A Survey on Tuberculosis Patients Presenting to Port Moresby General Hospital after Defaulting Tuberculosis (Tb) Treatment

Mateus Pinheiro

Port Moresby General hospital and the University of Papua New Guinea, October, 2017

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ABSTRACT

Introduction

Papua New Guinea for decades has been battling the very high prevalence of Tuberculosis (Tb) like other developing Nations. This nation faces many challenges in achieving desired cure rate in Papua New Guinea. Defaulting from tuberculosis (Tb) treatment has been one of the major obstacles to treatment management and an important challenge for TB control. Understanding of various factors accounting for treatment default could help to achieve better compliance from patients. Thus, the aim of the study is to look in depth into the causes and other related factors of Tb treatment default from Tb patients presenting to Port Moresby General Hospital after default in treatment, from May 2015 to May 2016.

Methods

A descriptive-retrospective qualitative Survey carried out at the medical wards and Tb clinic PMGH. A total of 88 tuberculosis patients were selected randomly. A standardized questionnaire was used in the survey to assess patients' religion and beliefs, duration of treatment prior to default, Reasons for default, level of education, means of transport used to clinic and some factors that affects adherence to treatment.

Results

The study showed that all patients (n=88) 100 were Christian faith, but only 69% of 88 patients were pure Christian, remaining 31% mixture of Christian faith and sorcery beliefs. 83 % of patients default Tb treatment after two months, 17 % stopped Tb drugs after first month of intensive phase. 52 % of patients only had as far as primary school level of education. 15.9 % of 88 patients had no formal education. 70% patients used public transport as main transport to clinic, while 24% walk to clinic because live nearby, the remaining 6% had own transport. 64 (72.3%) had personal reason default Tb treatment. Out of 64 patients with personal issue related default, 48.44 % of Symptoms resolution, 28% due to sorcery practice in Papua New Guinea and 23. 44% side effects of Tb drugs. 42% of patients default with socio-economic problems. 66 (75%) patients failed to have proper health information regarding their symptoms. In regards to co-morbidity and risk factors, 22.7% patients had co-morbidities, predominately HIV infection (16%). 46% of 88 patients taking alcohol while on Tb drugs and 45% were smokers. Majority of them (68%) chew betel nuts. Only 28 % had employed while majority (72%) unemployed with no income per fort night. Majority patients had poor nutritional status, more than half of patients (64%) had Body Mass Index (BMI) less than 18kg/m^2. Almost every patient had no treatment supervisor, 55 (60.8%) self-administer medications, only 39.2 % supervised by family members. 55% of patients had Sputum smear positive for AFB, 11.4 % Smear was negative for AFB hence treatment initiated base CXR and clinical grounds. Remaining 26.1% patients had no sputum microscopic examination due to extra-pulmonary tuberculosis.

Other factors that still affect adherence include young age (<30 years old) for 60.2 %, married for 65.9 %, female gender of 61.4%.

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Conclusion

The majority of patients have defaulted due to personal related problems. Failure of give proper health information about symptoms relief with DOTS is a challenge faced by patients. Most patients stopped treatment at end of intensive phase. Practice of sorcery in Papua New Guinea is still having an influence on Tb treatment adherence. There are other factors associated with poor adherence of patients to Tb treatment. Other factors will require concentrated policy makers and relevant entities.

Keywords: TB: tuberculosis, DOTs: Direct observe treatment short course, LTFU: Lost to follow up, EPTB: Extra pulmonary Tuberculosis, PMGH: Port Moresby general hospital, NCD: national capital district, HIV: human immunodeficiency virus, IP: intensive phase, CP: continuation phase, PMV: Public motor vehicle, NTP: National Tuberculosis program, DR-TB: drug resistant -tuberculosis, PNG: Papua New Guinea

INTRODUCTION

Papua New Guinea has one of the highest TB burdens in the Western Pacific Region according to WHO reports. Based on annual TB case notifications, the number of TB cases reported has increased by 70% in the last 8 years. The notification of smear positive TB is however is low despite an increase in the trend of TB case notification, indicating that the quality of TB detection and diagnosis is poor. National Tuberculosis Program (NTP) data indicate that there is ongoing transmission of TB within communities and households as shown by the high occurrence of smear-positive TB among the economically productive age group (15-39) and by high numbers of children diagnosed with TB (26 -28% of total TB cases annually) which essentially reflect ongoing TB transmission. NTP data on TB notifications indicate that 70 percent of all TB cases reported in the last five years are from BMUs which are located in the urban areas. The southern region has the highest burden of TB in the country with the National Capital District (NCD) being the most important and visible hot spot for TB. NCD hosts only 5 percent of the country's population, but contributes to 25 percent of all TB cases in the country with TB case notification rates that are nearly four times higher than the national average (>1200/100 000 population) and that are consistent over the years. High case notification rates are also observed in Western, Oro, Gulf, Morobe, and West New Britain provinces. Around 32% of all TB cases are reported as sputum not done or not available and 24% of total TB cases are reported as extra pulmonary TB (EPTB). This indicates that at least 41% of all TB patients were not properly diagnosed as per WHO indicators. The treatment success rate for all new smear positive cases in 2014 was 67% compared to 69% in 2011 and this continues to remain below 70% annually thereafter and has never reached the 85% target. The loss-to-follow-up (LTFU or Defaulter) rate slightly improved to 17% in 2014 (20% in 2011). The success rate for retreatment cases has improved from 52% in 2011 to 57% in 2014. Defaulter rate among retreatment still remains higher than 20%. Direct Observed Treatment is not done for more than 95% of TB cases on treatment with current treatment outcomes indicating poor quality of treatment management and case holding. Many patients in PNG were not completed their treatment because of many reasons. TB lost to follow up is one of the important area that need more attention. It increases the difficulty of treatment and places a greater burden on countries TB control programs. TB Patient in PNG still lacks of knowledge about TB which leading to high rate of treatment default. As shown by Bogosia's in his study for MMed thesis (2013), showed that TB patients participate in the study not knowledgeable about TB, its treatment and side effects of TB treatment. We are one of the developing nations and apart from the rise in HIV/AIDS other factors also contribute to the rising number of TB cases. Socio-economic hardships, difficult accessing treatment especially in rural areas, lack of finance and high illiteracy rates in the community are some of the important factors. Levy, Dakulala, Bana Koiri, et al (1998) found out in their study that there was a poor understanding of TB in the Papua New Guinea communities. They found that many people did not know what Tuberculosis was and hence did not understand why they had to be on treatment. They concluded that the DOTS program was lacking, there were staff that lacked proper training and TB education was poor. TB cases are still on the rise and we having an increasing number of patients being admitted for MDR-TB and even XDR-TB at PMGH. Tb still comprises the top five causes for admission and deaths as reported by Pyakalya in a study done at PMGH for his MMed Thesis (2013). There appears to be very little improvement in PNG since the last observations were made by Levy, Dakulala, Bana Koiri, et al (1998).

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Tuberculosis treatment lost to follow up is a major public health problem which leads to persistence infectious sources and development of new tuberculosis strains in the communities. It is influenced by several factors. Patient, treatment, health care system and community level factor that vary from one place to another has major impact on treatment outcome. Most common reasons for default as described by Natasha Chida, et al (2015) in Pakistan showed that financial burden, medication side effects and beliefs as major causes of default. Alcohol, smoking, illegal drugs use, young age, single, unemployment, and distance to treatment center are risk factors for default as revealed by Emily A. Kendall, at el (2013). Its effect on development of drug resistant TB (DR-TB) strains varies from country to country but is not well understood, since most surveillance programs only sample patients who return to care on their own rather than actively recovering patients for testing to avoid bias and because routine pre-treatment drug susceptibility testing (DST) is rarely done in most of the setting, making it is difficult to determine if drug resistance been before default or resulted from it. To design effective programmatic interventions to address TB treatment default requires vigorous evaluation at the community level. Duration of treatment must be explained to the patients and also symptoms may resolve during Intensive Phase (IP). Symptom resolution in IP also causes defaults. Shown in Systematic review in New York, USA by Margaret E. Kruk, et al (2008), most patients lost to follow up in the first two months of treatment, because they feel better during this time. However, MTB organisms were not fully killed. This group of patients is at higher risk of developing drug resistant-, Tuberculosis (DR-TB).

In PNG, every year raising number of Default cases for sensitive TB and DR-TB. Reasons for lost to follow up were vary from one case to another. Personal, social- economic, health care system and health workers' attitude, sorcery belief, lack of education, and family problems are some of the leading causes of default in PNG. There has been growing number of patients being diagnosed with DR-TB through Gene X-pert Machine in PNG. With the current low cure rate in the country, there is an obvious need to reassess all the keys areas in the management of TB. There is currently no doubt about the impact of lost to follow up to the growing DR-TB in the country. This study aims to assess the reasons for lost to follow up on TB treatment. This is to assess that personal problems (symptoms resolution, ignorance, effects of alcohol, side effect of TB drugs and sorcery belief), Health care system problems (health care attitudes, not enough health education given, no access to medication, to many drugs because of other co-morbidities) and Socio-economic problems (family issues, violence in society, transport issues, work relocation). Risks contributing defaulter also will be explored, alcohol used, betel nut chewed, smoking, illicit drugs used, employment status. Diagnostic dilemma and DOTS provider which consider important in default will be assess, especially case of sputum negative.

Aims And Objectives of The Study

The primary aim of the study was to assess the cause of the Tuberculosis treatment lost to follow up. Personal, Health care system, Socio-economic, and sorcery believe considered to be the causes of TB treatment default. The secondary aims were to identify the risk factors and other components which considered being a significant contribution factors for TB patients lost to follow up on treatment.

METODOLOGY AND STUDY POPULATION

Study Design

The study employed a mixed -methods of descriptive retrospective qualitative design, integrating quantitative analysis with qualitative assessment.

The study was done on confirmed Tuberculosis patient lost to follow up on TB treatment presented to Port Moresby General Hospital. They were randomly selected to participate in this study

Study Site

Patients included in this study were from the medical ward 3A, 3B, 3C, 3D and TB clinic at Port Moresby general hospital.

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Sample selection and size

There was a total of 88 patients (n=88) who took part in this study

The inclusion criteria for patients in this study:

- Patients over the age of 13 years
- All patients diagnosed as Pulmonary TB and Extra-pulmonary TB
- Patients were on TB treatment for more than one month and stopped taken TB treatment more than two months.

The exclusion criteria for patients in this study:

- Patients who were under 13 years old
- Patients who did not communicate well or no guardian
- Patients who were on TB treatment less than one month or stopped TB treatment less than two months.
- Patients' that were under the care of the researcher at the time of the study.

Collection of Data

A standardized questionnaire form was designed and was completed by face to face interview after informed consent was obtained from participants. The questionnaire consisted of two sections. Section one dealt with patients' background characteristics (age, sex, origin, residence, religion/believe, education level and body mass index). Section two: enquired into patients' TB status (History of TB, reasons for default, co-morbidities, risk factors, employment status and income per fortnightly, means of transport, Diagnostic support (Sputum) and DOTS provider).

In second part, a section was assigned specifically to assess TB status and reasons for defaulting Tb treatment. It had the thirteen important factors affecting TB treatment outcome as mandated by WHO and adapted by National department of Health (NDOH), PNG. In this section the researcher interview participant in depth to the components which likely to contribute to TB treatment default.

Data analysis

The data collected was analyzed using the Epi Info software or SPSS 22 version and excel spreadsheet. The excel spreadsheet was used to arrange data and Epi info or SPSS was used to calculate statistical significance.

Ethical Clearance

Prior to study at Port Moresby General Hospital (PMGH), an application for ethical clearance was made with the School of Medicine and Health Sciences, University of Papua New Guinea. A letter of notification was given to the clinical director of Port Moresby General Hospital to seek permission for the Study. Patients for the study were enrolled on voluntary basis after an informed consent was signed.

RESULTS

The results collected were for the variables such as those mentioned in the methodology. The variables will cover patients' characteristics, Duration of treatment prior to lost to follow up, Reasons for default, Risk factor, co morbidities, employment status and income per fortnight, means of transport, sputum results prior to previous DOTS, location of DOTS started and DOTS supervisors

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Basic Characteristics of the participants

A total of 88 patients (n= 88) has been involved in this survey. The table 1 shows the basic characteristic of the patients and duration of DOTS been before defaulting them.

Basic characteristic	No of participants	Percentages (%)
Age (years)		
13-30	53	60.2
31-45	26	29.5
46-60	7	8.0
>61	2	2.3
Mean ±SD	31±12	
Gender		
Male	34	38.6
Female	54	61.4
Marital status		
Single	30	34.1
Married	58	65.9
Origin of patients	6	6.8
NCD	82	93.2
Non-NCD		
Educational levels		
No formal education	14	15.9
Primary school	46	52.3
Secondary school	24	27.3
Tertiary education	4	4.5

Table 1: Basic characteristic of respondents

As shown in the table 1, the mean age of study population was 32± 12 years. The majority (60.2 %) were in the age category of 13-30 years. There were 34 (38.5%) males who took part in the study and 54 females (61.4%). 65.9 % (88) were married while 30 (34.1%) were single -patients in this study. 82 (93.2%) were originated from adjacent provinces, and only 6.8% (88) were from National Capital District (NCD), indicating that most patients were travelling around before they came to reside in NCD. If these Patients are Sputum Positive and MDR-TB They would have infected people around before presented to PMGH as default cases. Table 1 shows that 15.9

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% (88) had no formal education and 46 (52.3%) made it as far as primary school levels only. Of it remaining, 24 (27.3%) had level of secondary school education and 4.5 % (n=88) had made up to tertiary education.

A survey on Phase of Tuberculosis treatment prior to lost to follow up

Figure 1: phase of TB treatment (Rx) prior to LTFU

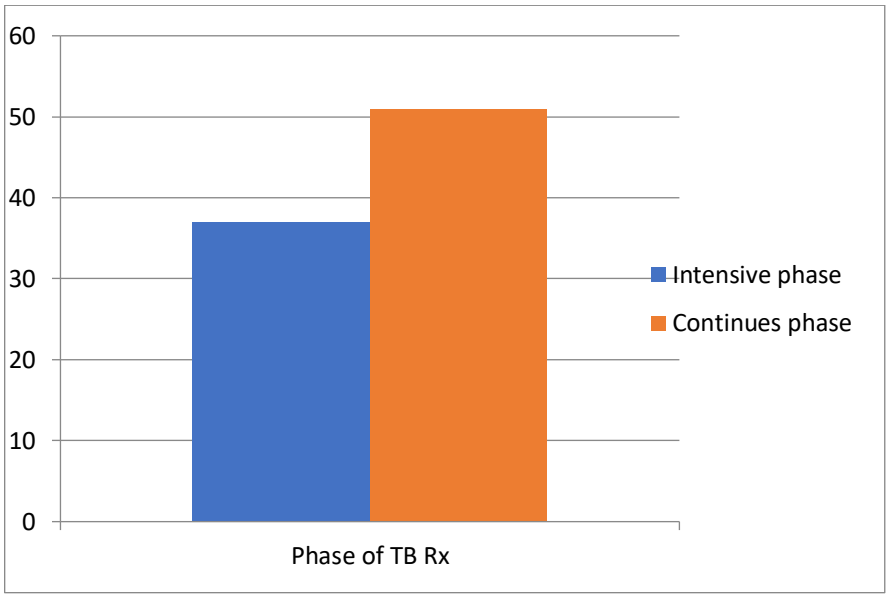

Figure: 1.Column chart

As shown on column chart, Majority of patients lost to follow up on TB treatment occurred after the intensive phase. Out of 88 patients, 58 % were lost to follow at continuation phase whilst 42 % of the participants interviewed were defaulted their treatment on intensive phase (IP). This adds to concept that symptoms resolution after taking TB treatment for at least one month as cause of discontinuing TB medications.

A survey on religion and beliefs of TB patients presented to PMGH

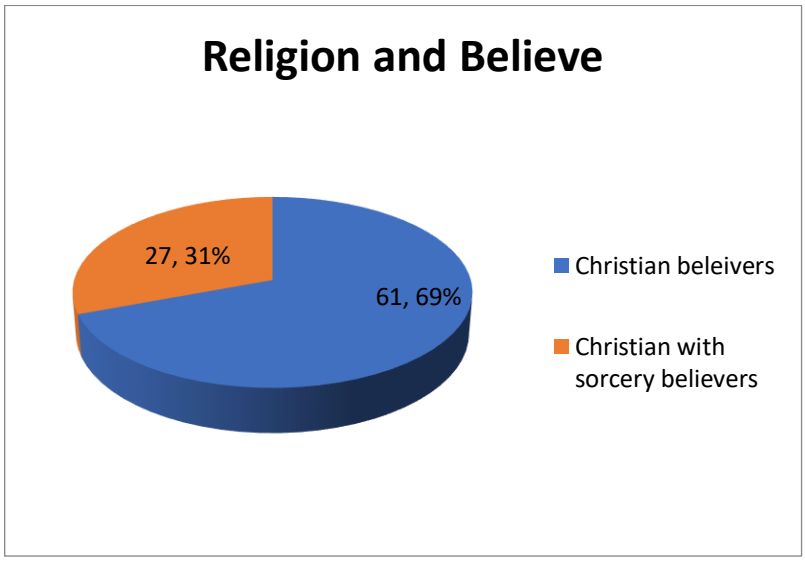

Figure: 2 pie Chart shown patients' religions and beliefs.

As seen on pie chart that all patients have faith as Christian believer. However, it is interesting to see on the pie chart that only 69% of 88 patients involved in this survey were pure Christian faith. 31% were Christian but also believe in sorcery

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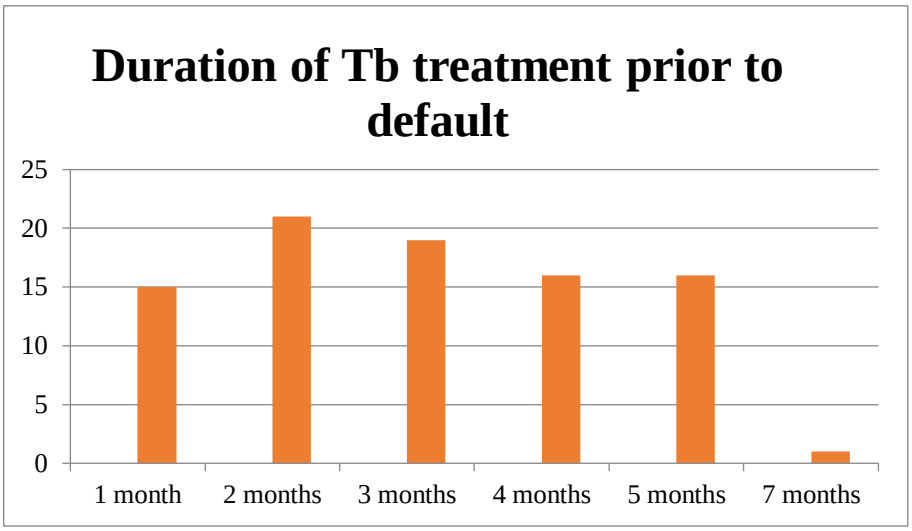
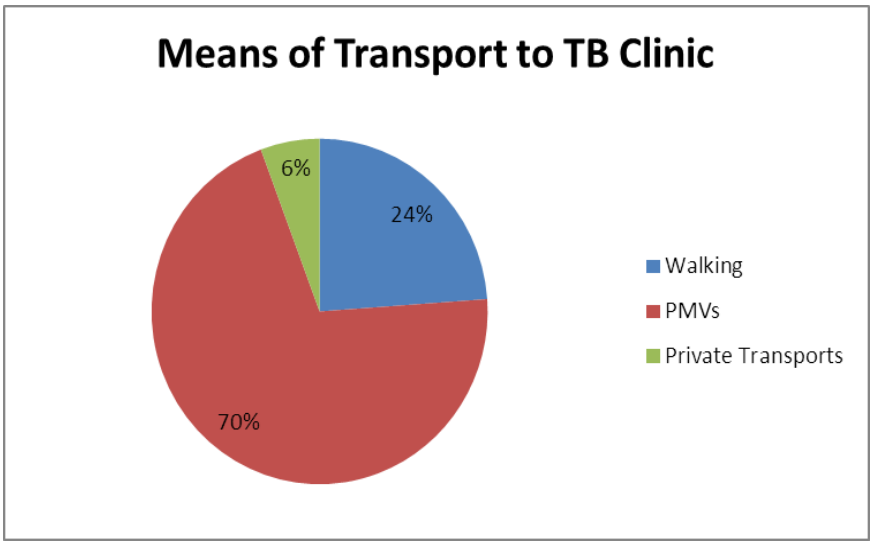
A Survey on the duration of TB treatment before lost to follow up on DOTS



Column chart 3, revealed duration of DOTS taking by patients before discontinuing it. The chart shown, that majority of patients stopped taking DOTS after two months commenced on Fix dose combination (FDC) chemotherapy for tuberculosis treatment. Out of 88 patients enrolled in this survey only 15 (17%) stopped treatment in the first month. However, no participants stopped DOTS before one month.

A survey on Means of transportation used to TB clinic for consultation and recollection of medications

Means of transport to TB clinic for consultation and collection of TB drugs



The Pie chart shown means of transport patients used in this survey to reach TB Clinic. It shows on the Pie chart that 70% (n=88) using public transport as means of transportation to TB clinic. 24% (n=88) patients walk to see health care provider or recollected DOTS from clinic. The remaining 6% (n=88) patients used own transportation.

Figure 4: Pie Chart

A survey assessing issues causing tuberculosis treatment lost to follow up presented to PMGH

Issues	No of patients	% of patients
A. Personal		

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Yes	64	72.3
No	24	27.7
1. Symptoms resolution		
Yes	31	48.44
No	33	51.56
2. Believe in Sorcery		
Yes	18	28
No	46	72
3. Side effect of Tb drugs		
Yes	15	23.44
No	49	76.56
B. Socio-economic		
Yes	37	42
No	51	58
C. Health system		
Yes	76	86.4
No	12	13.6
D. Symptom resolution not explain		
Yes	66	75
No	22	25

Table: 2, showed issues causing TB treatment lost to follow up

As can be seen on table 2, 72.3 % (88) patients had personal issues related TB treatment default. Out of 64 individual issues, 31 (48.44%) was symptom resolution. They reported that symptoms had improved hence treatment was discontinued. 18 (28%) was related to practice of sorcery as part of Melanesian culture. The remaining 23.44% was due to experiencing Tb medication side effects. Table 2 shown, 37 (42%) had socio-economic related to TB treatment lost to follow up. Loss of family member, partner left, violence in community and lack of family support are the social issues faced by patients in this study. Out of 88 patients in this study survey, 76 (84.6%) had health system contributed default. 66 (75%) were due failure of Symptom improvement after taking TB medication was not explained.

A survey on risk factors, co-morbidity and other components contributed to lost to follow up on TB treatment

	No of patient	% of patients
Co-morbidities (HIV, DM, COAD, HTN)		

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Yes	20	22.7
No	68	77.3
HIV	16	18.2
Alcohol		
Yes	40	45.5
No	48	54.5
Smoking		
Yes	39	44.32
No	49	55.68
Chew betel nuts		
Yes	60	68.2
No	28	31.8
Employment status		
Yes	25	28.4
No	63	71.6
Income per fort night		
Yes	25	28.4
No	63	71.6
Normal BMI (18-24.9 kg/m^2)		
Yes	32	36.4
No	56	63.6
Have DOTS support		
Yes	35	39.2
No	53	60.2
Last sputum results		
Positive	55	62.5
Negative	10	11.4
Not done	23	26.1

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Table:3, described risk factors, co-morbidities DOTS supervisor and other related issues to noncompliance Tb medications. As shown on table 3, 22.7% of the patients in this study had other co-morbidities. Common co-infection was Retro-viral infection (18.2%) and a small percentage of other diseases. 40 % was taking alcohol while on TB medications and 60 % of them chew betel nuts. It also seen from table 3, that 71.6% (88) had no income per fortnight due to unemployment. Table 3, also described the nutritional status of the patients, where 56 (63.4%) had poor nutritional status with Body Mass Index (BMI) < 18 k/m². More than 60% (88) patients involved in this study had no DOTS supporter, which may take into the concept of symptom resolution causing Tb treatment default because no proper DOTS supervisor.

DISCUSSION

Tuberculosis continues to cause a large burden disease worldwide, killing an approximately 2 million of people every year. It is estimated that 95% of all TB cases and 95% of all TB deaths occurs in the South. Fuelled by poverty, poor public health systems and increasing HIV/AIDS prevalence. TB continues to be the persistent challenge for global health and development.

Tb control programs currently emphasize the Direct Observed Therapy Short Course (DOTS) strategy, promoted by the World Health Organization and International Union Against Tuberculosis and Lung Disease. The current goals are to achieve 85% treatment success and 70% case detection. Among others, TB global control currently confronts two challenges to meet those goals: diagnosis delay and lost to follow up of treatment.

Personal behavior has been the main factor associated with challenges mentioned. In fact, DOTS program was designed to control this dilemma and hence ensure early diagnosis and completion of treatment.

This study looked at aspects that were considered to be the necessary in Papua New Guinean Patients with strong Melanesian Culture. In developing Nations like Papua New Guinea, there are some issues regarding Tb treatment that cannot be easily corrected due to strong cultural background and economic hardships. Health education and right information are strategies that can be utilized in Papua New Guinea as they do not require much but for all cadres of health sectors to work together given proper information (20)

Majority of patient in this survey had personal issues related TB treatment lost to follow up. 72.3% (88) default TB medication because of individual reasons. Symptoms disappearance after commenced on Fix dose combination chemotherapy for Tuberculosis is the most common issues. Almost every TB patient (75%) commenced on FDC in this study did not have explanation about when constitutional symptoms of TB will resolve after they are on DOTS. They responded that doctors advised them to take DOTS for six months or more depends on the category of TB they had. But doctors did not explain when they will feel better after on DOTS. They were reported that symptoms improved or patients became asymptomatic hence medications were discontinued, though they were been told that DOTS must be taken up to six months or more. Duration of treatment must be emphasized to the patient and also symptoms resolution during intensive phase must be explained to make sure patients do not stop medication because they feel better. Study shown that most patients commenced on DOTS after two months they will become asymptomatic (Margaret E. Kruk et.al 2008). This study revealed that more than half (58%) default from DOTS after completing intensive phase or commenced on DOTS for more than two months (9,12,24)

Papua New Guinea is a Melanesian race dominated by Christian faith. This survey looked at the relationship between Christian faith and sorcery believes effect on TB treatment adherence. The study result shown that 100 % of patients have faith in Christian with different denominations. There was no other religion was found with patient. However, it is interesting to see on survey that only 61 (69%) were pure Christian in faith. The remaining 27(31%) patients have mixture of Christian and practice of sorcery beliefs as part of their culture. Melanesian culture of believe in sorcery have an effect on TB treatment adherence. A Significant number of TB patients in this study population had been directed away from TB medication due to practice of sorcery in Papua New Guinea. 28 % (64) of personal reason related default was due to sorcery. They were superstitious about tuberculosis and though it was caused by witchcraft. Therefore, they stopped TB medications and went to village looked for traditional healers which commonly done in Papua New Guinean community. The remaining 24 % (64) of the patients' behavior related TB treatment default was side effects of DOTS. This group of patients

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stopped their TB medications because they developed joints pain, skin rashes and other side effects while on DOTS. The study done in Pakistan by Natasha Chida, et.al (2015) shown that cultural beliefs and medication side effects as a major cause of lost to follow up on TB treatment (12,21)

Socio-economic hardship in Papua New Guinean community also been studied in this survey. More than half (58%) of the patients involved in this study had some socio-economic problem. Loss of family member, separation from partner, violence in community preventing patients coming to clinic and lack of financial family support were faced by patients in this study. About 72 % patients were unemployed therefore they had no income per fort night. While only 28% had regular income per fort night. With this financial issue can directly affect TB treatment compliance, because majority (70%) of patients in this survey taking Public Motor Vehicles (PMVs) to their respective clinics. Many of these patients attested to the fact that they lacked financial and social support from the relatives resulting in not attending their clinic day. Study done by Levy, Dakulala, Bana Koiri, et.al revealed that socio-economic hardships, difficult accessing treatment and lack financial support are issues related to TB treatment default (2,3,4,5,9,17,19,23,29).

Level of education also been looked at on this study as contributing factors to non-compliance with DOTS. This study result shown that 52.3% of patients only reached education level as far primary school. Whilst, there were16% had no formal education. This group of patients will take time to grasp concepts hence they require repetitive simple explanation and longer counseling periods. There are many aspects of treatment that the patient and doctor need to discuss. This enhances patients understanding and improves compliance to treatment. Only 4.5 % of patients in this survey had Tertiary education. Higher education can help patients understanding of TB and its treatment therefore improve compliance. Studies done in other countries have shown that with proper education and better understanding, treatment compliance improves, hence reduced chance of lost to follow up (9,20,21)

This survey also explored on the co-morbidities and risk factors in Papua New Guinean patients. The factors were chosen based on observations about difficulties that the patients face on the day to day basis in a developing Nation like Papua New Guinea. It was also chosen base on the studies done overseas that showed significant links defaulting from treatment and associated risks and co-morbidity. The factors that were associated assessed in this study, Retroviral infection, alcohol used, smoking, nutritional status, and proper TB diagnosis (9,10,14,22,33)

Retroviral infection is the most co-morbidity found in this survey. 18.2% of the 88 TB patients default treatment in this survey was infected by retroviral as well. Tuberculosis is the commonest opportunistic infection and the most important cause of morbidity and mortality in human immunodeficiency virus (HIV) infected patients. Also, HIV is the greatest predictor for the progression of latent TB infection to TB disease, thus fuelling the TB epidemic in Papua New Guinea. This study found that 45.5 % taking alcohol. Some of them responded that because they drunk and forgot to take their TB drugs. It is interesting in this survey that 44.3 % of patients were smoker. They smoked while on TB drugs. It is not clear smoking directly causing TB treatment default in Papua New Guinean community, but study done in other country shown that smoking and alcohol was strong association with TB treatment default (Emily A. Kendall, at.el, 2013). These important risk factors that commonly found in Papua New Guinean patients must be emphasized. Especially smoking and alcohol should be discouraged. Proper nutrition is important for TB patients. In this study.63.6% for the 88 patients interviewed reported had nutritional problem. These patients had Body Mass Index < 18k/m² or fall into category of poor nutrition. There are other factors like proper TB diagnosis before commencing DOTS especially with the current raising of default rate and increasing number of Multi Drugs Resistance Tuberculosis (MDR-TB) in Papua New Guinea. This study result shown that 11.4% of patients were commenced on TB drugs despite sputum Acid Fast Bacilli (AFB) was negative for pulmonary Tuberculosis. With the current poor cure rate in the country, these are findings that are not conductive for treatment completion. These patients are likely to be default.

TB treatment supporter is one of the important elements in DOTS strategy worldwide. In Papua New Guinea, many families play the role of treatment partners as required by the DOTS strategy worldwide as DOTS supervisor to ensure that patients taken DOTS on daily basis and reported if patients developed any unwanted side effects. This study has shown that 60.2% of the 88 patients involved had no DOTS supervisor

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(6,9,11,14,24,27,30). This study also highlights other issues that are closely associated with the management of tuberculosis in Papua New Guinea. As study been done in PMGH shown that multiple patient- related factors and health system- related factors was contributed to poor treatment outcome (Aumora. B, 2016). Addressing tuberculosis in Papua New Guinea also means attending to these issues. This study was done with the intention to assess for pitfalls in the management of our patients in Papua New Guinea. This study is a good study that can be done nationwide. The data collected in this study currently is a small sample so may or may not reflect what happen in Papua New Guinea. It also needs to be done over a period of time for a database to be built.

Limitation

The author understands the limitation of this study can not be implemented in globally as the study is done in single study site, Port Moresby general hospital so it limited generalizability, selection bias, practice-specific effects as in some part of the world may not exiting sorcery beliefs as in Papua New Guinea. Smaller sample size (n=88) reducing statistical power, data collection methods, diagnostic criteria leading to systemic bias, results may not be reproducible in other settings with patient populations or healthcare infrastructure. Single site study sometimes can show larger outcomes effect than multi-center studies due to more controlled condition this can lead to overestimation of effect

CONCLUSION

In conclusion, Papua New Guinea like many developing Nations has many challenges. One of the very challenges we face is to improve health care for Papua New Guineans. Tuberculosis is one of the infections known to mankind for ages and it has plagued many countries Worldwide.

Papua New Guineans, as other Melanesian countries have strong cultural beliefs despite most being Christian. Practice of Sorcery is still dominating community in some part of the country and some had driven away patients from TB medications compliance. There may be many reasons as to why this is so however we cannot go on this way. TB is a killer; it has killed in the past and will continue to kill if proper strategy is not well implemented.

These have been advertisement and billboards put up around the Nation. Despite these efforts, the study has shown that Personal behavior of Papua New Guineans is a major cause of TB treatment interruption in the country. This study highlights the fact that most patients are stopped TB drugs after feeling better. It is further compounded by illiteracy and other socio-economic factors. Health education and proper information is one way in which we can change this situation. Relevant institution and policy makers must play a role in stop TB default hence reduced drugs Resistance Tuberculosis for Papua New Guineans.

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