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Perceived Level of Implementation of the National Tuberculosis Program as Correlated to its Delivery on Patients with Pulmonary Tuberculosis

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ABSTRACT

This study aimed to evaluate the delivery of treatment on patients with PTB (pulmonary tuberculosis) and the perceived level of implementation of the NTP (National Tuberculosis Program) among the indigent patients in Canitoan, Cagayan de Oro City. The relationship between the implementation of the NTP and its delivery has been established. The study revealed that adult men were mostly infected with PTB; were found as smear positive and showed PTB related anomalies on their chest radiographs. The study utilized the descriptive-evaluative design employing the survey technique and purposive sampling. The study further revealed that case detection, health education, supervised treatment and counseling in the perceived level of implementation of the NTP in terms of diagnosis, health education, supervised treatment and counseling were gaining significance to its delivery in terms of directly supervised treatment, record keeping and intake of first dose.

Keywords **-** PTB, TB, NTP, National Tuberculosis Program, pulmonary tuberculosis, chest x-ray, directly supervised treatment, case detection, record keeping, intake of first dose

INTRODUCTION

Liceo de Cagayan University has entered into a Memorandum of Agreement during the first quarter of 2009 with the Local Government Unit of Canitoan, Cagayan de Oro City to undertake a community outreach program. Since the University has a well-established x-ray facility under the College of Radiologic Technology, the University offered to receive referrals and conduct free x-ray examination to a maximum of thirty (30) indigent patients per month. This community outreach program pledged to follow the cases with clinical findings.

It has been noticed that since the start of the referral system done by the Health Center of Canitoan, most of the requests received were for Chest X-ray Examination (CXR). This observation gave the researcher an idea to focus on the study of respiratory cases more particularly on the prevalence of Pulmonary Tuberculosis (PTB).

Bacteriological confirmation is the gold standard for diagnosing PTB. However, it is not always feasible to gather sputum specimens from all participants in a prevalence survey. Alternative methods have therefore been developed that include screening for symptoms or chest radiography (CXR). In most surveys either one or both of these methods are used to select the subjects for sputum examination. (den Boon, 2006)

Since the data of the CXR results are available and accessible following the observation of highest ethical standard, it is the purpose of this study to not only acquire information regarding the incidence of PTB in Canitoan Village but to also provide base line information for further researches to take place in order to strengthen the PTB control and community extension programs.

The knowledge of these data can be an eminent way to formulate a University-wide tuberculosis control program in the community involving the College of Radiologic Technology, College of Medical Laboratories, College of Pharmacy, College of Nursing, Psychology Department of the College of Arts and Sciences and Liceo Center for Community Development.

The incidence of PTB in Canitoan Village has significantly increased both in adults and children as revealed in the studies conducted by Jabien et. al. 2011 and Casino et. al. 2011 of the College of Radiologic Technology, Liceo de Cagayan University. Some cases of PTB have relapsed following an unsuccessful treatment which may require a different regimen as shown in the referral slips of these patients from the health center. Though the files of the health center showed proper documentation on the registered PTB cases enrolled in the DOTS program of the government, the increasing number of new referrals is very alarming especially with new cases found among children. The implementation of the TB program is very promising however the establishment of a thorough case finding and detection greatly suffered since

Canitoan has been chosen by the City Government to house the relocation sites of some displaced households due calamaties. The sudden increase of the population accompanied by the rise of new PTB cases posed a great challenge on implementing the TB control program of Village since the ratio of the health workers in relation to the population has dramatically changed.

With my recent visit to the City Health Office of Cagayan de Oro City, Nice Bingona of the Nursing Services assigned to the NTP and Dr. Fe Bongas the City's Medical NTP Coordinator revealed that Pulmonary Tuberculosis still ranked sixth among the causes of mortality in the Cagayan de Oro City. Though ranked as seventh last 2011, this year PTB ranked tenth as the leading cause of morbidity among the residents of the City.

This phenomenon has inspired the researcher to study on the correlates between the perceived level of implementation of National Tuberculosis Program and the delivery of treatment on patients with pulmonary tuberculosis.

This study is also aimed to establish the demographic profile of the respondents in terms of age, gender, number of family members, monthly financial income, nature of residence, signs and symptoms experienced, clinical diagnosis and drug used. Particularly, it sought to determine the signs and symptoms experienced by the patients, the results of the clinical diagnosis and the drug used by these patients. Furthermore, this study intended to determine the level of the implementation of the National Tuberculosis Program in terms of case finding, diagnosis, availability of drugs/supplies, health education, supervised treatments and counseling following the NTP Policies and Procedures in 2001 (Appendix B-3).

This study also sought to determine the level of effectiveness in the treatment of patients with pulmonary tuberculosis in terms of physical assessment and prescription of appropriate regimen, registration, health education, intake of first dose, directly supervised treatment and record keeping.

CONCEPTUAL FRAMEWORK

This study is grounded on Premark's Principle of reinforcement. If the present tuberculosis control program of the community is not fully implemented, this may be treated as a weakness in the treatment process currently employed by the community. This weakness is identified as a flaw and must be enhanced by formulating a tuberculosis control program of the university that has a well established facility which can used for an extensive monitoring and evaluation on the treatment process of these indigent patients who happens to be residents of the adopted community of

the Liceo de Cagayan University. This newly formulated TB control program serves as reinforcement to the existing program in the community and is clearly aligned to Premark's principle that any activity higher on the scale can be used to reinforce any activity lower on the scale. (Almajar. 2004)

The community managed health centers bear huge tasks to assess and evaluate the implementation of the tuberculosis control program given by all health workers more specifically on health education and counseling of the affected individuals with PTB. The extent and degree of implementation of the tuberculosis control program will reveal the scientific truth about the infection practices employed by the Health Workers. The determination of these flaws will somehow evaluate the quality of the program. This process may improve the quality of implementing the program and initiate change by developing a university-wide tuberculosis control program involving the various departments of the University with well-established facilities and knowledgeable and skilled personnel which can help strengthen the present program employed by the adopted community.

By knowing the extent of the implementation of the tuberculosis control program seeks to measure the level of unmet objectives within the existing program. Determining the unmet objectives is the first step before any effective program planning can begin. Once a program has been developed and begun, evaluators turn to the task of documenting the level of effectiveness of the program to which implementation shows that a program has been implemented well. (Almajar, 2004)

This effective control program helps stop the spread of Mycobacterium Tuberculosis, one of the highly infectious microorganisms. Determining the presence of these microorganisms and its identification will greatly help the health practitioner to understand of what infectious diseases are, how they are spread, and how they are controlled. Health care providers have been granted the responsibility not only to the patients entrusted to their care, but also to the entire public sector. (Adler, 2007)

In 1876, Robert Koch, a physician, introduced the germ theory of disease. Before this point, the assumption was something transmitted form an ill person to a well person. Up until the sixteenth century, evil spirits were popular explanation for illness. In the sixteenth century, however, diseases were assumed to be spread by an unknown entity called a contagion, and the disease was said to be contagious, a term still in use today. Through scientific experimentation, Koch was able to prove that specific organism caused specific diseases. He was able to prove that a precise series of events must occur for microorganisms from an infected person to be transmitted to an uninfected person. His postulates forever changed the relationship between microorganism and humans. (Adler, 2007)

According to the postulates of Koch, four factors are involved in the spread of

diseases. Each factor is considered a link in the chain, and each link is connected to the next to form a ring. If at any point in the infection the chain is broken, the cycle cannot continue, and infection will cease. For infections to be transmitted, the following must exist: the host, an infectious microorganism, a mode of transportation and a reservoir. (Adler, 2007)

In the study of Dr. P. R. Donald in 2000 revealed that in developed communities tuberculosis occurs mainly in older adults; in developing communities tuberculosis occurs at all ages, albeit with differing manifestations. In developing communities a high disease incidence is encountered in young children. A large proportion of the population is aged less than 15 years and as many as 40% of tuberculosis notifications may be children; tuberculosis may be responsible for 10% or more of childhood hospital admissions and 10% or more of hospital deaths. Furthermore, with an annual risk of infection of 2–3%, close to 40% of the population may be infected by age 15 years.

A related study of Diwan and Thorson in 2000 showed that globally, the ratio of female to male tuberculosis cases notified is 1/1·5–2·1, 70% more smear-positive male than female tuberculosis patients are diagnosed every year and notified to the WHO. It is unclear why more males than females are diagnosed with tuberculosis. The conclusion of a recent research workshop on gender and tuberculosis was that a combination of biological and social factors is responsible for these differences and that knowledge as well as research within this field is insufficient. Epidemiological information shows that there are differences between men and women in prevalence of infection, rate of progression from infection to disease, incidence of clinical disease, and mortality due to tuberculosis.

Furthermore, the number of the family members in a household is very significant if one has to take a look on the nature of TB as very highly infectious disease. The study of Tornee et. al. in 2005 on the association between environmental factors and tuberculosis infection among household contacts indicated that the risk of positive tuberculin skin testing in household contacts was found to increase with household crowding. Children living in a crowded household were five times more likely to have tuberculosis infection.

The income of the entire family is equally important in managing tuberculosis. A study was conducted in five urban communities in Metro Manila with different socio-economic status by Tupasi et. al., 2000 concluded that socio-economic factors should be taken into account in the design of TB information campaigns and in prioritizing public health interventions about TB since the study revealed that no intention of seeking health care and intention to self-treat in case of TB disease were significantly correlated to low family monthly income.

In another study of Tupasi et. al. in 2000 on bacillary disease and health seeking behavior among Filipinos with symptoms of tuberculosis: implications for control showed that there were significantly more symptomatic than asymptomatic subjects attended chest radiographic screening during the survey. However, in response to the symptoms experienced, majority took no action or self medicated, while only few consulted a private practitioner, seek consultation at the public health center, hospital and to traditional healer.

The low response to the closely associated signs and symptoms of tuberculosis in seeking clinical diagnosis can greatly be accounted to very low family income. However, effective and affordable tests have to be available to ensure better results in the fight against tuberculosis. Study of Boehme, 2011 suggested that test can effectively be used in low-resource settings to simplify patients' access to early and accurate diagnosis, thereby potentially decreasing morbidity associated with diagnostic delay, dropout and mistreatment.

Other than effective clinical diagnosis, drugs have to be taken into account. The study of Grimaldo, E. R. et. al. in 2001 revealed some drugs used by the TB program of the government like Ciprofloxacin and Ofloxacin are now significantly less effective alternative therapy in tuberculosis, particularly for Multi-drug resistance-TB (MDR-TB), due to a selection pressure from their widespread use in the treatment of TB and possibly other infections in the community, which is hyperendemic for tuberculosis.

In some instances, patients developed resistance to drugs available in the health centers. These patients must be treated with regimens, including first- and second-line drugs, tailored to their drug susceptibility pattern. Treatment of patients with MDR-TB using the DOTS-Plus strategy and individualized drug regimens can be feasible, comparatively effective, and cost-effective in low- and middle-income countries like the Philippines. (Tupasi, 2006)

However, another more significant factor in the implementation in NTP is the supervised treatment. According to Volmink, J. et al. in 2000, the direct observation of patients taking their medication is a strategy to improve completion rates for tuberculosis treatment, but the programs to implement this approach consist of a complex array of inputs aimed at influencing adherence. Policy makers need a clear understanding of these inputs to succeed. The author suggested to emphasize the five elements the five elements of WHO's strategy, including incentives, tracing of defaulters, legal sanctions, patient-centred approaches, staff motivation, supervision, and additional external funds during its implantation.

The community also plays a vital in the implementation of this program. Hadley, M. and Maher D. in 2000 found out that decentralizing tuberculosis control measures beyond health facilities by harnessing the contribution of the community

could increase access to effective tuberculosis care. The study suggests potential for an expansion of both formal and informal community involvement in tuberculosis control. Informal community involvement includes delivery of messages to encourage tuberculosis suspects to come forward for treatment and established tuberculosis patients to continue treatment. A wide range of community members provide psychological and logistic support to patients to complete their treatment. The formal community involvement indicates that programs should focus on ensuring that treatment is accessible.

It is a fact that stigma affects the diagnosis and treatment of TB. The study of Macq, J. et. al., in 2007, cited some qualitative studies report that community members without TB, individuals with TB, and health-care providers who treat TB perceive TB stigma to be a barrier to prompt diagnosis of the disease. Some interventions, particularly TB clubs where member can share their experience and learn new inputs on the prevention of TB, have been shown to decrease TB stigma and improve TB treatment adherence. The study of Jaramillo, E. even emphasized that Health education and, arguably, more successful control program could help to reduce the social isolation suffered by people with tuberculosis.

People's confusion as to the implications of the tuberculosis symptoms, costs of transportation to clinic services, the social stigma that attaches to tuberculosis, the high cost of medication, organizational problems in providing adequate follow up services, and patients' perception of clinic facilities as inhospitable all contribute to the complexity. All these can be addressed clearly during counseling. (Rubel, 2001)

In year 2000, the WHO DOTS strategy for tuberculosis (TB) control had been adopted by 148 out of 212 countries, but only 27% of all estimated sputum smear-positive patients were notified under DOTS in that year. The study investigated the way in which gains in case detection under DOTS were made up until 2000 in an attempt to anticipate future progress towards the global target of 70% case detection. As TB programs in the 22 High Burden Countries (HBC) have expanded geographically, the fraction of the estimated number of sputum smear-positive cases detected within designated DOTS areas has remained constant at 40–50% although there are significant differences between countries. This fraction is about the same as the percentage of all smear-positive cases notified annually to WHO via public health systems worldwide. The implication is that, unless the DOTS strategy can reach beyond traditional public health reporting systems, or unless these systems can be improved, case detection will not increase much. Substantial efforts are therefore needed (a) to develop new case finding and management methods to bridge the gap between current and target case detection, and (b) to improve the accuracy of national estimates of TB incidence, above all by reinforcing and expanding routine

surveillance. (Dye, 2000)

The NTP should provide a picture on the real situation of PTB in the country. Records and documentation are essential in establishing mortality and morbidity rates of the communities. The study of Dye, C. et. al. in 2008 revealed that in monitoring progress in tuberculosis control, the ultimate aim for all countries is to count tuberculosis cases (incidence) accurately through routine surveillance and proper recording. By 2015, every country should be able to assess progress in tuberculosis control by estimating the time trend in incidence, and the magnitude of reductions in either prevalence or deaths.

Now, if delay in diagnosis of TB is prolonged at the referral center with a significant proportion of Health service delay. More specific and effective health education of the general public on tuberculosis and seeking of appropriate medical consultation is likely to improve case detection. Certain specific groups require further attention. Alcoholics and subsistence farmers should be targeted to improve accessibility to TB treatment. Continuing medical education about TB management procedures for health providers and improvement in the capacity of TB control services should be undertaken. (Kiwuwa, 2005)

All these must be understood not only by the health care providers but also by the patients, their families and the community as well in relation to how infectious TB is. In the study of F. Adtu et. al. where the Ugandan Ministry of Health adopted the strategy as a national policy revealed that the improved compliance among PTB infected individuals is achieved by providing education and counseling not only to the infected individual but to the entire family who at risk of being infected.

The National Tuberculosis Control Program of the Philippines in 2001 includes health education as part of the initiation of treatment to be done by the health workers with emphasis on key messages such as: TB is infectious, TB can be cured but requires regular drug intake, results of irregular drug intake, side effects of anti-TB drugs, importance of follow up sputum smear examinations and importance of family/treatment partner support. This Program seemed to be aligned with the National Policy of Uganda on the implementation of its tuberculosis control program which involves education, counseling and training as part of the multifaceted plan.

OBJECTIVES OF THE STUDY

This study is aimed to determine the prevalence of pulmonary tuberculosis among indigent patients of Canitoan Village, Cagayan de Oro City, Philippines.

Specifically, the study sought to answer the following questions:

1. To determine the profile of the respondents in terms of:
    1.1. Age;
    1.2. Gender:
    1.3. Number of family members;
    1.4. Monthly financial income; and
    1.5. Nature of residence.
    1.6. Signs and symptoms experienced;
    1.7. Clinical diagnosis; and
    1.8. Drug used?
2. To determine the perceived level of implementation of the National Tuberculosis Program in terms of:
    2.1. Case finding;
    2.2. Diagnosis;
    2.3. Availability of drugs/supplies;
    2.4. Health education;
    2.5. Supervised treatment; and
    2.5. Counseling?
3. To determine the level of effectiveness in the delivery treatment on patients with pulmonary tuberculosis in terms of;
    3.1. Physical assessment and prescription of appropriate regimen;
    3.2. Registration;
    3.3. Health education;
    3.4. Intake of first dose;
    3.5. Directly supervised treatment; and
    3.6. Record keeping?
4. To determine the significant relationship between the perceived level of implementation of the national tuberculosis program and the delivery of treatment on patients with pulmonary tuberculosis?
5. The design a program as a University-wide endeavor in augmenting the existing tuberculosis control program of the adopted communities as part of the community extension services?

METHODOLOGY

Research Design

This study utilized the descriptive method that determines the incidence of pulmonary tuberculosis among indigent patients of Canitoan Village, Cagayan de

Oro City, Philippines. Descriptive studies describe occurrence of outcome between the independent variables and independent variable (Calderon, 2008). The findings of this study served as basis to for a university wide tuberculosis control program for community extension services.

Research Setting

The study was conducted at the X-ray Facility located at Rodolfo N. Pelaez Hall under the College of Radiologic Technology, Liceo de Cagayan University where all the data were available including the referral slips and CXR result.

This study was also conducted Canitoan Village where some pertinent data were available in NTP record book of the health center and where all these respondents live.

Research Sample/Sampling Method

The subjects of the study were drawn from the data of the 43 indigent patients with chief complaints of pulmonary symptoms referred to the X-ray Facility of Liceo de Cagayan University but were focused solely on the 30 indigent patients with TB related abnormalities on CXR results.

Secondary data were used in this study. Referral slips and CXR results of all indigent patients referred from Canitoan Barangay Health Center to the X-ray Facility from February 2010 to October 2011 for CXR regardless of age, sex, chief complaints and whether they have undergone treatment or not and data from patient's records available at the Barangay Health Canter.

Data Gathering Procedures

Phase I. Before the study was be conducted, a formal letter asking for permission was made, addressed to the Dean of the School of Graduate Studies. The approved letter was then be presented to the Barangay Captain of Canitoan, Cagayan de Oro City of the Hospital. Same approved letters were presented to the Department Head of Liceo de Cagayan University X-ray Center and the Public health nurse of the Barangay Health Center of Canitoan, Cagayan de Oro city. In the letter, the researcher explained the purpose of the study in order for the concerned party to be well informed.

Phase II. Afterwards, the researcher conducted the study. The researcher retrieved the data from Liceo de Cagayan University X-ray Center and the Barangay Health Center. After secondary data were retrieved, the researcher then now paid visits to the respondents for a one on one interview using a questionnaire which has undergone a pilot testing and reliability test. These questionnaires were filled up by the respondents themselves and scored the implementation of the NTP and its delivery particularly

parts II and III of the questionnaire.

Phase III. The data were then gathered, tabulated, statistically treated, interpreted and analyzed.

Statistical Technique

Appropriate statistical tools were employed according to the problem of this study.

To determine the incidence of pulmonary tuberculosis among indigent patients of Canitoan Village, Cagayan de Oro City, Philippines, the Frequency and Percentage were used.

The formula for percentage is:

$$P = \frac{f}{N} \times 100$$

Where: P = is the percentage
N = is the total population
f = is the frequency

To determine the level of effectiveness in the delivery of treatment on patients with pulmonary tuberculosis and the perceived level of implementation of the national tuberculosis program, the weighted mean was used.

The formula for weighted mean is:

$$\bar{x} = \sum_{i=1}^{n} w_i x_i$$

To determine the level of effectiveness in the delivery of treatment on patients with pulmonary tuberculosis and the perceived level of implementation of the national tuberculosis program, the weighted mean was used.

The formula for weighted mean is:

$$\bar{x} = \sum_{i=1}^{n} w_i x_i$$

To test the relationship between the level of effectiveness in the delivery of the treatment on patients with pulmonary tuberculosis and the perceived level of implementation of the national tuberculosis program, the pearson correlates was used.

The formula for pearson correlates is:

$$r = \frac{\sum_{i=1}^{n}(X_i - \bar{X})(Y_i - \bar{Y})}{\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2}\sqrt{\sum_{i=1}^{n}(Y_i - \bar{Y})^2}}$$

To determine the verbal description on the relationship between the level of effectiveness in the delivery of the treatment on patients with pulmonary tuberculosis and the perceived level of implementation of the national tuberculosis program, Davis and Davis was used.

P< 0.02 to 0.05	Significant
P< 0.01 to 0.199	Highly significant
P< 0.000 to 0.0111	Very Highly significant
P> 0.051	Not significant

RESULTS AND DISCUSSION

Objective 1. To determine the demographic profile of the respondents in terms of age, gender, number of members of the family, monthly financial income, nature of residence, signs and symptoms experienced, clinical diagnosis and drug used?

Table 1 shows the distribution of the profile of the respondents by age, gender, number of members of the family, monthly income, nature of residence, signs and symptoms experienced, clinical diagnosis and drug used.

As regards to their age, nine (9) or 30 percent of the respondents aged 41 to 50 years old. There are seven (7) or 23.33 percent aged 21 to 30 years old, followed by six (6) or 20 percent aged 51 to 60 years old, another five (5) or 16.67 percent aged 61 to 70 years then three (3) or 10 percent of the respondents aged 31 to 40 years old. This shows that adults are the most affected age group with tuberculosis and no children and young adults are presently treated with PTB though the study of Casino et. al. in 2011 revealed otherwise. There were 30 children diagnosed with primary complex or TB among children. These cases were already reported to the authorities hoping that actions will be done. It would not be surprising if adults are more likely to get infected

since TB is a disease with age-dependent risks and the role of reinfection found out that the risks of developing disease are age-dependent according to Vynnycky, 2000. The above mentioned findings may also support the recommendations of Kiwuwa, 2006 specifically target a certain adult groups especially the groups of alcoholics and subsistence farmers to improve accessibility to TB treatment.

Taking into account the gender of the respondents, 21 or 70 percent are males and nine (9) or 30 percent are females. Majority of the affected population with PTB are males since smoking is part of the lifestyle among male respondents as observed by the BHW during the researcher's interview with the latter. Though the reasons are still unclear, the according to the study of Diwan and Thorson in 2000 however, the researchers were clear in their conclusion that a combination of biological and social factors is responsible for these differences and that knowledge as well as research within this field is insufficient. Epidemiological information shows that there are differences between men and women in prevalence of infection, rate of progression from infection to disease, incidence of clinical disease, and mortality due to tuberculosis.

As to the family history of PTB, 22 or 73.33 percent maybe have no family history and eight (8) or 26.67 percent have at least one member of their family infected with PTB. This means that PTB is mostly acquired and not attributed to infection among the family members however, the results imply that the risk of further infection is still high if you base it on the nature of the disease that is highly communicable. As Leung in 1999 presented in her study that *M tuberculosis* is transmitted via airborne droplet nuclei that are produced when persons with pulmonary or laryngeal TB cough, sneeze, speak, or sing. Infection occurs when a susceptible person inhales droplet nuclei that contain tubercle bacilli from the infected individual.

The number of members of the family comprised mostly of 3-4 with 13 or 43.33 percent among the respondents. This is followed ten (10) or 33.33 percent with 5-6 members of the family then, five (5) or 16.67 percent with 7 or more family members and two (2) or 6.67 percent with 1-2 members. This implies that infection rate would somehow increase since most of the respondents are living with other family members who are greatly at risk of infection. This result is supported by the study of Tornee et. al. in 2005 on the association between environmental factors and tuberculosis infection among household contacts indicated that the risk of positive tuberculin skin testing in household contacts was found to increase with household crowding.

As to the monthly financial income, ten (10) or 33.33 percent are earning between Php2,501.00-3,500.00 while nine (9) or 30 percent are having income of Php500.00-1,500.00 and more than Php4,501.00. Only two (2) or 6.67 percent

are within Php1,501.00-2,500.00 this means that most of the families are earning less with mostly 3-4 members in family. Proper diagnosis plays a vertical role in the medication of the patients and has been neglected since most of them have low monthly income. Though the medicines are for free, the fare going to the center to access effective test to TB or for their daily treatment has become a burden to most of the patients. These data were observed during the researcher's constant visit to the center. This observation is also backed up by the study of Tupasi et. al., in 2000 where the researcher concluded that socio-economic factors should be taken into account in the design of TB information campaigns and in prioritizing public health interventions about TB since the study revealed that no intention of seeking health care and intention to self-treat in case of TB disease were significantly correlated to low family monthly income.

As regards to the nature of residence, 25 or 83.33 percent are not crowded and five (5) or 16.67 percent live in a crowded area. Since most of the respondents' home are not crowded this does not mean that the possibility of spreading the disease is low. However, this implies that infection is still possible because of the nature of the disease that is highly infectious especially children as revealed by the study of Tornee et. al. in 2000 that in cases where there are children living with the infected individual, the infection rate would be five times higher.

Most of the respondents experienced coughing for two or more weeks with 27 or 90 percent affirmed before they were diagnosed clinically. This is followed by fatigue with 24 or 80 percent. Ranked third are the significant weight loss and chest and/or back pains not referable to any musculo-skeletal disorders with 21 or 70m percent of the respondents have experienced. Both fever and sweat have 19 or 63.33 percent followed by shortness of breath with 17 or 56.67 percent of the respondents. Body malaise, chills and hemoptysis or recurrent blood-streaked sputum have all 14 or 46.67 percent of the respondents experienced these symptoms while only 13 or 43.33 have experienced sputum expectoration. The referral slips gathered at the Liceo de Cagayan University X-ray Center revealed the same chief complaints of cough for two weeks or more and chest and/or back pains from these patients referred for chest x-ray examination by the Medical Doctor of Canitoan Barangay Health Center. This implies that most of these signs and symptoms are very common however; most of the patients especially in the rural areas do not prioritize proper screening because of lack of funds. This holds true as revealed in the study of Tupasi et. al. in 2000 that with some subjects who showed the same abovementioned signs and symptoms, majority took no action or self medicated, while only few consulted a private practitioner, seek consultation at the public health center, hospital and to traditional healer because of low income in the family.

As to the result of the sputum examination, 25 or 83.33 percent are smear positive and five (5) or 16.67 percent are smear negative. This may indicate that there are patients who are not diagnosed positive by a sputum examination but presented the signs and symptoms of a person with PTB and the chest x-ray examination revealed otherwise. This implies that the move of having the chest x-ray examination as a secondary diagnostic examination to rule out PTB among the patients referred by the Health Center of Canitoan for free as part of Liceo de Cagayan University community extension program is aligned in providing accurate diagnosis. Chest X-ray examination has really been a tool to help in the diagnosis of tuberculosis as it was also used in the study on bacillary disease and health seeking behavior among Filipinos with symptoms of tuberculosis: implications for control. On the other hand, this may also open the opportunity of a strong tie up with the College of Medical Laboratories to perform the sputum test in accordance with the NTP procedures.

Since the memorandum of agreement between the local government unit of Canitoan and Liceo de Cagayan University has been in place and free chest examination were given to all the patients referred by the health center. The results of the chest x-ray examination of the respondents with PTB related abnormalities are 28 or 93.33 percent and 2 or 6.67 percent without PTB related abnormalities. These result support the importance of the free chest x-ray examination given by the Liceo de Cagayan University X-ray Center in providing a more definite clinical diagnosis to the patients who shows signs and symptoms of a person with PTB but were smear negative in the sputum examination.

Most of the PTB cases were new which comprise 27 or 90 percent of the respondents with 2 or 6.67 classified as return after default and only 1 or 3.33 percent is found to experience a relapse. This implies that there might be an increase in the number of patients who are considered as multi-drug resistant TB (MDR-TB). In the study of Grimaldo et. al. in 2000, some patients may develop MDR-TB due to a selection pressure from their widespread use in the treatment of TB and possibly other infections in the community, which is hyperendemic for tuberculosis.

The treatment regimen followed by 24 or 80 percent is regimen I and three (3) or 10 percent are following regimens II and III respectively since most of them are new cases. The data imply that the health center has to be prompt in giving appropriate drugs especially to those who may have developed MDR-TB since this is already available in the health centers as part of the DOTS-Plus program. This is supported in the study of Tupasi, et. al. in 2006 that these patients must be treated with regimens, including first- and second-line drugs, tailored to their drug susceptibility pattern. Treatment of patients with MDR-TB using the DOTS-Plus

strategy and individualized drug regimens can be feasible, comparatively effective, and cost-effective in low- and middle-income countries like the Philippines.

All patients are using Isoniazid Refampicin, Pyrazinamide and Ethambutol. These four drugs come in a four-in-one-tablet so patients have to take 1 tablet a day instead of four tablets a day as the drug therapy would require few years ago. However there are three (3) or 6.67 percent of the respondents who are taking Streptomycin injectables on top of the four other drugs given to patients who return after default or experience a relapse utilizing regimen II for the moment. The relapse and defaults were mostly attributed to patients taking trips to other parts of the country while on treatment. Their trips caused them to skip the medication several times according to the Public Health Nurse assigned in Canitoan This implies that the drugs used by the health centers are in accordance with using more effective drugs in the treatment of TB as compared to the result of the study of Grimaldo, E. R. et. al. in 2001 which revealed that some drugs used by the TB program of the government like Ciprofloxacin and Ofloxacin are already significantly less effective alternative therapy in tuberculosis.

Table 1. Demographic profile of the respondents

Age	**Frequency**	**Percentage**
21-30 years old	7	23.33
31-40 years old	3	10.00
41-50 years old	9	30.00
51-60 years old	6	20.00
61-70 years old	5	16.67
Total	**30**	**100.00**
Gender	**Frequency**	**Percentage**
Male	21	70.00
Female	9	30.00
Total	**30**	**100.00**
Family History of PTB	**Frequency**	**Percentage**
Yes	8	26.67
No	22	73.33
Total	**30**	**100.00**

Number of Members of the Family	Frequency	Percentage
1 – 2 members	2	6.67
3 – 4 members	13	43.33
5 – 6 members	10	33.33
7 members above	5	16.67
Total	**30**	**100.00**

Monthly Financial Income (Php)	Frequency	Percentage
500.00-1,500.00	9	30.00
1,501.00-2,500.00	2	6.67
2,501.00-3,500.00	10	33.33
3,501.00-4,500.00	0	0.00
4,501.00 above	3	30.00
Total	**30**	**100.00**
Nature of Residence	**Frequency**	**Percentage**
Crowded	5	16.67
Not Crowded	25	83.33
Total	**30**	**100.00**

Signs and Symptoms Experienced	Yes		No	
	F	%	F	%
Coughing for two or more weeks duration	27	90.00	3	10.00
Fever	19	63.33	11	36.67
Sputum expectoration	13	43.33	17	56.67
Significant weight loss	21	70.00	9	30.00
Hemoptysis or recurrent blood-streaked sputum	14	46.67	16	53.33
Chest and/or back pains not referable to any musculo-skeletal disorders	21	70.00	9	30.00
Sweat	19	63.33	11	36.67
Chills	14	46.67	16	53.33
Fatigue	24	80.00	6	20.00
Body malaise	14	46.67	16	53.33
Shortness of breath	17	56.67	13	43.33
Clinical Diagnosis				
a. Results of Sputum Examination	**Frequency**		**Percentage**	
Smear Positive	25		83.33	

Smear Negative	5	16.67
Total	**30**	**100.00**
b. Results of Chest X-ray Examination	**Frequency**	**Percentage**
Without PTB related Abnormalities	2	6.67
With PTB related Abnormalities	28	93.33
Total	**30**	**100.00**

c. Type of PTB Case	**Frequency**	**Percentage**
New	27	90.00
Relapse	1	3.33
Failure	0	0.00
Return after Default	2	6.67
Transfer-In	0	0.00
Total	**30**	**100.00**
Treatment regimens	**Frequency**	**Percentage**
RegimenI	24	80.00
RegimenII	3	10.00
RegimenIII	3	10.00
Total	**30**	**100.00**
Drug Used	**Frequency**	**Percentage**
Isoniazid	29	96.67
Refampicin	30	100.00
Pyrazinamide	30	100.00
Ethembutol	30	100.00
Streptomycin	2	6.67

Objective 2. To determine the perceived level of implementation of the National Tuberculosis Program in terms of case detection, diagnosis, availability of drugs/supplies, health education, supervised treatment and counseling?

As shown in table 2, in terms of case detection, have a sputum smear test for other members of the family who show signs and symptoms of persons with TB has a weighted mean value of 2.00 with a verbal description of partially implemented. Have all children in the family with TB patients to undergo thorough assessment and examination has a 1.70 weighted mean for case detection is 1.82 with a verbal description of partially implemented. The results show that not all the programs for

case detection are implemented. This implies that if case detection is not implemented thoroughly, the rate of reported cases will become erratic and may affect the attempt of the government to strengthen its TB control program in the community level. This implication is aligned in the study of Dye in 2000 stressing the importance of a well implemented case detection and case finding programs in order to develop new case finding and management methods to bridge the gap between current and target case detection, and to improve the accuracy of national estimates of TB incidence, above all by reinforcing and expanding routine surveillance.

In terms of diagnosis, explaining the result of the sputum smear test and explaining the importance of other examination like Chest X-ray both have weighted mean of 2.87 with a verbal description of fully implemented. The giving of referral for sputum smear examination as soon as possible has a weighted mean of 2.47 with a verbal description of partially implemented. The overall weighted mean is 2.69 with a verbal description fully implemented. This result shows that the health center has observed the proper referral system for patients with TB to sputum test and to Liceo de Cagayan University X-ray Center for the chest x-ray examination. This further shows a strong tie up in terms the extension program of the University with adopted community in the delivery of the free x-ray examination for the indigent patients. This implies that if the role of the private sector is fully utilized in the desire to minimize the TB cases in community, this tie up can greatly reinforce the existing programs in the community if properly maintained. According to the study of Auer, the urgent need to foster co-ordination and collaboration between the private and the public health providers is clear in improving the any anti-TB programs in the community.

In terms of availability of drugs/supply, providing drugs for TB has a weighted mean of 2.90 with a verbal description of fully implemented and providing other supplies necessary for the drug therapy has a weighted mean of 2.20 and with a verbal description of fully implemented. This result shows that the NTP program provides all the necessary drugs and supplies for the therapy. This implies that if the commitment of the government to address the problem in tuberculosis and become more accessible even to the less fortunate will result to an improved treatment program especially for patients who have developed MDR-TB must receive appropriate drug therapy. According to Tupasi in 2006, these patients must be treated with regimens, including first- and second-line drugs, tailored to their drug susceptibility pattern. Treatment of patients with MDR-TB using the DOTS-Plus strategy and individualized drug regimens can be feasible, comparatively effective, and cost-effective in low- and middle-income countries like the Philippines.

In terms of health education, conducting health education about TB that can

be cured but requires regular drug intake has a weighted mean of 2.87 with a verbal description of fully implemented. The conduct of health education about the signs and symptoms of TB has a weighted mean of 1.73 with a verbal description of partially implemented. This overall weighted mean is 2.34 with a verbal description is partially implemented. This result shows that the patients still lack some pertinent information regarding tuberculosis and how important these data in the overall success of the whole NTP and drug therapy of these patients. This implies that an increase in mistreatment is expected unless corrective measures will be imposed. NTP of the Philippines strongly suggests that health education must be implemented as part of the initiation of treatment to be done by the health workers with emphasis on key messages such as: TB is infectious, TB can be cured but requires regular drug intake, results of irregular drug intake, side effects of anti-TB drugs, importance of follow up sputum smear examinations and importance of family/treatment partner support.

In terms of supervised treatment, the presence of a BHW or Volunteer during the collection of specimens during the drug therapy period has a weighted mean of 2.77 with a verbal description of fully implemented while the presence of a BHW or Volunteer everyday during the entire drug therapy to ensure the intake of drugs even during weekends or holidays has a weighted mean of 2.20 with a verbal description of partially implemented. The overall weighted mean is 2.49 with a verbal description of partially implemented. This result shows that there is still so much to do in the area assigning a treatment partner. This implies that if supervised treatment is not thoroughly followed, the cases of mistreatment will rise. The success to remind and prompt the patients to religiously take their drugs mostly relies on the efficiency of the assigned partner especially if they are part of the family thus ensuring the success of the TB program. The study of Auer in 2001 found that the family plays an important role in health seeking. This is as expected in the Philippines where the family remains an important source of support. Health communication to promote health and prevent illness should be conveyed to more than one person in the family.

In terms of counseling, conducting counseling on patients with TB has a weighted mean of 1.87 with a verbal description of partially implemented while the conduct of counseling on the entire family of patients with TB has a weighted mean 1.83 with a verbal description of partially implemented. The overall weighted mean is 1.85 with a verbal description of partially implemented. This result implies that there is still a need of the program to implement means of allowing the patients and their families to understand better their roles to play in and how vital it is in the success of the entire program and therapy. In the study of F. Adtu et. al. where the Ugandan Ministry of Health adopted the strategy as a national policy revealed that

the improved compliance among PTB infected individuals is achieved by providing education and counseling not only to the infected individual but to the entire family who at risk of being infected.

Table 2. Perceived level of the implementation of the national tuberculosis program

Case Detection	Mean	SD	Verbal Description
Conduct home visits to inform about the services related to TB.	1.73	0.640	Partially implemented
Conduct home visits to inform about the programs related to TB.	1.83	0.747	Partially implemented
Have a sputum smear test for other members of the family who shows signs and symptoms of persons with TB	2.00	0.695	Partially implemented
Have all children in the family with TB patients to undergo thorough assessment and examination.	1.70	0.837	Partially implemented
Total	**1.82**	**0.729**	**Partially implemented**
Diagnosis			
Give referral for sputum smear examination as soon as possible	2.47	0.629	Partially implemented
Gives referral for chest x-ray examination as soon as possible.	2.53	0.681	Partially implemented
Explain the result of the sputum smear test.	2.87	0.345	Partially implemented
Explain the importance of other examinations like Chest X-ray.	2.87	0.345	Partially implemented
Total	**2.69**	**0.500**	**Fully Implemented**
Availability of Drugs/Supplies			
Provide drugs for TB	2.90	0.305	Fully Implemented
Provide other supplies necessary for the drug therapy	2.20	0.551	Partially Implemented
Total	**2.55**	**0.428**	**Fully Implemented**
Health Education			
Conduct health education about the signs and symptoms of TB.	1.73	0.640	Partially Implemented
Explains the importance of a sputum smear test.	2.10	0.607	Partially Implemented
Demonstrate the proper was of sputum expectoration	2.47	0.629	Partially Implemented

Explains the result of the sputum smear test	2.37	0.615	Partially Implemented
Explain the relevance of other examinations like Chest X-ray.	2.70	0.596	Fully Implemented
Explain the importance of Chest X-ray Exam to rule out TB.	2.53	0.571	Fully Implemented
Conduct health education on TB as infectious.	2.60	0.621	Fully Implemented
Conduct health education about TB that can be cured but requires regular drug intake.	2.87	0.345	Fully Implemented
Explain the results of irregular drug intake.	2.70	0.535	Fully Implemented
Explain the side effects of anti-TB drugs	2.27	0.538	Partially Implemented
Explain the importance of the follow-up sputum smear exam.	2.03	0.556	Partially Implemented
Explain the importance of family support during treatment.	2.13	0.629	Partially Implemented
Conduct health education on the other members of the family on how to avoid infection.	2.23	0.679	Partially Implemented
Explain the reasons for a long drug therapy sessions.	2.40	0.621	Partially Implemented
Explain the results of drug resistance	2.27	0.691	Partially Implemented
Total	**2.34**	**0.599**	**Partially Implemented**

Supervised Treatment			
Presence of a BHW or Volunteer during the collection of specimens during the drug therapy period.	2.77	0.504	Partially Implemented
Presence of a BHW or Volunteer everyday during the entire drug therapy to ensure the intake of drugs even during weekends or holidays	2.20	0.484	Partially Implemented
Total	**2.49**	**0.494**	**Partially Implemented**
Counseling			
Conduct counseling on patients with TB.	1.87	0.860	Partially Implemented
Conduct counseling on the entire family of patients with TB.	1.83	0.592	Partially Implemented
Total	**1.85**	**0.726**	**Partially Implemented**

Objective 3. To determine the level of effectiveness in the delivery of treatment on patients with pulmonary tuberculosis in terms of physical assessment and prescription of appropriate regimen, registration, health education, intake of first dose, directly observed treatment and recording?

As reflected in table 3, in terms physical assessment and prescription of appropriate regimen, conducting thorough physical assessment has a weighted mean of 2.53 with a verbal description of good while to determine the type TB for appropriate regimen has a weighted mean of 2.93 with a verbal description of good. The overall weighted mean is 2.73 with a verbal description of good. The result implies that the center needs to elevate in the area of assessing the patients' condition thoroughly to effectively treat the disease condition though delivering the appropriate regimen to every patient with a certain type of TB. The clinical diagnosis plays a vital role in establishing the right regimen to the patient by identifying the TB classification. According to Tupasi in 2001, patients must be treated with regimens, including first- and second-line drugs, tailored to their drug susceptibility pattern.

In terms of registration, maintaining and updating NTP Treatment Card has a weighted mean 3.47 and with a verbal description of good while maintaining and updating NTP ID Cards for the patient and the treatment partner has a weighted mean of 3.23 with a verbal description of good. The overall weighted mean is 3.36 with a verbal description of good. This result implies that the center may have registered all these patients however it is suggested that effective recording is required to maintain and update all these registration to ensure a highly effective treatment. According to Dye, proper recording can help improve the accuracy of national estimates of TB incidence, above all by reinforcing and expanding routine surveillance.

In terms of the intake of first dose, recording the date when treatment started has a weighted mean of 4.27 with a verbal description of very good while recording the due date of other examinations and drug intake has a weighted mean of 4.30 and a verbal description of very good. The overall weighted mean is 4.29 and with the verbal description of very good. This results shows that assistance of the center in the first take of the medication has been almost effective. This may indicate that the center has a very good recording system. the importance of a good recording system is aligned in the study of Dye, C. et. al. in 2008 which revealed that in monitoring progress in tuberculosis control, the ultimate aim for all countries is to count tuberculosis cases (incidence) accurately through routine surveillance and proper recording.

Table 3. Delivery of treatment on patients with PTB

PHYSICAL ASSESSMENT AND PRESCRIPTION OF APPROPRIATE REGIMEN	Mean	SD	Verbal Description
Conduct thorough physical assessment	2.53	1.106	Good
Determine the type of TB for appropriate regimen	2.93	0.944	Good
Total	**2.73**	**1.025**	**Good**
REGISTRATION			
Maintain and update NTP treatment Card	3.47	1.008	Good
Maintain and update NTP ID Cards for the patient and the treatment partner	3.23	1.135	Good
Register the patient for the NTP program	3.37	0.964	Good
Total	**3.36**	**1.035**	**Good**
HEALTH EDUCATION			
Conduct health education on TB as infectious	3.27	1.258	Good
Conduct health education about TB that can be cured but requires regular drug intake.	3.53	1.106	Very Good
Explain the results of irregular drug intake.	3.97	0.964	Very Good
Explain the side effects of anti-TB drugs.	3.47	1.074	Good
Explain the importance of the follow-up sputum smear exam.	3.40	0.968	Good
Explain the importance of family support during treatment	3.27	1.015	Good
Total	**3.49**	**1.064**	**Good**
INTAKE OF FIRST DOSE			
Record the date when treatment started.	4.27	0.944	Very Good
Record the due date of other examinations and drug intake.	4.30	0.877	Very Good
Total	**4.29**	**0.910**	**Very Good**
DIRECTLY OBSERVED TREATMENT			
Assign a treatment partner.	3.23	0.935	Good
Do " directly observed treatment" everyday during the whole course of treatment	3.10	0.885	Good
Conduct weekly consultation meeting at the health center during the whole course of treatment	3.73	0.907	Very Good
Total	**3.35**	**0.909**	**Good**

RECORD KEEPING			
Maintain and update the TB register.	3.77	1.040	Very Good
Maintain the treatment card at the health center	3.67	1.213	Very Good
Maintain and update the ID cards of the patient and the treatment partner	3.70	1.022	Very Good
Total	**3.71**	**1.091**	**Very Good**

Objective 4. To determine the significant relationship between the perceived level of implementation of the National Tuberculosis program and the delivery of treatment on patients with pulmonary tuberculosis?

Table 4 reflects the calculated values when the perceived level of implementation of the national tuberculosis program is compared to the effectiveness of treatment in patients with pulmonary tuberculosis. It is indicated that the computed P-values of the perceived level of implementation according to case detection and availability of drugs/supplies, did not reach the value of significance. This means that case detection and availability of drugs/supplies are not correlated to the delivery of treatment on patients with pulmonary tuberculosis.

However, when the perceived level of implementation of the national tuberculosis program in terms of diagnosis reached the value of significance with P-values of 0.001 when compared to intake of the first dose with verbal description of very highly significant, 0.004 for record keeping which is highly significant and 0.042 directly supervised treatment with a verbal description of significant. This means the proper diagnosis of the patients would lead in prompting these patients to take the medicines the soonest possible time to insure an immediate response to the need of drug therapy to all diagnosed patients showing PTB abnormalities in either one or both of the sputum test and chest x-ray examination. The diagnosis of these patients will provide the idea of the health personnel to keep track of therapy and have the patients' record updated as part the treatment plan. Furthermore, the diagnosis channels the directly supervised treatment to guarantee the completion the entire treatment plan. This is aligned to the designed flow of NTP activities.

As regard to the perceived level of implementation of the national tuberculosis program in terms of health education obtains a value of significance when compared to the delivery of treatment on patients with pulmonary tuberculosis in the area of intake of first dose with a corresponding P-value of 0.048 and with verbal description of significant. This denotes that educating the patient about the very vital information of the drugs, side effects, results in irregular drug intake, drug resistance

and the length of the drug therapy will mark the success of the treatment plan. The cooperation of the patient and the commitment to complete the whole session of treatment relies on the full understanding of the whole program. This is supported by the study of Kiwuwa in 2005 that substantial reduction in case detection delays may be achieved through more specific and effective health education of the general public on tuberculosis and seeking of appropriate medical consultation.

As suppose to the comparison between the perceived level of implementation of the national tuberculosis program in terms of supervised treatment with the delivery of treatment on patients with pulmonary tuberculosis in the areas of intake of first dose and directly supervised treatment have hit a value of significance with 0.019 and 0.039 P-values respectively with verbal descriptions of highly significant for the intake of first dose and significant for the directly supervised treatment. This connotes that supervision employing volunteers or family members as best option will preserve the commitment of both the patient and the treatment partner to religiously combat tuberculosis on a day-to-day basis even during weekends and holidays thus successfully completing and following the entire treatment plan. In the study of Auer in 2001 emphasized the role of the family members in success of the treatment process and further encouraged the public to always be accompanied by a family member when seeking health care and enabling community health workers to adequately convey health communication messages to the families in their houses are two approaches to strengthen family-based health communication.

To observe the comparison between the perceived level of implementation of the national tuberculosis program in terms of counseling with the delivery of treatment in patients with pulmonary tuberculosis in the area of intake of the first attains the value of significance with a 0.016 P-value with a verbal description of highly significant. It implies that counseling not only on the patient but to the whole family must jump start at the onset of the first take of the anti-TB drug assures the success and completion of the drug therapy. The knowledge to be provided to the other members of the family will usher into a thorough understanding of the whole situation of a lengthy treatment plan. This will surely signal full support for the patient from the significant others thereby eases up the burden of the infected member as well as the entire family in dealing with the constraining situation and welcome the hope of being healed instead of dwelling into the feeling of hopelessness. The study of Auer clearly stated that the technical and organizational aspects of TB control should not detract from appreciation of the human aspects of treatment and control strategies since the proper tuberculosis control program involves education, counseling and training as part of the multifaceted plan of the NTP.

Table 4. Relationship between the perceived level of implementation of the national tuberculosis program and the delivery of treatment on patients with pulmonary tuberculosis

Perceived level of implementation of the National Tuberculosis Program	Delivery of Treatment on Patients with Pulmonary Tuberculosis	Pearson Correlation	P-Values	Interpretation
Case Detection	Physical assessment and prescription of appropriate regimen.	0.204	0.281	Not significant
	Registration	0.180	0.343	Not significant
	Health Education	0.258	0.169	Not significant
	Intake of first dose	0.017	0.929	Not significant
	Directly Supervised Treatment	0.341	0.066	Not significant
	Recording keeping	0.057	0.765	Not significant
Diagnosis	Physical assessment and prescription of appropriate regimen.	0.211	0.263	Not significant
	Registration	0.132	0.486	Not significant
	Health Education	0.220	0.243	Not significant
	Intake of first dose	0.568	0.001	**Very highly significant**
	Directly Supervised Treatment	0.373	0.042	**Significant**
	Recording keeping	0.509	0.004	**Highly significant**
Availability of Drugs/Supplies	Physical assessment and prescription of appropriate regimen.	0.018	0.927	Not significant
	Registration	-0.257	0.139	Not significant
	Health Education	-0.230	0.221	Not significant
	Intake of first dose	0.233	0.214	Not significant
	Directly Supervised Treatment	0.045	0.812	Not significant
	Recording keeping	-0.008	0.967	Not significant
Health Education	Physical assessment and prescription of appropriate regimen.	0.306	0.100	Not significant
	Registration	0.010	0.957	Not significant
	Health Education	0.215	0.255	Not significant
	Intake of first dose	-0.365	0.048	**Significant**
	Directly Supervised Treatment	-0.163	0.391	Not significant
	Recording keeping	-0.309	0.097	Not significant

Supervised Treatment	Physical assessment and prescription of appropriate regimen.	0.156	0.411	Not significant
	Registration	0.071	0.711	Not significant
	Health Education	0.259	0.167	Not significant
	Intake of first dose	0.424	0.019	**Highly significant**
	Directly Supervised Treatment	0.378	0.039	**Significant**
	Recording keeping	0.257	0.170	Not significant
Counseling	Physical assessment and prescription of appropriate regimen.	0.219	0.086	Not significant
	Registration	0.106	0.576	Not significant
	Health Education	0.254	0.159	Not significant
	Intake of first dose	-0.435	0.016	**Highly significant**
	Directly Supervised Treatment	-0.040	0.833	Not significant
	Recording keeping	-0.259	0.151	Not significant

CONCLUSIONS

Based on the findings of the study, the following conclusions are drawn:

Adults are the most affected age group with tuberculosis. This is supported by the study of Dr. P. R. Donald in 2000 which also revealed that in developed communities tuberculosis occurs mainly in older adults that can greatly attributed to poor lifestyle.

Majority of the affected individuals are males though the reasons are unclear but a great number of studies would associate this to a combination of biological and social factors.

PTB among the cases is mostly acquired, this can be attributed to the fact that TB is highly contagious and most of the residents live with infected individuals in a crowded household. Most of these infected individuals are living with quite a big number of family members. This situation increases the possibility of doubling the infection rate among the members especially on children who are very much susceptible to infection. These families are low income earners. Since the income of the family plays a vital role in managing the health of the members, seeking medical attention will be the least of the family's priority above all other equally important matters like food and utilities.

Coughing for two or more weeks is the most common symptoms experienced by these infected individuals and most of them are smear positive with regards to their sputum test since most of the residents treat coughing as a normal, simple and not life threatening not until coughing becomes worst that they will seek assistance at

the Barangay Health Center that usually comes at the later part. Although most of the PTB cases are new, there is a little danger of developing MDR-TB among those defaulters and patients who have experienced relapse since most of these relapse are accounted to failure to complete the therapy for reasons that within the span of the therapy, some patients will have to leave the community for some important matters to attend to in other places outside Canitoan. All these PTB cases are taking Isoniazid, Refampicin, Pyrazinamide and Ethambutol. Streptomycin injectables are given to those who have experienced relapse since these drugs are provided under the National Tuberculosis Program.

Diagnosis is important in establishing the proper therapy and the exact schedule that the enrolled patient of the NTP will have to follow for accurate recording. These records are important in drawing the real picture on TB cases in the country. The success of the program relies mostly on the proper diagnosis of the patient. However, an equally important factor is the supervised treatment in which determines the role of the treatment partner who is usually a family member. The diagnosis will greatly aid in the understanding of the treatment partner on how important it is to abide with the schedule of treatment to come up with successful treatment plan.

Health education is the key factor for patients to comply for the whole course of the treatment plan. Health teachings would include the regimen, duration of the therapy, role of the treatment partner, support of the family and infection control. These facts have to be understood and applied by everyone involved and will have to be established during the first intake of the series of drug intake.

The completion of the therapy depends on the commitment of the treatment partner. Treatment partners are assigned to supervise the treatment. This role has to be built on commitment since the treatment program must be diligently followed by the treatment partner. Family members are the best treatment partners, aside from they live with the TB patients, they also feel more towards the patients indicating a higher chance of completing the therapy.

The level of implementation of the national tuberculosis program in area of counseling is significant to the level of effectiveness in the treatment of patients with pulmonary tuberculosis in terms of intake if first dose. Counseling is important in decreasing possibility treatment failure especially during the intake of the first dose. Diagnosis and treatment are greatly affected with the stigma associated to TB that would lead to isolation. A lot of studies accounted the failure of treatment to stigma experienced by the patient and the other members of the family. If counseling is well provided, the patients and their family will have a better understanding on the whole situation and their understanding will promote more successful treatment plan.

RECOMMENDATIONS

Based on the findings produced in the study, the following recommendations are offered for considerations:

1. Implement the proposed tuberculosis program as a University-wide endeavor in augmenting the existing tuberculosis control program of the adopted communities as part of the community extension services. This will be spearheaded by the College of Radiologic Technology involving the College of Nursing, College of Pharmacy, College of Medical Science and Laboratory, College of Physical Therapy, Psychology Department of the College of Arts and Science and the Guidance Office. This will be imposed by the Liceo Center for Community Development. This will be introduced to the faculty, staff and student volunteers of the enjoined Colleges, health workers of the adopted communities, volunteers of the adopted communities and the LCCD personnel.
2. Encourage more volunteers for the directly supervised treatment especially those family members of the successfully treated individuals. The supervised treatment has to be strengthened in creating a group of that individuals committed to supervise, follow-up and guarantee the treatment process, is religiously followed in a day to day basis.
3. Intensify the health education program of the community on tuberculosis especially on the family level to improve case detection and seeking of appropriate medical consultation. Health education has to be enhanced and geared towards the thorough understanding of the patients and the family members of the affected individual on the entire treatment process specifically on the different signs and symptoms, characteristics of tuberculosis as a highly infectious disease, characteristics of the drugs used in the treatment, results of the tests and the importance of the support of the family to ensure a successful combat against tuberculosis.
4. Form a TB club in the community to facilitate the needs of those patients and families who are stigmatized with the whole situation and may need immediate counseling.
5. Conduct seminar-workshops on the proper implementation of the proposed tuberculosis program spearheaded by the University through the LCCD and the College of Radiologic Technology in partnership with the City

Health Office for the faculty, staff and student volunteers of the enjoined Colleges, health workers of the adopted communities, volunteers of the adopted communities and the LCCD personnel.

6. Conduct a monthly monitoring and evaluation to be implemented by the LCCD to keep track of the sustainability of the proposed University tuberculosis program for the adopted communities and generate feedback from all the involved parties.
7. Encourage future researchers to conduct related studies most especially on the level of effectiveness of the implementation of the proposed University tuberculosis program on the adopted communities.
8. Propose for a revisit in the curricula of all the health related courses in Liceo de Cagayan University for a possible review and incorporation of the NTP Policies and Procedures in the Community Health subjects.
9. Emphasize the significance of the first dose and the succeeding doses in the TB treatment compliance during health teaching and counseling.

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