THE EFFECTIVE WAY TO PREVENT OCCUPATIONAL HAZARDS ON TUBERCLOSIS TREATMENT

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ABSTRACT

The study aimed to monitor the effective ways to prevent the occupational hazards on tuberculosis treatment. Multi-stage sampling procedure was used for this study. The findings of this study revealed that knowledge of occupational hazards of treatment and management of tuberculosis is not a new idea in Anambra state, however, majority of the respondents have low level knowledge of occupational hazards protection and prevention services available, particularly when it requires an improvement on the existing means of services. Preventive and control measures to reduce the risk of TB infection and protection of health care workers should be given highest priority in health care planning and development.

Keywords: Tuberculosis, Occupational hazards, Treatment, Protection, Prevention

INTRODUCTION

Tuberculosis (TB) in all its forms is a major occupational hazard for healthcare workers (HCWs) worldwide. It may sound like a disease of the past, but tuberculosis, or TB, is still a real concern today in Nigeria, Mbaneme, *et al* (2014). Moreover, as the old saying goes, an ounce of prevention is worth a pound of cure. More so, the best way to be well is to avoid getting sick in the first place.

Ministries of Health and their research institutes should develop new mechanisms to address determinants of tuberculosis to reduce the occupational hazards and the disease incidence. The transmission of strains of *Mycobacterium tuberculosis* occurs through infected droplets aerosolized by patients with active pulmonary TB. The transmission risk is highest when patients have unrecognized TB or are receiving inappropriate treatment, Dolin, *et al* (2010).

Tuberculosis (TB) is primarily an airborne disease caused by *Mycobacterium tuberculosis*. The bacteria spread from person-to-person through the air (World Health Organization 2010). This bacterium mainly affects the lungs, but may adversely affect other organs. TB is a curable disease. People who have the active TB disease in their lungs can release tiny particles containing M. Tb into the air by coughing, sneezing, laughing or singing. The air droplet nuclei are invisible to the naked eye. Droplet nuclei can remain airborne in a room temperature for many hours, until, they are removed by natural or mechanical ventilation (World Health Organization 2010). Tuberculosis is one of the commonest airborne diseases that are yet to be identified as it were one of the leading causes of morbidity and mortality in Nigeria despite the fact that it is curable with adequate treatment.

According to Burkitt, *et al* (2007), environmental and occupational medicine are uniquely wide-ranging medical specialties that consider the impacts of work and the

environment on human health. Work is a major part of life. Virtually every patient seen in a clinic, office, or hospital has spent eight or more hours of almost every day and many months and years of life working. In their jobs, people could be exposed to dangerous chemicals, hazardous physical agents, and emotional stress and trauma. Any of these exposures can cause disease, sometimes immediately and sometimes after an interval of years or decades. Study of these work-related exposures and their effects constitutes the core of occupational medicine.

Any job has potential occupational hazards associated with it, whether in an air-conditioned office, in a construction company, or at a gate. Occupational hazards are unavoidable; therefore, everyone involved should have protection as much as possible. Although occupational risk cannot be eliminated, efforts to reduce the potential hazards is imperative, William (2003). Tuberculosis control programmes focus on case identification and treatment. Therefore, opportunities to prevent the occupational hazard at onset are often over-looked hence, the effective way to prevent occupational hazard on treatment of tuberculosis. The donor agencies and partners in tuberculosis programmes are investing billions of dollars annually to identify and treat individuals with active tuberculosis investing nothing on the hazard associated with treatment and working with patients of tuberculosis. New strategies are needed to prevent occupational hazard on treatment of tuberculosis to

further reduce global incidence and mortality of tuberculosis and achieve the visionary goal of a tuberculosis-free world.

According to World Health Organization (2003) The local government tuberculosis supervisor (LGTBS) coordinates tuberculosis (TB) control activities and oversees all the health facilities providing TB treatment services in each local government area. They are in charge of both public and private facilities that treats and cases of tuberculosis. They nominate both public and private health centers and laboratories for tuberculosis dot sites. LGTBS are patient trackers and counselors in management of tuberculosis. They preach adherence to tuberculosis medicine and administration to patients by treatment supporters and direct observation treatment strategy (DOTS). Thus, LGTBS are the largest cadre of dedicated TB control health workforce in Nigeria. The LGTBS is a link between the DOTs facilities, communities and the state TB control officer.

Health care workers in most TB Dot facilities are at high risk of becoming infected with tuberculosis (nosocomial transmission) especially when they have immuno-suppression. It is therefore very important to have active guidelines for Effective Way to Prevent Occupational Hazard on TB Treatment, and control in the context of LGTBS settings on issues of TB transmission. Preventive and control measures to reduce or prevent occupational hazard of TB infection and protection of LGTBS

should be given highest priority in health care planning and development. TB prevention in health care settings for staff, guardians and other patients is very essential.

Materials and Method

The sample for the study consisted of fifteen Local Government Tuberculosis, Leprosy and Burulli-ulcer Supervisors, twenty six health facilities each from the twenty one local government areas of the state and six members of the State Teams; six programme officers of Local Government Action on AIDs managers, and ten Local Government Disease Surveillance Officers. The ten percent of the programme officers were use as sample size which is 583. Multi-stage sampling procedure was used for the study. In stage one, all the programme officers were clustered into five representing the five progammes. In stage two, all the programmes were listed, three were randomly drawn using simple random sampling technique by balloting with replacement. In stage three, male and female respondents were chosen from each of the three programmes. Non-probability (chance selection was used in selecting the persons. At the end, 583 respondents were selected and used for the study. The instrument used for data collection was structured interview Protocol. The researcher following review of related literature and personal experiences developed the instrument. Structured interview was used because some of the respondents are reluctant to respond.

The interview protocol was in four sections. Section "A" contained three questions on background information of the respondents. Section "B" contained ten questions on modes of prevention of tuberculosis

Section “C” contained ten questions on the application of Tb prevention in treatment of tuberculosis. Section “D” contained ten questions on Use of Mechanical prevention application in the management of tuberculosis. All questions are close-ended

Five hundred and eight three copies of the structured interview protocol were distributed to male and female respondents in the five programmes by the researcher and trained research assistants. Distribution and collection of the instrument lasted for three weeks.

Data collected were analysed using descriptive statistics of frequency, percentage and grand mean as well as inferential statistics of chi-square. Percentages were used to answer the research questions while the null hypotheses were tested using $\lambda 2$ (chi-square) at 0.05 level of significance. Appropriate degrees of freedom were used.

Discussions of the Results

The socio economic characteristics of the respondents are presented in the following figures: Figure 3, shows the male accounted for 48% while 52% were female. The high percentage of the female is because of sampling of the entire programme officers without exempting any member of the programme. Figure 4, shows the age range with the highest frequency is 41-50 years, which accounted for 40% of the respondents while those above 51 years and above accounted for seven percent. The average age in the study area is 41 years. This implies that respondents are in their active age and therefore can work to earn more income, which can affect their decision to take proper preventive measure of their health and their household health.

Figure 5, shows that proportion of the married programme officers was 69%, which may therefore encourage the willingness to prevent oneself against tuberculosis infection in other, not infect members of their family.

Figure 6, shows about 13% of the respondents represent those without formal education on occupational hazards while only 2% of the respondents had Tertiary education on occupational hazards. The mean year of education among the programme officers was 6 years. This revealed that a programme officer in the study area had at least six years of formal education on occupational hazard. Education on

occupational hazards helps to enlighten the respondents on the need to keep our environment clean, free from germs and healthy for all.

Figure 7, shows that the schedule of duty of the respondents revealed that 37%, 30%, and 22% engaged in Tb management, Aids management and disease surveillance respectively while only about 6 and 5% were health attendants and students respectively.

The general method of prevention i.e. the occupational hazards management of tuberculosis infection, its reliability as well as the frequency of treatment of tuberculosis are presented in figure 8.

Figure 8, revealed that 32% of the respondents claimed that immune status of the exposed TBLS determines the rate of tuberculosis infection especially if the immunity is very low. On another hand, 23% of the respondents believe that the infectiousness of the person with tuberculosis determines the rate of its transmission to TBLS that meets or closer to the patient. However, 27% of this category indicated that it is the proximity; frequency and duration of exposure while eighteen percent of the respondents claimed that environmental factors determine the concentration of the Tb organisms in a given area.

Figure 9, shows the frequency of level of awareness of route of discharging mycobacterium organisms (Bacilli) showed that 14% agreed that when affected person shouts, it discharges tuberculosis infectious organisms. About 24% of the

respondents believed when affected person sneezes, it discharges tuberculosis infectious organisms. Twenty-three (23%) percent agreed that when 19% affected person cough it discharges tuberculosis infectious organisms. In addition, agreed that when affected person sings it discharges tuberculosis infectious organisms. Given this result, respondents are encouraged to cover their mouths for improved, prompt and regularly.

Figure 10 depicts the level of awareness of the hazards of tuberculosis identification and the willingness to prevent its infection. The result revealed that 34% claimed that cough that last for two weeks or more with pain in the chest is one of the symptoms, 24% claimed that coughing up sputum or blood or bloodstain; 19% claimed that Fever and sweating at night; 12% claimed that weakness or fatigue and weight loss; no appetite and chills respectively. This is an indication that majority of the respondents are already aware of the symptoms of tuberculosis and can identify a tuberculosis patient.

Figure 11 shows level of awareness of occupational hazards of tuberculosis based on the level of their education. The result showed that those respondents that attained university education were 41% which means that their academic qualification enlightened them to be able to identify that all actions in Figure 10 are tuberculosis symptoms, professional education which is 23% of the respondents believed that it is only a bad cough that last for three weeks or more with pain in the chest and

coughing up sputum or blood or bloodstain is the symptoms, while those with non-formal education on occupational hazards and secondary education which is 19% and 17% of the respondents respectively believe it is only a bad cough that last for three weeks or more with pain in the chest. Given the disadvantages that 40% of the study population are not fully aware of the occupational hazards associated with treatment and management of tuberculosis. This contribute to fact that most of the respondents in this category may be managing tuberculosis disease without willing to apply the protection and prevention treatment measures available at the Health facilities. Thereby seeking medication where not necessary and at the same time receiving wrong treatment at the wrong place [there is no significant relationship among respondents on their level of Education ($p<0.05$).]

Figure 12 reveals the level of awareness of effective way to prevent occupational hazard on treatment and management of tuberculosis base on the respondent's gender and there is no significant relationship between male and female in their level of awareness of the occupational hazard on management of tuberculosis by $p<0.05$. It shows that 6% male possessed high level of awareness of the occupational hazards, 8% possessed moderate level of awareness of the occupational hazards while 24% possessed low level of awareness occupational hazards based on their gender and the total percentage of male is 39%; 13% possessed high level awareness of the occupational hazard based on their gender,

15% possessed moderate level of awareness of the occupational hazard while 33% possessed low level of awareness of the occupational hazards and the total percentage of female is 61%. [there is no significant relationship among respondents gender in their level of awareness on effective way to prevent occupational hazard on treatment management of tuberculosis ($p>0.05$)].

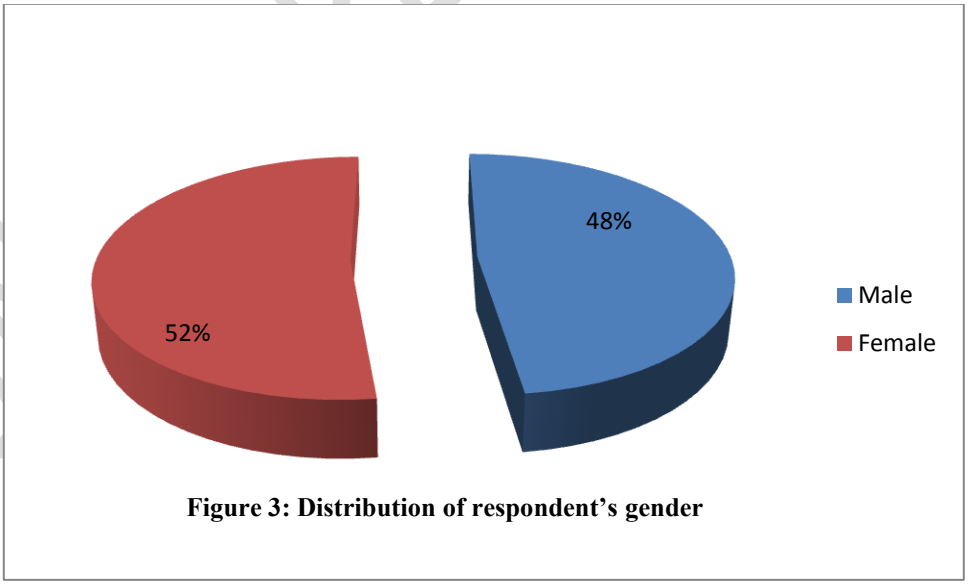

Figure 3: Distribution of respondent's gender

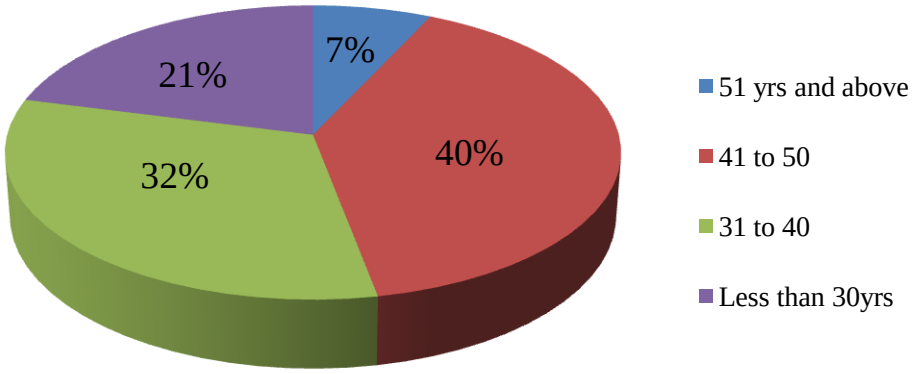

Figure 4: The respondents' age distribution

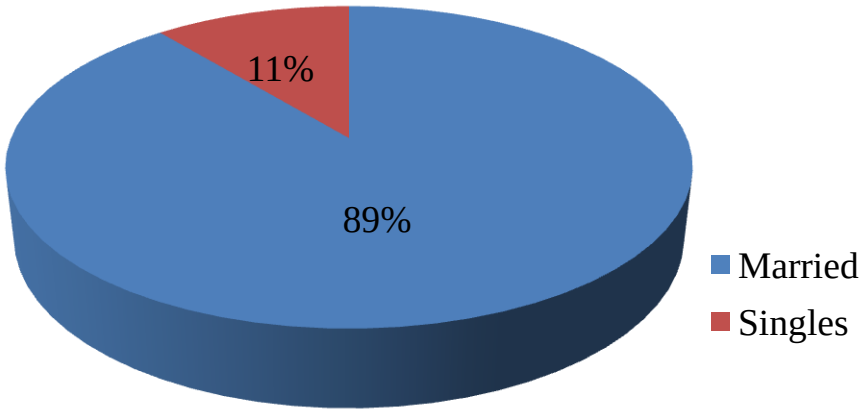

Figure 5: The proportion of the married programme officers

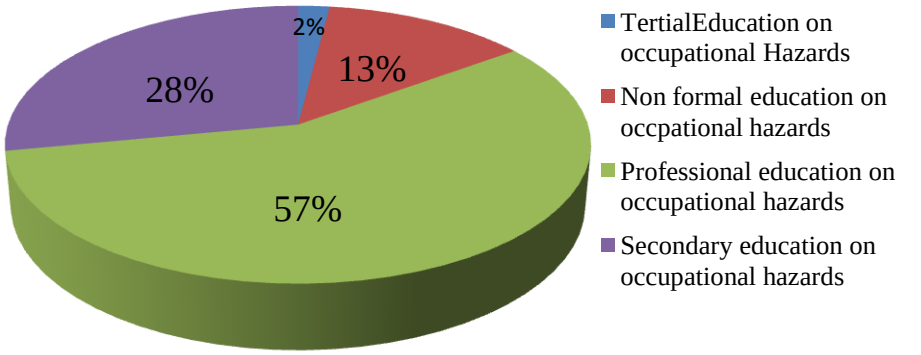

Figure 6: The respondents' level of education

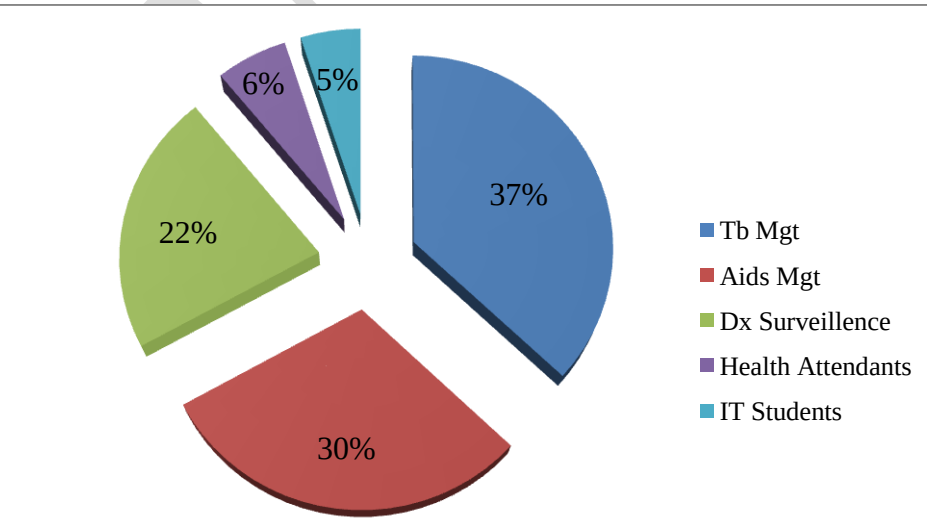

Figure 7: The respondents' shedule of duty

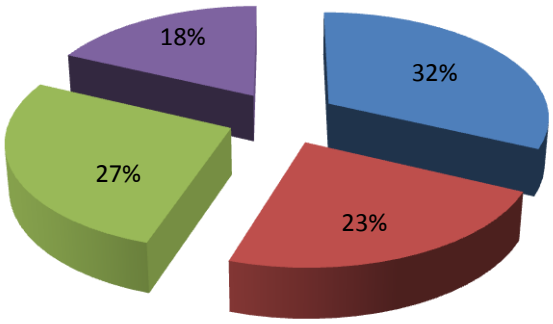

Figure 8: Level of awareness of route of transmission of tuberculosis determines TBLS rate of infection

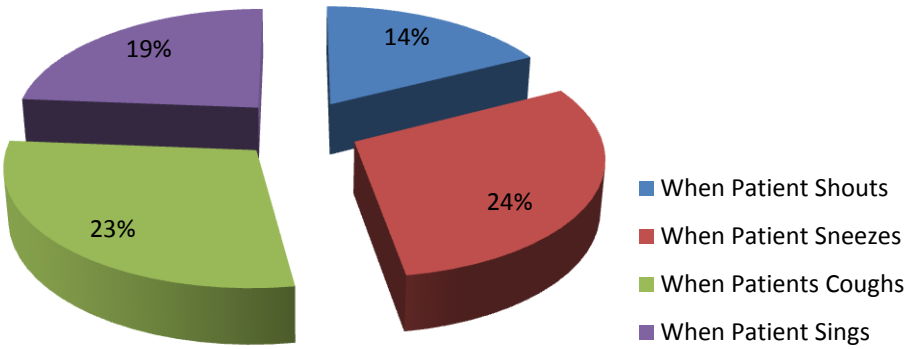

Figure 9: Level of awareness of route of discharge of bacterial organism

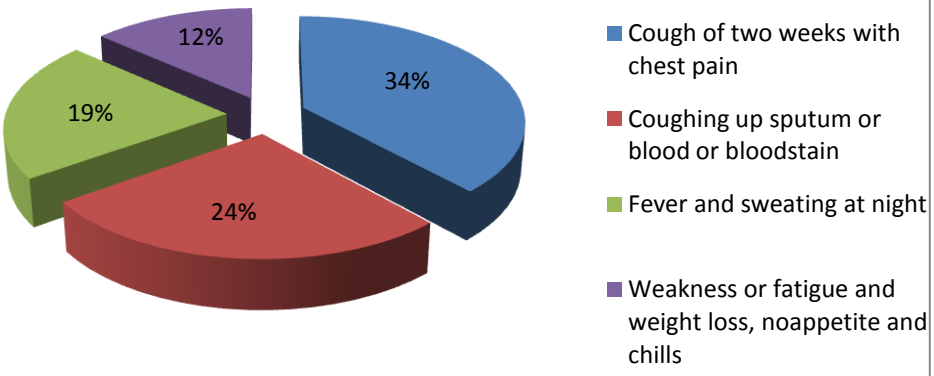

Figure 10: Level of awarerness of the hazards of tuberculosis identification and willingness to prevent its infection

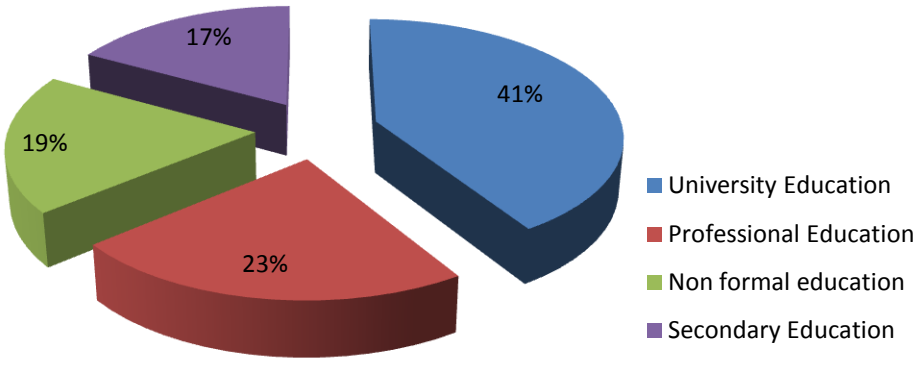

Figure 11: Level of awareness of occupational hazards of tuberculosis base on level of education

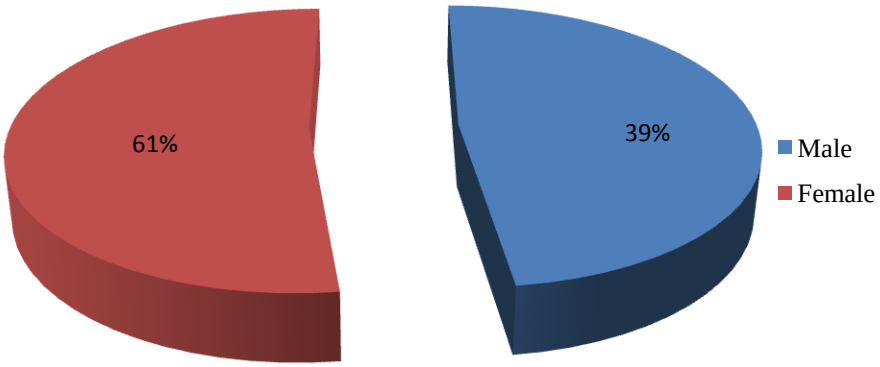

Figure 12: Level of awareness of Effective Way to Prevent Occupational Hazard on Treatment and management of tuberculosis base on Gender

Recommendations

Preventive and control measures to reduce the risk of TB infection and protection of health care workers should be given highest priority in health care planning and development. Each facility should have a written TB infection prevention and control plan that outlines a protocol for the prompt recognition, separation, provision of services, investigation for TB and referral of patients with suspected or confirmed TB disease. Early recognition of patients with suspected or confirmed TB disease is the first step in the arrangement. An Environmental health officer should be assigned to screen patients with a cough of two weeks or more immediately after they arrive at the facility. Patients with cough should be allowed to be registered without queuing with other patients, Stop TB Department, WHO (2003).

It is therefore, recommended that programmes that will facilitate public awareness of occupational hazards associated with treatment and management of tuberculosis be initiated. Again, administrative and environmental prevention and protective measures were building into the health facilities. While health workers and local

government tuberculosis supervisors should be reminded daily to recorganise and observe them on daily bases. In addition, to know that occupational hazards associated with treatment and management of tuberculosis patients are preventable. Directly Observed Treatment strategy (DOTS), microscopic centers and TB care units created with every sense of safety in place. This will encourage effective way to prevent occupational hazard on TB treatment. In addition, public enlightenment campaign through mass media also adopted for proper information to the health workers and treatment supporters on the effective way to prevent occupational hazard on TB treatment at the private and government hospitals and health centers. More so, make the entire health workers observe the effective way to prevent occupational hazard on tuberculosis treatment, however, health workers should observe monthly routine investigation for early identification of safety defaulters. Health workers or community volunteers should be willing to observe and put into practice the effective way to prevent occupational hazard on tuberculosis treatment.

Conclusion

This study revealed that knowledge of occupational hazards of treatment and management of tuberculosis is not a new idea in Anambra state, however, majority of the respondents have low level knowledge of occupational hazards protection and prevention services available, particularly when it is going to be an improvement on the existing means of services. Sex, education and age distribution awareness of protection and prevention treatment measures of tuberculosis discovered to be determinants of household willingness for improved protection services in the local government area of the state.

Environmental controls are the second line of defense for preventing the spread of TB in health care settings. It is important to recognise that if work practice or administrative controls are inadequate, environmental controls will not eliminate the risk Obionu , (2018). Many environmental control measures (like filtration and ultraviolet irradiation) are technologically complex and expensive.

Health care staff should be mindful of the direction of airflow to ensure the patient is closest to the exhaust air and the staff is closest to the clean air source.

Environmental Health Officer is the designated staff person to check on environmental control measures and maintain a log of monitoring and maintenance. Windows and doors should be checked on a daily basis to ensure they are in proper position.

Generally all windows and doors should be open when natural ventilation is the primary environmental control to allow for the free movement of air (e.g. across room from window to door or vice versa).

Instructions on cough hygiene Procedures to Patients who are found to be TB suspects or cases should immediately be informed about the importance of cough hygiene and advised to cover their mouth and nose with a hand when they cough or sneeze. Alternatively should be given face masks and wear while in the facility and disposal of used tissues or masks in identified no-touch receptacles and not on ground; No-touch receptacles for disposal of used tissues and masks should be available in the waiting areas. This special waiting area should have the highest natural ventilation possible, Stop TB Department, WHO (2003). The facemask is a falls false protective measure for the health care workers, other staff, patients, or visitors against TB. Rather, the moisture around the mouth and nose from breathing through these ordinary masks creates a favourable environment for bacteria including TB bacilli. Therefore, it is not recommended that health care workers and

other staff or visitors in TB care settings wear them. However, these masks may be useful in reducing release of bacteria from the patient to the environment. Hence, TB patients can use them.

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