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Factors associated with non-compliance to treatment regimen among tuberculosis patients in university of portharcourt teaching Hospital, Rivers State

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Abstract
This study investigated the factors associated with non-compliance to treatment regimen among tuberculosis patients in the University of Port Harcourt Teaching Hospital, rivers state. A descriptive survey research was used for the study. Sample for the consisted of 83 tuberculosis patients in the Tuberculosis unit of University of Port Harcourt Teaching Hospital at the time of study. Self-structured questionnaire was used for data collection. Validity of the instrument was ensured, reliability was ascertained using test re-test method, values were analysed using Pearson product moment correlation with a value of 0.8. Data obtained were analyzed using frequency and percentage table. Chi-square was used to test the hypothesis at p=0.05. Findings showed that patient-centered factors (socio-demographic status, educational background) as well as healthcare system-related factors (accessibility and availability of services) were among factors that influence non-compliance to tuberculosis treatment regimen. Hypothesis test reveals that there is no statistically significant relationship between patient's age and their non-compliance to treatment regimen. Recommendations based on the findings include: tuberculosis patients be adequately health educated on the need to comply strictly with their treatment regimen as this would go a long way in ensuring better clinical outcomes.

Keywords: factors, non-compliance, socio economic, treatment, tuberculosis

Introduction
Tuberculosis is a chronic infectious disease caused by the infectious agent known as mycobacteriurn tuberculosis which affects the lung parenchyma. Tuberculosis (TB) is probably the most infectious disease in the world. It has been reported as one of the public health problems by all the regions of the world; despite the availability of a cost-effective treatment, TB is still a major public health burden in developing countries,(World Health Organization [1,2]. TB has continued to be a major cause of high morbidity and mortality in the 22 countries contributing 80% of global TB burden[3].Patient non-compliance is a serious healthcare concern that poses a great challenge to the successful delivery of healthcare. This is widespread and has been reported from all over the world[4]. According to a study by the New England Health Care Institute, one-third to one-half of the American patients are non-compliant[5]. The rate of non-compliance in patients with chronic diseases in developed countries, on long-term treatment, is on the order of 50%, this could be even higher in developing countries [6,7].

Patient non-compliance is not only limited to the failure to take medication , but also the failure to make lifestyle changes, undergo tests or keep appointments with physicians, the noncompliant patients are more prone to encountering serious dif1culties[8]. Non-compliance to long term therapy severely compromises the effectiveness of treatment and adversely affects the patient's condition[4]. Compliance to treatment is one of the most important factors that affect the outcome of therapy

Compliance in healthcare is defined as the extent to which a patient's behaviour (in terms of taking medication, executing the lifestyle changes, undergoing medical tests or keeping appointments with the physicians) coincides with the healthcare provider's recommendations for health and medical advice[9]. Non-compliance on the other hand, is extent to which a patient's behaviour does not agree with the healthcare provider's recommendations for

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health; noncompliant patients are those who's health-seeking or maintenance behaviours lack congruence with the commendations prescribed by a healthcare provider[5].

Noncompliance can be due to factors that are patient-centered, therapy-related or healthcare system-related[3]. Patient centered factors can be demographic(age, gender, educational level and marital status);therapy related factors include, route of medication, duration of treatment, complexity of treatment and side effects of medicines; healthcare system –related factors include, availability, accessibility and the health care provider[5].The factors affecting non-compliance of tuberculosis patients to treatment regimen include their age, socio-economic status, educational background, accessibility to health services and knowledge of the effects of tuberculosis medication[6]. These factors have been implicated in other literatures.

The finding of this study may provide enough information that will enable the healthcare provider utilize specific behavioral interventions in ensuring tuberculosis patients comply to their treatment regimen, Results of this study may be useful in planning and implementation of care related to tuberculosis patients' compliance and non-compliance level and as such enhance healthcare provider's skills and competent in care.

This study therefore seeks to determine the contributory factors to non-compliance among Tuberculosis (TB) patients.

The specific objectives of this study includes to:
i. determine the patient centered factors associated with noncompliance of tuberculosis patients to treatment regimen.
ii. Determine the healthcare system-related factors that influence non-compliance of tuberculosis patients to treatment regimen.

Hypothesis
There is no significance relationship between age of tuberculosis patients and their non-compliance to treatment regimen.

Methodology
This study is a descriptive cross sectional design that described the factors responsible for non-compliance to treatment regimen by tuberculosis patients in University of Port Harcourt Teaching Hospital (UPTH). It is one of the major tertiary institutions in the oil rich Niger Delta region of Nigeria. It is an apex health institution which offers health care services for a large cosmopolitan population both at primary, secondary and tertiary levels. UPTH has 800 bed spaces with the following department existing in the institution: Medicine, Surgery, Accident and Emergency, Pharmacy, Microbiology, Haematology, Paediatrics, Obstetrics and Gynaecology and a primary

health care center located at Aluu Rivers state which is an extension of the hospital. The Tuberculosis (TB) unit of the University of Port Harcourt Teaching Hospital was chosen because adequate sample with relevant characteristics of the study will be easily available. Patients in the TB units are managed strictly by barrier nursing. They had a total number of 105 tuberculosis patients in the tuberculosis unit of the hospital at the time of the study. Convenience sampling technique was used to select a sample size of 83 accessible patients for the study. The remaining twenty two (22) could not be studied because some of them (12) were too ill to participate in the study while the others (10) participated in the test re-test study for the reliability.

Self-structured questionnaire was used to collect data from participants. The questionnaire had three sections: A,B and C. Section A contained 6 items on socio demographic characteristics of respondents while section B consisted of 5 items on patient-centered factors and section C 3 items on healthcare system-related factors associated with non-compliance to treatment regimen among tuberculosis patients

The self-structured questionnaire was submitted to two (2) specialists in measurement and evaluation and the field of study that assessed the face and content validity of the instrument and their comments were used to make necessary corrections before administration.

The reliability of the instrument was ascertained using the Test-Retest method. Ten copies of the instrument were administered to the 10 respondents on admission but who did not participate in the actual study and another ten copies of the instrument were re-administered to them after one week interval. Data obtained were analysed using the Pearson product moment correlation coefficient formula and a value of 0.80 obtained affirming the reliability of the instrument. Eighty three (83) copies of the questionnaire were administered personally by the researchers to the respondents after due explanation of the purpose of the research and how to fill the questionnaire. The process of data collection lasted for one week, all the questionnaire were duly completed and retrieved reflecting 100% return rate. Ddata collected were coded in a spreadsheet and analysed using both descriptive statistics of frequency and simple percentages to discuss the specific objectives while inferential statistics of chi square was used to test the hypothesis.

Approval was obtained from the ethical committee of the institution where the study was carried out. Also, informed verbal consent was obtained from the respondents after explaining the purpose of the study to them. They were also assured that any information provided will be treated confidentially.

Data Presentation

Table 1: Socio-demographic characteristics of respondents (n=83)

Variable	Classification	Frequency	Percentage (%)
Age	18-23	14	16.9
	24-29	17	20.5
	30-35	42	50.6
	36 and above	10	12.0
Sex			
	Male	39	47.0
	Female	44	53.0

Marital Status			
	Single	7	8.40
	Married	76	91.6
Educational Background			
	Primary	2	2.00
	Secondary	30	36.1
	Tertiary	51	61.9
Religion			
	Christianity	78	94.0
	Islam	5	6.00
Occupation			
	Civil Servants	42	50.6
	Self employed	30	36.1
	Unemployed	11	13.3

Table 1 shows that out of 83 respondents studied, 14(16.9%) were aged 18-23years, 17(20.5%) were aged 24-29 years, 42(50.6%) were aged 30-35 years while 10(12.0%) were aged 36 years and above respectively; 39(47.0%) were males while 44(53.0%) were females; 7(8.4%) were single while 76(91.6%) were married; 2(2.00%) have primary education, 30(36.1%) have secondary education while 51(61.9%) have tertiary education respectively; 78(94.0%) were Christians while 5(6.0%) were Muslims; 42(50.6%) were civil servants, 30(36.1%) were self-employed while 11(13.3%) were unemployed.

Table 2: Influence of patient-centered factors on their compliance to tuberculosis treatment regimen (n=83)

Items	SA	A	D	SD
Although tuberculosis treatment is free I still do not comply strictly with the treatment regimen	42(50.6%)	20(24.1%)	5(6.02%)	16(19.3%)
I skip my treatment sometimes because of high cost	60(72.3%)	10(12.0%)	3(3.61%)	10(12.0%)
I feel tuberculosis treatment is costly and as such do not want to comply with the treatment regimen	56(67.5%)	13(15.7%)	5(6.02%)	9(10.8%)
I do not comply to treatment regimen because of stigmatization	63(75.9%)	12(14.5%)	3(3.61%)	5(6.02%)
Although I am educated and have good knowledge on the effect of tuberculosis I still skip my medication	60(72.3%)	20(24.1%)	2(2.41%)	1(1.20%)

Table 2 shows that out of the 83 respondents studied, 42(50.6%) strongly agreed that Although tuberculosis treatment is free I still do not comply strictly with the treatment regimen, 20(24.1%) agreed to it, while 5(6.02%) disagreed, 16(19.3%) strongly disagreed, 60(72.3%) strongly agreed that they skip their treatment sometimes because of high cost, 10(12.0%) agreed to it, while 3(3.61%) disagreed to it,l0(12.0%) strongly disagree, 56(67.5%) strongly agree that they feel tuberculosis treatment is costly and as such do not often to comply with the treatment regimen, 13(15.7%) agreed to it, while 5(6.02%) disagreed to it 9(10.8%) strongly disagreed. 63(75.9%) strongly agree that they do not comply to treatment regimen because of stigmatization, 12(14.5%) agreed to it, while 3(3.61%)disagreed to it, 5(6.02%) strongly disagreed to it. The table further showed that 60(72.3%) of the respondents strongly agreed that although they are educated and have good knowledge on the effect of tuberculosis yet, they skip medication; 20(24.1%) agreed; 2(2.41%) Strongly disagreed while 1(1.20%) disagreed.

Table 3: healthcare system-related factors associated with non-compliance to treatment regimen among tuberculosis patients (n=83)

S/N	Items	SA	A	D	SD
1	I skip my medication sometimes because they are not always available at the health center	20(24.1%)	30(36.1%)	15(18.1%)	18(21.7%)
2	I skip my medications sometime because the health care providers that guides consumption of the drugs are not always accessible	40(48.2%)	20(24.1%)	10(12.0%)	13(15.7%)
3	I don't comply with my treatment regimen because of difficulty in accessing the medication in the health center	50(60.2%)	20(24.1%)	9(10.8%)	4(4.82%)

Table 3 showed that, 20(24.1%) strongly agree that they skip their medications because they are not always available at the health centre, 30(36.1%) agreed, 15(18.1%) disagreed while 18(21.7%) strongly disagreed. Also, 50(60.2%) strongly agree that they do not comply because of difficulty in accessing the medication at the health centre, 20(24.1%) agreed, 9(10.8%) 4 disagreed while 4(4.8%) strongly disagreed.

Testing of Hypothesis
Hypothesis: There is no significant relationship between age of tuberculosis patients and noncompliance with

treatment regimen. Table 5: Relationship between age of tuberculosis patients and their non-compliance with treatment regimen (n=83)

Table 5: Relationship between socio-economic status of tuberculosis patients and their non-compliance with treatment regimen (n=83)

X^2Cal	X^2tab	Df	P-value	Inference	Decision
0.107	5.991	2	0.05	X^2cal <X^2tab	H_0 accepted

Table 4 shows that X^2Cal <X^2tab (X^2Cal=0.107, X^2tab=5.991, df-2.P=0.05), since X^2Cal is lesser than X^2tab, we reject the alternate hypothesis and accept the null hypothesis that there is no statistically significant relationship between age of tuberculosis patient and noncompliance with treatment regimen.

Discussion of Findings
Patient centered factors that influences noncompliance
Table 2 shows that out of the 83 respondents studied, 49(59.0%) agreed that patient-centered factors influence their noncompliance to tuberculosis treatment regimen while 34(41.0%) disagreed. This result corroborates the findings of other studies: Patient centered factors that influences noncompliance can be demographic(age, gender, educational level and marital status) [5] ; many of the reasons for default are related to the socio-economic situation and cultural background[10]; educational background exerts significant effect on the extent to which TB patients are compliant to TB treatment regimen[11]; risk of non-adherence increases as a result of economic barriers in accessing health care[12]. Other patient-centered factors that have been implicated in defaulting treatment include, having no family support, poor knowledge about TB, being more than 25years old and use of public transport[13].

Healthcare system-related factors
Results from table 4 showed that out of the 83 respondents studied, 61(73.5%) indicated that accessibility of services regarding tuberculosis influence patients noncompliance to tuberculosis treatment regimen while 31(37.3%) stated that it does not. Also ,60(72.3%) of the respondents agreed that the health care providers that guides consumption of the medicines are not always accessible while 23(27,7%) disagreed .This result is in consonance with other findings regarding healthcare system-related factors; distance from the hospital, lack of repeated smears, unit transfer after the intensive phase[13].risk of non-adherence increases as a result of barriers in accessing heath care facility[12], healthcare system –related factors include, availability, accessibility and the health care provider[5].; pattern of healthcare delivery[3].

Hypothesis:
There is no significant relationship between age of tuberculosis patients and their noncompliance with treatment regimen.
Findings from table 5 showed that X^2cal <X^2tab, (at df=3 and P-value of 0.05, hence value is insignificant and the null hypothesis accepted. This implies that there is no statistically significant relationship between age of tuberculosis patients and their non-compliance with treatment regimen. This finding is in contrast with the observation which stated that ''being more than 25years old

is also among the factors influencing non adherence to treatment regimen''[13].

Summary
This study was on the factors associated with non-compliance to treatment regimen by tuberculosis patients in University of Port Harcourt Teaching Hospital (UPTH). A descriptive study design was used on a sample size of eighty three (83) respondents. Data was obtained from the respondents with the use of self-structured questionnaire. The result of this study showed that socioeconomic background such as educational status and accessibility of services are among factors that influence compliance to treatment regimen among tuberculosis patients. Hypothesis tested showed that there is no statistically significant relationship between age of tuberculosis patients and their non-compliance with treatment regimen.

Conclusion
Tuberculosis is the world's most serious public health problem despite the availability of effective diagnosis and treatment measures. With good compliance to treatment regimen, tuberculosis is very curable and has good management outcome. Results from the study showed that socio- economic factors like poor educational status and accessibility of services among others are significant factors associated with non-compliance to treatment regimen. It is therefore important that nurses health educate individuals, families and groups on the need to comply with tuberculosis treatment regimen, irrespective of the socio-economic and educational backgrounds of the patients. This would go a long way in reducing morbidity and mortality associated with noncompliance to treatment regimen.

Recommendations
Based on the findings of this study the following are therefore recommended:
(1) There should be adequate health education of tuberculosis patients on the need to comply with treatment regimen.
(2) Government, non-governmental organizations, the media and social network should be actively involved in extensive awareness and enlightenment programme on the benefits of compliance with treatment regimen among tuberculosis patients and the general public.
(3) There should be effective behavioral intervention that would help ensure tuberculosis patients comply with their treatment regimen.
(4) There should be an effective follow up system of tuberculosis patients managed on outpatient basis.
(5) There should be an effective decentralization of treatment to primary health care centres.
(6) Social protection measures for patients should be considered as priorities for disease control strategies in order to lessen the impact of those barriers on adherence to treatment.

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