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Prevalence of Tuberculosis in Owerri West Local Government Area of Imo State (2008-2014)

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Abstract
The study determined the prevalence of tuberculosis in Owerri West local government area of Imo State. Three specific objectives were formulated with two research questions and two null hypotheses. Description research design was adopted for the study. The population for study consisted of 58 cases of TB in Owerri West from 2008-2014. The entire population was used therefore, there were no sampling. The instrument for data collection was researched design TB- proforma (TB-P). Data analysed were presented using description statistic of frequency tables and percentages while the null hypotheses were verified using chi – square statistic. The findings revealed that the highest prevalence of tuberculosis was recorded in 2009 (75.9%) and this occurred more among female. No TB cases were recorded between 2011 and 2012. Prevalence of TB was found to be more among age group 26 -35 years and lowest among age group 56 and above. Overall, a gradual rise in TB prevalence with progression of age (increase in age) was seen. The findings further show that there is a significant difference in the prevalence rate of TB based on age and there is no significant difference in the prevalence rate according to gender. The study recommended among other things that government should regularly conduct population based TB prevalence survey both in urban and rural areas of the 36 States of the federation.
Key words: Prevalence, Tuberculosis, DOTS and Owerri West.

Introduction
Tuberculosis (TB) is a contagious, and in many cases fatal diseases that typically attacks the lungs. Apart from the lungs, it can also affect the other parts of the body. It is widespread and like the common cold spreads through the air. Accordingly to Konstaintines (2010), the diseases spread when people who have an active TB infection cough, sneezed or otherwise transmit respiratory fluids through the air. A person needs only to inhale a small amount of these to be infected. WHO (2014) stated that each person with active TB will infect an average between 10 and 15 people every year. Most TB infections (known as latent TB) do not have symptoms. About one in ten latent infections eventually progresses to active diseases which if left untreated, kills more than 50% of those so affected.

The main cause of TB is *Mycobacterium tuberculosis*, a small, aerobic, non motile bacillus (Mandell, Bennett & Raphael, 2010). This bacterium is known for its unique clinical characteristics. It divides every 16 to 20 hours, which is an extremely slow compared with other bacteria. However, unlike most bacteria, *Mycobacterium tuberculosis* can withstand weak disinfectant and survive in a dry state for weeks (Sourthwick, 2007). In nature, the bacterium can grow only within the cells of the host organism, but can be cultured in laboratory.

The most common symptoms and signs of TB are fever, chills, night sweats, loss of appetite, weight loss and fatigue (Gerald & Bennett, 2010). In active infection, classic symptoms such as severe inflammation of the lungs, chronic cough with blood tinged sputum and significant nail club also occur (Schiffman, 2009).

A number of risk factors are known to make people more susceptible to TB thereby aiding the prevalence of the disease. According to World Health Organisation, (2011), the most important TB risk factors globally is HIV/AIDS, 13% per-cent of people with TB are infected by the virus. This is a particular problem in sub-saharan Africa, where rate of HIV are high (WHO, 2006).

Tuberculosis is closely linked to both overcrowding and malnutrition, making it one of the principal diseases of poverty (Lawn & Zumia, 2011). Those at high risk thus include: people who inject illicit drugs,

habitants and employee of locals were vulnerable people gathered (e.g prisons and homeless shelter), medically underprivileged and the resource- poor communities, high – risk ethnic minorities, children in close contact with high – risk categories of patients, and health – care provides serving these patients (Griffith,1996). Lawn and Zumia (2011) reported that chronic lungs diseases are another significant factor. Other disease States that can also increase the risk of developing tuberculosis includes alcoholism and diabetics mellitus (Restrepo, 2007)

Studies on the prevalence of TB play strategic role in the global efforts and fight to completely eliminate TB as pandemic and public health threat. Prevalence is a statistical concept referring to number of cases of a disease that are present in particular population at a given time (Kennet, 2012). Gerstman (2003) defined prevalence as the proportion of a population who have or had a specific characteristic in a given time (in medicine, typically an illness, a condition or a risk factor such as depression or smoking).

As a result the high death rate of TB patients and the non – adherence of TB patients toward their medication, the WHO in 1995 declared TB as a global emergency and called for TB control through the adoption of the direct observed treatment short- course (DOTS). DOTS strategies is a short – course chemotherapy (a minimum of six months) that appropriate diagnose of TB. It start from registration of each patient detected followed by standardized multi drug treatments with a secure supply of high quality anti – TB from all patients in treatment (WHO 1994). It also in compasses individual patients outcome evaluation to ensure cure and cohort evaluation to monitor overall programme performance through delivery of the prescribed medication, checking for side infect, documenting the visit, counselling and answering patients questions (WHO 1994). DOTS programme not only a highly effective and affordable strategies for control of TB and prevention of emergency and spreads drug – resistant TB but also valuable in resource – poor communities (WHO, 2002).

Prevalence of TB is a global threat, especially in developing countries including Nigeria. Nigeria ranks 10th among the 22 high – burden TB countries in the world (US Embassy, Nigeria, 2012). There were an estimated 320,000 prevalent cases of TB in 2010, equivalent to 199/100,000 cases (WHO, 2010). The prevalence TB burden in Nigerian is compounded by a high prevalence of HIV in the country which stands at 4.1% in general population (WHO, 2010). Smoking and alcoholism which are remarkable risk factors that enhance susceptibility of TB infection is wide spread among the populace, especially among the youths. These TB risk factors are also wide spread in Owerri West Local government Area. Owerri West was carved from the former Owerri Local Government Area in 1996.It comprises of sixteen communities. All these communities have one health centre each. But it is only Obinze and Avu health centre that DOTS of TB is practiced. Regrettably, the prevalence survey conducted in Nigeria in 2012 has shown that TB prevalence is higher than estimated (WHO, 2010). Moreso, there exist a dearth of studies and reliable TB prevalence in Owerri West L.G.A, Imo State. It is on this premised that the researcher tends to investigate/Estimate the prevalence of TB in Owerri west from the year 2008 t0 2014.

Purpose of the Study

The main purpose of the study was to determine the prevalence of tuberculosis in Owerri west Local Government Area between the year 2008 and 2014. The study intended to determine specifically the:
1. Prevalence of tuberculosis in Owerri West LGA from 2008 -2014.
2. Prevalence of tuberculosis in Owerri West LGA based on Age from 2008-2014.
3. Prevalence of tuberculosis in Owerri West LGA based on gender from 2008 -2014.

Reasearch Questions
1. What is the prevalence of tuberculosis in OwerriWest LGA from 2008 – 2014?
2. What is the prevalence of tuberculosis in Owerri West LGA form 2008 - 2014based on Age?
3. What is the prevalence of tuberculosis in Owerri West from 2008 - 2014 according to gender?

Hypotheses
HO1: There is no significant difference in the prevalence of tuberculosis in Owerri West LGA based on age.
HO2: There is no significant difference in the demographic pattern of tuberculosis in Owerri West LGA according to gender.

Methods

Descriptive research design was adopted in this study. Nworgu (2006) opined that descriptive research design is one in which a group of people or items are studied by collecting and analysing data from only a few people or items considered to be representative of the entire group. The population comprised 58 TB cases from 2008 – 2014. All the 58 cases were used for the study and so, there was no sampling in the study. TB proforma was the instrument for data collection. Frequency tables and percentages were used to answer the research questions while the hypotheses were verified using chi-square statistics at 0.05 level of significance and at appropriate degrees of freedom.

Results

The results of the study are presented based on the research questions and hypotheses. The findings are presented below.

1. Research question 1: What at is the prevalence of tuberculosis in Owerri West LGA from 2008 – 2014? Data answering the research question is presented in table one.

Table 1: The Prevalence of TB in Owerri West from 2008 – 2014 (58)

Years	TB Prevalence	
	F	%
2008	4	6.9
2009	44	75.9
2010	4	6.9
2011	0	0
2012	0	0
2013	2	3.4
2014	4	6.9
Total	58	100

Data in Table 1 shows that the highest TB cases of 44 (75.9) occurred in 2009 followed by 4 cases (6.9%) which occurred in 2008, 2010 and 2014 respectively. The Table further shows that two cases (3.4%) occurred in 2013 while there were no record of TB occurrence in 2011 and 2012.This implies that there was high prevalence of TB in 2009.

Table 2: Prevalence of TB in Owerri West LGA Based on Age (N= 58)

Age	2008		2009		2010		2011		2012		2013		2014		Total	
	F	%	F	%	F	%	F	%	F	%	F	%	F	%	F	%
15-25	0	0	7	12	1	1.7	0	0	0	0	0	0	0	0	8	13.7
26 -35	0	0	21	36.2	1	1.7	0	0	0	0	0	0	2	3.4	24	41.3
36 -45	0	0	7	12.1	1	1.7	0	0	0	0	1	1.7	0	0	9	15.5
46-55	1	1.7	7	12	1	1.7	0	0	0	0	1	1.7	1	1.7	11	19
56 above	3	5.2	2	3.4	0	0	0	0	0	0	1	1.7	0	0	6	10
Total	4	6.9	44	75.9	4	6.9	0	0	0	0	3	5.1	3	5.1	58	100

Table two shows that age group 26 -35 recorded the highest occurrence of tuberculosis (41.3%) while age group 56 and above recorded the least occurrence of TB (10%). Table 2 overall shows gradual rise in the prevalence of TB with increase in age. This implies that the highest TB Prevalence case occurred among age bracket 26-35 years.

Table 3: Prevalence of TB Cases in Owerri West According to Gender (N = 58)

Years TB Cases	Male		Female		Total	
	F	%	F	%	F	%
2008	4	6.9	0	0	4	6.9
2009	12	20.7	32	55.2	44	75.9
2010	2	3.4	2	3.4	4	6.9
2011	0	0	0	0	0	0
2012	0	0	0	0	0	0
2013	2	3.4	0	0	2	3.4
2014	1	1.7	3	5.2	4	6.9
Total	21	36.2	37	63.8	58	100

Table 3 shows the prevalence of TB according to gender. The table shows that females recorded the highest case (32, 55.2%) in 2009 than males (12, 20.7%). The same number of cases of TB prevalence was recorded for the male and female in the year 2010. The table further shows that apart from the years 2011 and 2012 when no TB cases were recorded, the males and females recorded low TB cases in other years (2008, 2013 and 2014). Furthermore, the females recorded the overall of 37 cases (63.8%) of TB occurrence for the period understudy, while the males recorded overall of 21 cases (36.2%) of TB. This implies that females have higher prevalence of TB than males.

Table 4: Summary of Chi – square   analysis Verifying the null Hypothesis of no significant difference in the prevalence of TB Based on Age (N = 58)

Variable	Cal x²	p.Val	Level of Sig.	Df	Decision
Age	47.114	0.00	0.05	5	Rejected

Cal x² = 47.114, P Value = 0.00, df=5 p< 0.05
Table 4 shows that x²   calculated value of 47.114 with corresponding p. value of 0.00 which is less than the p value at 0.05 level of significance at 5 df. The null hypothesis is therefore rejected. This implies that there is statistical significant difference in the prevalence of TB cases based on Age.

Table 5: Summary of Chi- square Analysis Verifying the Null Hypothesis of no Significant Difference in the Prevalence of TB Based on Gender (N = 58)

Variable	Cal x²	p. Val	Level of Sig.	Df	Decision
Year	11.00	0.088	0.05	6	Accepted

Cal x² = 11.00, p. value = 0.088, df =6 p< 0.05
Table 5 shows that x² calculated value of 11.00 with corresponding p value of 0.088 which is greater than 0.05 level of significant at 6df. The null hypothesis of no significant difference in the prevalence of TB cases based on gender is accepted. This implies that the prevalence of TB does not differ according to gender.

Discussion

Findings in table I shows that the highest number of TB cases were recorded in 2009, 44(79.9%) followed 4 cases (6.9%) in 2008, 2010 and 2014 respectively. This finding is not unexpected and supports WHO (2007) survey which revealed that the prevalence of TB per 100,000 people was highest in sub- Saharan African and Nigeria ranks 4th among high burden TB in African, this an estimated 320,000 prevalent cases of TB in 2010 in Nigeria equivalent to199/100,000 cases (WHO, 2010) the reduction in number of TB case in 2013 and 2014 and the zero occurrence in 2011 and 2012 was not surprising. This may be attributed to the impact of the Directly Observed Therapy Short – course (DOTS) programme in the health centres of the council. According to WHO (2002), DOTS produces cure rate of up to 95% even in the poorest Countries and prevent new infections by curing infectious patients. DOTS programme has not only proven to be highly effective and affordable strategy for controlling TB and prevention of emergence and spread of drug- resistant TB, but also valuable in resource – poor communities (WHO,2009)

Result in table 2 indicates that age group 26 -35 recorded the highest prevalence (41.4%) of TB. This findings agree with the report of the United States Embassy in Nigerian. According to Nigerian Tuberculosis fact sheet, United States Embassy in Nigerian (2012), the age groups commonly affected by TB in Nigerian are the most productive age groups with the 25-34 age groups accounting for 33.6% (15,303) of the smear positive cases registered in 2010. However, the result that age group 56 and above recorded the least occurrence of TB (10.3%) is surprising and negates the finding of Kadri, Bhagyalaxmin, Lala and Tushar (2003) who reported higher TB prevalence in people of Sixty (60) years and above. The difference may be attributed to socio – economic and cultural factors (Hudelson, 1996) and some risk factors such as HIV/AIDS, malnutrition and poverty (WHO, 2011) which play important roles in determining susceptibility to infections and progression to diseases. Furthermore, result in the Table 2 revealed overall a gradual rise in the prevalence of TB with progression or increase in age. This finding supports Kadir et al (2003) who reported a gradual rise in prevalence with progression in age (increase in age) in an epidemiological study of prevalence of TB in an urban area.

Result in Table 3 revealed that female recorded overall, the highest case (37= 36.2%) of TB occurrence for the period understudy than male (21=36.2%). This finding does not agree with an earlier study done by Hamid, Declercq, Van and Saki (2004) who reported low female to male ratios (less than one) in a study on gender differences in TB suspect diagnosed with positive smear. This implies that male susceptibility than female. The female higher TB Prevalence (Table 3) could be attributed to poverty experienced in low income communities in Nigerian. This explanation is in line with the assertion of Diamond, Mathews and Stephenson (2001), which holds that poverty and gender are two key factors implicated in women's vulnerability to tuberculosis. Moreso, evidence from various researchers strongly suggest that there is a close linked between TB and poverty experience (Oxlade &Murry, 2012; Hargreaves, Boccia, Evans Adato &Petticrew, 2011). Result in Table 3 further revealed similar TB outcomes for both male and female in year 2010,2011and 2012. This is not surprising and is line with Thorsen,

Hoa, Long, Allebeck and Diwan (2004), who reported that TB prevalence was similar among the male and female in a population- based study on prevalence and case detection sputum smear positive pulmonary TB.

Conclusions

Based on the findings of the study and discussion, the following conclusions were reached The highest cases of tuberculosis in Owerri West was recorded in 2009 and lowest in 2003. Between 2011 and 2012 there was no TB occurrence. Tuberculosis cases occurred more among the age group 26-35 years while the lowest occurred among age group 56years and above. Overall, a gradual rise in the TB prevalence with progression of age (increase in age) was seen. Women recorded more tuberculosis prevalence than men.

Recommendations

On the basis of the findings of the present study, the discussion and the conclusions thereof, it was recommended as follows:

1. The federal Ministry of Health should regularly conduct population based TB prevalence survey both in rural and urban areas of the 36 States of the federation.
2. The ministry of Health should map out modalities to proactively eliminate the fear and stigma associated with tuberculosis.
3. The Government should establish more DOTS centres both in the urban and rural communities for the management, control and cure of tuberculosis.
4. General awareness campaign through the media should be carried to educate and enlighten the masses on the importance of immunization of all children against TB disease.
5. Tuberculosis control strategies should be targeted to the poorest population that are most at risk and should also address TB risk factors such HIV/AIDS, drugs, malnutrition and air pollution.

References

Diamond, I., Mathews, Z. & Stephenson, R. (2001). *Assessing the heart of the poor, towards a pro-poor measurement strategy.* Heart system resources Centre, Department for International Development, London.

Gerald, L., Mandell, J.E.,& Bennett, R, (2010). *Mandell, Douglas and Benneth principles and practice infectious disease* (7thed). Philadelpia, P.A Churchill Livingstone/Elsevier, PA,chapter 250.ISBN 978-0- 443-06839-3.

Gerstman, B.B., (2003) Epidemiology kept simple: *An introduction to traditional and modernepidemiology* (2nded). Hoboken, NJ:Wileyliss.

Griffith, D, &Kerr,C, (1996) "Tuberculosis: diseases of the past, diseases of the present" *Journal of PerianesthesiaNursing* 11(4) : 240 -250.

Hamid, A.S Declercq, E., Van. D.A & Saki, K.A (2004) Gender differences in tuberculosis: A prevalence survey done in Bangladesh.*The International Journal of Tuberculosis and Lung Diseases* 8(8): 952-957.

Hargreaves, J.R. Boccia, D, Evans, C.A, Adato, M, & Petticrew, m, (2011). The Social determinants of tuberculosis: from evidence to action.*Am Journal of Public Health* 101: 654-662.

Hudelson, P, (1996). Tuberculosis and Lungs Diseases.*Science Direct*,77(5), 391 -400.

Kadir, A.M., Bhagyalaxmin, A, Lala, M.K, &Tushar,P, (2003). Epidemiological study of prevalence of Tuberculosis in the Urban slum Area of Ahmedabad city. *India Journal of Community Medicine*, 28(3).

Kenneth, J.R., (2012). *Epidemiology: An introduction*. London: Oxford University Press.

Konstantinos, A., (2012). Testing for tuberculosis. *Australian Prescriber,* 33(1) 12-18.

Lawn, S.D. & Zumia, A, (2011). Tuberculosis. *Lance,t 373* (9785): 57-72.

Mandell, G.L., Bennett J.E, &Rapheal.(2010*). Mandell, Douglas, and Bennett's principles andpractise of infectious diseases* (7thed.). Philadelphia, P.A: Churchill Livingstone/ Elserier.PP.

Nwaogu, B.G. (2006). *Educational research, basic issue and methodology.* Ibadan: Olusayi Press Ltd.

Oxlade O.,Schwartzman. K., Behr,M.A.,Bennett, A., & Pai, M., (2009). Global tuberculosis thread: a reflection of changes in tuberculosis control or in population? *International Journal of Tuberculosis and Lungs Diseases, 13*: 1238-1246.

Oxlade, O., &Murray, M., (2012). Tuberculosis and Poverty: Why are the poor at greater risk in India*? PLOS ONE Journal.*7(11);47533.

Restropo, B.I., (2007) "Convergence of tuberculosis and diabetics epidemic: renewal of old acquaintances" *Clinic Infectious Diseases* 45(4): 436-8.

Schiffman, G., (2009) Tuberculosis sympthoms. *e Medicine Health.*

Southwick, F.,(2007).. *Infectious Diseases: A Clinical Short Course*, 2nd ed. McGraw –Hill Medical Publishing Division.

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Thorsen, A., Hoa, N. P., Long, N. H., Allebeck, P.,& Diwan, V. K., (2004). Prevalence and case detection of sputum smell positive pulmonary TB, a population- based study from Vietnam. *Journal of Clinical Epidemiology*.57, (4), 398- 402.

World Health Organisation, (1994). *Frame work for tuberculosis control*. WHO/TB/94.179.

World Health Organisation, (2002). *Tuberculosis.* WHO/TB/O2.

World Health Organisation, (2006). "Global Tuberculosis Control Report" 2006- Annex 1 Profiles of high- burden Countries (PDF) Retrieve 13th October 2006.

World Health Organisation, (2009).*The Stop TB Strategy case report treatment outcome an estimate of TB burden Global tuberculosis control: epidemiology, strategies financing*: PP 187 – 300 retreive 14 November 2014.

World Health Organisation, (2011).*The sixteenth global report on tuberculosis*. Geneva: The Author.

World Health Organisation, (2014). *Improved data reveals higher global burden of tuberculosis.*WHO Fact Sheet on tuberculosis Geneva: The Author.

United State Embassy in Nigeria, (2012). *The Nigeria Tuberculosis fact sheet.* Plot 1075, Diplomatic FCT, Nigeria Drive. Retrieved from http: llnigeria.usembassy.gov.