may also promote further validation of the result of this DNP Project in congruence to the situations in practice, and also shed new understanding, which may not be significantly apparent in the results but it substantially relevant to the topic.

Specifically, the PowerPoint presentation will encapsulate a summary of the results and findings with a brief explanation of its implications. Then a short video clip will be presented to illustrate the prevalence of Tuberculosis among Type II Diabetes patients in United States, and how the proposed program will be implemented. Multimedia will be used in the presentation

because it could be a vehicle to increase the audience interest in the topic and increase their interest in wanting to understand more about this issue.

Project Summary

Introduction

The following project summary is intended to support the PowerPoint presentation and will also serve as a concurrent conference proceedings submission. Diabetes has been known as one of the most common cause of morbidity in United States. In fact, this also is the predicament in other countries. This great concern then lead to several interventions and life style programs that would help patient manage their health and reduce complication of diabetes. However, it seems that new predicaments needs to be addressed when several researchers have discovered that tuberculosis influence the development of pneumonia. To further cultivate on this health issue, we conducted a study which would help evaluate the impact that tuberculosis on the health in relevance to diabetes which is supported by credible and reliable resources. Aside from this, this DNP Project is to develop a program to teach clinic staff about the importance of early identification of patients with diabetes and TB. It is expected that (a) the resulting program will meet the needs of the clinic staff, and increase their knowledge and ability to identify diabetic patients prone to developing TB and that, in turn; (b) staff will be able to impart this knowledge about the importance of screening for diabetes and TB to individuals. A formative and summative assessments were developed to appraise whether the program has met its goals and objectives and to acquaint stakeholders with its viability and sustainability.

Background

The association of diabetes and tuberculosis had been identified among populations with low socio-economic status and high incidence of both diseases (Perez et al., 2007). Dooley and Chaisson (2009) reported that in 2000 about 171 million of individuals were diagnosed with diabetes and this was expected to further increase to 366 million – 440 million by 2030. The issue about diabetes had been more alarming when recent studies showed that about 5 to 30 percent of patients with tuberculosis present with concomitant diabetes (Pablos-Mendez, Blustein, Knirsch, 1997; Feleke, Abdulkadir&Aderaye, 1999; Ponce-de-Leon et al., 2004; Wang, Lee &Hseuh, 2005; Alisjahbana et al., 2006; Singla et al., 2006) and the available evidence indicates that diabetes acts as a risk factor for the development of tuberculosis (Ruslami, Aarnoutse, Alisjahbana, Van der Ven,& Van Crevel, 2010).

Dooley and Chaisson (2009) expound that diabetes puts an individual to a great risk of developing tuberculosis because diabetes is known to affect chemotaxis, phagocytosis, activation and antigen presentation by phagocytes in response to mycobacterium tuberculosis. This was also supported by the prevalence of tuberculosis among 3,106 diabetic patients as seen in chest radiograph. In addition to this, it was also mentioned earlier that the greater dose of insulin taken by a diabetic patient makes them more likely to develop tuberculosis. Therefore, the severity of diabetes can be directly link to the risk of development of tuberculosis.

This predicament promoted us to underscore on a program, which would serve as preventive measure in the development of tuberculosis among diabetic patients. This programs starts with educating health care providers such as nurses and other clinic staffs on the significance of early identification of diabetic and TB patients. We utilized logic model was chosen as the framework for this project. Summative and formative evaluation were conducted

by 10 health care providers and staffs including physicians, educators, and administrators to review the program for effectiveness, viability and sustainability.

Proposal and Future Project Strengths

The strength of this study is being able to meet the standards of the evaluator. Through summative and formative evaluation, we have validated that the program is sufficiently equipped for implementation among health care providers as well as clinic staffs. The evaluators who participated in this study were leaders who were encapsulated with the knowledge and experience, which we consider as valuable factors in relevance to their ability to profoundly appraise a program. Our evaluators were composed of nurse supervisor, office manager, 2 consultants, local department of health, education director, informatics chief, nursing director, chief operating officer, and a medical director. The position held by the participants reflects their expertise and credibility in the industry.

In addition to this, the program was developed based the consistency of results from the recent studies. Cultivating on several studies around the world provides a better perspective of the needs to propose this program for the impact will not only be manifested on the ability of the health care providers to promote health and prevent development of complications, but it will also manifest on the effectiveness of the health care sector of the nation in addressing the health care needs of its people. This is very important because prevention always provides the best option rather than cure.

Recommendations for Future Project Study

This study is still open for further improvement. Although, evaluators have strongly agreed that this is equipped for implementation, it is still imperative to consider pre-study tool feasibility test findings if available and possible in order to help fortify the content validity of the

program. In addition to this, it would also be substantial to increase the participants or number of evaluator for future proposal. It would be helpful to integrate staff nurses, including the novice and seasoned nurses as well as the patients and their caregiver if necessary, because it can provide the program new ideas on how the program as well as its materials could be more effective when applied to target population. In addition to this, it would also help them evaluate the learning needs of the target population, allowing to make teaching congruent to the learning needs.

References

AGREE. (n.d.). Agree. Retrieved from http://www.agreetrust.org/

Alisjahbana, B., van Crevel, R., Sahiratmadja, E., den Heijer, M., Maya, A., Istriana, E.,…van der Meer, J. (2006). Diabetes mellitus is strongly associated with tuberculosis in Indonesia. *The International Journal of Tuberculosis and Lung Disease, 10*,696-700.

Alisjahbana, B., Sahiratmadja, E., Nelwan, E.J, Purwa, A., Ahmad, Y., Oteenhoff, T., …van Crevel, R. (2007). The effect of type 2 diabetesmellitus on the presentation and treatment response of pulmonary tuberculosis.*Clinical Infectious Diseases,45*,428-435.

Bach, J., Ehrhardt, J., Copeland, G., Simmons, L., Deising, N., Silva, W. &Korseniewski, S. (2009). A Logic Model for Evaluation: Michigan Birth Defect Surveillance System.

National birth defect prevention network meeting. (2009). *National Birth Defect Prevention Network* Retrieved from http://www.nbdpn.org/current/2009pdf/AM2009PDF/ WED800AM_Bach%20 and %20Ehrhardt_Logic%20Mode l %20Plan_MI-Web.pdf.

Bartholomew, L.K., Parcel, G.S., Kok, G. & Gottlieb,N.H.(2006).*Intervention mapping (*2nd ed.). Mountain View,CA:Mayfield.

Boucot, K.R., Dillon, E.S., Cooper, D.A., Meier, P. & Richardson, R. (1952). TB among diabetics: The Philadelphia Survey. American Review of Tuberculosis,65, 1-50.

Centers for Disease Control and Prevention. (2011). National Diabetes Fact Sheet: National estimates and general information on diabetes and pre-diabetes in the United States. *Centers for Disease Control and Prevention.* Retrieved from http://www.cdc.gov/diabetes/pubs/pdf/ndfs_2011.pdf

Centers for Disease Control. (2011). *State program evaluation guides: Developing and using a logic model.* Division for Heart Disease and Stroke Prevention. Retrieved from http://www.cdc.gov/ dhdSP/programs/nhdsp_program/evaluation_guides/logic_model.htm

Centers for Disease Control and Prevention. (2012). Title. Retrieved from http://www.cdc.gov/tb/statistics/report/ 2012/pdf/report2012.pdf.

Centers for Disease Control and Prevention. (2013). Tuberculosis. Centers for Disease Control and Prevention. Retrieved from http://www.cdc.gov/tb/publications/factsheets/statistics/TBTrends.htm

Centers for Disease Control and Prevention. (2014). Diabetes research and statistics. Centers for Disease Control and Prevention. Retrieved from http://www.cdc.gov/diabetes/consumer/research.htm

Dean-Coffey, J. (2007).Logic models: Centers for civic partnership's 2007 organizational learning and evaluation conference. *Center for Civic Partnerships*. Retrieved from www.civicpartnerships.org/docs/home/07OLEPresentations

Disa, A.(n.d.). Stakeholders and Public Policy. Retrieved from http:// www.future 500.org/stakeholder-engagement-as-a-public-policy-tool/

Donohue, C.V. (2012). Staff Education: Defining what is needed is more important than ever. *Home Healthcare Nurse, 30*(2),70-71.

Dooley, K.E. &Chaisson, R.E.(2009). TB and diabetes mellitus: convergence of two epidemics. *Lancet Infectious Disease, 9*(12), 737-746.

Feleke, Y., Abdulkadir, J., & Aderaye, G. (1999). Prevalence and clinical features of tuberculosis in Ethiopian diabetic patients. *East African Medical Journal,76*,361-364.

Gall, M. D., Gall, J. P., & Borg, W. R. (2003*). Educational research: An introduction* (7th ed.). New York, NY: Allyn and Bacon.

Gaynor, S. E., VanCura, B. J., Reschak, G. L. (2001). Teaching an elephant to drive: massive staff education in a tight time frame. *Journal for Nurses in Staff Development, 17*(1), 303-308.

Glanz, K., Rimer, B.K., &Su, S.M. (2005). *Theory at a glance, a guide for public health practice*. National Cancer Institute, United States Department of Health and Human Services, National Institutes of Health. Retrieved from http://www.cancer.gov/PDF/ 481f5d53-63df-41bc-bfaf-5aa48ee1da4d/TAAG3.pdf

Gonzales – Curiel, I. (2012).Latent tuberculosis: New insights for the healthcare professional. Atlanta, GA: Scholarly Editions.

Green, L.W. &Rabinowitz, P. (2013). PRECEDE-PROCEED. The Community Tool Box, add department if there is one, University of Kansas, City, State. Retrieved from http://ctb.ku.edu/en/tablecontents/sub_section_main_1008.aspx

Habel, M., Lassen, C. F., & Rankin, S.(1998). New-building occupancy: The role of nursing staff development. *Journal of Nursing Staff Development, 14*(1),23-29

Harmsworth, S., Turpin, S, &TQEF National Co-ordination Team. (2000). Creating an effective dissemination strategy: An expanded interactive workbook for educational development projects. Innovations Team. Retrieved from http://www.innovations.ac.uk/btg/resources/publications/dissemination.pdf

Harries, A.D., Murray, M.B., Jeon, C.Y., Ottmani, S-E., Lonnroth, K., Barreto, M.L.,…Kapur, A.. (2010). Defining the research agenda to reduce the joint burden of disease from diabetes mellitus and tuberculosis. *Tropical Medicine International Health,15*(6), 659-63.

Healthy People 2020. (2010a). Topics and objectives. Retrieved from http://www.healthy people.gov/2020/topicsobjectives2020/default.aspx

Healthy People 2020. (2010b). Respiratory Disease. Retrieved from http://www.healthy people.gov /2020/topics objectives2020/overview.aspx?topicid=36

Hodges, B.C. &Videto, D.M. (2011). Assessment and planning in health programs (2nd ed.).Sudbury, MA. Jones & Bartlett Learning.

Implication for Business: WHO's new collaborative framework on TB and Diabetes. (2011). *GBC Health*. Retrieved from http://www.businessfightsaids.org/asset/implications-for-business-whos-new-collaborative-framework-on-tb-and-diabetes/

Kettner, P.M., Moroney, R.M. & Martin, L.L. (2013). Designing and managing programs: An effectiveness-based approach. Thousand Oaks, CA. SAGE Publications, Inc.

Leung, C. C., Lam, T. H., Chan, W. M., Yew, W.W., Ho, K.S., Leung, G., …Chang, K.C. (2007). Lower risk of tuberculosis in obesity. *Archives of Internal Medicine,167*, 1297-304.

McBride, M. (2006). Diving for data. A southwest Florida hospital deploys clinical and financial analysis tools to eliminate losses and empower decision makers. Health Management Technology, 27(3), 22.

McCawley, P.F. (n.d.). The Logic Model for Program Planning and Evaluation. University of Idaho, Moscow, ID. Retrieved from http://www.uiweb.uidaho.edu/extension/LogicModel.pdf

McNabney, M.K., Willging, P.R., Fried, L.P. &Durso, S.C. (2009). The "Continuum of Care" for Older Adults: Design and Evaluation of an Educational Series. Journal of American Geriatric Society, 57,1088-1095.doi: 10.1111/j.1532-5415.2009.02275.x

Nash, D. B., Reifsnyder, J., Fabius, R.J., Pracilio,V. P.(2011). *Population health: Creating a culture of wellness.* Sudbury, MA: Jones & Bartlett Learning, LLC.

Pablos-Mendez, A., Blustein, J., &Knirsch, C.A. (1997).The role of diabetes mellitus in the higher prevalence of tuberculosis among Hispanics. *American Journal of Public Health87*,574-579.

Ponce-de-Leon, A., Garcia-Garcia, M.I., Garcia-Sancho M.C., Gomez-Perez, F., Valdespino-Gomez, J., Rojas, R., …Sifuentes-Osornio, J. (2004).Tuberculosis and diabetes in Southern Mexico. *Diabetes Care, 27*,1584-1590.

Pratt, C. C., McGuigan, W. M., & Katzev, A. R. (2000). Measuring program outcomes: Using retrospective pretest methodology. American Journal of Evaluation, 21(3), 341–349.

Restrepo, B.I., Camerlin, A.J., Rahbar, M.H., Wang, W., Restrepo, M.A., Zarate, I., & Fisher Hoch, S.P. (2011). Bulletin of the World Health Organization, 89, 352-359. Retrieved from http://www.who.int/bulletin/volumes/89/5/10-085738/en index.htmldoi:10.2471/BLT10.085738

Ruslami, R., Aarnoutse, R.E., Alisjahbana, B., Van der Ven, A.J. & Van Crevel, R. (2010).Implications of the global increase of diabetes for TB control and patient care. Tropical Medicine & International Health, 15(11), 1289-99.

Sen, T., Joshi, S.R. &Udwadia, Z.F. (2009).TB and Diabetes Mellitus: Merging Epidemics. Retrieved from www.japi.org/may_2009/article_07.pdf.

Singla, R., Khan, N., Al-Sharif, N., Ai-Sayegh, M.O., Shaikh, M.A., & Osman, M.M.(2006). Influence of diabetes on manifestations and treatment outcome of pulmonary TB patients. *International Journal of Tuberculosis and Lung Diseases, 10*, 74-79.

Stevenson, C.R., Forouhi, N.G., Roglic, G., Williams, B.G., Lauer, J.A., Dye, C. &Unwin, N. (2007).Diabetes and TB: the impact of the diabetes epidemic on TB incidence. BMC Public Health, 7, 234.doi:10.1186/1471-2458-7-234.

The Essentials of Doctoral Education for Advance Nursing Practice. (2006). Retrieved from http://www.aacn.nche.edu/publications/position/DNPEssentials.pdf

Wang, J.Y., Lee, L.N., &Hsueh, P.R.(2005). Factors changing the manifestation of pulmonary tuberculosis. *International Journal of Tuberculosis and Lung Diseases, 9*,777-783.

White, K.M. & Dudley-Brown, S. (2012). Translation of Evidence into Nursing and Health Care Practice. New York, NY. Springer Publishing Company, LLC.

W.K. Kellogg Foundation. (2001). *Using logic models to bring together planning, evaluation, & action: Logic model development guide.* Battle Creek, MI: Author. Retrieved from http://www.wkkf.org/Pubs/Tools/Evaluation/Pub3669.pdf

Yaverbaum, E. & Sherman, E. (2011). Add title of what was retrieved. Retrieved from http://www.netplaces.com/leadership/empowerment-and-delegation/empwerment.htm

Young, J.L. (2011). *Educating Staff Nurses on Diabetes: Knowledge Enhancement*. *MEDSURG N*ursing,20(3),143-150.

Vanek, C. (2012). Likertscale—What is it? When to use it? How to analyze it? Retrieved from http://www.surveygizmo.com/survey-blog/likert-scale-what-is-it-how-to-analyze-it-and-when

Appendix A
Activities and Types of Data Needed

TB Screening	DM Screening
1. TB risk assessment	1. Body Mass Index (BMI) (kg/m2)
previous BCG: Yes__ No__Unknown___	Overweight = 25.0 -29.9
Country of Origin __ City of Origin ___	Obesity (Class 1) = 30.0 - 34.9 Obesity (Class 2) = 35.0 - 39.9 Extreme Obesity ≥40.0
2. Assessment	2. Physical inactivity (age 45/> for DM II)
cough __ hemoptysis ____ wt. loss_____	3. 1st degree relative w/ DM
screen for TB ____ observe for TB suspect__	4. High-risk ethnic populations (Hispanic, Native-African, Asian-Americans and Pacific Islanders)
3. Order	5. Hxgestational DM or deliver baby>9lbs
PPD__CXR (PA/LAT)_ CXR, single____	6. Hypertension (≥140/90)
4. TST Questions (past year)	7. HDL cholesterol ≤ 35 mg/dl or a TG ≥ 250 mg/dl
chronic fever ___	8. Hx of vascular disease
frequent night sweat ___	9. Hx impaired Glucose Tolerance Test (IGT) or Impaired Fasting Glucose (IFG)
BCG vaccination ____	HgbA1c : 6.0-6.4% (126 mg/dl) ; pre-diabetic and HgbA1c : ≥ 6.5% (>126 mg/dl); diabetic (American Diabetic Association: Diabetes Care,33:514,2010)
bloody cough _____	
chronic weight loss _____	
5. Plan	
return to office in: 48-72H ____	

Appendix B

Diabetic and TB Education Program : Proposed Budget for 2Months

Expected Revenues	2 months
Clinic allocation for education materials	$2,000.00
Organization (CDSDP Funds)	$3,000.00
Donor contributions (drug companies/DME supplies)	$2,000.00
TOTAL REVENUE:	$7,000.00

Expected Expenses	2 months
1. Salaries/wages/fees	
NP @ $ 70/hours x 2 hrs. (3 sessions/ week)	$3,360.00
guest honorarium fees x3	$600.00
Total for salaries/wages/fees	$3,960.00
Non-salary Expenses	
2. Supplies	$1,000.00
3. Equipment	400.00
4. Printing/Posters	500.00
5. Miscellaneous	500.00
Total non-salary Expenses	$2,400.00
TOTAL EXPENSES	$6,360.00

Appendix C
TB and DM websites/links

A. List of recommended TB websites/links:

http://www.cdc.gov/tb;

http://www.nim.nih.gov/medlineplus/TB.html;

http://www.cdc.gov/tb/webcourses/TB101/intro.html;

http://www.cdc.gov/tb/programs/Evaluation/Default.htm

B. List of recommended DM websites/links:

http://www.ndep.nih.gov/resources/index.aspx?Tooltype=17 (National Diabetes Education Program)

http://www.youtube.com/watch?v=rgNf8nsXAOQ (Diabetes Education 3D Medical Animation)

http://www.diabeteseducation.com/quiz/diabetes-complications/o

http://www.videomd.com/Diabetes-Remedies-Videos-9-fvcallv.aspx

Appendix D
Staff Confidence Level – A Survey
Robert Wood Johnson Grant on Patient Self-Management

DATE: _____ NAME: _____

When talking with patients who have diabetes: (1=NO comfort – 7=EXTREMELY comfortable)
* Note: A = questions only for the following: MA, LVN, RN

1) How comfortable are you asking questions about diabetes and tuberculosis?
1 2 3 4 5 6 7

2) How comfortable are you answering patient's questions?
1 2 3 4 5 6 7

3) How comfortable are you checking a patient's feet? (A)
1 2 3 4 5 6 7

4) How comfortable are you talking about how physically active a patient is (exercise)? (A)
1 2 3 4 5 6 7

5) How comfortable are you talking about a patient's food choices (diet)? (A)
1 2 3 4 5 6 7

6) How comfortable are you talking about meal planning and reading food labels? (A)
1 2 3 4 5 6 7

7) How comfortable are you discussing blood sugar and TB testing? (A)
1 2 3 4 5 6 7

8) How comfortable are you talking about the patient's medications? (A)
1 2 3 4 5 6 7

9) How comfortable are you helping a patient set a self-management goal? (A)
1 2 3 4 5 6 7

10) How comfortable are you calling a patient to invite them to a planned education in service?
1 2 3 4 5 6 7

11) How comfortable are you doing a planned visit with a patient? (A)
1 2 3 4 5 6 7

12) How comfortable are you participating in a diabetes group visit with one of the providers?
1 2 3 4 5 6 7

13) How comfortable are you calling a patient by phone to review and either change or add to their self-management goal? (A)
1 2 3 4 5 6 7

14) How comfortable are you listening and understanding what makes a patient with diabetes and TB stressed? (A)
1 2 3 4 5 6 7

15) How comfortable are you talking to a provider about their diabetic and TB patients? (A)
1 2 3 4 5 6 7

16) How comfortable are you working with a provider who wants their patient's to have planned education in-service visits?
1 2 3 4 5 6 7

17) How comfortable are you working with a provider who wants their patient's to come to a group session education and question visit?
1 2 3 4 5 6 7

This product was developed by the St. Peter Family Medicine Residency Program in Olympia, WA with support from the Robert Wood Johnson Foundation, Princeton NJ .
Grantees of the Diabetes Initiative have adapted and developed materials useful to project implementation, training, education and assessment activities. We are making them available on this Web site for others to use or adapt in their own organizations. Robert Wood Johnson Foundation Diabetes Initiative:
http://www.diabetesinitiative.org/resources/tools/documents/13-PROV-Resident.Facultyconfidencelevelsurvey_web_000.pdf

Appendix E

Performance measurement, monitoring, and evaluation timeline. Long-term effects of impact evaluation versus short and intermediate health outcomes.

Planning Model Steps	TB screening	DM Screening
Condition	Lack of awareness on increase severity of TB in DM patients	Lack of knowledge about facts in DM and its devastating effect on TB
Input	Training funds for in-service and education programs using CDC and other resources links; conferences with experts	Teaching and education by healthcare personnel in the clinic with provider supervision
Activities	TB screening test (TST)TB education program for clinic staff, patients, interested individuals and target population	DM screening In-service training for clinical staff (facts on DM and its complication; preventive measures; nutrition; holistic care of target population

Planning Model Steps	TB screening	DM Screening
Outputs	4 RNs; 7 LVNs; 8 MAs; 3 INTAKE COORDINATORS; 2 LAB TECHNICIAN educated/ trained; increase # of patients participating in the TB screening program	4 RNs; 7 LVNs; 8 MAs;3 INTAKE COORDINATORS; 2 LAB TECHNICIAN educated/trained; increase # of patients able to self-monitor their blood sugar and knowledgeable on HgbA1c screening
Immediate Outcome	Increase understanding of importance of TB skin test (TST); mode of transmission; signs/symptoms; treatment; preventive measures; complications	Increase understanding of DM and its complications and importance of DM screening; DM s/s symptoms; contributing factors; treatment; preventive measures

Planning Model Steps	TB screening	DM Screening
Intermediate Outcome	Better understanding of the devastating effect of TB on patients with DM ; Increase vigilance on detecting individuals who are potential TB candidates by knowing the s/s of TB	Better understanding on how to identify the s/s of hypo/hyperglycemia; how to regularly monitor blood glucose levels; how to prevent DM complications
Impact	Decreasing in the incidence of TB in the clinic population through active clinic staff participation in educating out patient, increase individual participation in the program (Active PPD skin testing); being aware of its significance and increase knowledge base on how to prevent the disease and its spread	Decreased number of patients diagnosed to have DM as evidenced by decrease in number of elevated HgbA1c Decrease in DM complication rates Increase in overall awareness of the Diabetes by the patient population through active participation of clinic staff in imparting evidenced-based knowledge on the disease entity

Appendix F
Evaluation plan that includes goals, objectives, and activities.

Type of Screening	Goal	Outcome Objective
TB screening	To reduce the incidence of TB in the clinic's patient population To develop an effective TB screening program to be implemented by the clinic To increase knowledge base of healthcare personnel and increase competencies and skills training on importance of TB screening To develop an outreach education program to susceptible individuals in the community	By (date) there will be a 80% decrease in number of TB cases in the clinic patient population By (date) there will be 100% increase in knowledge base of healthcare personnel on the facts about TB and its impact on chronic diseases in particular, diabetes

Type of Screening	Goal	Outcome Objective
Diabetic screening	To increase awareness of individuals and families on diabetes and its complications To develop a DM screening program to be implemented in the clinic To develop an educational program on the early detection and prevention of diabetes in all individuals regardless of age, sex and nationality	By (date), there will be a 100% increase in knowledge base on diabetes by majority of patients in the clinic By (date), an 95% increase in DM screening rate will be demonstrated in the clinic By (date), an 70% decrease in number of patients diagnosed with diabetes and have (+) TB screening test (TST) at the same time

Appendix G
Pretest and Posttest survey (multiple choice questions)

A. Diabetes

Module I: Theoretical aspect

1. What is diabetes?

2.What are the types of Diabetes?

3. Risk factors for Diabetes?

4. Relevance and Incidence of Diabetes?

5. How does diabetes affect tuberculosis?

Module II: Clinical Aspect

1. What are the symptoms of DM?

2. Complications of DM?

3. Treatment for DM?

4. How can we prevent DM?

Module III: Social relevance; Lifestyle changes

1. DM in the US?

2. US Department of Health and Human Services agenda?

3. Resources for the National Diabetes Prevention Program?

source: CDC's National Diabetes Fact Sheet. ; http://www.cdc.gov/diabetes/consumer/learn.htm

National Diabetes Information Clearing House; www.cdc.gov/diabetes/prevention/index.htm

B. Tuberculosis (multiple choice questions)

Module I: Theoretical Aspect

1. What is Tuberculosis?

2. Risk factors for Tuberculosis?

3. How does it spread?

4. Latent TB?

Module II: Clinical Aspect

1. What are the symptoms of Tuberculosis?

2. Testing for TB?

3. Treatment for TB?

4. How is TB related to DM?

5. Drug-resistant TB?

Module III: Social Changes

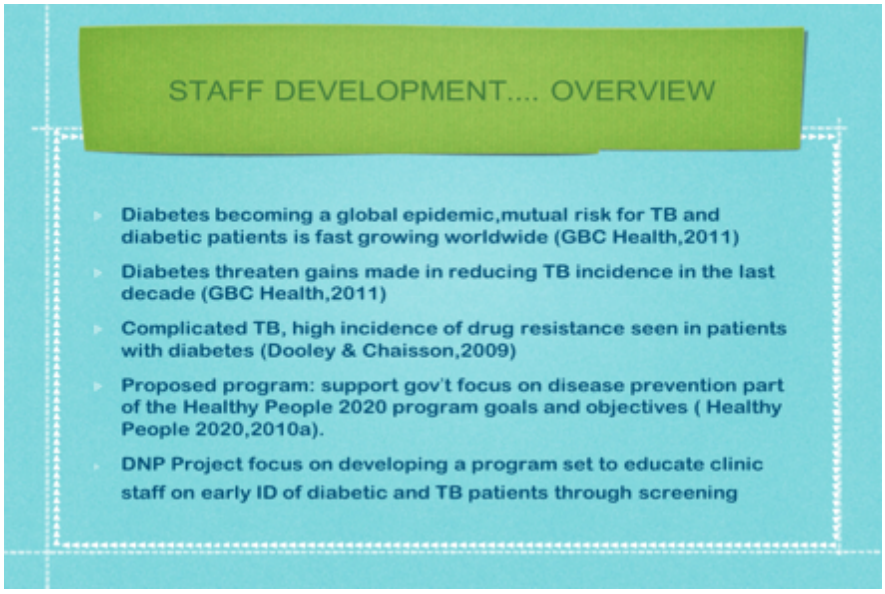
1. Relevance and Incidence of TB in the US?

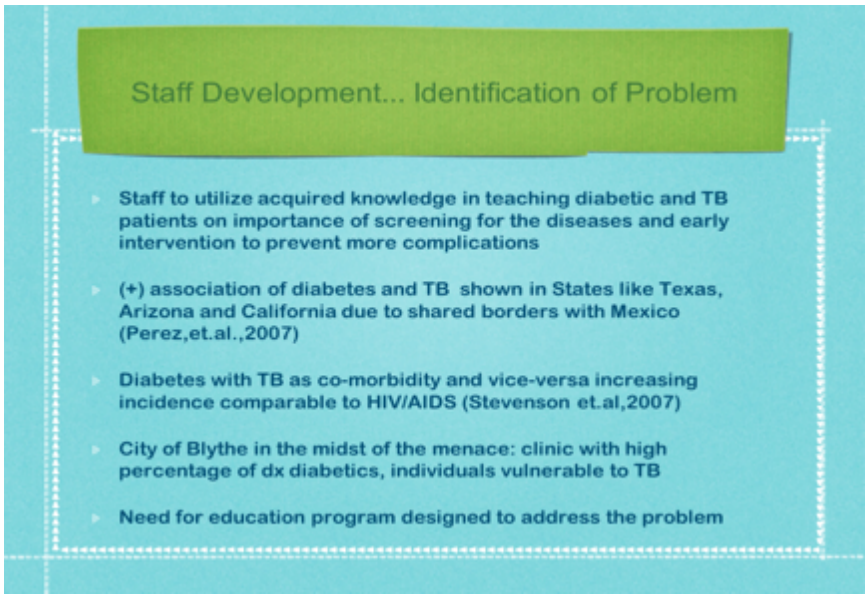
2. State and Local TB control programs resources/needs?

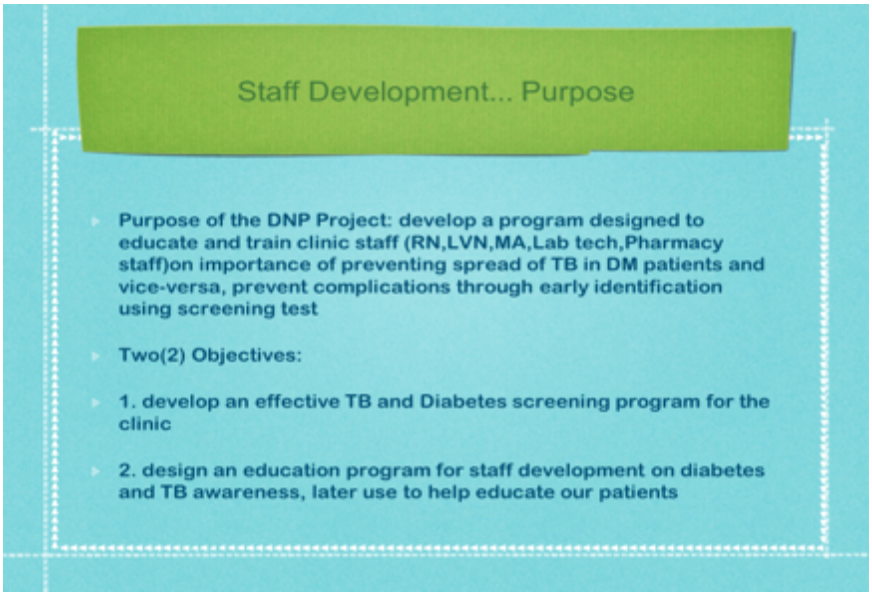
3. Who are the priority groups for targeted testing and treatment completion?

sources: Tuberculosis statistics report,2012; www.cdc.gov/tb/statistics/report/2012/pdf/report 2012.pdf. ; www.cdc.gov/TB/Topic/basics/default.htm

Appendix H
Scholarly Product




Staff Development... Identification of Problem
Staff to utilize acquired knowledge in teaching diabetic and TB patients on importance of screening for the diseases and early intervention to prevent more complications
(+) association of diabetes and TB shown in States like Texas, Arizona and California due to shared borders with Mexico (Perez,et.al.,2007)
Diabetes with TB as co-morbidity and vice-versa increasing incidence comparable to HIV/AIDS (Stevenson et.al,2007)
City of Blythe in the midst of the menace: clinic with high percentage of dx diabetics, individuals vulnerable to TB
Need for education program designed to address the problem


Staff Development... Purpose
Purpose of the DNP Project: develop a program designed to educate and train clinic staff (RN,LVN,MA,Lab tech,Pharmacy staff)on importance of preventing spread of TB in DM patients and vice-versa, prevent complications through early identification using screening test
Two(2) Objectives:
1. develop an effective TB and Diabetes screening program for the clinic
2. design an education program for staff development on diabetes and TB awareness, later use to help educate our patients

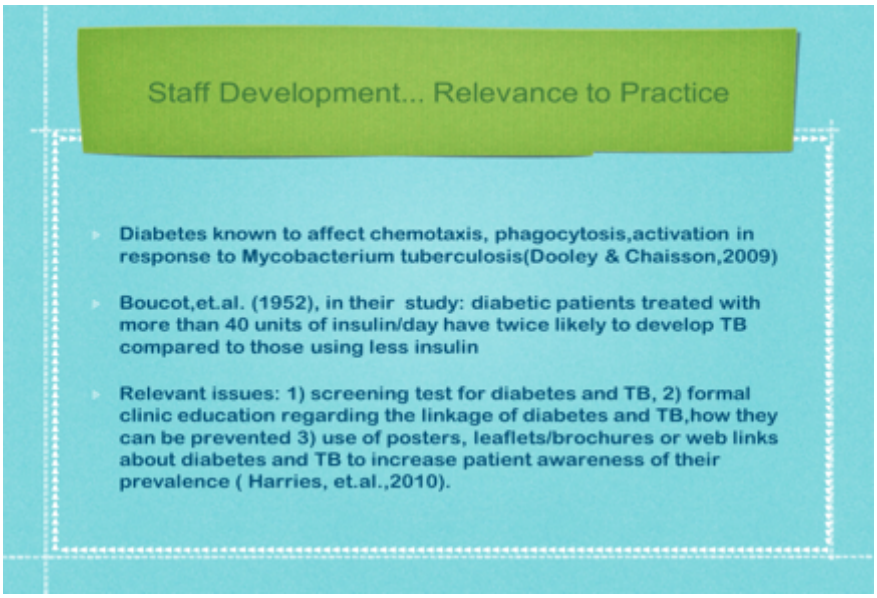
Staff Development... Goals and Outcomes

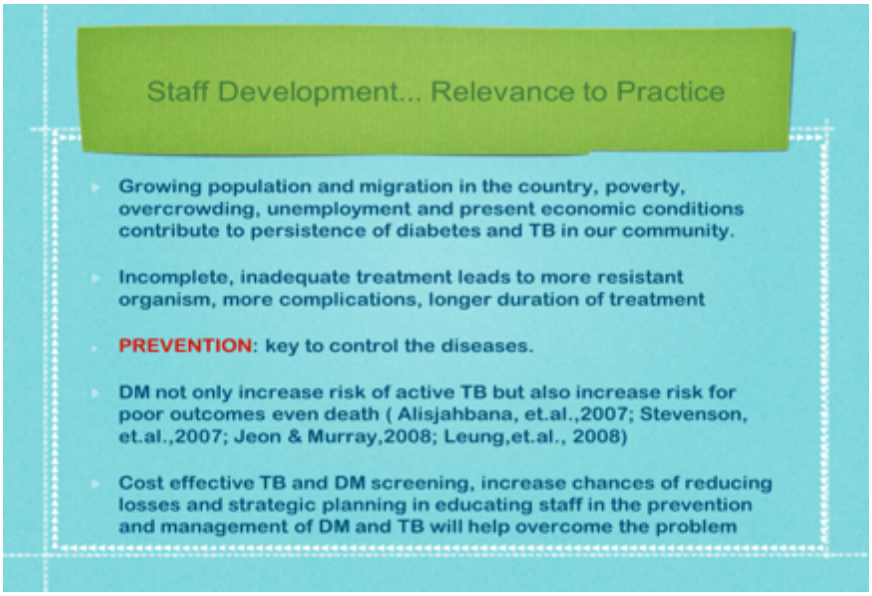
- Short term goal: Educate clinic staff on diabetes and TB, its complications and how it can be prevented using screening test
- Long term goal: implement education program for all the clinics under the umbrella of our organization (Clinicas de Salud del Pueblo, Inc) using a standardized
- screening test (Screen for Life program)

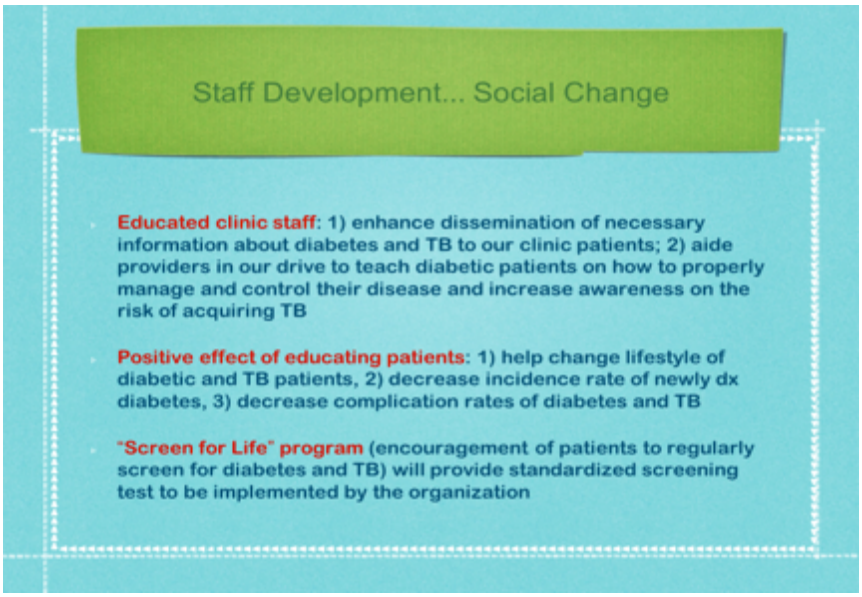
- Desired Outcome: Well educate and knowledgeable clinic staff on diabetes and TB who can help providers in info. dissemination to all patients in the clinics; provide a simple, cost-effective working diabetic and TB screening test

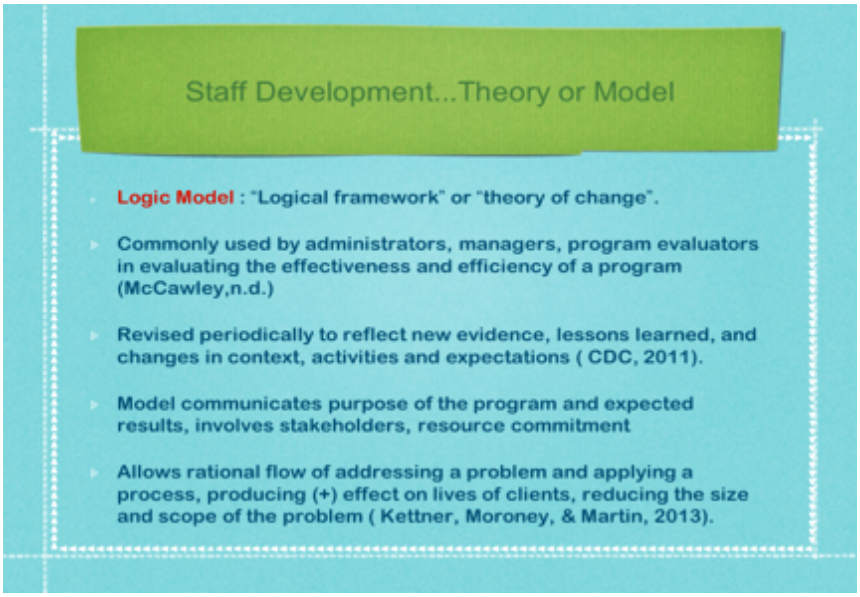
Staff Development... Relevance to Practice

- TB ranks high in respiratory diseases covered in the Healthy People 2020 topics which increase cost of health care, high insurance rate, loss productivity (Health People 2020,2010c)
- Total eradication cannot be acheived due to resurgence of new "players" in the health care arena e.g. HIV/AIDS,Ebola virus, chronic disease: hepatitis,diabetes which lowers our immune systems (Harries, et.al.,2010)
- Hong Kong: 4,690 elderly patients with HgbA1c > 7% have 3x increase in acquiring active TB compared to those with HgbA1c < 7%. (Dooley & Chaisson,2009).
- Poor control of DM lead to multiple complications which indirectly affect function of macrophages and lymphocytes weakening ability to contain TB organism (Dooley & Chaisson, 2009).


Staff Development... Relevance to Practice
Diabetes known to affect chemotaxis, phagocytosis,activation in response to Mycobacterium tuberculosis(Dooley & Chaisson,2009)
Boucot,et.al. (1952), in their study: diabetic patients treated with more than 40 units of insulin/day have twice likely to develop TB compared to those using less insulin
Relevant issues: 1) screening test for diabetes and TB, 2) formal clinic education regarding the linkage of diabetes and TB,how they can be prevented 3) use of posters, leaflets/brochures or web links about diabetes and TB to increase patient awareness of their prevalence (Harries, et.al.,2010).


Staff Development... Relevance to Practice
Growing population and migration in the country, poverty, overcrowding, unemployment and present economic conditions contribute to persistence of diabetes and TB in our community.
Incomplete, inadequate treatment leads to more resistant organism, more complications, longer duration of treatment
PREVENTION: key to control the diseases.
DM not only increase risk of active TB but also increase risk for poor outcomes even death (Alisjahbana, et.al.,2007; Stevenson, et.al.,2007; Jeon & Murray,2008; Leung,et.al., 2008)
Cost effective TB and DM screening, increase chances of reducing losses and strategic planning in educating staff in the prevention and management of DM and TB will help overcome the problem


Staff Development... Social Change
Educated clinic staff: 1) enhance dissemination of necessary information about diabetes and TB to our clinic patients; 2) aide providers in our drive to teach diabetic patients on how to properly manage and control their disease and increase awareness on the risk of acquiring TB
Positive effect of educating patients: 1) help change lifestyle of diabetic and TB patients, 2) decrease incidence rate of newly dx diabetes, 3) decrease complication rates of diabetes and TB
"Screen for Life" program (encouragement of patients to regularly screen for diabetes and TB) will provide standardized screening test to be implemented by the organization

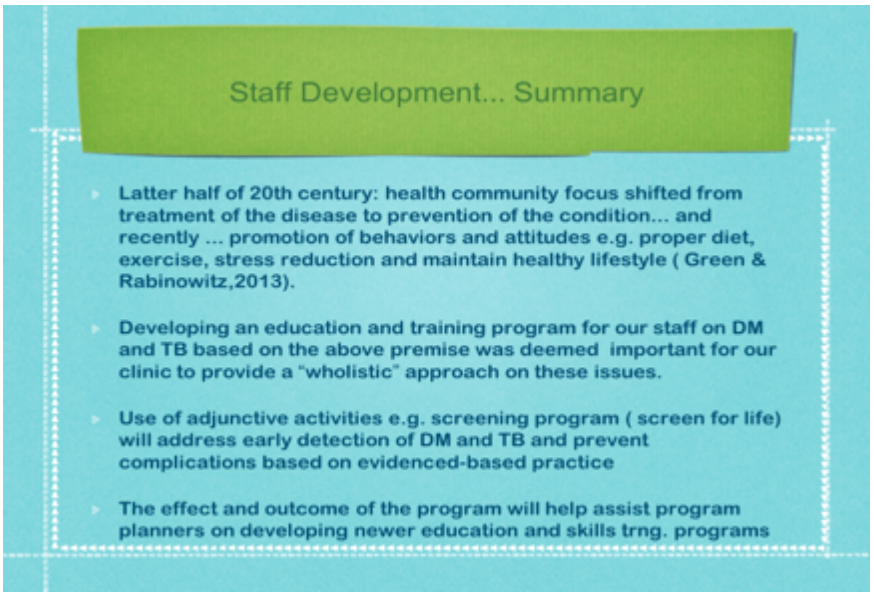

Staff Development...Theory or Model
Logic Model : "Logical framework" or "theory of change".
Commonly used by administrators, managers, program evaluators in evaluating the effectiveness and efficiency of a program (McCawley,n.d.)
Revised periodically to reflect new evidence, lessons learned, and changes in context, activities and expectations (CDC, 2011).
Model communicates purpose of the program and expected results, involves stakeholders, resource commitment
Allows rational flow of addressing a problem and applying a process, producing (+) effect on lives of clients, reducing the size and scope of the problem (Kettner, Moroney, & Martin, 2013).

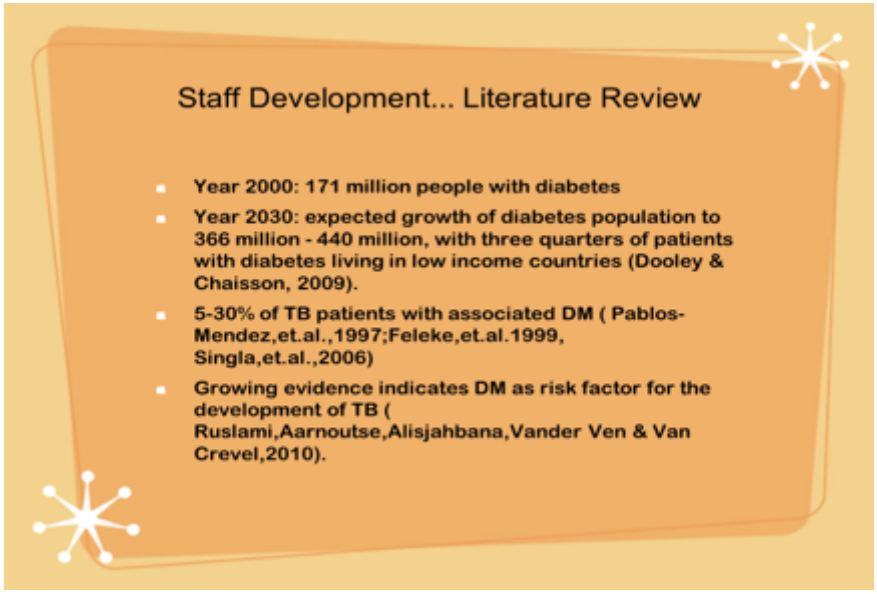
Staff Development...Theory or Model

- Following elements of Logic Model: (W.K. Kellogg Foundation,2001)
- 1)purpose of the project: educate clinic staff on DM and TB, increasing awareness of thier importance and
- 2)activities: propose an education and screening program (modular education system)
- 3) target system to be influence: clinic staff
- 4) outputs and outcomes: educated and knowledgeable staff, competent to aide providers in teaching patients on diabetes and TB and how they can be prevented
- 5)measurement of effectivity: use of pre-post test surveys

Staff Development... Limitations & Strength

- **Limitations**: limited to development of education and screening program, comprehension of individual clinic staff, interpretation of visual materials, cost of the materials/supplies
- **Strengths**: staff's satisfaction of the knowledge gained and new skills acquired, increase confidence levels of individual staff which can lead to enhanced performance of duties and delivery of quality health care


Staff Development... Summary
Latter half of 20th century: health community focus shifted from treatment of the disease to prevention of the condition... and recently ... promotion of behaviors and attitudes e.g. proper diet, exercise, stress reduction and maintain healthy lifestyle (Green & Rabinowitz,2013).
Developing an education and training program for our staff on DM and TB based on the above premise was deemed important for our clinic to provide a "wholistic" approach on these issues.
Use of adjunctive activities e.g. screening program (screen for life) will address early detection of DM and TB and prevent complications based on evidenced-based practice
The effect and outcome of the program will help assist program planners on developing newer education and skills trng. programs

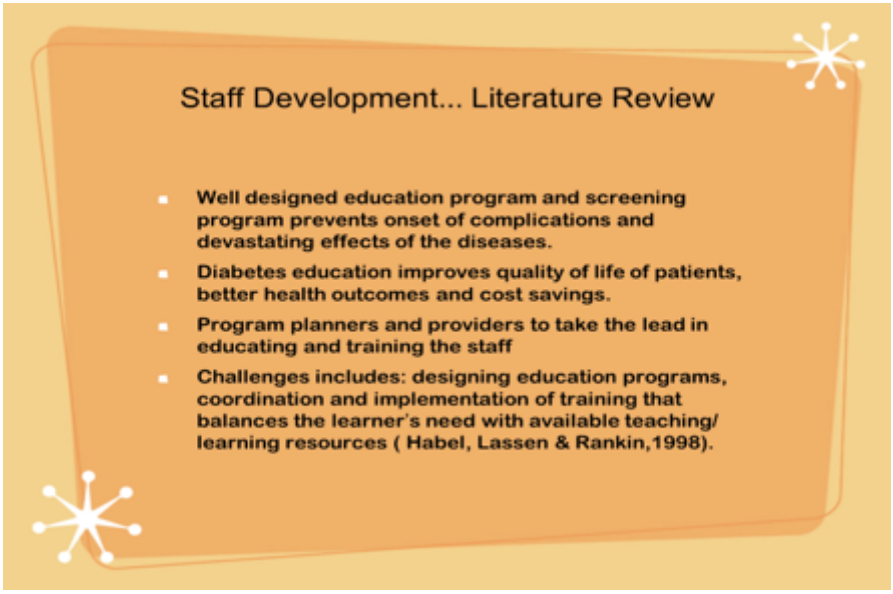

Staff Development... Literature Review
Year 2000: 171 million people with diabetes
Year 2030: expected growth of diabetes population to 366 million - 440 million, with three quarters of patients with diabetes living in low income countries (Dooley & Chaisson, 2009).
5-30% of TB patients with associated DM (Pablos-Mendez,et.al.,1997;Feleke,et.al.1999, Singla,et.al.,2006)
Growing evidence indicates DM as risk factor for the development of TB (Ruslami,Aarnoutse,Alisjahbana,Vander Ven & Van Crevel,2010).

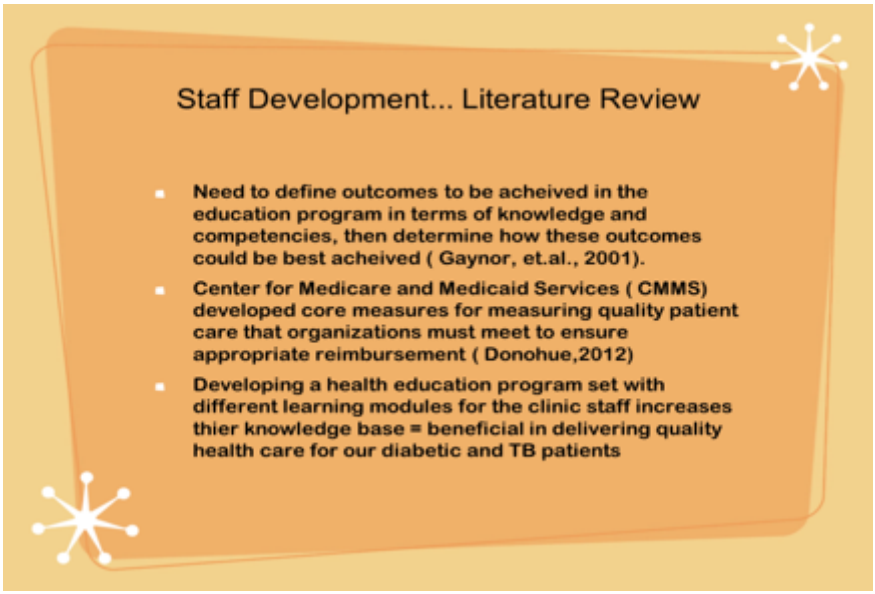
Staff Development... Literature Review

- Numberof US States,TB still peristent: Texas, Arizona and California
- Restrepo, et.al.,2011: incidence of TB was 10.5 cases/100,000 in South Texas and 38/100,000 in northeastern Mexico
- CDC, 2011: Four (4) states (California, Florida, New York and Texas) continue to report more than 500 cases each in 2011. Combine the four states accounted for 5,299 TB cases or approx. half (50.4%) of all TB cases reported in 2011 (CDC, MMWR,2012).
- Many literatures reports TB's close association with HIV/AIDS and Diabetes.

Staff Development... Literature Review

- TB can worsen glucose control in diabetes and vice-versa, diabetes can cause multiple drug resistant TB and worsen it clinical course as well (Dooley & Chaisson,2009).
- Behavior = biggest problem in TB control and often lead to serious consequences, complications, and spread of the disease to others
- Sen,Joshi & Udwadia (2009), DM II major factor associated with TB in both Mexicans and Hispanic Americans.
- McCormick and colleagues, Univ. of Texas School of Public Health showed co-morbidity tandem of TB-DM far exceeds those of TB-HIV.


Staff Development... Literature Review
Well designed education program and screening program prevents onset of complications and devastating effects of the diseases.
Diabetes education improves quality of life of patients, better health outcomes and cost savings.
Program planners and providers to take the lead in educating and training the staff
Challenges includes: designing education programs, coordination and implementation of training that balances the learner's need with available teaching/ learning resources (Habel, Lassen & Rankin,1998).

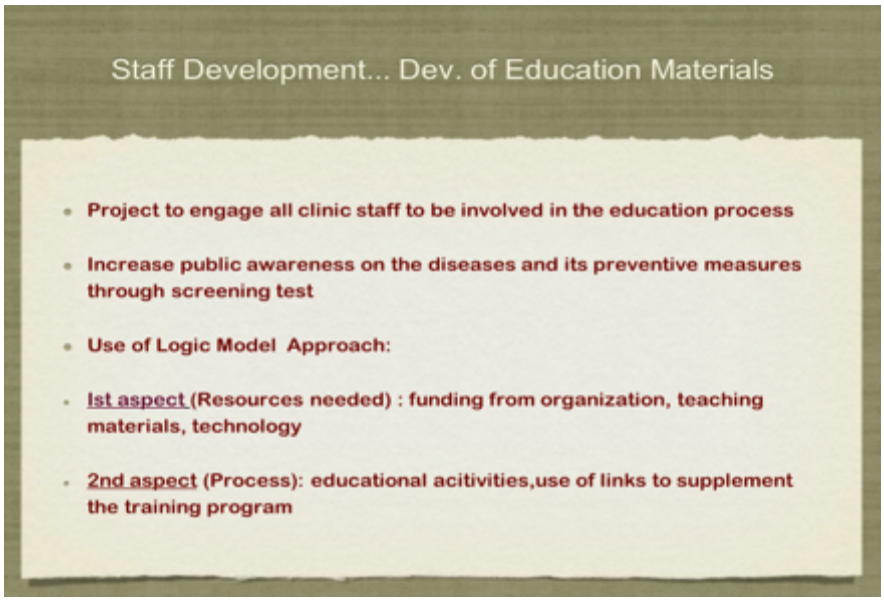

Staff Development... Literature Review
Need to define outcomes to be acheived in the education program in terms of knowledge and competencies, then determine how these outcomes could be best acheived (Gaynor, et.al., 2001).
Center for Medicare and Medicaid Services (CMMS) developed core measures for measuring quality patient care that organizations must meet to ensure appropriate reimbursement (Donohue,2012)
Developing a health education program set with different learning modules for the clinic staff increases thier knowledge base = beneficial in delivering quality health care for our diabetic and TB patients

Staff Development... Project Approach

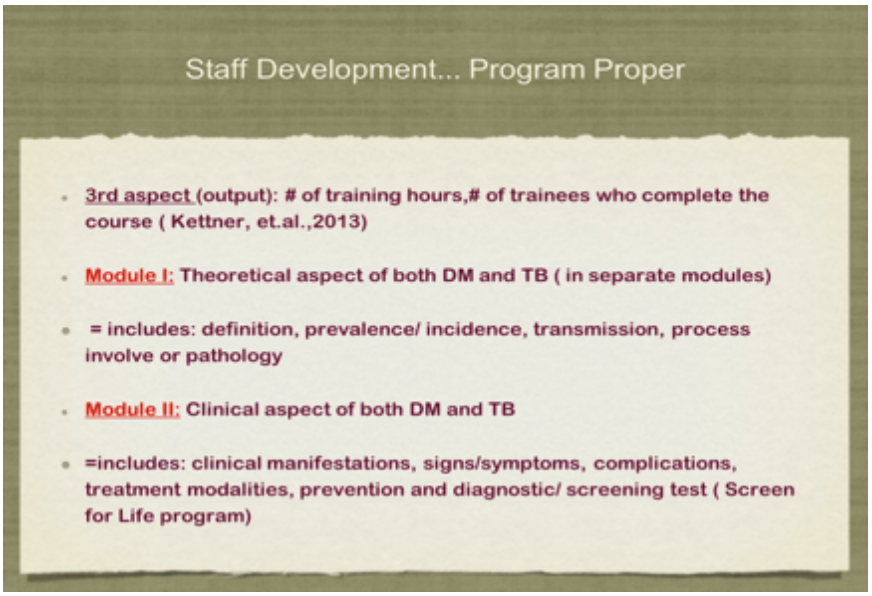
- Application of coalition structure accomplished by preparing a set of teaching modules for both Diabetes and TB
- Plan a pre and post test survey evaluation
- Data collection and analysis of results with comparison of pre and post survey test
- A summative evaluation will formalize the education and screening program and outcomes presented to stakeholders

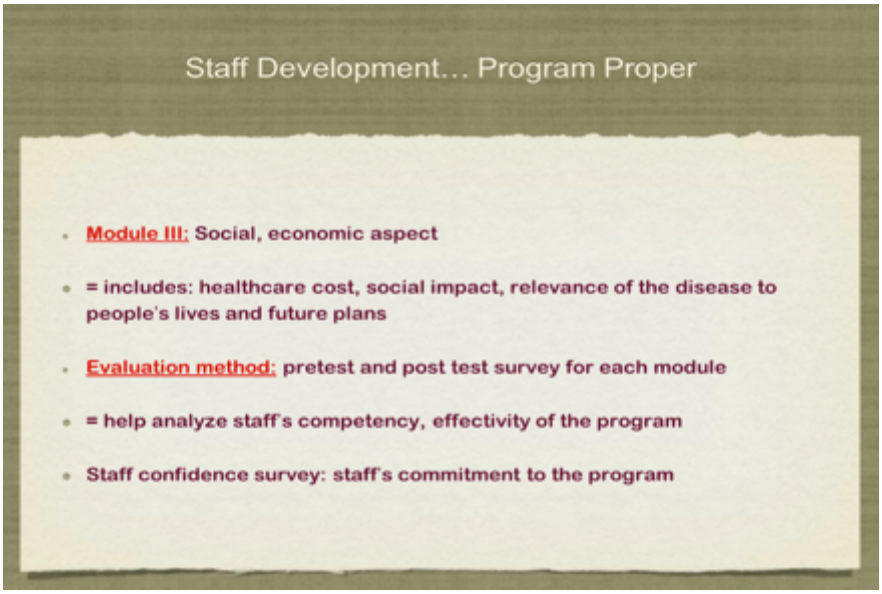
Staff Development... Method

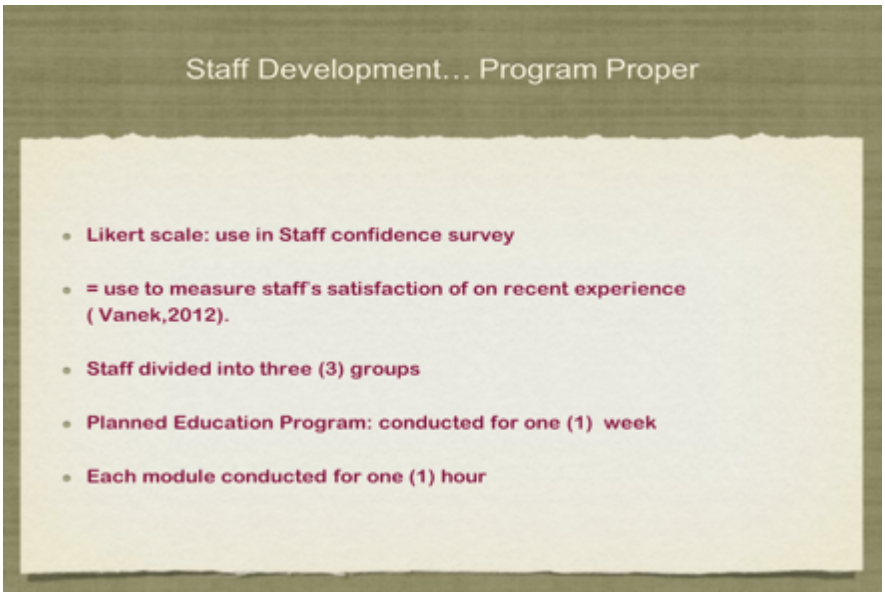
- Steps involved in developing the education program and screening test:
- 1. Assembly of the "team" (planners, stakeholders,staff)
- 2. Review of literatures relevant to diabetes and TB
- 3. Gathering of educational materials
- 4. Creation of specific education modules for DM and TB
- 5. Choosing type of evaluation method
- 6. Presentation of results and recommendations to the organization
- 7. Standardization of education module to be implemented in all the clinics once approve by organization

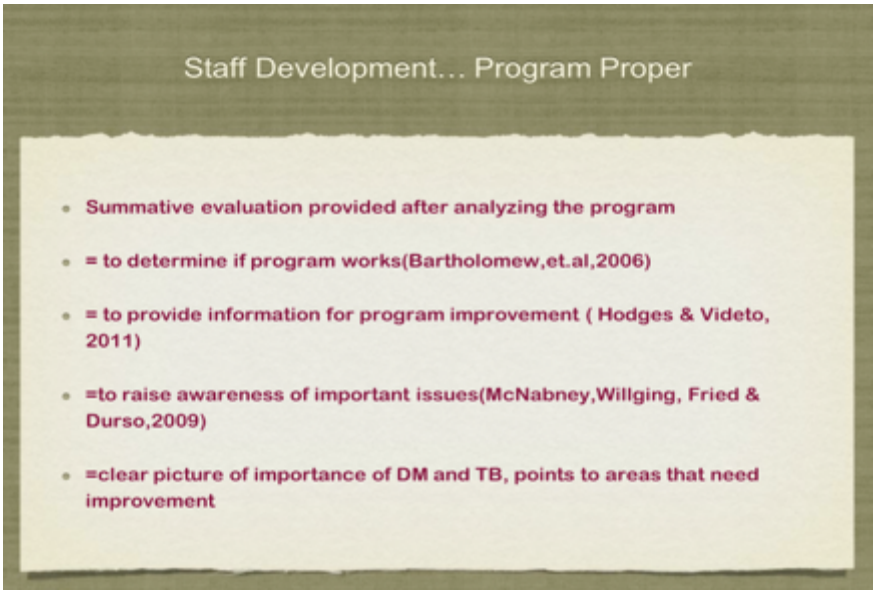

Staff Development... Dev. of Education Materials
Project to engage all clinic staff to be involved in the education process
Increase public awareness on the diseases and its preventive measures through screening test
Use of Logic Model Approach:
Ist aspect (Resources needed) : funding from organization, teaching materials, technology
2nd aspect (Process): educational acitivities,use of links to supplement the training program

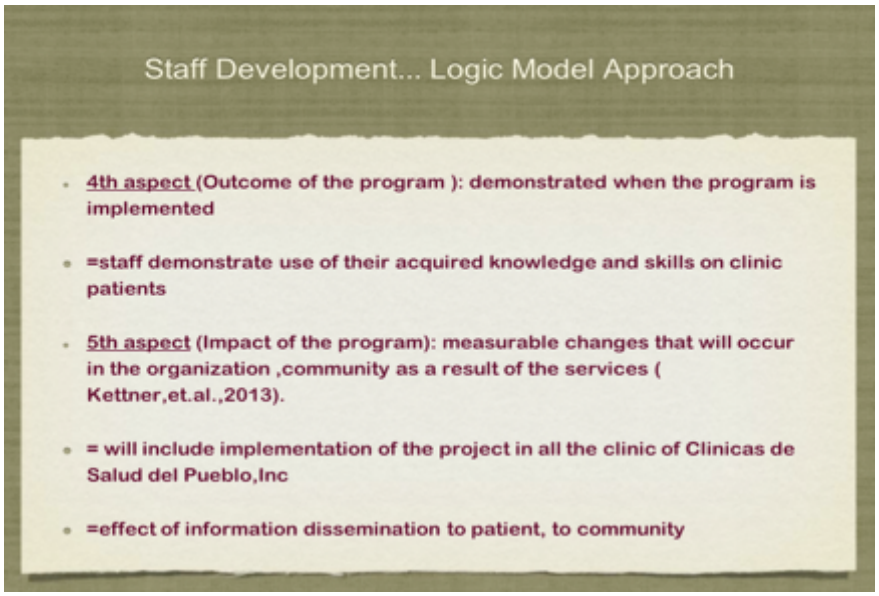

Staff Development... TB and DM Education
TB education and training materials from CDC
Continuous education: experts from Dept. of Health both local and regional will be invited
DM educational materials from CDC and various links
Continuous education: use of video educational programs

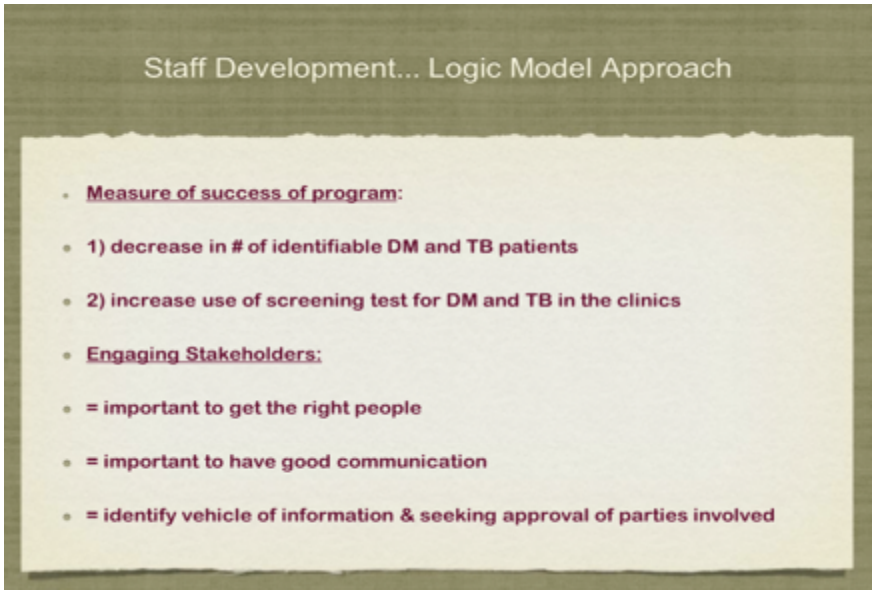

Staff Development... Program Proper
3rd aspect (output): # of training hours,# of trainees who complete the course (Kettner, et.al.,2013)
Module I: Theoretical aspect of both DM and TB (in separate modules)
= includes: definition, prevalence/ incidence, transmission, process involve or pathology
Module II: Clinical aspect of both DM and TB
=includes: clinical manifestations, signs/symptoms, complications, treatment modalities, prevention and diagnostic/ screening test (Screen for Life program)


Staff Development... Program Proper
Module III: Social, economic aspect
= includes: healthcare cost, social impact, relevance of the disease to people's lives and future plans
Evaluation method: pretest and post test survey for each module
= help analyze staff's competency, effectivity of the program
Staff confidence survey: staff's commitment to the program


Staff Development… Program Proper
Likert scale: use in Staff confidence survey
= use to measure staff's satisfaction of on recent experience (Vanek,2012).
Staff divided into three (3) groups
Planned Education Program: conducted for one (1) week
Each module conducted for one (1) hour


Staff Development… Program Proper
Summative evaluation provided after analyzing the program
= to determine if program works(Bartholomew,et.al,2006)
= to provide information for program improvement (Hodges & Videto, 2011)
=to raise awareness of important issues(McNabney,Willging, Fried & Durso,2009)
=clear picture of importance of DM and TB, points to areas that need improvement


Staff Development... Logic Model Approach
4th aspect (Outcome of the program): demonstrated when the program is implemented
=staff demonstrate use of their acquired knowledge and skills on clinic patients
5th aspect (Impact of the program): measurable changes that will occur in the organization ,community as a result of the services (Kettner,et.al.,2013).
= will include implementation of the project in all the clinic of Clinicas de Salud del Pueblo,Inc
=effect of information dissemination to patient, to community

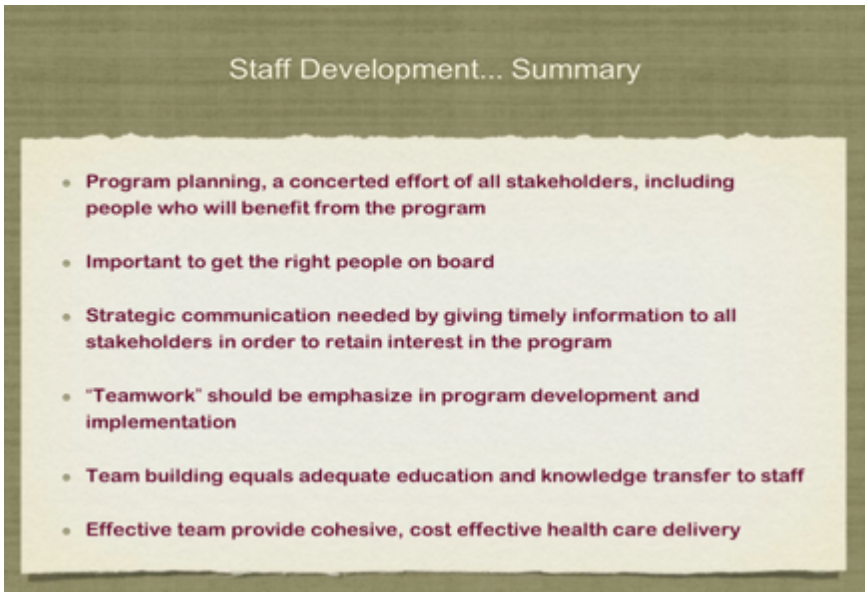

Staff Development... Logic Model Approach
Measure of success of program:
1) decrease in # of identifiable DM and TB patients
2) increase use of screening test for DM and TB in the clinics
Engaging Stakeholders:
= important to get the right people
= important to have good communication
= identify vehicle of information & seeking approval of parties involved

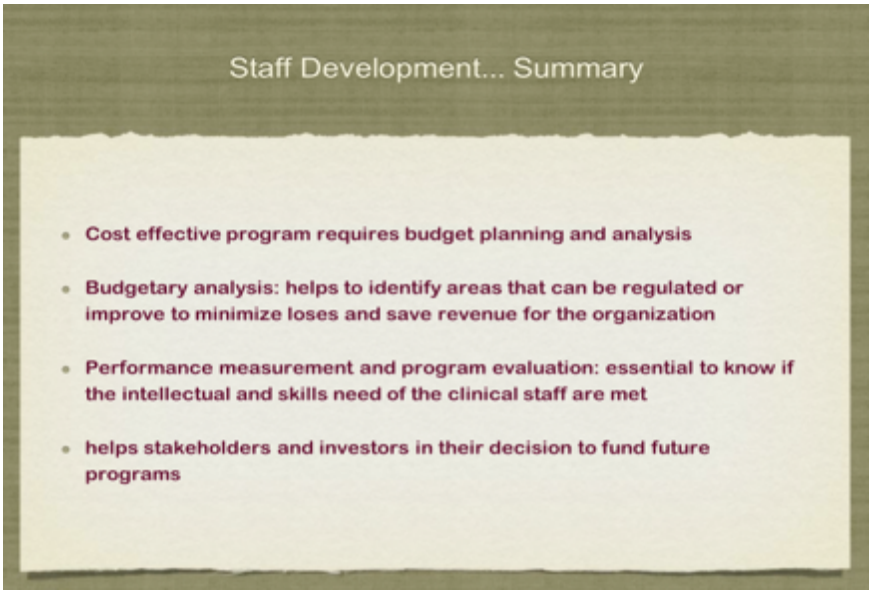
Staff Development... Financial

- Budget allocation and financial assistance needed for project to move
- Budgeting, important pillar in program planning
- Organization to provide funding after approval of the program
- Benefactors include: DME equipments, drug companies, pharmacies

Staff Development... Implementation/evaluation

- Evaluation: pre-test and post-test survey
- =conducted before and after each education module (1,2 and 3)
- =survey results: use to validate effectivity of teaching module
- =program implementation will be planned and executed on bi-annual basis, inclusions on DM and TB updates
- =updates from CDC, Dept. of Health


Staff Development... Summary
Program planning, a concerted effort of all stakeholders, including people who will benefit from the program
Important to get the right people on board
Strategic communication needed by giving timely information to all stakeholders in order to retain interest in the program
"Teamwork" should be emphasize in program development and implementation
Team building equals adequate education and knowledge transfer to staff
Effective team provide cohesive, cost effective health care delivery

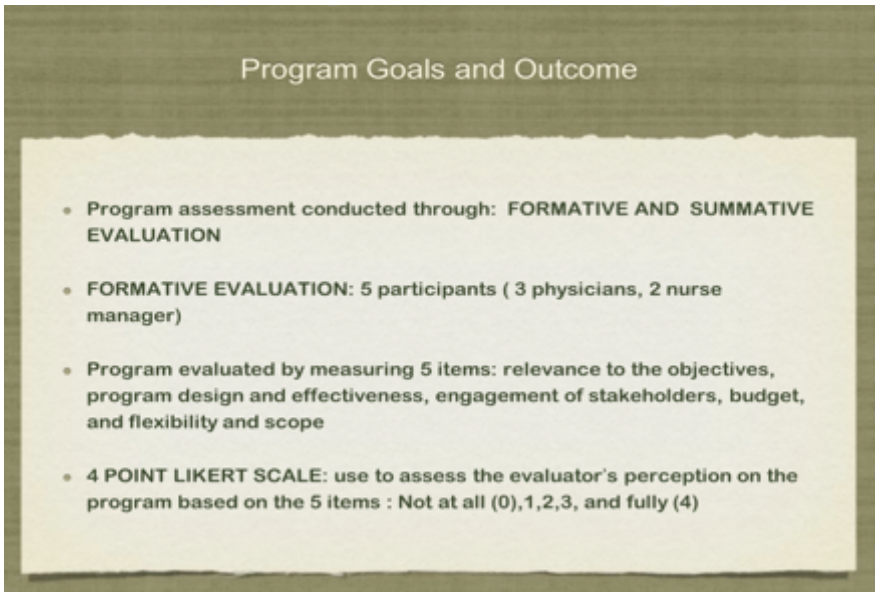

Staff Development... Summary
Cost effective program requires budget planning and analysis
Budgetary analysis: helps to identify areas that can be regulated or improve to minimize loses and save revenue for the organization
Performance measurement and program evaluation: essential to know if the intellectual and skills need of the clinical staff are met
helps stakeholders and investors in their decision to fund future programs

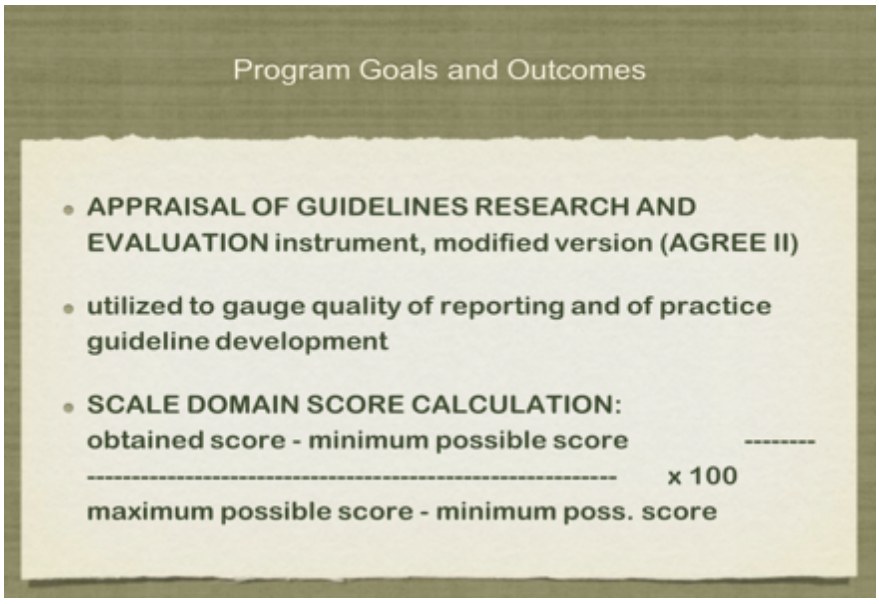
Discussion and Implications

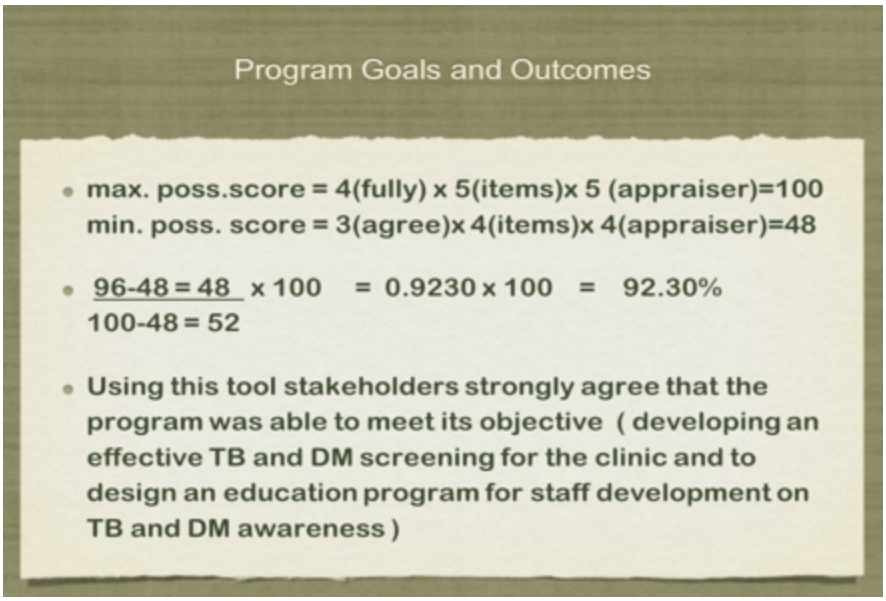
- SUMMARY OF FINDINGS:
- STAKEHOLDERS e.g. RN,LVNs,MAs, Lab tech., pharmacy staff
- not only limited to health care providers but also other stakeholders influenced by the program e.g. patients and whole community
- CHANGE: one of the goal of the program... change the community's behavior towards health considering the increase prevalence of DM and tuberculosis
- EVALUATION: needed to demarcate the impact of the program
- RESULT OF EVALUATION: integral tool in determining need for potential changes which needs improvement to make the goals congruent with the implementation, and needs to be continous to meet community demands

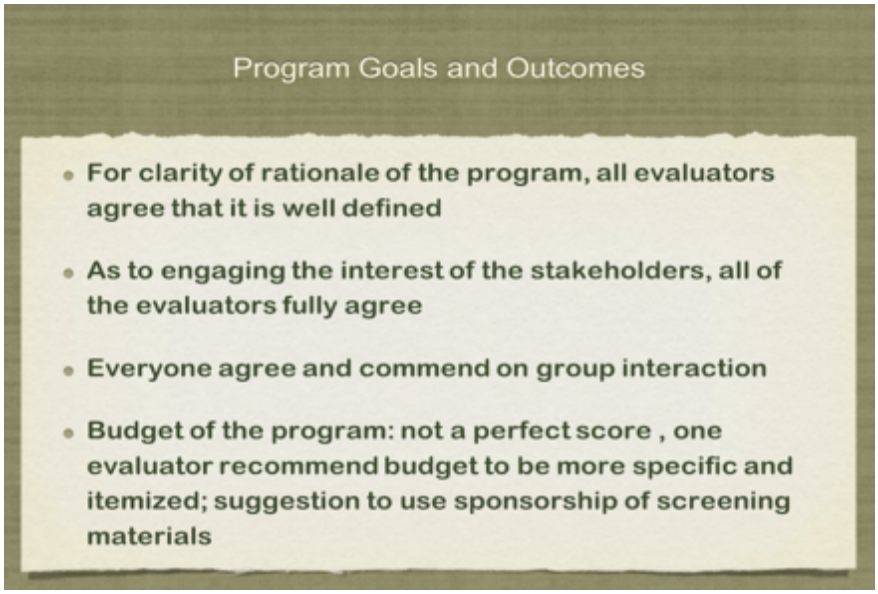
Protection of Human Subjects

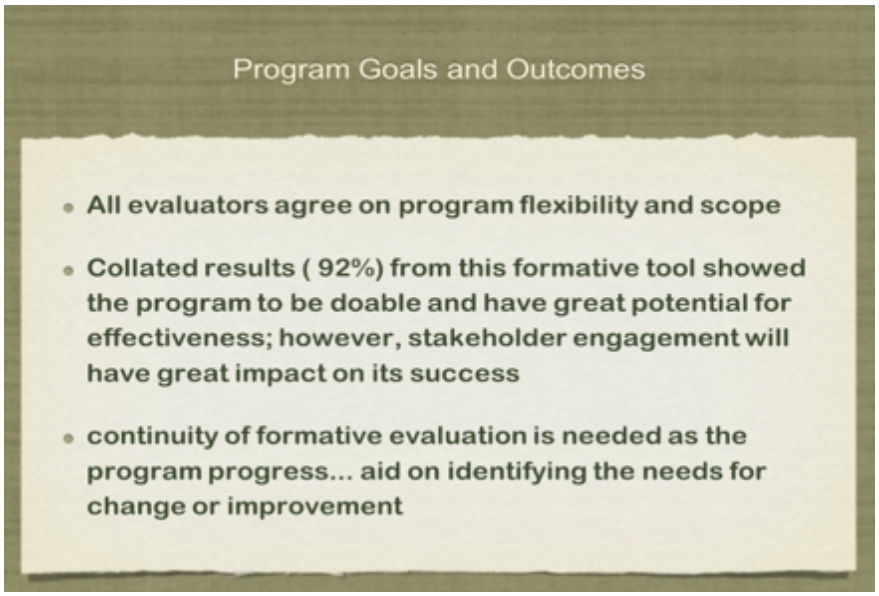
- Program participation involved 10 different staffs and health care providers (nurse supervisor, education director, chief operating officer, office manager,informatic chief, consultants,nursing director,local department of health chief).
- Participants are notified of the nature of the program and evaluation
- Primary intention of the program: educate health providers and staff effectively prior to implementing the program among patient
- Target subjects: workforce in health care

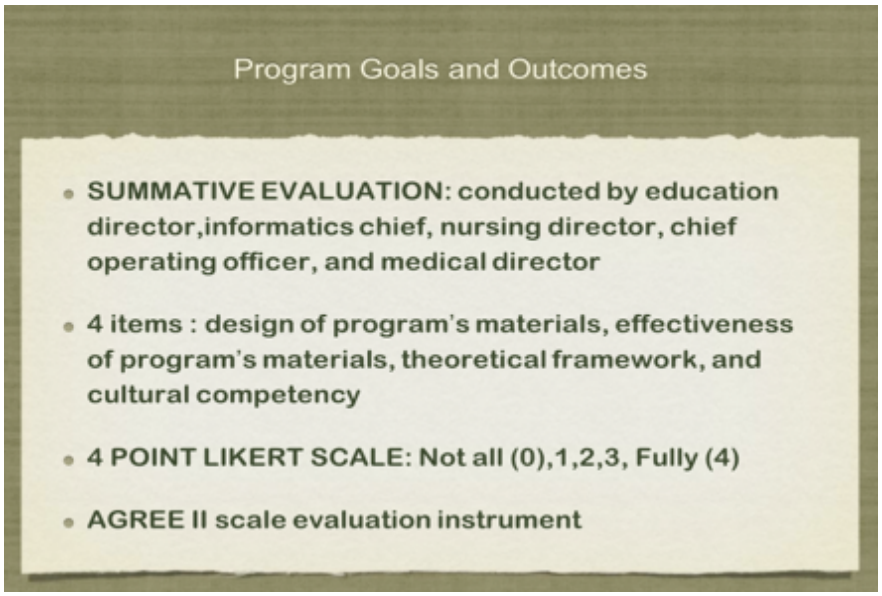

Program Goals and Outcome
Program assessment conducted through: FORMATIVE AND SUMMATIVE EVALUATION
FORMATIVE EVALUATION: 5 participants (3 physicians, 2 nurse manager)
Program evaluated by measuring 5 items: relevance to the objectives, program design and effectiveness, engagement of stakeholders, budget, and flexibility and scope
4 POINT LIKERT SCALE: use to assess the evaluator's perception on the program based on the 5 items : Not at all (0),1,2,3, and fully (4)

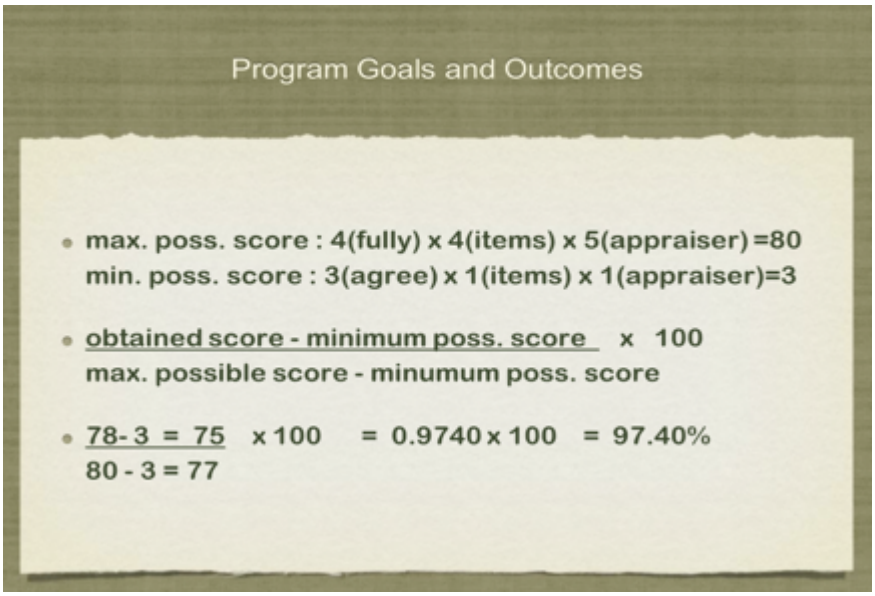

Program Goals and Outcomes
APPRAISAL OF GUIDELINES RESEARCH AND EVALUATION instrument, modified version (AGREE II)
utilized to gauge quality of reporting and of practice guideline development
SCALE DOMAIN SCORE CALCULATION:
obtained score - minimum possible score
maximum possible score - minimum poss. score
x 100

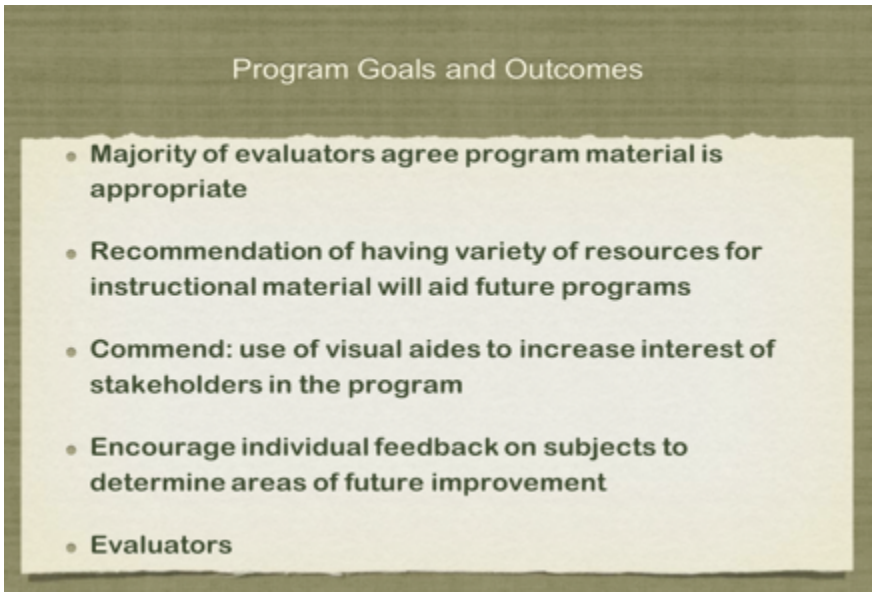

Program Goals and Outcomes
max. poss.score = 4(fully) x 5(items)x 5 (appraiser)=100
min. poss. score = 3(agree)x 4(items)x 4(appraiser)=48
96-48 = 48 x 100 = 0.9230 x 100 = 92.30%
100-48 = 52
Using this tool stakeholders strongly agree that the program was able to meet its objective (developing an effective TB and DM screening for the clinic and to design an education program for staff development on TB and DM awareness)

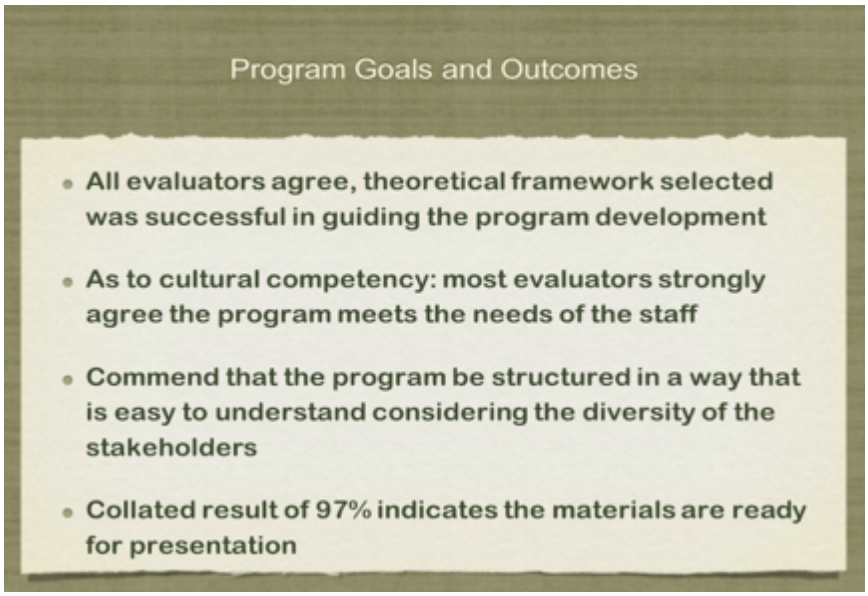

Program Goals and Outcomes
For clarity of rationale of the program, all evaluators agree that it is well defined
As to engaging the interest of the stakeholders, all of the evaluators fully agree
Everyone agree and commend on group interaction
Budget of the program: not a perfect score , one evaluator recommend budget to be more specific and itemized; suggestion to use sponsorship of screening materials

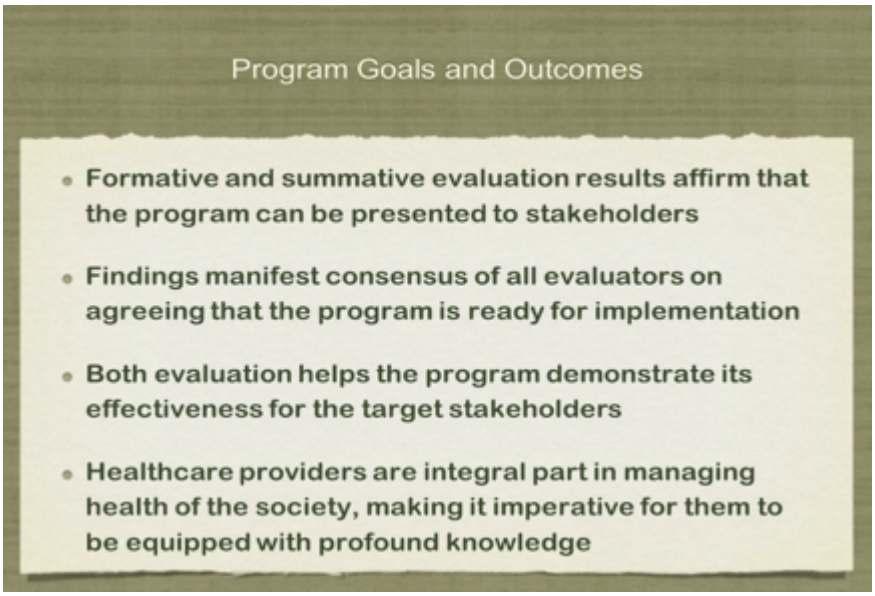

Program Goals and Outcomes
All evaluators agree on program flexibility and scope
Collated results (92%) from this formative tool showed the program to be doable and have great potential for effectiveness; however, stakeholder engagement will have great impact on its success
continuity of formative evaluation is needed as the program progress... aid on identifying the needs for change or improvement

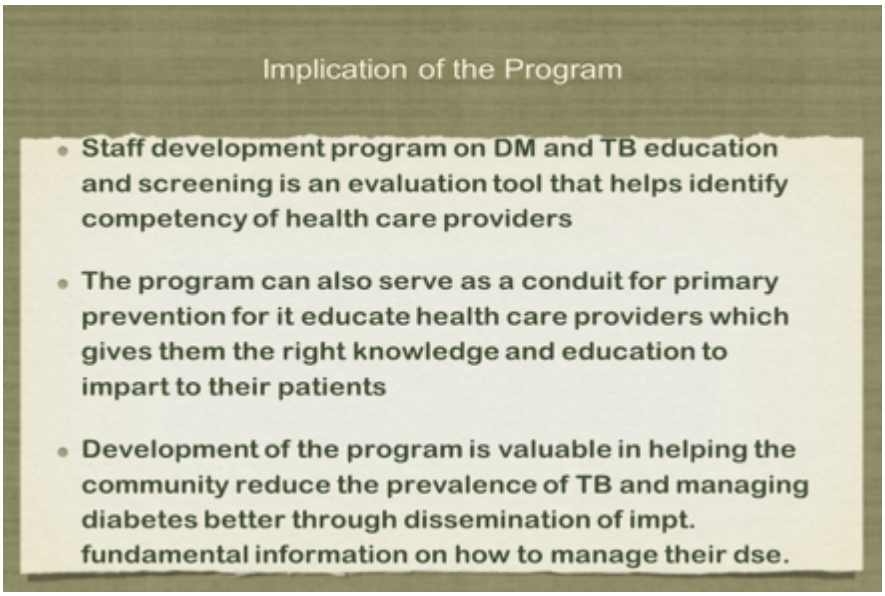

Program Goals and Outcomes
SUMMATIVE EVALUATION: conducted by education director,informatics chief, nursing director, chief operating officer, and medical director
4 items : design of program's materials, effectiveness of program's materials, theoretical framework, and cultural competency
4 POINT LIKERT SCALE: Not all (0),1,2,3, Fully (4)
AGREE II scale evaluation instrument

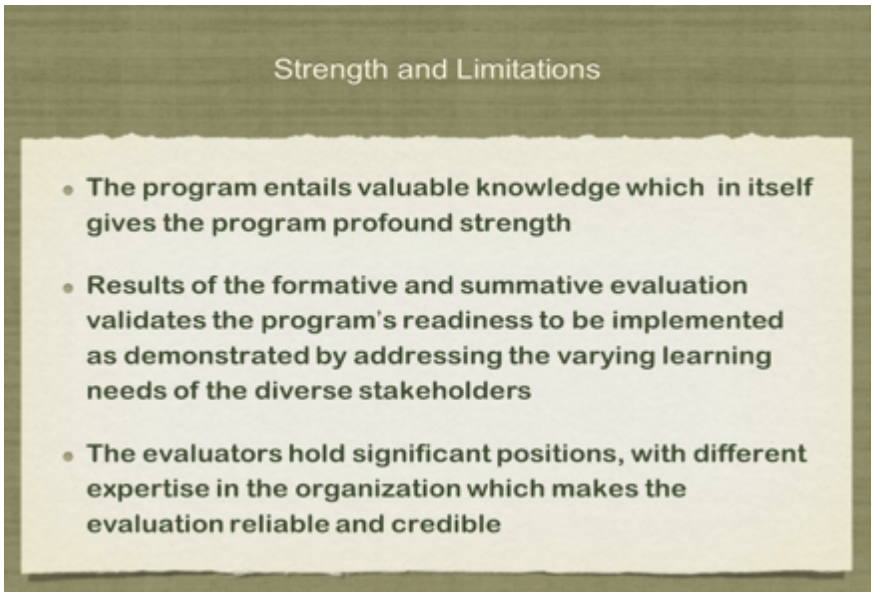

Program Goals and Outcomes
max. poss. score : 4(fully) x 4(items) x 5(appraiser) =80
min. poss. score : 3(agree) x 1(items) x 1(appraiser)=3
obtained score - minimum poss. score x 100
max. possible score - minumum poss. score
78- 3 = 75 x 100 = 0.9740 x 100 = 97.40%
80 - 3 = 77

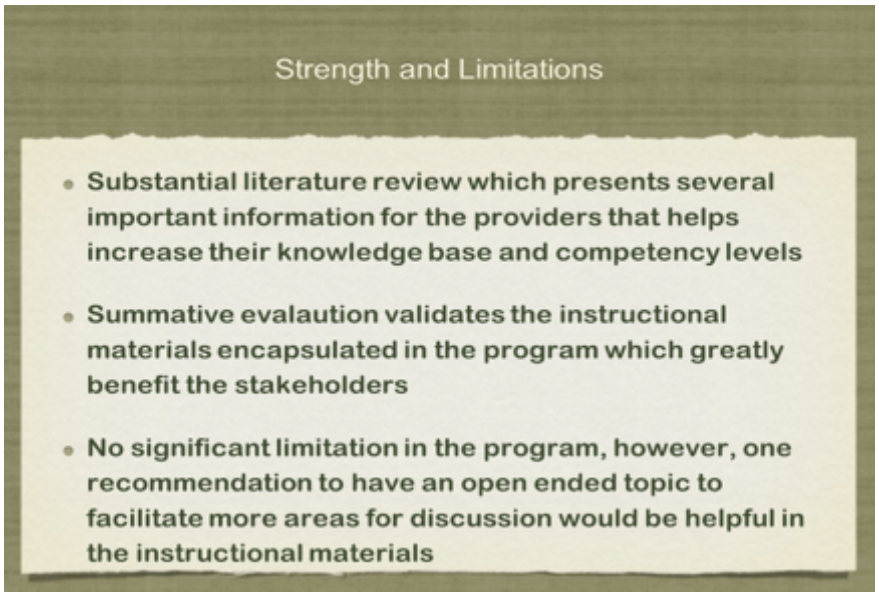

Program Goals and Outcomes
Majority of evaluators agree program material is appropriate
Recommendation of having variety of resources for instructional material will aid future programs
Commend: use of visual aides to increase interest of stakeholders in the program
Encourage individual feedback on subjects to determine areas of future improvement
Evaluators

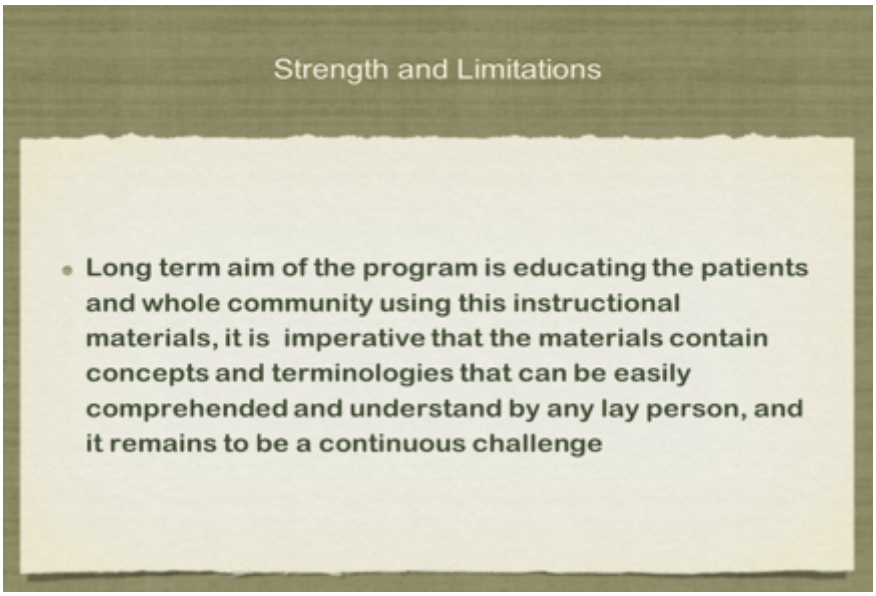

Program Goals and Outcomes
All evaluators agree, theoretical framework selected was successful in guiding the program development
As to cultural competency: most evaluators strongly agree the program meets the needs of the staff
Commend that the program be structured in a way that is easy to understand considering the diversity of the stakeholders
Collated result of 97% indicates the materials are ready for presentation


Program Goals and Outcomes
Formative and summative evaluation results affirm that the program can be presented to stakeholders
Findings manifest consensus of all evaluators on agreeing that the program is ready for implementation
Both evaluation helps the program demonstrate its effectiveness for the target stakeholders
Healthcare providers are integral part in managing health of the society, making it imperative for them to be equipped with profound knowledge


Implication of the Program
Staff development program on DM and TB education and screening is an evaluation tool that helps identify competency of health care providers
The program can also serve as a conduit for primary prevention for it educate health care providers which gives them the right knowledge and education to impart to their patients
Development of the program is valuable in helping the community reduce the prevalence of TB and managing diabetes better through dissemination of impt. fundamental information on how to manage their dse.


Strength and Limitations
The program entails valuable knowledge which in itself gives the program profound strength
Results of the formative and summative evaluation validates the program's readiness to be implemented as demonstrated by addressing the varying learning needs of the diverse stakeholders
The evaluators hold significant positions, with different expertise in the organization which makes the evaluation reliable and credible

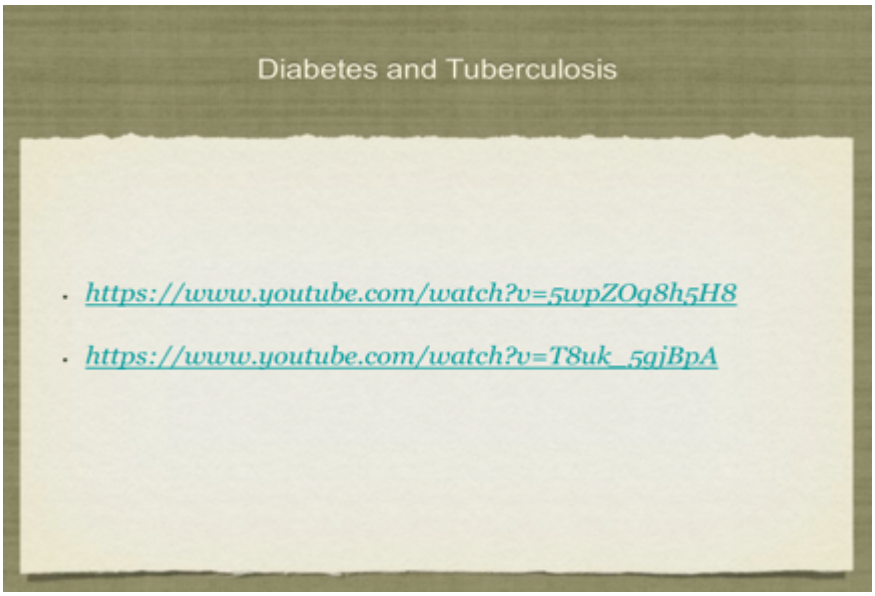

Strength and Limitations
Substantial literature review which presents several important information for the providers that helps increase their knowledge base and competency levels
Summative evalaution validates the instructional materials encapsulated in the program which greatly benefit the stakeholders
No significant limitation in the program, however, one recommendation to have an open ended topic to facilitate more areas for discussion would be helpful in the instructional materials

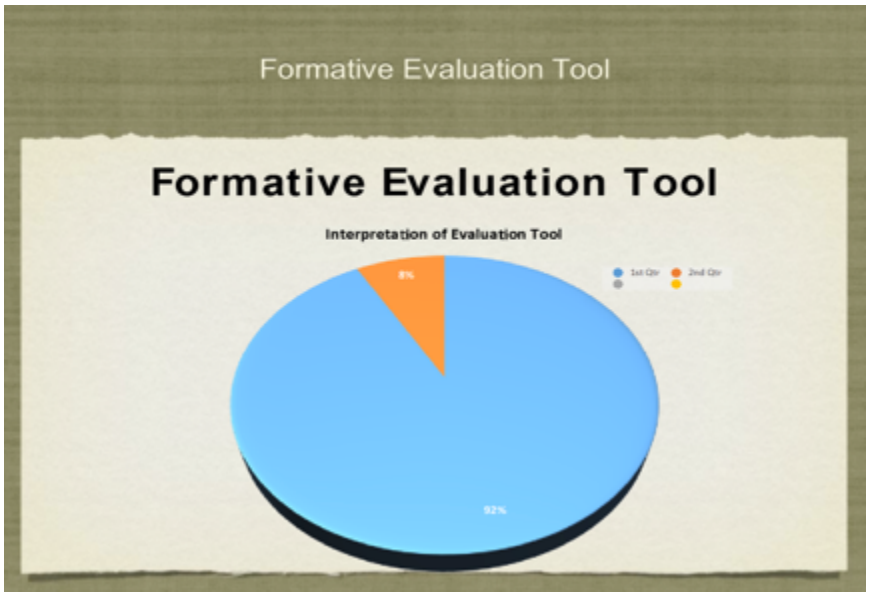

Strength and Limitations
Long term aim of the program is educating the patients and whole community using this instructional materials, it is imperative that the materials contain concepts and terminologies that can be easily comprehended and understand by any lay person, and it remains to be a continuous challenge

Program Dissemination

- Findings and results of the program evalaution helps better understand the purpose of the program
- Power point presentation will be utilized to facilitate explanation of results in summarized forms.
- The process of dissemination of information per se will utilize small scale conferences which might involve only about 20 -30 people at a time.
- Conferences is an effective vehicle for dissemination but it could be costly and time consuming (Hamsworth and Turpin,2000)

WHO: TB And Disbetes


Diabetes and Tuberculosis
https://www.youtube.com/watch?v=5wpZOg8h5H8
https://www.youtube.com/watch?v=T8uk_5gjBpA


Formative Evaluation Tool
Formative Evaluation Tool
Interpretation of Evaluation Tool
8%
92%

References

- Boucot, K.R., Dillon, E.S., Cooper, D.A., Meier, P. & Richardson, R. (1952). TB among diabetics: The Philadelphia Survey. *Am Rev. Tuberc.,65*, 1-50.
- Dooley, K.E. & Chaisson, R.E.(2009). TB and diabetes mellitus: convergence of two epidemics. *Lancet Infectious Disease, 9*(12), 737-746.
- Dovepress. (2014). Diabetes and tuberculosis control-video abstract 45082. *Youtube*. Retrieved October 23, 2014 from https://www.youtube.com/watch?v=T8uk_5gjBpA