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A Survey Of Understanding Of Directly Observed Therapy Short Course (DOTS) Amongst Final Year Medical Students And Doctors

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Abstract
Background: *DOTS is recommended as the standard of care in treatment of tuberculosis worldwide. By ensuring that patients take the right drugs, at the right intervals and in the right dosages, DOT reduces the chances of relapse or failure and prevents multi-drug resistant tuberculosis. Understanding of DOTS is key in its implementation but how well the concept of DOTS is understood among Medical Doctors and Students is not known in our setting.*
Aim: *The aim of this study is to find out the level of understanding of DOTS amongst Medical Doctors and Students in two tertiary hospitals in Bayelsa State, South –South Nigeria.*
Results: *Males accounted for 61.5% of the respondents. as against 38.5% of females. Most of the respondents 58 (55.8%) fell in the age group of 31 years and below. Medical students constituted 66 (63.5%) of the subjects compared to 38 (36.6%) medical doctors. Overall, 47.3% of respondents had good understanding of DOTS based on their answers to the questions asked in the questionnaire. Medical doctors had better understanding of DOTS compared to medical students and the difference is statistically difference (P < 0.026). However, there was no significant difference between understanding of DOTS and work experience.*
Conclusion: *The present study revealed poor level of understanding and knowledge gaps of DOTS amongst the respondents.*
Keywords: *Directly Observed Therapy, Medical Doctors, Medical Students, Understanding, Knowledge, Bayelsa State.*

I. Introduction

Tuberculosis (TB) is an infectious disease caused by the bacillus Mycobacterium tuberculosis. It typically affects the lungs (pulmonary TB) but can affect other sites as well (extra-pulmonary TB). TB is spread through droplet nuclei that become aerosolized when an infected person coughs, speaks, sings or talks.

The most common method for diagnosing TB worldwide is sputum smear microscopy (developed more than 100 years ago), in which bacteria are observed in sputum samples examined under a microscope. Following recent developments in TB diagnosis, the use of rapid molecular tests for the diagnosis of TB and drug-resistant TB is increasing.

Tuberculosis (TB) was thought to be incurable until the middle of the 20th century when introduction of anti-TB drugs changed the fate of TB patients (Crofton J ., 1959).

Due to its vast public health implications, it is one of the three communicable diseases specifically mentioned under the Millennium Development Goals (MDGs). This has contributed to structured efforts on a global scale with notable improvements in National TB Programs (NTPs) worldwide. In spite of this , TB remains a public health challenge globally. Nigeria ranks 10th among the 22 high-burden TB countries in the world. WHO estimates that 2210,000 new cases of all forms of TB occurred in the country in 2010, equivalent to 133/100,000 population. There were an estimated 320,000 prevalent cases of TB in 2010, equivalent to 199/100,000 cases. There were 90,447 TB cases notified in 2010 with 41, 416 (58%) cases as new smear positives, and a case detection rate of 40%. 83% of cases notified in 2009 were successfully treated.

Without treatment, mortality rates are high. In studies of the natural history of the disease among sputum smear-positive and HIV-negative cases of pulmonary TB, around 70% died within 10 years; among culture-positive (but smear-negative) cases, 20% died within 10 years (World Health Organization, 2009). The necessity of Directly Observed Treatment Short Course(DOTS) for tuberculosis control was first demonstrated in India (Fox W.,1958). DOT is now recommended as the standard of care in treatment of tuberculosis worldwide (Bayer R et al.,1995; Balasubramanian VN et al., 2000).

By ensuring that patients take the right drugs, at the right intervals and in the right dosages, DOT reduces the chances of relapse or failure and prevents multi-drug resistant tuberculosis (Frieden TR et al.,1995 ; Weiss SE et al., 1994).

While DOT is central to the success of tuberculosis control programs, it is not easy to implement. DOT needs to be given at a location, which is convenient to the patient, and, by a treatment provider who is accountable to the health system. Several types of health care providers have successfully carried out treatment observation in various countries. However, knowledge of DOTS among health care workers is insufficient in some studies.

Understanding of DOTS is key in its implementation but how well the concept of DOTS is understood among medical doctors and students is not known in our setting.

Aim: The aim of this study is to find out the understanding of DOTS among medical doctors and students in two the tertiary hospitals in Bayelsa State South –South , Nigeria.

II. Method

Study Design

The research was a quantitative cross-sectional survey assessing understanding of DOTS among medical doctors in the departments of medicine of the Niger Delta University Teaching Hospital and Federal Medical Centre and final year medical students of the Niger Delta University, Bayelsa State, South-South Nigeria. All the final year medical students that participated in the study had completed their Internal Medicine postings. All persons were informed that their participation was voluntary and informed consent was sought from all participants prior to their participation. Confidentiality of participants was maintained as no personal identifying information was collected on the questionnaire.

Given the small number of the targeted population, no sampling was done so that all medical doctors in the departments of medicine and all final year medical students were included in the study. The total sample size was 104 consisting of 38 medical doctors in the departments of medicine and 66 final year medical students. A self-administered structured questionnaire was used to collect data. The questionnaires had 25 questions and were administered to each of the participants. The questions were about basic understanding of DOTS and encompassed the definition, DOTS policy , diagnosis, and treatment among others. Each correct answer was scored as 1 and incorrect answers were scored as zero. The total correct answers were summed and reported as the overall score out of 25 for that participant and then converted to percentage. The median score of 72 % was used as the cut off for defining good or poor levels of understanding of DOTS.

The respondents were classified into various categories on completion of the questionnaires.

Statistical Analysis

Data obtained were analyzed with a statistical computer software, Statistical Package for Social Sciences (SPSS) version 15.0, all the data of the patients collected were summarized.

The chi-square test was used to determine the statistical significance of association between categorical variables. P-value of <0.05 was considered significant.

III. Results

Ninety five percent (104/110) of questionnaires were completed by the respondents. The socio-demographic profile of the survey participants were highlighted in Table 1 below. Males accounted for 61.5% of the respondents. as against 38.5% of females. Most of the respondents 58 (55.8%) fell in the age group of 31 years and below while 2.8% were over 50 years old. Medical students constituted 66 (63.5%) of the subjects compared to 38 (36.6%).

Table 1: Socio-demographic characteristics of the participants (n=104)

Characteristics	**Number**	**Percentage (%)**
Sex		
Male	64	61.5%
Female	40	38.5%
Age		
Under 31 Years	58	55.8
31 - 40 Years	33	31.7
41- 50 Years	8	7.7
>50 Years	3	2.8
Did not indicate	2	1.9
Highest Educational Qualification		
Under Graduate	66	63.4
MB,BS	32	30.8
Specialized or Post –Graduate Degree	6	5.8
Did not indicate	Nil	
Number of years since graduation		
Medical Students	66	63.5

Under 5 years	21	20.2
5- 10 years	12	11.5
>10years	5	4.8
Did not indicate	Nil	

Overall, 47.3% had good understanding about DOTS based on their answers to the questions asked in the questionnaire. As shown in Table 2, the level of understanding of DOTS is generally poor and varied with age, work experience and professional categories of the respondents.

Table 2: **Level of understanding of respondents about DOTS.**

Variable	Good understanding		Poor understanding		Total	
	Frequency	Percent	Frequency	Percent	Frequency	Percent
Age Category						
Under 31 years	36	50.7	35	49.3	71	70.2
31-40 years	11	44.0	14	56.0	25	24.0
41-50 years	2	66.7	1	33.3	3	2.9
> 50	1	33.3	2	66.7	3	2.9
Did not indicate	1	50	1	50	2	1.9
Gender Category						
Male	34	51.5	32	48.5	66	63.5
Female	15	39.5	23	60.5	38	36.5
Work Experience Category						
Nil (Medical Student)	27	40/9	39	59.1	66	63.5
5 years or less	13	61.9	8	38.1	21	20.2
Over 5 years	10	58.8	7	41.2	17	16.3
Professional Category						
Medical Doctor	23	60.5	15	39.5	38	36.5
Medical Student	25	37.9	41	62.1	66	63.5
TOTAL	**49**	**47.1**	**55**	**52.9**	**104**	**100**

Table 3: Pearson's correlation between understanding of DOTS on one hand and professional status and work experience of respondents on the other. As shown , medical doctors had better understanding of DOTS compared to medical students and the difference is statistically difference ($P < 0.026$). However, there was no significant difference between understanding of DOTS and work experience.

Table 3: Pearson's correlation between understanding of DOTS on one hand and professional status and work experience of respondents on the other.

Variables	**Good understanding of DOTS No.**	**Poor understanding of DOTS No .**	**Pearson's Chi-Square**	**Odds Ratio**	**P-value**
Age (Years)					
<31	36	35	0.607	1.249	**0.607**
31 yrs and above	14	17			
Sex					
Male	34	32	1.403	1.629	**0.236**
Female	15	23			
Work experience					
≤ 5years	13	8	0.037	1.138	**0.085**
>5 years	10	7			
Professional Status					
Medical Doctor	23	15	4.977	2.515	**0.026(S)**
Medical Student	25	41			

Higher percentage of medical doctors had correct answers to most of the DOTS questions.

Table 4: The percentage of respondents that had correct responses to the DOTS questions.

Questions	All Respondents	Medical Doctors	Medical Students
1.What does DOTS stand for?	99.3.%	100%	98.5%
2. DOTS is an initiative of	77.9%	79.2%	76.5%
3. DOTS is a strategy in the treatment of which disease?	100%	100%	100%
4. DOTS is divided into how many stages	86.7%	79.2%	94.1%
5. The duration of the 1st stage of DOTS involve the use of 4 drugs.	95%	98.5%	94.1%
6 .The 1st of DOTS last for 2 or 3 months.	92.1%	91.7%	92.6%
7. The total duration of DOTS could be up to 12 months	49.4%	70.8%	27.9%
8. How many categories are there when enrolling a patient for DOTS.	39.5%	33.3%	45.6%
9. DOTS was introduced in order to ensure ?	93,7%	91.7%	95.6%
10. How many components make up the DOTS policy statement?	10.1%	8.3%	11.8%
11. Dots successfully led to decrease in mortality and morbidity of the disease.	94.2%	95.8%	92.6%
12. DOT has failed, hence the introduction of DOTS-plus.	44.9%	50%	39.7%
13. The goal of DOTS- Plus is to address	51.5%	75%	27.9%
14. Government participation is a necessary requirement for the success of DOTS	91.6%	87.5%	95.6%
15. Any trained health care worker can administer DOTS	88.5%	91.7%	85.2%
16 .Sputum smear positivity is a necessary prerequisite for the success of DOTS.	42.4%	58.3%	26.5%
17. Patients with HIV/TB co-infection require a longer duration of treatment.	45.7%	45.8%	45.6%
18. Patients response to treatment may be monitored by	71.7%	62.5%	80.9%
19. INH is used throughout the duration of DOTS regime	77.3%	83.8%	70.8%
20.. What does FDC stand for?	24%	33.3%	14.7%
21..What is the reason for FDC in DOTS	21.1%	33.3%	8.8%
22. Please write the correct adult doses of these drugs in mg: Rifampicin Isoniazide. Ethambutolpyrazinamide	32.9%	58.3%	7.4%

IV. Discussion

In this survey of understanding of DOTS amongst medical doctors and students, majority of the respondents(55.8%) were under the age of 31 years. This was because most (63.5%) of the respondents were medical students. Males constituted 61.5% of the participants compared to 38.5% of females (Table1).

About 50.7% of participants aged less than 31years had good understanding of DOTS compared to the corresponding figure of 44% in those aged between 31-40 years, and 51.5% of males as against 38.5% of females had good understanding of DOTS (Table 2).

However, based on personal characteristics such as age and gender, this study did not find any statistically significant difference among respondents with regard to their understanding of DOTS (Table 3).

This suggests that increasing age did not contribute to increased understanding and knowledge of DOTS. This was in contrast to Hashim findings (Hashim DS et al., 2003) where age was significantly associated with good knowledge and understanding of DOTS.

Contrary to expectation, among medical doctors with less than 5 years of experience 61.9% had good understanding and knowledge of DOTS compared to 58.8% of those with more than 5 years of experience (Table2). However, it was not statistically significant.

One would have expected that many years of work experience would translate to higher knowledge and better understanding of DOTS but this was not the case in this study.

It might be that the participants with longer years of experience did not see the need to update themselves about new developments on TB, while their counterparts with less number of years of working experience were still eager to learn about the disease.

Not surprisingly, good knowledge and understanding of DOTS was significantly associated with professional categories. Among medical doctors 60.5% had a good understanding of DOTS compared to 37.9% of medical students and the difference was statistically significant .$P<0.026$.

In the present study, there was inadequate knowledge and understanding of DOTS amongst the final year medical students. This may be due to the facts that textbooks are not updated frequently and may not reflect current diagnostic and treatment guidelines including DOTS.

Our findings are also similar to those of several other investigators who have conducted surveys among health profession students. A study done in Istanbul (Kilicaslan Z, et al., 2003) evaluated undergraduate. training on tuberculosis at a Medical School among fourth-year medical students andfound many incorrect answers.

Similarly, surveys carried out in China, Delhi and Brazil among Final year medical Students, Interns and General practitioners respectively (Bai LQ, et al., 2003; Rajpal S et al..,2007 ; Teixeira EG et al., 2008) came to similar conclusions.

In contrast, a study (Emili J, et al., 2001) done to assess knowledge of DOTS among final year medical students from Canada, India, and Uganda found that the TB knowledge base and practice competency was adequate.

One interesting finding of this study is the difference in the percentage of respondents among the medical doctors and the students that had correct responses to each of the DOTS questions. Higher percentage of medical doctors had correct answers to the DOTS questions concerning investigations and therapy including duration of treatment, drug formulations and dosages. All participants fared poorly (10.1%) on question about the components of the DOTS policy statements (Table 4).

Limitations

Respondents attitude and practices were not evaluated. Since respondents were all final year medical students and doctors in the Internal Medicine departments of the Niger Delta University Teaching Hospital and Federal Medical Centre, there was no scope to increase the sample size.

V. Conclusion

The present study revealed poor level of understanding and knowledge gaps of DOTS amongst the respondents.. As tuberculosis continues to be a major public health problem in Bayelsa State, our medical doctors and students should have good understanding and basic knowledge of DOTS. An educational remedial intervention is recommended.

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References

[1]. Bai LQ, Ziao SY, Xie HW, Yang GF, Wang YZ. Knowledge and practice regarding tuberculosis among final-year medical students in Hunan, China. Zhonghua Jie He He Hu Xi Za Zhi 2003;26:458-46.
[2]. Balasubramanian VN, Oommen K, Samuel R. Dot or Not? Direct observation of anti-tuberculosis treatment and patient outcomes, Kerela State, India. Int J Tuberc Lung Dis 2000; 4 (5): 409-413.
[3]. Bayer R, Wilkinson. Directly observed therapy for tuberculosis: history of an idea. Lancet 1995; 345: 1545-1548.
[4]. Crofton J. Chemotherapy of pulmonary tuberculosis. BMJ 1959;304-311.
[5]. Emili J, Norman GR, Upshur RE, Scott F, John KR, Schmuck ML. Knowledge and practices regarding tuberculosis: A survey of final-year medical students from Canada, India and Uganda. Med Educ 2001;35:530-6.
[6]. Fox W. The problem of self-administration of drugs with particular reference to pulmonary tuberculosis. Tubercle1958; 39:269-274.
[7]. Frieden TR, Fujiwara PI, Washko RM, Hamburg MA. Tuberculosis in New York City-turning the tide. N Engl J 1995 ; **333:** 229-233.
[8]. Hashim DS, Al Kubaisy W, Al Dulayme A. . Knowledge, attitudes and practices survey among healthcare workers and tuberculosis patients in Iraqi. East Mediterr Health J. 2003 Jul; 9(4):718-31.
[9]. Hong YP, Kwon DW, Kim SJ, Chang SC, Kang MK, Lee EP, et al. Survey of knowledge, attitude and practices for tuberculosis among general practitioners. Tuber Lung Dis 1995;76:431-5.
[10]. Kilicaslan Z, Kiyan E, Erkan F, Gurgan M, Aydemir N, Arvesen O. Evaluation of undergraduate training on tuberculosis at Istanbul Medical School. Int J Tuberc Lung Dis 2003;7:159-64.
[11]. Rajpal S, Mittal A, Dhingra VK, Malhotra R, Gupta R, Malhotra C, et al. Knowledge, attitude and practices regarding tuberculosis and dots among interns in Delhi. India J Coll Physicians Surg Pak 2007;17:457-61.
[12]. Teixeira EG, Menzies D, Cunha AJ, Luiz RR, Ruffino-Netto A, Scartozzoni MS, et al. Knowledge and practices of medical students to prevent tuberculosis transmission in Rio de Janeiro, Brazil. Pan Am J Public Health 2008;24:265-70.
[13]. Weiss SE, Slocum PC, Blais FX, et al. The effect of directly observed treatment on the rates of drug resistance and relapse in tuberculosis. N Engl J Med 1994; 330**:** 1179-1184.).
[14]. World Health Organization. The Stop TB Strategy, case reports, treatment outcome and estimates of TB burden. Global TB control: epidermiology, strategy, financing 2009; 9:187-300.