Nigerian

Journal

of Psychiatry

Nigerian Journal of Psychiatry

CONTENTS

INTRODUCTION

The Nigerian Journal of Psychiatry publishes original scientific papers, review articles, short reports and opinion papers in all areas of psychiatry and related fields such as Sociology, Psychology, Anthropology and Neurosciences.

All original articles are peer reviewed and once accepted for publication can not be published else where in whole or part without prior authority from the Editorial Board. Letters on published articles are welcome.

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Authors may send three copies of their manuscript typed double spaced on one side of the paper only, with wide margin of A4 size paper accompanied by an electronic copy on floppy disk. However, on-line submission is highly encouraged. The title of the article should be brief and relevant. A short summary that includes background, aims, methods, results and conclusion which should not be more than 150 words should be included.

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Authors should give a word count of the same summary and of the whole article. The whole article should be between 3000 and 5000 words.

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Statistical procedure and analysis should be appropriate and should be correctly interpreted.

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EXAMPLES

Adewale M.O. (1992). Psychiatric assessment in prison inmates Nigerian Journal of Psychiatry, 11, 5, 312-330.

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In this edition of the Nigerian Journal of Psychiatry, Akhigbe & Akhigbe (2015) gave a succinct review of the place of Neuroimaging investigations in Clinical psychiatry. The usefulness and limitations of these investigative tools were emphasized by the authors. In another paper, also from Benin, locus of control, an important psychological variable was studied among medical students of the University of Benin, Benin City, Nigeria. Osasona & Koleoso (2015) in this paper focused on the demographic determinants of locus of control in their subjects. Uwakwe et al (2015) examined the compliance of medical schools in Nigeria to the recommended standard of psychiatric curriculum in the training of medical students. In the sampled medical schools, there was no uniform level of training and exposure to clinical psychiatry for the medical students among the institutions.

In a study in Oshogbo, South-west, Nigeria, Eegunranti et al (2015) found high percentage of their subjects (newly diagnosed patients with HIV positivity) developed emotional disturbances such as fear, anxiety and depression. The authors reported this could affect patients' functionality and adherence to the required medication. Otakpor & Akanni (2015), again from Benin studied the influence of personality traits and religiosity on psychopathology among adolescents. From Enugu, South-East Nigeria, Ndukuba et al (2015) examined the use of physical restraint in the management of acutely disturbed mentally ill patients in Nigeria. The authors advocated the need to develop a uniform protocol for this important management technique in Nigerian psychiatric practice.

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Neuroimaging in Psychiatry: A Review of the Background and Current Trends

A. O. AKHIGBE & K. O. AKHIGBE

ABSTRACT

This paper offers a selective literature review of neuroimaging in psychiatry, with the goal of offering a background and a summary of current trends. While not exhaustive, numerous publications are cited in an attempt to provide a reasonable cross-section of research activity in the field of brain imaging in psychiatry and how to overcome the challenges in our setting. There are two different types of neuroimaging of value in clinical psychiatry, namely: structural neuroimaging techniques (e.g., CT, MRI) which provide static images of the skull, and brain, and functional neuroimaging techniques (e.g., single photon emission CT [SPECT], positron emission tomography [PET], functional MRI [fMRI], electroencephalography [EEG], magnetoencephalography [MEG]) which provide measures that are directly (MEG, EEG) or indirectly (SPECT, PET, fMRI) related to brain activity. Although neuroimaging is making increasing contributions to multiple aspects of clinical psychiatry, including differential diagnosis, prognosis, clinical management, and development of new interventions, it still remains largely a research tool and is of limited use in clinical psychiatry.

INTRODUCTION

Psychiatrists have known for at least 100 years that mental illness must be fundamentally due to perturbations of normal neural activity in the brain (Andreasen, 1988). Emil Kraepelin a founding father of modern psychiatry in his work with a group of distinguished brain scientists which included Alzheimer, Nissi, Brodmann and Gaupp working in the psychiatric clinic of Munich University could not demonstrate those perturbations with naked eye or microscope and this led some psychiatrists to conclude that there were no specific neural abnormalities (Andreasen, 1988). However, it is now clear that these psychiatrist-neuroscientists were on the right track but lacked sufficiently sensitive tools to map and measure the complex aberrations of cognitive, perceptual, emotional and motor functions that characterize major mental illnesses such as schizophrenia or the affective disorders (Andreasen, 1988).

Modern neuroimaging techniques demonstrate that there is substantial localization of many functions in the neural tissue of the brain (Daliri and Behroozi, 2012).

Some research findings have shown that advances in brain imaging techniques have made it possible to identify the anatomic, metabolic and neuro-chemical substrates of mental illnesses (Malhi & Lagopoulos, 2007; Davoren et al, 2009). These advances have also been applied to treatment options and drug development, making it possible to predict the therapeutic response (Fu & McGuire, 1999; Tamminga & Conley, 1997).

The available brain imaging techniques applied in psychiatry are classified into two types, namely: structural and functional imaging methods.

Structural Imaging Methods

The structural neuroimaging methods include Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) which provide static images of the skull and brain.

Computed Tomography (CT)

Computed tomography (CT) is the earliest structural imaging technique to be applied to psychiatry being the oldest brain imaging technique developed in the early 1970s. Remarkable structural abnormalities have been reported over the years on CT of the brain in various psychiatric disorders. For example Johnstone et al. reported in 1976 that patients suffering from schizophrenia tended to have a significantly greater degree of enlargement in the ventricular system than did a matched control group (Johnstone et al., 1976). There are also several reports of gross focal brain lesions on CT and MRI in schizophrenia which are clinically unsuspected; such findings include aqueductal stenosis (Tamminga & Conley, 1997), arachnoid and septal cysts (Kuhnley, 1980; Lewis and Mezey, 1985) and agenesis of the corpus callosum(Lewis et al, 1988). Marchie et al in southern Nigeria also reported a case of frontal lobe lesion on CT presenting with psychiatric disorder (Marchie et al, 2002).

CT scans use multiple x-ray sources and detectors to provide cross-sectional images of the brain. On CT films, areas of increased beam attenuation, like the skull, and calcifications appear white; areas of low attenuation such as gas appear black, while those of intermediate attenuation such as soft tissues appear in shades of gray. The use of

intravenous radio-opaque contrast significantly improves the ability of CT to visualize certain normal and abnormal structures. Contrast highlights vascular structures as well as lesions that lead to compromise of the blood–brain barrier. As a result, vascular abnormalities such as aneurysms, dissections, and arteriovenous malformations will be more easily visualized. Contrast will also highlight lesions that lead to gross disruption of the blood–brain barrier. Such lesions include inflammatory processes of the brain (e.g., infection) and tumors (Park & Gonzalez, 2004). However, up to 5% of patients can develop idiosyncratic reactions to contrast media, manifested by hypotension, nausea, flushing, urticaria, and anaphylaxis. (Roffman et al, 2010).

Computed Tomography also has some functional imaging applications, such as Xenon-enhanced computed tomography and dynamic perfusion-computed tomography.

Magnetic Resonance Imaging (MRI)

Magnetic resonance imaging (MRI) is used for both structural and functional imaging techniques with a lot of advantages over CT. Unlike CT which involves the use of ionizing radiation for imaging, MRI uses high magnetic field for imaging and this makes it safer especially for follow-up imaging and human research studies. MRI has multiplanar capabilities unlike CT where brain imaging is limited to transverse plane, except reformatted images which usually results in compromise of the structural details. The ability of MRI to image in all planes, including coronal plane, which is particularly useful for visualizing frontal and limbic regions as well as superb grey-white resolution (Andreasen, 1988), has made it a preferred brain imaging modality. The major drawback so far against the use of MRI is cost and availability, most

especially in developing countries like Nigeria and most African countries. In Nigeria there are limited numbers of MRI scanners compared with the population and the highest MRI field strength available at the time of this review is 0.5 tesla (T), and it has limited application. For routine MRI imaging, 1.5 to 3T super-conducting systems are used for general clinical imaging with field strengths of 1T and below being applied in niche situations and few very high field systems of 7 to 9T are available worldwide. Neurological applications like MR spectroscopy (MRS), functional MRI (fMRI) and spin-tagging perfusion imaging (also called Arterial Spin Labelling, ASL) which fall under functional assessment of the brain, are possible with an optimized 3T system (Jones and Jenkins, 2003).

Functional imaging methods

These imaging methods are based on the following parameters: 1) Regional cerebral blood flow (rCBF) and brain perfusion studies; 2) Cerebral glucose metabolism; 3) Oxygen consumption in the brain and 4) Neurotransmitter functions and occupancy.

Imaging techniques which determine regional cerebral energy metabolism and blood flow, including oxygen consumption are normally regarded as regional cerebral function tests, while the techniques for studying cerebral neurotransmitter functions in man are used to delineate the mechanisms of action of antipsychotic and antidepressant drugs, as well as the diagnosis and progression of Parkinson's disease and to evaluate neuroprotective drugs (Kessler, 2003).

Functional imaging methods include the following:
1. Positron emission tomography (PET) including Amyloid PET imaging
2. Single photon emission computed tomography (SPECT).

3. Xenon-enhanced computed tomography (XeCT),
4. Dynamic perfusion-computed tomography (PCT).
5. Functional magnetic resonance imaging (fMRI).
6. Magnetic resonance spectroscopy (MRS)
7. Magnetic resonance imaging dynamic susceptibility contrast (DSC).
8. Arterial spin-labeling (ASL).
9. Doppler ultrasound (Transcranial Doppler).

All of the above listed imaging methods are used for brain perfusion studies and they give similar information about brain hemodynamics in the form of parameters such as cerebral blood flow (CBF) or volume (CBV) but each technique has its advantages and drawbacks (Wintermark et al., 2005)

The MRI based methods are functional MRI, (fMRI), and magnetic resonance spectroscopy (MRS). In general terms, MRI provides exquisitely detailed images of brain structure; fMRI provides images of local neuronal activity with high spatial and temporal resolution; and MRS provides measurements of the concentrations of numerous chemicals in the brain without the radiation exposure of PET and SPECT but with much lower sensitivity (Malison and Innis, 1999).

The oxygen consumption as a parameter in brain functional assessment is possible using the ability to detect in vivo blood oxygenation changes with MRI. During changes in neuronal activity there are local changes in the amount of oxygen in the tissue which can be monitored with the **b**lood-**o**xygen-**l**evel-**d**ependent or BOLD signals in fMRI ((Fox and Raichle 1986; Fox et al., 1988). When a BOLD signal is detected, blood flow to a region of brain has changed out of proportion to the change in oxygen consumption (Kim and Ugurbil,1997). BOLD signals on MRI

are indicators of both increases and decreases in oxygen consumption in normal human brain.

The two radiotracer methods of neuroimaging, positron emission tomography (PET) and single photon emission computed tomography (SPECT) entail the injection of radioactively labeled drugs. The imaging and measurement over time of the distribution of these radiotracers is used to assess the neurochemistry, blood flow, or metabolism of the brain. For SPECT it involves the use of tracers, like xenon-133 and (123)I-labeled iodoamphetamine(123 I-IMP) . With these techniques, cerebral perfusion is assumed to provide an indication of metabolic activity, with areas of hyperfusion reflecting an increase in cerebral metabolic activity (Andreasen, 1988). Tracers for dopamine and acetylcholine receptors are available and increased dopamine receptors in the basal ganglia have been observed with SPECT (Eckelman et al., 1984; Crawley et al.,1986). SPECT has been applied in the study of Alzheimers disease. Both SPECT and PET have shown a pattern of hypo-perfusion in posterior temporo-parietal regions which appear to be specific to and characteristic of this disease (Bonte et al., 1986; Rezaie et al.,1985; McGeer et al.,1986). Flow pattern differences between Alzheimer's disease and depression could be useful in differentiating these disorders, which is often a difficult differential in psychiatry (Rush et al., 1982; Post et al,1987).

Positron Emission Tomography (PET)

Positron Emission Tomography (PET) has been reported as the most elegant of the available brain imaging techniques giving better resolution images (Andreasen, 1988), but it is more expensive to acquire and to operate. It is used for assessment of metabolic activity and measurement

of neurotransmitter function. Cerebral metabolic activity is measured with deoxyglucose labeled isotopes, using the following isotopes; Fluorine-18 (^{18}FDG) Carobon-11 (^{11}C), and Oxygen-15 (^{15}O). These isotopes have short half-life, with ^{15}O having the shortest half-life of 2 minutes, thereby allowing a rapid comparison of cerebral metabolic activity in a variety of conditions (Andreasen, 1988). The study of neurotransmitters using PET has been possible using various ligands.

Ligands are currently available for the study of D1 and D2 dopamine receptors and for serotonin, benzodiazepine, opiate, and muscarinic receptors (Sedvall et al., 1986). PET imaging of neurotransmitter systems permit direct measurement of receptor occupancy as direct brain assessment of drug activity instead of peripheral method of assessment using serum blood levels as indicators of the presence of drugs in the brain. PET application in the study of dopamine D2 receptor has contributed to the understanding of the pathophysiology of schizophrenia and the mechanism of action of neuroleptic drugs (Sedvall et al., 1986). Early studies demonstrated that D2 receptors could indeed be labeled, as evidenced by clear areas of uptake in the caudate and putamen (Sedvall et al., 1986; Wagner et al., 1983).

Compared with other functional imaging techniques, PET has several advantages. Compared with SPECT and MRS, PET is more sensitive in detecting processes that occur in minute concentrations (such as neurotransmitter and neuroreceptor processes). Compared with SPECT, PET also has the potential to measure a wider range of biochemical and physiological processes (partly because the positron-emitting radiosotopes ^{15}O, ^{11}C, ^{13}N, and ^{18}F which can be incorporated into physiological and pharmacological

compounds without affecting their behavior in the body) and has fewer artifacts from radiation scatter and attenuation (because of the current availability of attenuation-correction procedures) (Reiman, 1999).

Compared with fMRI, advantages of PET include a better-established role in comparing images acquired in the resting state during different scanning sessions (e.g., in patients versus controls, before and after treatment, and in longitudinal studies of aging and age-related disorders); less-severe artifacts from head movement, claustrophobic anxiety, and ambient noise; the absence of signal dropout in brain regions in close proximity to sinuses (e.g., the hippocampus); the ease with which one can provide sensory stimuli and acquire ancillary measurements during the imaging session; and the ability to characterize a wide range of neurochemical processes (Reiman, 1999).

Disadvantages of PET include its relatively low spatial resolution (limiting its ability to characterize changes in extremely small regions, such as brainstem nuclei), the time required to acquire an image (requiring behavioral and baseline tasks to be studied in blocks), radiation exposure (limiting the number of scans that can be acquired in normal volunteers), expense, and limited availability (Reiman, 1999).

Single Photon Emission Computed Tomography (SPECT)

Like PET, SPECT is an imaging technique that provides information about biochemical and physiological processes. This technique capitalizes on radiosotopes (e.g., ^{123}I, ^{99}mTc, ^{133}Xe) with longer radioactive half-lives than those used in PET studies. SPECT is commonly used to provide measurements of cerebral blood flow (e.g., using the radiotracer ^{99}mTc-hexamethylpropyleneamine oxime [HMPAO]). SPECT also has

the potential to measure neuroreceptor processes. Techniques have been developed for estimating the density of acetylcholine presynaptic and muscarinic receptors and dopamine type 1 (D1), D2, and transporter receptors (Reiman, 1999). Compared with PET, SPECT studies are less expensive and more widely available. However, SPECT provides a smaller range of biochemical and physiological measurements; current imaging systems have a slightly lower spatial resolution, have lower sensitivity for detecting processes that occur in minute concentrations, and cannot acquire transmission images for the correction of radiation attenuation.

The longer-lived radioisotopes tend to be associated with slightly higher levels of radiation exposure. PET and SPECT are presently not available in Nigeria.

Magnetic Resonance Spectroscopy (MRS)

MR spectroscopy has been practiced across a wide variety of neuropathological conditions, including traumatic brain injury, neonatal hypoxic ischaemic brain injury, epilepsy, multiple sclerosis, infection and metabolic disorders. Arguably, the two conditions for which it has shown its greatest clinical potential are brain tumours and Alzheimer's disease (Currie et al., 2013). In psychiatry, the best-known application of proton MR spectroscopy for the measurement of psychoactive drugs in humans is the quantification of brain lithium (Komoroski, 1993), Gonzalez et al haven developed a method using proton MR spectroscopy that provides adequate measurement of brain lithium in humans (Gonzalez et al, 1993).

Transcranial Doppler (TCD) Ultrasound

Brain perfusion can also be studied using the transcranial Doppler (TCD) ultrasound. TCD can detect intracranial arterial stenoses and occlusions, as well as aneurysms (Arger and Debarilyoob, 2004). This imaging modality is useful in cases of vascular depression or late-life depression (McDonald et al., 2006).

Specific Imaging Findings in Major Psychiatric Disorders

The major drawback in the utilization of imaging modalities in psychiatric diagnosis has been from the reported inconsistent imaging findings from various studies and the small population studies (Amen & Flaherty, 2006, Andreasen, 1988). Yet it is a well-known fact that there is lack of coherence in the diagnostic criteria in psychiatry and efforts have been made over the last 2 decades to bring reliability and validity to psychiatric diagnosis. There is nonetheless a growing dissatisfaction with current diagnostic systems in psychiatry as Linden (2011) asserts that although the authors of the Diagnostic and Statistical Manual of Mental Disorders (DSM) (American Psychiatric Association, 2000) and the International Classification of Disease (World Health Organisation, 1992) were guided by the aim to make the diagnostic criteria more reliable, these criteria are still largely based on clinicians' assessments. Thus, patients whose symptoms are caused by very different biological processes may be subsumed under the same category, and some of them may receive inappropriate treatment as a consequence (Linden, 2012). There are as yet no reliable etiological models and biomarkers that are currently available for most psychiatric disorders (Linden, 2012).

Psychiatric diagnosis will thus continue to be based on descriptive criteria for the foreseeable future (First, 2010).

However with further studies more consistent imaging findings are emerging in the major psychiatric disorders in the last decade, especially as a result of the technological advances. The use of imaging in psychiatry has also been seen as a possible anti-stigma tool which may enhance the appreciation of mental illness as a real medical problem (Amen & Flaherty, 2006).

In psychiatry, fMRI has led to an improved understanding of the cerebral correlates of psychopathological phenomena, cognitive disorders, and genetic risk factors. Functional neuroimaging has been used to study the effects of treatment, not just with medications of different kinds, but also with electroconvulsive therapy, vagus nerve stimulation, and various types of psychotherapy. This use of psychological techniques (psychometry and psychotherapy) in combination with biological techniques (functional neuroimaging) typifies the trend in modern psychiatry toward the integration of these two approaches to mental illness, which were once widely held to be incompatible (Linden, 2006).

Possible clinical applications of functional neuroimaging in psychiatry include
1. Assessment of the effects of treatment,
2. Determination of differential indications for treatment,
3. Identification of target areas for neurophysiological treatment methods, either invasive (deep brain stimulation) or noninvasive (transcranial magnetic stimulation),
4. Development of neurobiologically inspired treatments such as neuropsychotherapy and neurofeedback (Linden, 2006).

Imaging Findings in Schizophrenia and Affective Disorders

Structural Imaging Methods

On structural imaging methods, which include CT and MRI, the following abnormalities have been consistently found in series of studies in **schizophrenia.**

1. Enlargement of the ventricles, the lateral ventricles most prominently.
2. Cortical atrophy as evidenced by sulci widening.
3. Reduction in cerebral cortical grey matter volume.
4. Cerebellar atrophy.
5. Reduction in volume of the hippocampal-amygdala complex.
6. Increased CSF in the ventricles

Dilatation of the lateral and third ventricles was one of the first and consistent neuroimaging findings in schizophrenia and a recent study confirmed the specificity of ventricular enlargement in schizophrenia compared to affective psychosis (Vu and Aizenstein, 2013).

Patients with schizophrenia as a group also show loss of local brain volume in numerous areas, including the language and auditory areas of the temporal lobe, the attention and visuomotor integration areas of the parietal lobe, the memory and executive areas of the frontal lobe and parts of the limbic system and the basal ganglia. Such volume loss has been reported in adolescent schizophrenics and found to progress at a rate of up to 4% per year (Vu and Aizenstein, 2013).

Several reports of gross unsuspected brain lesions on CT and MRI in patients presenting with schizophrenia abound in the literature. Three of such studies gave a prevalence of unsuspected focal abnormality on CT of between 6-9%.(Owens et al.,1980;Brugha et al., 1988)

The study of identical twins discordant for schizophrenia by Suddath et al (Suddath et al.,1990) also reported lateral and third ventricular enlargement as well as reduced volume of temporal lobe grey matter including hippocampus when compared with the unaffected co-twin.

Harvey et al and Zipursky et al showed similar findings of a small (6%) but significant reduction in diffuse cerebral cortical grey matter volume but not white matter volume in schizophrenic patients compared to controls taking into account all anthropometric and demographic variables (Harvey et al.,1993; Zipurski et al., 1994).

The grey matter volume reduction has been found to be specific to schizophrenia rather than psychosis in general and in two studies this finding was reported in schizophrenics but not in bipolar patients, compared with controls (Zipurski et al., 1994;Schlaepfer et al., 1994).

Reduced volume of the hippocampus-amygdala complex and para-hippocampal gyrus is now a fairly well replicated finding in schizophrenia compared to healthy volunteer controls and some studies claimed that this reduction is more pronounced on the left than the right side in schizophrenia (Suddath et al.,1990; Barta et al.1990;), but bilateral finding is more consistent. Reduced superior temporal gyrus volume on the left was found to be associated with auditory hallucinations and thought disorders (Barta et al.1990; Shenton et al.,1992).

At the presently time, MR neuroimaging is used in schizophrenia research as a tool to assess the anatomic manifestations of the psychiatric pathophysiologic processes underlying the disorder. Thus, structural brain imaging though non-diagnostic for schizophrenia, it is proving helpful in correlating physiologic changes to patient self-reported experiences of symptoms of the disease.

The structural imaging findings in affective disorders have not been as consistent as in schizophrenia. In late life depression, appearances of atrophy as well as an increased rate of subcortical white matter lesions have been shown (Rabins et al.,1991; Figiel et al.,1991). Lateral ventricular enlargement in depression is usually found in chronic cases and elderly patients as well as correlation with psychotic symptoms (Lewis, 1996; Beyer and Krishnan, 2002). Enlargement of the third ventricle in bipolar affective disorders has been linked to volume losses in the medial thalamic or hypothalamic areas that form the walls of the third ventricle (Strasser et al., 2005). Hypothalamic volume loss is of particular interest because of its possible implication in the prominent somatic and autonomic symptoms such as disturbed circadian clock present during both depressed and manic episodes.

Depressive symptoms occur frequently (in up to a third of cases) in stroke, traumatic brain injury or brain tumours, particularly those affecting the frontal lobe and basal ganglia (Linden and Fallgatter, 2009). Other brain disorders which commonly present with depression include multiple sclerosis and some systemic illnesses affecting the brain such as acquired immunodeficiency syndromes, thyroid disease or even heart failure (Angermann et al., 2007).

The following structural imaging findings have also been reported in affective disorders; reduced basal ganglia volumes, basal ganglia hyperintensities on MRI in depression as well as increased rates of sub-cortical hyperintensities in several studies of bipolar disorders, compared with controls (Krishnan et al. 1992; Dupont et al. 1990; Swayze et al.,1990).

Functional imaging findings

Functional magnetic resonance imaging (fMRI) neuroimaging investigations in schizophrenia have been used for a variety of purposes. These include shedding light on the underlying pathophysiology of the illness, understanding the neural basis of characteristic symptoms, aiding with diagnostic classification, predicting treatment outcome, and

understanding the effects of risk genes for the disorder (Pearlson, 2011).

The studies by Ingvar and Franzen observed abnormalities in blood flow in patients with schizophrenia, referred to as hypofrontality and this finding has been replicated by a number of investigators, but not by all (Ingvar and Franzen, 1974; Mathew et al., 1982; Gur et al.,1985; Weinberger et al., 1988).

The use of some frontal lobes challenging tests like continuous performance test and Wisconsin card sorting tests show increased blood flow in the frontal cortex in normal individuals as assessment of frontal lobe function, but non-response to challenging tests is noted in schizophrenics. Left hemispheric abnormalities have also been observed which is consistent with the language and auditory abnormalities observed in schizophrenia (Berman et al., 1993).

Neuroreceptor imaging using PET and SPECT have shown higher dopamine level in schizophrenia (Sedvall et al., 1986; Wagner Jr et al.,1983; Farde et al.,1985; Wong et al.,1986; Amen & Flaherty, 2006).

Mechanism of action of various antipsychotic drugs in schizophrenia have been studied with the dopamine D2 receptor occupancy using PET. D2 receptor blockage was demonstrated at clinical dosages of antipsychotic drugs (Farde et al., 1988).

As hippocampal volume reduction has also become a consistent structural abnormality in schizophrenia; abnormal hippocampal activity at rest, during experience of auditory hallucinations and during performance of memory retrieval tasks have been demonstrated (Heckers, 2001). Studies by Todtenkopf and Benes show more pronounced increase in hippocampal regional cerebral blood flow (rCBF) during a tone-recognition task in patients off antipsychotic medication, which confirms previous evidence that antipsychotic drugs normalize hippocampal dysfunction in schizophrenia (Todrenkopf and Benes, 1998).

Studies by Weinberger has also linked schizophrenia with genetic problem involved in the development and maintenance of hippocampal circuitry (Weinberger, 1999).

Dementia

This refers to disorders with cognitive impairment which consist of mild cognitive impairment (MCI), non-Alzheimer's and Alzheimer's dementia (AD).

Structural imaging

Dementia is the commonest area of application of structural brain imaging in psychiatry.

CT or MRI is usually requested in cases of pre-senile dementia to exclude focal organic brain disorders such as slow growing tumours, chronic subdural haemorrhage and normal pressure hydrocephalus.

Normal aging is accompanied with brain volume reduction of 5-10% by the age of 80 years, and associated lateral and third ventricular dilatation as well as cortical cerebral sulci enlargement. Therefore signs of cerebral atrophy alone without clinical features of dementia and other neuropsychological evaluation as well as EEG features is not diagnostic but follow-up scans showing progressive change is more diagnostic (Lewis,1996; Burns and Pearlson, 1994).

Structural imaging In Alzheimer's disease (AD) has shown progressive enlargement of lateral and third ventricles and cortical sulci, which is most marked in medial temporal lobe regions (Todrenkopf and Benes, 1998). Another promising distinguishing feature between elderly controls or depressives from Alzheimer's disease, is hippocampal atrophy on MRI , which was positive in 90% of cases studied (Heckers, 2001).

Functional imaging

The application of functional imaging in dementia has made it possible to differentiate AD from other types of dementia; AD being a more severe form of the disease.

Amyloid PET imaging is the most prominent among the functional imaging methods and it has been found useful in differentiating MCI from AD and predicting future outcomes of MCI as a possible early form of AD.

However amyloid PET positivity has been found to be age related and can also be seen in dementia with Lewy bodies and few other medical conditions such as amyloid angiopathy (Rowe et al., 2010; Morris et al., 2010; Gomperts et al., 2008; Edison et al., 2008). Therefore interpretation of amyloid PET positivity is expected to be in conjunction with proper psychiatric clinical evaluation and to follow the appropriate use criteria for amyloid PET imaging. (Keith et al., 2013)

Mild cognitive impairment (MCI) is believed to be a transitional phase before progression to Alzheimer's disease (AD), and this offers a window for therapeutic intervention to slow or halt disease progression (Pauwels et al., 2009).

The use of biomarkers in CSF such as beta amyloid (AB1-42) and phosphorylated tau (t Tau and pTau) has been reported to provide a sensitivity and specificity of > 80% in AD (Pauwels et al., 2009). The use of CSF and MRI biomarkers have also been shown to have prognostic value in predicting which MCI patient will develop AD in other studies (Vos et al., 2012; Andreasen and Blennow, 2005)

Amyloid imaging also has significant application in drug development for the treatment of AD (Mathis et al., 2007; Blennow et al., 2014).

There are several attempts on new treatment strategies of AD

based on the amyloid hypotheses (Shimada, 2014) one of such drugs is phenserine which is aiming to lower beta amyloid (AB) production (Greig et al., 2005; Thatte, 2000).

Recent study on effect of phenserine and other cholinesterase inhibitors on AD patients showed positive effects on cognition as well as changes in brain amyloid levels (Lahiri et al., 2000)

Multi-infarct dementia is another disorder which shows generalized cortical atrophy and radiological features of lacunar infarcts in about 70% of cases, which is similar to the findings in AD (Weinberger, 1999). However, location of the atrophic changes and other functional imaging findings as discussed above will differentiate this from AD

Current trends

In several articles, Amen and co-authors have argued for the value of SPECT in psychiatry, emphasizing its usefulness in complex and treatment-refractory cases (Amen et al. 2011; Amen, Willeumier & Johnson 2012). Amen (2006) asserts that brain imaging technology has already reached the point that is useful for making clinical diagnosis and help in treatment selection, adding that psychiatry remains the only medical specialty that rarely looks at the organ it treats (Amen, 2001; Amen, 2006; Amen & Flaherty, 2006). Neuroimaging has indeed been found most useful in neurological conditions like stroke, seizure disorders, tumours and head trauma, but is still a developing field in the diagnosis and management of psychiatric illnesses (Gupta et al. 2004). The Consensus Report of the APA Work Group on Neuroimaging Markers of Psychiatric Disorders stated that "there are currently no brain imaging biomarkers that are currently clinically useful for any diagnostic category in psychiatry" (First et al. 2012). The Work group concluded that "despite the invaluable leads that the neuroimaging studies have provided regarding the neurobiological bases for psychiatric disorders, they have yet to impact significantly the diagnosis or treatment of individual patients" (First et al. 2012).

Given all the work remaining to be done, the claims of clinics that they can reliably use structural or functional brain scans such as MRI, PET, SPECT, diffusion tensor imaging (DTI), or fMRI to help diagnose and choose treatment for a range of psychiatric disorders is without medical or scientific support (First et al.,2012; Farah and Gillihan, 2012). The APA Council on Children, Adolescents, and their Families asserts further that, "Although knowledge is increasing regarding specific pathways and specific brain areas involved in mental disease states, at present the use of brain imaging to study psychiatric disorders is still considered a research tool." and, "Specifically, no published investigation in the field has determined that any structural or functional brain abnormality is specific to a single psychiatric disorder. Additionally, imaging studies examine groups of patients and groups of healthy controls; therefore, findings may not apply to all individuals with a given disorder." (APA 2005). Mayberg (2012) added that "Such claims are beyond the scope of current research and give false hope to patients and their families dealing with a condition that is difficult to diagnose or treat".

Which Categories of Psychiatric Patient May Benefit From Imaging?

Definitely not all psychiatric patients will need to be imaged like in other medical conditions. Just like one of the advocates of imaging in psychiatry said; on a clear day radar is not necessary to land a plane, but radar is needed when there is trouble seeing the airport (Amen & Flaherty, 2006). In unclear cases, poor or non-response to treatment and those who can afford the available imaging modalities in our setting, imaging will definitely add to the patient's treatment in many ways. If a treatable organic cause is found, definitive treatment may result in cure and finding a structural abnormality may help with compliance. In AD early diagnosis has been linked with better outcome with therapy and possibility of planning for the future before the patient becomes completely incapacitated is also an advantage.

At the present time, it is only structural neuroimaging methods that are available in our setting. This is as a result of the high equipment cost of functional neuroimaging.

Indications for structural neuroimaging in patients with psychiatric symptoms include the following:

- New or first-onset psychiatric illness
- Recent or advancing cognitive dysfunction
- New or worsening instances of syncope, vertigo, loss of consciousness, etc.
- New-onset dementia
- Onset of any psychiatric problem (psychosis, affective disorder, personality change) in a patient > 50 years old
- A history of head trauma
- New, worsening, or altered pattern headaches
- New signs of brain pathology, e.g., seizure, paresis, or brain-related visual alteration
- Concerns about intracranial infection, inflammation, metastases, or increased pressure
- During an initial work-up for ECT (Park and Gonzalez, 2004).

CONCLUSION

The science of using neuroimaging techniques to diagnose psychiatric conditions is in a nascent stage (MacQueen, 2010). It must however be admitted that neuroimaging is making increasing contributions to multiple aspects of

clinical psychiatry, including differential diagnosis, prognosis, clinical management, and development of new interventions (Osuch and Williamson, 2006).

At the present, neuroimaging can contribute to psychiatric practice in the following ways:

· To exclude other causes that may lead to similar symptoms, such as space occupying lesions, cerebrovascular or inflammatory diseases.
· Improvement in therapy and more objective follow-up of patients.
· Consistent use of neuroimaging may eventually improve diagnosis in psychiatry and nosology of psychiatric disorders.
· Consistent use of neuroimaging and research may eventually lead to genetic markers and preventive treatment options.

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Demographic Determinants of Locus of Control among Medical Students in a Nigerian University

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ABSTRACT

Background: Locus of control (LOC) plays a major role in many aspects of human behaviour such as achievement motivation, success-orientation, self-control, social adjustment, independence and expectancy. This paper examined the demographic factors that determine locus of control among medical students in a Nigerian university.

Methods: This study utilized a cross-sectional design. Participants were drawn from two successive sets of final year medical students of 2010/2011 and 2011/2012 academic sessions of University of Benin. The Levenson Multidimensional Locus of Control Inventory and a Socio-demographic data collection sheet were used to collect data from 262 (183 males and 79 females) students selected through convenience sampling. Data were analyzed using the 16th version of the SPPS. Percentages, means, t-test and ANOVA were performed and the statistical level of significance was set at $P<0.05$.

Results: The male students had higher means scores than the female students on all the three dimensions of LOC. There were statistically significant differences between male and female students on the internal LOC and powerful other subscales ($p= 0.007$ and 0.048 respectively). The older students ($\geq$ 26 years) recorded higher and slightly higher means scores than the younger students (< 26 years) on the internal LOC and the powerful others subscales respectively, while the younger students had slightly higher means score on the chance control subscale. There was no statistically significant difference between the older and the younger students in any of the LOC domains (internal LOC, $p= 0.293$, chance subscale, $p= 0.848$, and powerful others subscale, $p= 0.814$). Students who were single recorded higher means score than the married students on all the LOC subscales but marital status had significant influence on only the internal LOC dimension ($p = 0.007$). Ethnicity did not have statistically significant influence on any of the LOC dimensions.

Conclusion: The findings of this study show that sex has significant influence on internal LOC and powerful others control while marital status significantly influence internal LOC. These findings could be of immense benefit to senior medical educators, mental health professionals, and counsellors, intending to improve the competence of future medical practitioners, help them cultivate the right mental attitude and a strong internal LOC.

Keywords: **Locus of control, sex, age, marital status, ethnicity, medical students**

INTRODUCTION

The objective of medical training is to advance well-informed, competent, and qualified physicians and the medical school programme has been developed to achieve these goals. Regrettably, manifestation of abnormal attitudes by the medical trainees could hamper the achievement of these goals. According to Georgina (2004), one of the most important factors for academic failure is the manifestation of an abnormal attitude. In other words, the whys and wherefores attributed to success and failure can determine expectations and behaviours which influence an individual's future success or failure. There is evidence to support the contention that a person's belief that situations are controlled by chance, fate, luck, or stronger people, an 'external locus of control', would result in behaviour different from that of a person who believes that he controls his fate by his own behaviour, an 'internal locus of control' (Rotter et al, 1961; Lefcourt, 1966; Rotter, 1966).

Locus of control (LOC) is defined as a persons' tendency to see events as being controlled internally or externally (Rotter, 1966; cited in Lloyd & Hastinhs, 2009). According to Rotter (1990), LOC refers to the extent to which someone believes that outcomes are based on his or her own actions or personal characteristics versus the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable. Individuals with more of an external LOC tend to believe that events in their lives are controlled by external forces over which they have no control, whereas an internal LOC is the belief that outcomes in one's life are under his/her own control (Rotter, 1990). Rotter (1990) proposed that individuals' personality is determined by having either internal locus of control (LOC) or external

LOC (Pervin, 1993; Graham & Weiner, 1996; Corr & Matthews, 2009). Both types of personality traits, internal or external LOC, create different motivational behaviours, tendencies and cognition.

Locus of control plays a key role in numerous aspects of human behaviour, such as achievement motivation, success-orientation, self-control, social adjustment, independence and expectancy (Almajali, 2012). It may also determine one's perceptions and expectation of success (Wise, 2005). Beck (1979) asserts that students with an internal LOC are more likely to do well in independent learning situations, while students with an external LOC will need additional reassurance and direction from the instructor. Asiedu-Appiah and Addai (2014) suggest that individuals with internal LOC do perform better than those with external LOC; Internals are seen to exert greater effort with the expectation that greater performance leads to reward, demonstrate better personnel professional success and, in general, perform better within the organisation. Besides, the LOC is a potential personality factor, which may have important roles in mental health. April et al (2012) argues that, with external LOC, individuals are more susceptible to depression and such people develop resistance to anti-depressive drugs. Those individuals also have reduced levels of happiness (April et al, 2012). According to American Psychiatric Association (2000), helplessness and hopelessness are the major indications of depression. Since hopelessness is directly linked to the beliefs by which individuals feel incapable to control the conditions and the consequences of their illnesses, it is accepted that people with external LOC suffer from hopelessness and, therefore, are at risk to become depressed (Field & Kruger, 2008).

It is important for future medical personnel in Nigeria to develop the right attitude as this portends important implication for their success in training and in practice. Furthermore, adaptive or maladaptive skills developed while in medical schools may lay the foundation for future professional adjustment or maladjustment (Bok & Needed, 1984). Therefore, it is important that they are given the right sustenance early in their training. We believe that this could be of immense benefit to the future doctors and their patients. Therefore, this study aims to identify those demographic factors that may be relevant to LOC so as to develop appropriate intervention to help medical students develop the right attitudes.

The relationship between sex and LOC has been examined in the literature. According to Seemann (2008), the anticipated trend is that males should have a more internal LOC, while females should have a more external LOC. This is based on the belief that males are more independent than females. However, the literature has not constantly supported this tendency. Levenson (1981) notes that males have a more external LOC than females. Cairn et al (1990) claims the opposite, that males have a more internal LOC than females. The leading inclination in the literature is that males have a more internal LOC than females (Chubb & Fertman, 1997). Archer and Waterman (1988) appraised 22 studies for gender differences on several variables, including LOC. In 15 of the studies, no gender differences were found; in six studies, the males were more internal; and in one study, the females were more internal. Mueller (2004), using survey statistics collected from university students in seventeen countries, found no statistical difference between men and women in terms of LOC. Sherman et al (1997), Smith et al (1997), and Costa et al (2001),

among others, found gender differences in LOC. In these studies, women tended to be external, while men tended to be internal. Likewise et al (2005) found that men and women who participated in their survey differed in their personality traits; men, on the average, were more internal than the women. In Nigeria, Mkpae (2014) found that males were more internally controlled than females.

The difference between man and woman in perceived LOC may be particularly significant in the light of the relationship between LOC and stress. In previous studies, external LOC has been associated with increased level of stress. Linn and Zepa (1984) found that medical students with a more external LOC reported more unfavourable stress than students with a more internal LOC. Similarly, in a study of practising physicians by May and Revicki (1985), external LOC was correlated with high levels of professional stress.

Age has also been found to have a strong relationship with LOC. Schieman (2001) avers that an individual's LOC changes as he/she ages, explaining that, as people get older, they lose their sense of control. Similarly, Aldwin and Gilmer (2004) note that it is sometimes assumed that, as people age, they will become less internal and more external, but facts have been confusing. Newhouse (1974) discovered that older children were significantly more likely to admit blame for failure and less praise for success than are younger children. Using Rotters' scale, Lao (1974), as cited in Lefcourt (1981) found that there is a growing sense of worth from youth to childhood, signifying that attributional modes alter with age, possibly as a result of learning. Maqud (2010) who studied LOC among Nigerian adolescents discovered that LOC scores (internal/external) were neither significantly associated with ages

nor with their socioeconomic backgrounds.

This study, therefore, addressed the following hypotheses: (i) male medical students will score significantly higher on the three dimensions of LOC (internal, chance, and powerful others) than the female students; (ii) students who were younger in age will score significantly higher on the internal orientations, chance control, and powerful others subscale than students who were older in age; (iii) marital status will have a significant effect on LOC; (iv) ethnicity (Edo, Urhobo, Ibo, Yoruba) will significantly affect LOC among medical students.

METHODS

Study design and Participants

This cross-sectional study was conducted at the University of Benin Teaching Hospital (UBTH), Benin City, Nigeria. A convenience sample composed of 262 final year (600 level) medical students (183 males, 79 females) drawn from two successive academic sessions (2010/2011 and 2011/2012) participated in the study.

Measures

Demographic questionnaire: A demographic questionnaire was developed to elicit information on participants' age, sex, religion, marital status and ethnicity.

Levenson Multidimensional Locus of Control Inventory: Locus of control was measured using Levenson Multidimensional Locus of Control Inventory (Levenson, 1973). This instrument is one of the most extensively used general LOC scales (Furnham & Steele, 1993). This scale is three dimensional, consisting of 24 items and three independent scales (that is, internal, chance scales, and powerful others). Each item is scored based on a 6-point Likert-type scale. Total scores are computed for each scale

independently. Leverson (1973) reported a coefficient alpha scores of .67 for internal scale, .82 for the powerful others scale, and .79 for the chance scale. Test-retest reliabilities for a one-week and seven-week period were both in the .60 to .79 range (Levenson, 1973). In the current study, an acceptable internal consistency reliability scores of .65, .74 and .71 have been established for internal, chance, and powerful others subscales, respectively.

Ethical Issues

The study was approved by the Ethics and Research Committee of the University of Benin Teaching Hospital prior to data collection. The purpose of the study was explained to the students and they were assured of the confidentiality of information volunteered by them. Informed verbal consent was obtained from them and they were informed of their right to withdraw their participation at any time without penalty. The students were not given or promised any reward for participating in the study.

Procedure

Data collection took place in the students' classroom after their regularly scheduled class time. Before the questionnaires were administered, the study was explained to them. A cover sheet explaining that the questions were related to the participants' own thoughts and feelings was on the front page of each questionnaire; opportunity to ask questions was provided and clarifications were made. The questionnaires, which were self administered, were distributed to all the students in the class and none of them declined participation. Completion time ranged from 6 to 10 minutes. Completed questionnaires were retrieved and checked for correctness. The same procedure was replicated for the 2011/2012 academic session.

Data Analysis

Data were analyzed using the 16th version of SPPS. Percentages and means were calculated, the first three hypotheses were tested using the t-test for independent sample while the fourth hypotheses was tested using one-way ANOVA. Reliability assessment of the dependent scales (Cronbach's alpha) was performed. The statistical level of significance was set at $P<0.05$.

RESULTS

The total number of participants available for statistical analysis was 262. Of the 262 participants 135 (51.5%) were drawn from 2010/2011 academic session and 127 (48.5%) from 2011/2012 academic session. The mean age of the participants was 26.20 years (SD=2.65). Although a large proportion of the participants were Edo (42.7%), several participants were Urhobo (29.8%), Ibo (16.4%), Yoruba (7.6%), or from other (Ika, ijaw, and Etsako) ethnic backgrounds (3.4%). Majority of the students were single (93.9%), whereas a smaller proportion were married (6.1%). Most of the students were Christians (98.9%), while minority were Muslims (1.1%). (Table1).

The male students had higher mean scores than the female students on all the three subscales (internal LOC, Chance control, and Powerful others control), and sex significantly influenced internal locus of control (t = 2.69, P = 0.007) and powerful others control (t=1.99, P =0.048) but does not have significant influence on chance control (t=163, P = 0.104).

Older medical students (age ≥26 years) scored higher on internal locus of control and powerful others subscales than the younger students (age<26 years), while younger students scored higher on chance control subscale than the older students. However age did not

have significant association with any of the LOC domain (internal LOC, t=-1.05, *P*= 0.293; chance control, t=0.24, *P*=0.814; and powerful others control t=-0.19, *P*=0. 848).

Students who were single had higher mean scores than the married students on all the subscales but the difference was significant on only the internal LOC subscale (t=2.70, *P*= 0.007) (Table2).

Students from the different ethnic groups did not differ significantly on any of the subscales (internal LOC, F= 0.43, *P*=0.784; chance control F=1.52, *P*=0.197; and powerful others control F=0.68, *P*=0.607) (Table 3).

Table 1. Demographic characteristics of Participants

Sample Demographics		N	(%)
Academic	2010/2011	135	51.5
Sessions	2011/2012	127	48.5
	Male	183	69.8
Sex	Female	99	30.2
	Older	132	50.4
Age	Younger	130	49.6
	Single	246	93.9
Marital Status	Married	16	6.1
	Edo	112	42.7
	Urhobo	78	29.8
Ethnicity	Ibo	43	16.4
	Yoruba	20	7.6
	Other Ethnicity	9	3.4
Religion	Christianity	259	98.9
	Islam	3	1.1

Table 2. Locus of Control According to Sex, Age and Marital Status

Demographic Variables	Internal LOC $\bar{x}$ (SD)	t	p	Chance Control $\bar{x}$ (SD)	t	p	Powerful Others Control $\bar{x}$ (SD)	t	*p*
Sex									
Male	33.82(7.79)	2.69	0.007	12.92(9.51)	1.63	0.104	10.28(8.39)	1.99	0.048
Female	30.89(8.88)			10.94(7.77)			8.16(6.59)		
Age									
<26 yrs old	32.39(8.41)	1.05	0.293	12.45(9.39)	0.24	0.814	9.55(7.91)	0.19	0.848
>26 yrs old	33.46(8.01)			12.19(8.73)			9.73(7.99)		
Marital Status									
Single	33.28((7.97)	2.70	0.007	12.59(9.16)	1.89	0.059	9.82(8.08)	1.44	0.150
Married	27.62(10.24)			8.19(5.53)			6.83(4.52)		

Table 3. Locus of Control According to Ethnicity

Ethnicity	Internal LOC (SD)	F	DF	P	Chance control (SD)	F	DF	P	Powerful Others (SD)	F	DF	*P*
Edo	33.05 (8.30)	43	4	0.784	11.85 (9.85)	1.52	4	0.197	10.31 ( )	0.68	4	0.607
Urobo	33.46 (8.03)				11.03 (7.98)				8.50 (6.69)			
Ibo	32.81 (8.59)				14.40 (9.26)				9.51 (6.29)			
Yoruba	31.55 (5.35)				14.20 (7.64)				10.00 (7.44)			
Others	32.44 (10.27)				15.33 (7.97)				11.00 (7.04)			

DISCUSSION

The overall aim of this study was to examine the demographic determinants of LOC among medical students in a Nigerian university. The demographic factors considered were sex, age, marital status, and ethnicity. We found support for the notion that the male medical students reported higher degree of internal LOC and powerful others control than the female students, while there was no significant difference between male and female students based on chance control tendencies. This result is in tandem with some other observations concerning sex and LOC; Cairn et al (1990) claim that males have a more internal LOC than females. Chubb et al (1997) assert that the major tendency in the literature is that males have greater internal LOC than females. Further, Linz and Semykina (2005) observe that men, normally, are more internal than women. The result from this study corroborates earlier findings in Nigeria; Mpae (2014) avers that male students were more internally controlled than female students. Morowatisharifaba et al (2010)

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reported that male significantly outscored women on the basis of internal LOC. Contrary to our findings, Morowatisharifaba et al (2010) also found that, on the basis of chance, women significantly outscored men, while there was no statistically significant difference between male and female on the basis of powerful others LOC. An explanation of why male students reported higher degree of internal LOC and powerful others control than the female students may be that individuals in Western culture, including Nigeria, are socialised to assess females as less important than males. Consequently, males estimate themselves as powerful and independent. Conversely, females view themselves as weak and dependent upon males (Seemann, 2008). For the result on powerful others, it may have to do with the mentality of average Nigerian students that their success may be dependent on the relationship between them and their teachers. To them, their success in school is dependent not only on academic success, but also on their character, which is going to be judged and assessed by the teacher. Therefore, the teacher is a powerful person that must be considered. This belief may be common among the male students.

The findings from this research revealed no significant relationship between age and LOC among medical students. This finding supports the assertion of Maquid (2010) that LOC scores were not significantly associated with ages of Nigerian adolescents. Nevertheless, Schieman (2001) has argued that an individual's LOC alters as he/she ages. In other words, as a person gets older, he/she loses his/her sense of control. This assertion is further confirmed by Aldwin and Gilmer (2004) and Johnson et al. (2001), who argue that, as people age, they become less internal and more

external. The methodology adopted in this study might have played a role in our findings. The age of the students were dichotomised into just two levels. It is possible that there might have been a significant effect if the age had been manipulated into three or more levels. Another possible explanation could also be that the students who participated in this research were from the same class, almost in the same age group, with very few in their thirties and one that was forty years old.

Further, this study found a significant relationship between marital status and internal LOC with students who were single recording significantly higher internal LOC tendencies than the married medical students. There was no significant influence of marital status on chance control and powerful others control belief. In a related study, Asiedu-Appiah and Addai (2014), while investigating the causal relationship between employees' LOC and contextual performance, claim that there was no significant relationship between LOC and marital status. Fuscaldi et al (2011) also found no statistical differences in the comparison between marital status and LOC. It is important to note that, while these findings (Fuscaldi et al, 2011; Asiedu-Appiah & Addai, 2014) were in line with and similar to chance control and powerful others belief, this was not the same for internal LOC. This difference in marital status based on internality may be noteworthy in the light of the link between LOC and stress. Since previous studies have established an association between external LOC and stress (Linn & Zepa, 1984; May & Revicki, 1985), it may be that the married students were overwhelmed with the stressors of combining dual roles of being a husband/wife and at the same time a medical student.

This study did not provide support for the last hypothesis, that there will be a significant difference

among the different ethnic groups based on LOC. The finding of our study extends that of Maqsud (2010), while investigating LOC among Nigeria adolescents and their ethnic membership; found that there were no significant differences in belief in personal control of Hausa, Ibo, and Yoruba male adolescents. An explanation of why there was no significant difference among the students of Edo, Ibo, Urhobo and Yoruba origin based on LOC may be as a result of the students having stayed together in a particular location for about six years; it is possible that they have all imbibed similar affiliations, beliefs, and attitudes and ways of life. Even though those students might have been of different cultural backgrounds, this study has proved that ethnicity does not determine LOC among Nigerian medical students. Future research may be required to target and compare medical students from each of these ethnic groups, who are actually resident and schooling in their respective areas.

In conclusion, this study found that males had a more internal LOC than females, the single had a more internal LOC than the married, while age and ethnicity had no significant relationship with LOC. These findings could be of immense benefit to senior medical educators, mental health professionals, counsellors, who have the responsibility to help the students cultivate the right mental attitude and develop a strong internal LOC. The literature suggests that it is possible to assist students to become internals, and this can enhance their efforts to achieve better (Beck, 1979; Findley & Copper, 1983; Mandy, 2005). Inspiring medical personnel to develop the right mental attitude will help them appreciate and assume control over their own fate at work. Towards achieving this goal, self-awareness programmes and workshops can be organized

periodically for the students, as part of their training in the medical school, aimed at helping them (especially female and married students) to develop the right mental attitude towards their training and future practice.

Acknowledgement

We thank the students who participated in the study for their cooperation.

Limitations of the study

The relatively small scale of the study, the use of non probability sampling technique, and the non validation of the instrument used in defining locus of control in student population are the main limitations of the study, thus necessitating a cautious interpretation of the results of the study.

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An Appraisal of the Mental Health Curriculum for Undergraduates in Nigerian Medical Schools.

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ABSTRACT

Background: Nigerian Medical Schools need to attain international best practices in teaching psychiatry. The supply or availability of mental health professionals demands strong medical school psychiatry curriculum. The study therefore aims to investigate the level of adherence of Nigerian Medical Schools to the requirements of the regulatory bodies with regard to the teaching of Psychiatry at the undergraduate level.
Methods: A short seven item questionnaire was distributed to examiners in the Faculty of Psychiatry in April 2011, during the Fellowship Examination of the West African College of Physicians.
Results: Thirteen medical schools, spread across the six geopolitical zones of Nigeria were represented. Ten of the schools (79.6%) reported having a separate department of psychiatry. Only five of the medical schools provide some teaching in behavioural sciences during the preclinical years. Seven schools have no ward round teaching, most have neither tutorials nor seminars and majority (84.6%) do not conduct an independent examination in psychiatry.
Conclusions: Ppsychiatry curriculum is being selectively implemented in Nigerian Medical Schools.

K e y w o r d s :   P s y c h i a t r y , Curriculum, Medical schools, Nigeria, Teaching

INTRODUCTION

Mental disorders make a substantial independent contribution to the burden of disease worldwide (Prince M et al, 2007). The WHO initiated World Mental Health Survey, which is the largest global prevalence study so far, reported an inter-quartile range (IQR; 25th–75th percentiles across countries) of lifetime prevalence estimates of any DSM-IV mental disorder to be 18.1–36.1% (Kessler et al, 2009). Gureje et al (2008) used a nationally representative sample to estimate the prevalence of mental disorders in Nigeria, covering all the geopolitical regions that make up nearly 60% of the country's population. They reported common lifetime DSM IV occurring mental disorders anxiety (6.5%), mood disorder (3.1%) and substance use (3.7%) to have high comorbidity.

Yet all over the world, mental health experts, especially psychiatrists are grossly in short supply. For example, according to the WHO Mental Health Atlas, there is a median rate of 0.05 psychiatrists (per 100,000 population) in low income countries, 0.54 in lower-middle income countries, 2.03 in upper-middle income countries, and 8.59 in high income countries (WHO, 2011). In a World Health Organization Assessment Instrument for Mental Health Systems (WHO-AIMS) survey of mental health resources and services in Nigeria, Gureje (2006), estimated that there were only 0.15 psychiatrists per 100,000, 0.07 psychologists per 100,000 , 0.12 social workers per 100,000 and 0.05 occupational therapists per 100,000. The report opined that the same picture holds true for other countries in Africa including South Africa, Egypt, and Kenya. There is no evidence that the situation has shown any appreciable change since that report.

A worldwide long term plan must include increasing and ensuring the adequate supply of well-trained mental health professionals with psychiatrists at the lead. This training should have its foundation in the medical school psychiatry curriculum. A strong medical school psychiatry curriculum will have at least two important implications. First, the products, irrespective of whether they remain as general practitioners or become specialists in other fields of medicine, will continue to offer valuable mental health services, through proper identification, appropriate treatment and referral. Second, with adequate exposure and pragmatic orientation to psychiatry at the undergraduate medical school level, many more medical graduates will be more likely to choose to study and specialise in the field.

According to the report by Murthy and Khandelwal (2007), Behavioural Sciences are taught in the first year of undergraduate studies in the United States of America. During the first two years, there are about 60 hours of teaching in various psychosocial areas. In the third year, 30 hours are devoted to practical teaching of Psychiatry. In the fourth year, there is a full-time posting of 8 weeks of Psychiatry clerkship compared to 8 weeks each allotted for Obstetrics and Paediatrics and 12 weeks for both Medicine and Surgery. In Denmark, the teaching of psychiatry acquired the status of a major clinical subject during the fifties, rising to third place

after Surgery and Medicine and ahead of Paediatrics and Obstetrics and Gynaecology. Presently, there are approximately 240 hours of Psychiatry teaching in a six-year course, comprising about 7% of the total time. It is a major clinical discipline with a qualifying examination at the end of the course.

Currently in Britain, 80 hours are devoted to the behavioural science course during basic medical science teaching. During the clinical course, students first learn interview skills and psychiatry history-taking once a day during the 36 weeks and then attend a full-time Psychiatry clerkship for 3 months. This is usually followed by a university examination as in other subjects (Murthy and Khandelwal, 2007).

In that report the authors explained that there is a greater emphasis in Malaysia on the teaching of Psychiatry since the introduction of a new curriculum in the late seventies. Psychiatric aspects of various clinical disorders are discussed from the first year, followed by separate courses in Community Psychiatry and General Psychiatry. Most of the clinical teaching takes place in the fourth and fifth years of the course and consists of lectures, seminars and tutorials. The total teaching involves approximately 100 hours.

Murthy and Khandelwal (2007) concluded that Sri Lanka and Nepal have expanded the duration of Psychiatry teaching, revised undergraduate Psychiatry curriculum and made Psychiatry a qualifying subject for the final year undergraduate medical degree examination.

Ovuga, Buga and Oboke (2002) reported that in Uganda, Psychology and Sociology are taught in the first year followed by an integrated course in applied psychology. The principles of social work are taught in the second year while General and social psychiatry take place in the fourth year for five weeks with an examination, both

clinical and written. In fifth year, further clinical skill are taught and examined. Njenga (2002) reported that in East African medical schools, including Kenya and Uganda, the undergraduate training course, has a mental health module in each of the five years.

According to Emsley (2001), the national regulatory body for medical education and practice in South Africa placed psychiatry as the fifth major specialty for undergraduate medical schools (medicine, surgery, obstetric/gynaecology, paediatrics and psychiatry). Adequate training and exposure in psychiatry is ensured throughout the medical school curriculum. In the final year, another compulsory rotation and examination in psychiatry take place. Following the establishment of the University of Ibadan medical school, Lambo (1961) argued that the time allotted to psychiatry was inadequate. He proposed that in the preclinical years, principles of social sciences especially sociology, psychology and anthropology should be taught. Lambo was of the opinion that psychiatrists who are also trained in the social sciences would be in a better position to teach the social sciences to medical students. Lambo suggested that the sociological sciences be taught at preclinical years and should have the same weighting as anatomy and physiology in the first professional examination (so called second MB). He concluded that applied psychology, general principles of psychopathology, elements of psychotherapy, and clinical psychiatry should be taught at the early clinical stage.

In Nigeria, the National Universities Commission (NUC) (2007) recommends that Psychiatry be taught in third and fourth years of the six year basic medical undergraduate education. As a minimum, psychiatry should be a two unit medicine course code 409 to be examinable. Similarly, the Medical

and Dental Council of Nigeria (MDCN) (2006) requires that there must be a minimum of five psychiatrists, including trainee psychiatrists, in the Department of Mental Health. The Council recommends that in the Preclinical years of the medical education programme, about 38 lectures of medical psychology should be given in the first or second year. In the same second year, besides the core basic medical sciences (anatomy, biochemistry and physiology), the history of Medicine, Human Ecology, Medical Sociology and Introduction to Descriptive Biostatistics are to be taught. Eight (8) weeks are required to teach clinical Psychiatry. It should be taught after the Junior Clerkship in medicine and surgery. As a minimum, the MDCN requires that every medical school should have**:**

* A Department of Psychiatry (or Mental Health)
* A separate ward facility for short term care of acute patients.
* Collaborative mental health practice with a primary health care centre.
* Link with long stay Psychiatric Institutions in the locality.

We aimed to investigate the level of adherence of Nigerian medical schools to the requirements of the regulatory bodies and how they compare with other similar institutions in other parts of the world with respect to psychiatry.

METHODS

We designed a short seven item questionnaire (appendix) that was distributed to examiners in the Faculty of Psychiatry during the Fellowship examination of the West African College of Physicians of March/ April 2011. The questionnaire asked only about the locations of the Universities and avoided direct identification of institutions. Questionnaires were distributed to participating examiners via convenience method

as they came in contact with the research team. The participants were not required to write their personal names and in any institution where there was more than one examiner, the more senior examiner was approached to participate in the survey.

The 13 completed questionnaires out of 18 distributed were retrieved during the examiners' tea break. The results have been presented using only descriptive analysis.

Participants responded to questions such as:

* Whether psychiatry (mental health) was a separate Department.
* Credit load, indicated as hours per week, of behavioural sciences taught in the preclinical years.
* Credit load, indicated as hours per week, of medical psychology taught in the preclinical years.
* Credit load, indicated as hours per week, of sociology or other basic mental health sciences taught in the preclinical years.
* The methods of teaching: didactic lectures, out-patient clinics, ward rounds, seminars, tutorials, psychotherapy sessions and others.
* Total duration of clinical psychiatry rotation in weeks.
* Whether there is a separate examination for Psychiatry.
* Finally the questionnaire asked about the proportion of the final examinations marks allocated to psychiatry in cases where psychiatry examination is taken as part of another course such as internal medicine.

RESULTS

Thirteen medical schools, spread across all the six geopolitical zones of Nigeria were represented. Ten of the schools (79.6%) reported having a separate department of psychiatry (mental health) while the rest have

psychiatry domiciled in internal medicine. Only five of the medical schools (table 1a – 1c) provide some teaching in behavioural sciences. This is done for only about an hour a week for some two to four weeks during the preclinical years. There is virtually no teaching in medical psychology and sociology in most of the medical schools.

While three schools (table 3a – 3e) have no didactic teaching, six have no clinic experience as part of the clinical psychiatry programme. Seven schools have no ward round teaching. Similarly, most of the

schools have neither tutorials nor seminars. The majority of the surveyed medical schools do not conduct an independent examination in psychiatry (table 4). Only two medical schools have a full-fledged psychiatry examination not tied to any other course (internal medicine).

In the medical schools where psychiatry is examined as part of internal medicine, psychiatry contributes between less than five and fifteen or less per cent to the (final) year undergraduate exit medical degree examination.

Table 1a–1c. Distribution of the participating medical schools according to their programme in the basic sciences relevant to mental health. (N = 13).

SUBJECT	HOURS PER WEEK	N (%)
BEHAVIOURAL SCIENCES	0	8 (61.5)
	1	3 (23.1)
	2	2 (15.4)
SUBJECT	HOURS PER WEEK	N (%)
MEDICAL PSYCHOLOGY	0	11 (84.6)
	1	2 (15.4)
SUBJECT	HOURS PER WEEK	N (%)
SOCIOLOGY	0	11 (84.6)
	1	2 (15.4)

Table 2. Distribution of the participating medical schools according to duration of rotation in clinical psychiatry at the clinical years. (N = 13)

DURATION IN WEEKS	N (%)
0	1 (7.7)
2	2 (15.4)
4	6 (46.1)
6	3 (23.1)
8	1 (7.7)

Table 3a–3e. Distribution of the medical schools by the various teaching methods and time allocation of each method (N = 13)

TEACHING METHOD	HOURS PER WEEK	N (%)
DIDACTIC	0	3 (23.1)
	1	3 (23.1)
	3	4 (30.7)
	6	2 (15.4)
	8	1 (7.7)
TEACHING METHOD	HOURS PER WEEK	N (%)
SEMINARS	0	9 (69.2)
	1	2 (15.4)
	2	2 (15.4)

TEACHING METHOD	HOURS PER WEEK	N (%)
CLINICS	0	6 (46.1)
	1	1 (7.7)
	2	1 (7.7)
	3	1 (7.7)
	4	1 (7.7)
	8	1 (7.7)
	12	2 (15.4)

TEACHING METHOD	HOURS PER WEEK	N (%)
WARD ROUNDS	0	7 (53.8)
	1	1 (7.7)
	2	1 (7.7)
	3	1 (7.7)
	4	2 (15.4)
	8	1 (7.7)

TEACHING METHOD	HOURS PER WEEK	N (%)
TUTORIALS	0	7 (53.8)
	1	3 (23.1)
	2	3 (23.1)

Table 4. Distribution of the medical schools according to the contribution of psychiatry to the final exit MB examination marks

PERCENTAGE CONTRIBUTION	N (%)
0	1 (7.7)
1 – 4	1 (7.7)
5 – 9	2 (15.4)
10 – 15	7 (53.8)
NA	2 (15.4)

NA = COULD NOT GIVE ANY ESTIMATE

APPENDIX

Dear Sir/madam,
This questionnaire seeks to know how the teaching of Psychiatry takes place in your institution. Kindly respond to all the questions. Your name and that of the institution is not required.

1) Location of institution...
2) Is psychiatry (mental health) a separate Department in your institution? Yes ☐ No ☐
3) What is the credit load in terms of hours per week, of behavioural sciences taught in the preclinical years? ....
4) What is the credit load in terms of hours per week, of medical psychology taught in the preclinical years? ....
5) What is the credit load in terms of hours per week, of sociology taught in the preclinical years? ....
6) What is the credit load in terms of hours per week, of any other basic mental health science (different from 2 - 4) taught in the preclinical years? ....
7) Tick the applicable methods of teaching and indicate credit load in terms of hours per week:
   (a) Didactic lectures........ (b) Clinics....... (c) Ward rounds....... (d) Seminars........
   (e) Tutorials......... (f) Psychotherapy sessions.......... (g) Others (specify).............
8) Indicate total duration of clinical psychiatry rotation in weeks.............
9) Is there a separate exit exam examination for Psychiatry? Yes ☐ No ☐
10) Indicate proportion of the final MBBS exist examination marks allocated to psychiatry in cases where psychiatry examination is taken as part of another course such as internal medicine................

DISCUSSION

It is easily seen that most medical schools in Nigeria do not come anything near the basic minimum standards required by the MDCN regarding mental health in the undergraduate medical degree programme. Close to a quarter of the surveyed schools do not have a separate department of mental health. In the majority of the schools (62%-85%) surveyed, there is virtual absence of any programme in the basic social sciences relevant to mental health. This suggests that there is a very weak foundation from the outset. The medical school curriculum as indeed any other academic and or professional curriculum is drawn in a way to enable trainees have a graded stepped learning procedure that makes courses taught at higher levels dependent on those taught at lower levels. Once there is a faulty beginning, this can be very difficult to remedy. Both Lambo (1961) and MDCN, for good reasons laid much emphasis on the basic social sciences relevant to psychiatry. As already stated, Lambo (1961) argued that the social sciences at the preclinical years should have the same weight in the first professional examination (second MB) as anatomy and physiology.

It is not clear why the basic social sciences do not feature very well in the preclinical years of Nigerian medical schools. It is possible that lack of personnel, competing courses, and lack of enthusiasm on the part of the stake holders, among other factors partly contribute to the situation. In general, we know that when a new medical school is established, the curriculum depends largely on the interest, knowledge and philosophy of the pioneer teaching staffers. General regulatory and statutory requirements such as provided by MDCN and NUC ought to protect against the situation where curriculum will depend on the interest and whims of (pioneer) staffers. If this scenario is allowed, psychiatry may never be part of the medical school curriculum where the Provost, Dean, or even the Vice Chancellor "hate" or do not know the importance of the subject. At all times, curricular should be a reflection of statutory requirements, irrespective of who draws the curricular.

It is general knowledge that some (new) medical schools do not

have any academic staff at all for mental health. Sometimes these schools may get a psychiatrist to 'demonstrate' psychiatry to medical students. About 69% of the surveyed schools have between four and six weeks of clinical psychiatry rotation. This is much less than what obtains in many UK and US medical schools where the same rotation lasts for about three or more months, however, it is very much in keeping with a number of medical schools elsewhere in the world (Murthy and Khandelwal, 2007).

It is not clear how the schools arrived at the percentage or proportion of the (final year) examination marks allocated to psychiatry. Excluding the basic social sciences, both the NUC and MDCN requirements for the teaching of clinical psychiatry, implies that psychiatry will take no less than twenty percent of the period allocated to internal medicine. If this should be the case, it would be expected that marks allocated to courses in medicine would be logically proportional to the teaching (credit) load allocated to the course. Yet in the present situation no medical school combining its psychiatry examination with internal medicine makes a contribution of a fifth of the total marks in the internal medicine examination. It could be that at the beginning of the Departments or Faculties some of the decisions were taken more or less arbitrarily.

In some situations, academic staffs employed in Nigerian universities do not have any clinical responsibility with the traditional attached teaching hospital. On the other hand the teaching hospital may hire full time clinical consultants who have no academic responsibility with the university. In this kind of scenario, the 'university only' staffer delivers only (didactic) lectures to medical students but has no access to clinical materials. Although the MDCN and NUC require that as a

minimum every mental health department must have separate ward admission beds dedicated to psychiatry in the teaching hospital, there are medical schools without psychiatry admission beds at all in the teaching hospitals. In a situation where a psychiatrist is only a university staff with no hospital appointment, it becomes understandable how medical students can have only lectures without clinics or ward rounds. A full time hospital consultant on the other hand is not obliged to teach medical students.

It is argued that the teaching of psychiatry as perhaps indeed other medical courses should be varied to have small group teaching, seminars, tutorials, ward rounds, clinics, demonstrations etc (Dogra et al,2008; Karim et al, 2009; Wilson and Eagles, 2008; Ring et al,1999). Manley (2004) contends that although many factors affect medical students' career choices, study after study, however, has shown that the single greatest factor is the quality of teaching, particularly during the clerkship. This is relevant to the duration of psychiatry rotation.

Marimuttu and Chandwani (2012) are of the opinion that in the UK and other parts of the world, recruitment into psychiatry has lagged behind other specialties for some time. They argue that undergraduate teaching of psychiatry is key to recruitment.

Murthy and Khandelwal (2007) summarized three main reasons that show why psychiatry should occupy place of pride in medical school curriculum which we reproduce here. First, the general approach of Psychiatry which stresses the unity of body and mind is important in the whole of medical practice. Second, skills that are learned in Psychiatry are important for all doctors: for example, the ability to form a good relationship with a patient, to assess the mental state, and to convey distressing information. Third psychiatric

problems are common among patients seen by doctors working in all branches of medicine.

In 1998, the World Psychiatric Association (WPA), along with the World Federation of Medical Education (WFME) through a core curriculum committee, developed detailed guidelines for the "Core Curriculum in Psychiatry for Medical Students" (WPA, 1998). The basic minimum requirements by the MDCN are in keeping with this global document.

In 2012 USAID, through its 'Health Systems 20/20 Project', facilitated the cooperation between the Medical & Dental Council of Nigeria (MDCN), the Nigerian Universities' Commission (NUC), some individual Universities in Nigeria, Nigerian Medical Association , the Nigerian Dental Association, "Advisory Committee on Undergraduate Medical & Dental Curriculum," Nigerians in the Diaspora through the Association of Nigerian Physicians in the Americas (ANPA) and the Medical Association of Nigerian Physicians across Great Britain (MANSAG), to produce a comprehensive review to serve as a national template of the undergraduate medical curriculum for Nigerian Medical schools (Federal Ministry of Health of Nigeria, Health Systems 20/20 Project 2012). . In the template, under the integrated sciences for medicine, psychiatry is clearly separated from internal medicine and is allotted eight weeks, excluding psychology / social sciences relevant to psychiatry to be taught in the first and second semesters of the second year and the first semester of the third year.

The rotation in psychiatry is broken into two: psychiatry one (I) to be taught in the second semester of the fifth year and Psychiatry two (II) to be taught in the first semester of the sixth year. The template prescribes four courses in the final year examination: completely separating Psychiatry from

Preventive/ social medicine, Medicine and Surgery.

In our stud, only two medical schools reported having separate examinations in psychiatry. This new template is yet to be impended in most of the Nigerian Medical schools.

CONCLUSION

While the NUC and MDCN establish the standard for training, basic minimum standards are not the best but are exactly what they are: *minimum*. However, by strictly adhering to these minimum standards, not only will Nigerian medical schools strive to attain to international best practices in teaching psychiatry, but they will be securing the future of coming generations for their health which cannot exist without mental health.

The most recent curriculum review for Nigerian medical schools rightly gives psychiatry its deserved priority and every medical school in the country must strive to attain the set goals.

We need to point out that our study has a number of limitations. First, while there are well over twenty medical schools in Nigeria, we surveyed only thirteen. However, we covered medical schools from the six geopolitical zones of the country. Second, we surveyed examiners rather than probabilistically selecting teachers of psychiatry at the different medical schools. We note however, that there are relatively very few psychiatrists in Nigeria and the examiners who completed the study questionnaires are the same medical teachers of psychiatry from the institutions.

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Pattern of Emotional Disturbances Among Newly Diagnosed HIV Positive Clients in Osogbo Southwestern Nigeria

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ABSTRACT

Background: Clients with HIV have several concerns at the time of diagnosis. This study assessed prevalence, pattern and determinants of emotional disturbances among newly diagnosed HIV clients in Southwestern Nigeria

Methods: Descriptive cross sectional study among 400 newly diagnosed consenting HIV positive clients carried out between January and December 2014. Research instruments were pretested, semi structured interviewer administered questionnaire. Data was analyzed using the SPSS software version 17.0

Results: Mean age was 39.7±11.0 years, and 373(93.5%) had counseling before testing. Major pre-testing experiences include fear 61 (15.3%) and anxiety 36(9.0%). During testing, 28 (7.0%) said they were afraid of the outcome of the test, 41(10.3%) were anxious, 37(9.3%) were agitated while 20 (5.0%) panicked. Post-testing, 164(41.0%) were shocked, 28(7.0%) disbelieved the result, while 8(2.0%) denied the results. Two hundred and ninety (72.5%) respondents admitted having emotional disturbances, while 163(40.7%) were depressed. Predictors of having depression or emotional disturbances were being a female, not married and not having pretest HIV counseling.

Conclusion: Emotional disturbances and various forms of depression are common among clients surveyed, with far reaching effects on functional ability and adherence to Anti retroviral (ARVs) drugs.

Keywords: Emotional disturbances, Depression, newly diagnosed HIV cases

INTRODUCTION

The HIV/AIDs epidemic has drawn great attention to the desired importance of mental health as a global health concern (Freeman et al., 2007; Saxena et al., 2007). From anxiety to more serious neurotic and psychotic illnesses, prevalence of mental health disorders increases as people get tested and receive the unpalatable and unexpected results of a positive HIV disease. In 2010, 68% of all people living with HIV resided in Sub-Saharan Africa, a region with only 12% of the global population (Gonzalez et al., 2011). The trend of the epidemic is not different in Nigeria with a national prevalence rate put at 4.1% (FMOH, 2006a).

One of the factors militating against good adherence to Anti-Retroviral Therapy (ART) is stigma and discrimination. Traditionally, HIV was viewed from the spiritual and supernatural angle, with clients believed to have suffered curses from God. While stigma prevents many clients from seeking appropriate care, those who presents for care are being specially handled and many of them abandoned their ARV medications. Depression is the most common neuropsychiatric complication of HIV disease (Tate et al., 2003). Recent prevalence of depression among HIV positive people in Nigeria include 33.3% reported in Eastern Nigeria (Onyebuchi-Iwudibia and Brown,2014), and 23.1% reported n southwestern Nigeria(Obadeji, Ogunlesi and Adebowale, 2014.

This behaviour could be as a result of emotional disturbances and different grades of depression that are likely to characterize the diagnosis of a rare and incurable illness such as HIV. However, adherence is recognized as an important factor in treatment for patients with HIV, with many studies showing that consistently high levels of adherence are necessary for reliable viral suppression and prevention of resistance (Bangsberg, 2006; Bangsberg et al., 2000). Depression-related poor adherence has also been reported for diverse other medical conditions including diabetes, cardiovascular diseases, malignancy, and renal failure (Osborn and Egede, 2012), all with relatively little or no stigma and discrimination unlike HIV.

The fear of the unknown, fear of deaths, fear of raising Orphans and Vulnerable Children (OVCs), a need to take lifelong medications and far reaching decision about life are reasons why many clients got emotional upon declaring results of HIV testing. Many people are surprised when they learn that they have been infected with HIV. Some people feel overwhelmed by the changes that they will need to make in their lives. It is normal to have strong reactions when one

gets a positive HIV result, including feelings such as fear, anger, and a sense of being overwhelmed. Often people feel helpless, sad, and anxious about the illness.

Receiving a positive diagnosis, even if one is anticipating the result, is often very unsettling. Little is known about precursors of events before and around the diagnosis of a positive HIV test in Nigeria, and many citizens are not properly prepared for receiving HIV positive results despite counseling by the health care workers. Studies on the prevalence and impact of depression in persons newly diagnosed with HIV infection are also not common. The objective of this study was to assess prevalence, pattern and determinants of emotional disturbances and depression among newly diagnosed HIV clients in Southwestern Nigeria

METHODS

Study Area: Osogbo is the capital of Osun state in Southwestern Nigeria. The city has a population of about 600,000 and HIV prevalence of 2.7% which is lower than the national average (FMOH, 2006). There are two health facilities providing HIV treatment, care and support in the city while Primary Health Care (PHC) centers s were mere testing centers. There is a teaching and a general hospital providing comprehensive HIV treatment, care and support in the city.

Study design: descriptive cross sectional study among newly diagnosed HIV positive clients in Osogbo

Study population: include all newly diagnosed HIV positive clients. The teaching hospital was conveniently selected for this study because HIV work was at a stand-still in the general hospital due to close out of the International Partners supporting the general

hospital. Only eligible respondents who consented to participating were recruited.

Sampling: the study was carried out between January and December 2014. All newly diagnosed clients who consented to participating in the study were recruited into the study. **Research instruments**: was the WHO questionnaire on emotional disturbance and depression, and this was modified to collecting responses from the respondents. Questionnaires were semi structured interviewer-administered and pretested questionnaires administered by trained nurses. Questionnaires were administered on return visits or next appointment day of the client after HIV diagnosis. Depression was assessed using the modified Goldberg Depression Questionnaire which is a reliable, widely acclaimed screening test for depression (CRRF, 2014). Screening test scoring ranges as follows: 0-9 as No Depression Likely, 10-17 as Possibly Mildly Depressed, 18-21 as Borderline Depression, 22-35 as Mild-Moderate Depression, 36-53 as Moderate-Severe Depression and 54 and up as Severely Depressed. Adherence to ART was based on calculated adherence percentage being used in the programmatic Anti-Retroviral Therapy (ART) clinics. Adherence above 95% was adjudged as good and less than 90% calculated adherence as poor.

Ethical approval to carry out this research was obtained from LAUTECH Teaching Hospital Osogbo Health Research Ethics Committee, the director of the hospital's HIV comprehensive care center, while written informed consent was obtained from each respondent.

Study variables include the emotional experience they had immediately, and around the time or period of diagnosis of HIV and the follow up period.

Data management: Data was analyzed using the SPSS software version 17.0. After data cleaning and validity checks done through double entry, data were presented in form of frequency tables and charts after scoring using the modified screening test. Bi variate analysis and logistics regression was also carried out using selected variables of interest while level of significance was taken as $p<0.05$ for all inferential statistics.

RESULTS

Table 1 showed socio-demographic characteristics of respondents. Mean age was 39.7 ± 11.0 years, with 154(38.5%) belonging to 25-34 years age group, 220(55.0%) were male while 180(45.0%) were female. Sixty six (16.5%) were single while 301(75.3%) were currently married. About 172(43.0%) had up to secondary level education, 243(60.8%) were Christians, 124 (31.0%) were skilled workers while 138(34.5%) were semi-skilled.

Table 2 showed that eighty-three (20.8%) were tested at same time with their spouse while 57.3% were married as at the time of HIV diagnosis. About 373(93.5%) were counseled before testing, 220 (55.0%) were tested alone. The rule of privacy and confidentiality was observed during counseling of 354(88.5%) of respondents, while permission was taken before testing 314(78.5%) of respondents. Three hundred and sixty seven (91.8%) respondents said they sincerely agreed to be tested, and 252(63.0%) witnessed the testing procedure. While testing was ongoing, 61(15.3%) exercised fear, 33(8.3%) were disturbed, 18(4.5%) were worried, 36(9.0%) were anxious, 11(2.8%) said they were confident about their results while 43(10.8%) said nothing was actually going through their mind. Before the respondents had their

results broken to them, 28(7.0%) said they were afraid of the outcome of the test, 41(10.3%) said they were anxious, 37(9.3%) described being agitated, 20(5.0%) panicked, 11(2.8%) said they were confident of outcome of the results while 43(10.8%) said nothing or no feeling

Table 3 showed events following the HIV testing. After having the test results,164(41.0%) said they were shocked about the HIV positive result, 28(7.0%) said they disbelieved it, 8(2.0%) said they denied the result, 42(10.5%) said they were overwhelmed with fears, 78(19.5%) said they were depressed, 38(9.5%) said they felt like crying, 24(6.0%) were destabilized, 38(9.5%) felt like dying, 16(4.0%) had suicidal intent while 54(13.5%) said they took the HIV positive results in good faith. One hundred and twenty three reconfirmed the HIV positive result in another health facility, 21(5.3%) sought spiritual help, 109(27.3%) opted for disclosure.

Respondents described Health Care Workers (HCWs) as showed considerable concerns while breaking results, 281(70.3%) showed empathy while 179(44.8%) of the respondents were reassured by the health care workers. Major concerns of respondents include: fear of stigma 128(32.0%), fear of discrimination 65 (16.3%), fifty six (14.0%) was thinking about the fact that there was no cure, 28(7.0%) thinking about death,47(11.8%) thinking about possible prolonged hospital care, 24(6.0%) thinking about prolonged ARV use while 87(21.8%) was thinking about possibly falling sick. Two hundred and ninety (72.5%) respondents admitted to being disturbed emotionally while 346(86.2%) described their emotions as more stable now compared to the time of diagnosis

Table 4 showed pattern of depression among respondents within one to two weeks following the HIV positive results. Two hundred and thirty seven (59.3%) had no depression, 98(24.5%) were mildly depressed, 20(5.0%) had borderline, 33(8.3%) had mild to moderate depression, 12(3.0%) had moderate to severe depression while none of the respondents were severely depressed. One hundred and sixty two (75.0%) of respondents had above 95% calculated adherence scores, 41(19.0%) had between 90 and 94% while 13(6.0%) had below 90.0%.

Table 5 showed results of bi variate and logistics regression analysis between depression, having emotional disturbances and some selected socio-demographic variables, There is between depression and age or education level (p>0.05). However

statistically significant associations exists between depression and gender, marital status and having pre-test counseling(p<0.05). Also, there is no statistically significant association between having emotional disturbance and age or education level (p>0.05). However statistically significant associations exists between emotional disturbance and gender, marital status and having pre-test counseling (p<0.05).

When variables with statistical significance were further examined on binary logistic regression, male respondents were twice (1/0.5) less likely to be depressed compared to female respondents(OR 0.5, 95%CI 0.376-0.844 and p-0.001); married respondents were thrice (1/0.3) less likely to be depressed compared to those who were not married(OR 0.3, 95%CI 0.199-

Table 1. Socio-demographic characteristics of respondents

Socio-demographic characteristics of respondents	N	F
Age	39.7±11.0 years	
15-24	19	4.8
25-34	154	38.5
35-44	84	21.0
45-54	102	25.5
55-64	29	7.3
65 and above	12	3.0
Sex		
Male	220	55.0
Female	180	45.0
Marital status		
Single	66	16.5
Currently married	301	75.3
Others	33	8.2
Highest education level		
Primary	95	23.8
Secondary	172	43.0
Tertiary	110	27.5
Others	23	3.7
Religion		
Christianity	243	60.8
Islam	152	38.0
Others	5	1.2
Occupation status		
Professional	47	11.8
Skilled	124	31.0
Semi skilled	138	34.5

Table 2. Experiences during HIV Pretesting

Variable	F	%
Tested at same time with spouse	144	36.0
Married as at time of HIV diagnosis	229	57.3
Counseled before testing	373	93.5
Counseled		
Alone	220	55.0
Spouse present (if married)	144	36.0
Others	36	9.0
There was privacy and confidentiality	354	88.5
They took permission before testing me	314	78.5
I sincerely agreed to be tested	367	91.8
Respondent was there at the time of HIV testing	252	63.0
Going through respondent's mind at time of testing		
Aware I could be positive	28	7.0
Fear	61	15.3
Disturbed	33	8.3
Just praying	40	10.0
Worried	18	4.5
Confident	11	2.8
Anxious	36	9.0
Nothing	43	10.8
Wonder events following a positive results	32	8.0
Resigned to faith	38	9.5
Nothing	37	9.3
Others	42	10.5
Feeling of respondent before breaking the results at PCS		
Afraid	28	7.0
Anxious	41	10.3
Agitated	37	9.3
Panic	20	5.0
Confident	11	2.8
Thinking post test	37	9.3
Nothing	43	10.8
Others	26	6.5

Table 3. Experiences after HIV testing

Variable	F	%
Feeling after breaking results		
Shocked	164	41.0
Disbelieve	28	7.0
Denied the result	8	2.0
Overwhelmed with fears	42	10.5
Anxious	16	4.0
Depressed	78	19.5
Feel like dying	38	9.5
Uncertain	8	2.0
Destabilized	24	6.0
Took it in good faith	54	13.5
Like committing suicide	16	4.0
Others		
Reconfirmed in another health facility	123	30.8
Sought for spiritual help	21	5.3
Got traditional medicine assistance	4	1.0
Decided to disclose to my spouse	109	27.3
Decided not to disclose	8	2.0
HCWs showed concerned while breaking results	362	90.5
HCW could be described as empathetic while breaking results	281	70.3
Reassured by HCWs	179	44.8
Client eventually placed on ART	216	54.0
Major concerns of respondents		
Stigma	128	32.0
Discrimination	65	16.8
Falling sick	87	21.8
Prolonged ARV use	24	6.0
No cure	56	14.0
Death	28	7.0
Prolonged hospital care	47	11.8
M was emotionally disturbed upon	290	72.5
y emotions is now stable and better compared to time of diagnosis	346	86.5

Table 4. Pattern of depression and adherence to ART among respondents

Variable	F	%
Pattern of depression (n=400)		
No depression likely	237	59.3
Possibly Mildly Depressed	98	24.5
Borderline Depression	20	5.0
Mild-Moderate Depression	33	8.3
Moderate-Severe Depression	12	3.0
Severely Depressed	0	0.0
Pattern of adherence to ART(n-216)		
>95% calculated adherence	162	75.0
90-94% calculated adherence	41	19.0
<90% calculated adherence	13	6.0

0.511 and p-0.004); while respondents who did not have pre test counseling on HIV were three times more likely to be depressed compared to those who had HIV pretest counseling (OR 3.1, 95%CI 1.375- 7.189 and p-0.001). These observations were found to be statistically significant going by their p values less than or equals 0.05.

On emotional disturbances, no difference was found between male and female respondents having emotional disturbances (OR 0.9, 95%CI 0.595-1.444 and p-0.369). However married respondents were twice (1/0.6) less likely to have emotional disturbances compared to those who were not married (OR 0.6, 95%CI 0.373- 1.102 and p-0.052); while respondents who did not have pre test counseling on HIV were three times more likely to have emotional disturbances compared to those who had HIV pretest counseling (OR 3.1, 95%CI 1.410- 6.845 and p-0.003). All these observations were found to be statistically significant going by their p values less than or equals 0.05.Thus predictors of having depression or emotional disturbances were being a female, not married and not having had pretest HIV counseling.

Table 5. Bi variate and binary logistic regression analysis between depression, emotional disturbances and some selected socio-demographic variables

Bi variate analysis

	Depression Depressed Yes	No	X2 value	P value	Emotional disturbances Emotionally disturbed Yes	No	X2 value	P value
Age in years			4.592	0.064			7.282	0.219
<40 122(56.0)	96(44.0)				196(89.9)	22(10.1)		
>40 41(22.5)	141(77.5				94(51.6)	88(48.4)		
Sex			7.234	0.003*			0.050	0.050*
Male	76(34.5)	144(65.5)			158(71.8)	62(28.2)		
Female	87(48.2)	93(51.8)			132(73.1)	48(26.7)		
Marital status			2,259	0.001*			2.206	0.001*
Single	49(74.2)	17(25.8)			54(81.8)	12(18.2)		
Married	102(33.9)	199(66.1)			212(70.4)	89(29.6)		
Others	12(36.4)	21(63.6)			24(72.7)	9(27.3)		
Education level			0.669	0.155			0.007	0.366
Educated	146(41.3)	231(58.7)			274(72.7)	103(27.3)		
Not educated	17(30.4)	6(69.6)			16(69.6)	7(30.4)		
Had pre test counseling			6.944	0.002*			7.352	0.001*
Yes	145(38.9)	228(61.1)			277(74.3)	96(25.7)		
No	18(66.7)	9(33.3)			13(48.2)	14(51.8)		

Binary Logistics Regression

	Depression OR	95%CI Lower	Upper	P value	Emotional disturbances OR	95%CI Lower	Upper	P value
Sex (reference category =female)	0.5	0.376	0.844	0.001*	0.9	0.595	1.444	0.369*
Marital status (reference category = not married	0.3	0.199	0.511	0.004*	0.6	0.373	1.102	0.052*-
Had HIV pretest counseling (reference category =Yes)	3.1	1.375	7.189	0.001*	3.1	1.410	6.845	0.003*

˙Statistical significance

DISCUSSION

Mean age of respondents supports existing literature that HIV predominantly affects the young and sexually active members of the population (Ventura-Filipe et al., 2000). Majority of respondents had pretest counseling including couple counseling under the ethical requirements of privacy and confidentiality. About two thirds of respondents' witnessed the testing procedure. This supports another similar study (Eversley, et al., 2003). Pre HIV testing experience of respondents include fear, being worried, being disturbed, anxious while few were confident of outcome of results. Before receiving results, respondents' experiences include excessive fear, being afraid of a positive results, panicking, agitation, and anxiety. These experiences support findings from some other studies (, et al., 2011; Baumgartner

2007; Park, Zlateva and Blank, 2009). Many people may feel surprised when they learn that they have been infected with HIV. Some people may feel overwhelmed by the changes that they will need to make in their lives. It is normal to have strong reactions when one finds out that he is HIV positive, including feelings such as fear, anger, and a sense of being overwhelmed. Often people feel helpless, sad, and anxious about the illness

After receiving the test, many respondents were shocked, many overwhelmed with fears, many destabilized, denial, disbelieve and even suicidal intents This supports some other related studies in which clients finding out that they are HIV-positive raises personal concerns about death and dying, disclosure and stigma, changes in personal relationships, prolonged ARV use and hospital stay due to sicknesses, and un-

certainties about the future; and these stresses can precipitate anxiety and depression (Alonzo, 2000; Chalfant, Bryant and Fulcher, 2004; Leserman, 2003; Adebimpe, 2012)

About three-quarter of respondents said they were emotionally disturbed, about a little less than two thirds had no depression while about one quarter had mild depression. This supports several other studies reporting two thirds having depression (Bhatia, 2011), and 22% depression (Campos et al., 2008). In another related study, rates of depression were roughly two times greater in people living with HIV than the general population Ciesla and Roberts, 2001). These co-morbid psychiatric illnesses or conditions commonly manifest around the time of diagnosis, but many patients develop symptoms later in their course of illness (Ciesla and

Roberts, 2001). These emotional disturbances and depression may not be unconnected with newly found potential stressors including necessary changes in health behaviors, having to make decisions with incomplete information, unpleasant side effects of treatment, and coming to terms with a new identity as someone with a serious illness.

However, lower figure of depression obtained in this study when compared with most other studies could be as a result of programmatic efforts by Non Governmental Organizations (NGOs) and the State Agency for the Control of HIVAIDs (SACA) training and instituting the culture of comprehensive counseling before and after testing to all clients who come to the health facility for HIV services. In addition, the state have passed the HIV anti discriminatory laws while awareness about HIV have gone round the state even the rural areas. This could have raised the hopes of would be clients even if they turn out HIV positive.

The statistically significant relationship between gender and having emotional disturbances and depression is supported by another study (Cook, Cohen and Burke, 2002). In the African settings, the adverse effects of being positive on the family tend to affect women more. The low socioeconomic status of women making them to be subjective to the domineering influence of male is also a contributory factor. Apart from a seemingly higher health seeking behaviour of women, many socio-cultural factors in our societies are not favourable to women when it comes to the issue of HIV/AIDs

However, being married and having had pretest counseling may confer some psychological stability on respondents during the time of HIV diagnosis. Husbands are likely to be supportive to their wives among the married couples compared to the singles or non married, while health care workers are professionally bound to ensure privacy and confidentiality which could adequately prepare their clients for HIV test outcomes during pre test and post test HIV counseling. This could explain the statistically significant association found in this study. Similarly those who were pretested were more likely to be assured during counseling session, more likely to have alternative to some discriminating issues surrounding HIV care, more likely to ask questions and get answers to issues surrounding HIV treatment, care and support; and are more likely to resolve disclosure issues on time compared to those clients who did not have pre test counseling. In this study, high ART adherence were reported, and this supports several other studies (Tegger, et al., 2008; Vranceanu, Safren and Lu, 2008; Herrmann, McKinnon and John, 2008; Sternhell and Corr, 2002). Clients who are not stable may not be interested in commencing or continuing ARVs, they are the type who look for coping mechanism in ARV medications, feels extra stigma and discrimination, may look for alternative medical care after abandoning their ARVs and are likely to encourage resistance to ARVs.

As a study limitation, this research was based on ability of respondents to recall events at HIV diagnosis, and the tendency to magnify or forget some observations was still there. This was happening at a time of denial, considering the myths and misconceptions surrounding the transmission of HIV as a disease. Administering this questionnaire at the next follow up clinic has helped to reduce this limitation.

CONCLUSION

The time around HIV diagnosis could be tense as the respondents faced the unbelievable and the unexpected situations. Emotional disturbances ranging from simple to severe forms and depression like illness are common among clients surveyed. This trend may have far reaching effects on relationships of the HIV positive clients with the public, his willingness to disclose, initiation of ARV treatment and adherence to ART and eventual outcome and progress of HIV disease. Health care workers should have this at the back of their mind and show concerns and care when breaking HIV positive results and care and support during the period of few months following diagnosis of HIV.

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Effects of Personality Traits, Religiousness/ Spirituality on Adolescent Psychopathology in Benin City

A.N OTAKPOR, O.O AKANNI

ABSTRACT

Background: The rising prevalence of mental health morbidity among adolescents is worrisome because of the potential for dire consequences. Knowledge of predictive factors that contribute to this situation is considered invaluable. This study aims to determine the effect of personality traits and religiousness/spirituality on adolescent psychopathology.
Methods: The research design was cross-sectional. Big Five Personality Inventory (BFI-44), Ironson–Woods Spirituality/Religiousness Index (IWSRI), and the General Health Questionnaire (GHQ-28) were administered to 412 randomly selected senior secondary school students to evaluate personality traits, spirituality/religiousness, and psychopathology respectively.
Results: Adolescents with psychopathology (GHQ-Positive) had significantly higher neuroticism (p=.000), lower agreeableness (p=.001) and conscientiousness (p=.000); and low levels of religiousness and spirituality scores. High neuroticism (p=.000) and low 'Religious Behaviour' (p=.000) significantly predicted psychopathology. Religiousness and spirituality were negatively associated with neuroticism, but positively associated with conscientiousness, agreeableness and openness; and no association with extraversion.
Conclusion: The findings of the study provide empirical support for the influence of some personality traits and low religiousness/ spirituality on psychopathology among adolescents in this environment. Further studies in an effort to replicate these findings and to subsequently include them in adolescent mental health promotion programs are advocated.

Keywords: **Spirituality, Religiousness, Personality traits, Psychopathology, Adolescents**

INTRODUCTION

Adolescence corresponds to the period between the ages of 10 and 19 years and is a critical phase in human life cycle (WHO, 2000). The adolescent stage is characterised by instability and susceptibility to the development of psychopathology with myriad and severe consequences (Garaigordobil, 2006). Identification of factors that predict psychopathology in adolescents would guide the development of programmes to promote mental health, and prevent early adulthood psychopathology.

Amongst the various constructs of an individual's psychology is the dispositional trait, also referred to as personality trait which according to Adams & Olson (2010), accounts for consistencies in behaviour, thought and feeling across situations and over time. There are many approaches by which the trait concepts are described. John, Naumann & Soto (2008) acclaimed the "Big-Five Trait factor model" as the most popular current trait taxonomy of personality which assesses such traits as extraversion, agreeableness, conscientiousness, neuroticism and openness.

That a person's psychology can help predict the mental health state has consensual agreement.

Consistent with the view that personality characteristics matter for mental health, DeNeve & Cooper (1998) conducted a meta-analysis of some studies that examined the association of various personality traits with subjective wellbeing and found an overall effect size of r= 0.19. Most of these studies reported an association between such personality traits as high neuroticism, low agreeableness and conscientiousness with mental illness, but several researchers like John et al (2008), Bienvenu et al (2001), Trull and Sher (1994), and Lockenhoff et al (2009) have expressed doubt as to the mental health effects of extraversion and openness traits. Through regular screening, individuals with an at-risk personality trait for mental health morbidity can be identified and appropriate preventive and promotive measures instituted.

In the last *two or three* decades there have *been* several research *reports linking religiousness/spirituality to mental health state of young individuals.* Sorenson et al (1995) and Shafer (1997) in their respective studies of religious activities among unmarried adolescent mothers, and religiosity /spirituality, and personal distress among College students found negative associations between psychopathology and religiousness/ spirituality. On the other hand, Lockenhoff et al (2009), Cotton et al (2005), Jarvis et al (2005), and Nonnemaker et al (2003) reported statistically significant positive associations between religiousness, spirituality and adolescent psychopathology. Dew et al (2008) in their review of the literature on the

relationship between religiosity and psychopathology found that despite the wide variability in the quality of these researches, the prevalent findings indicated a protective effect of religiosity on mental health of adults, but less so for adolescents. Differences in research findings in the relationship between religion and mental health can be accounted for by several factors including the use of different measuring scales, differences in operational definition of religious variables, failure to control for covariates and varying sample sizes.

A long research tradition linking personality psychology with the psychology of spirituality and religion exists. Emmons and Paloutzian (2003) consider the five-factor personality as a useful theoretical frame work to inform and guide such enquiries especially as the "Big-Five" factor considers religiousness and spirituality as characteristic adaptive processes which develop as expressions of basic personality trait that is shaped by the socio-cultural context. Heaven and Ciarrochi (2007) in a longitudinal study found that personality traits in late adolescence predicted religiousness and spirituality in adulthood.

It is noteworthy that while there is abundant literature from the developed countries on this subject even though the majority of the research was in adult populations, there is paucity of information from the developing countries. Generalizing findings from the developed countries to the developing countries where the people are known for their intense religious fervor could be misleading. There is therefore a need to have local empirical evidence of the nature, and the strength of association that these variables have on the mental health of Nigerian adolescents.

This study aims to examine the interrelationship between personality traits, religiousness/ spirituality and adolescent psychopathology in this locale with a view to providing useful data for planning adolescent mental health programs. Specifically, the study seeks to determine the personality traits that are associated with psychopathology, the relationship between religiousness/spirituality and adolescent psychopathology, and the relationship between personality traits and religiousness/ spirituality.

METHODS

Study Location

The study was carried out among students in senior secondary schools in Benin City, the capital city of Edo State in Nigeria. The city is spread across three Local Government Areas (LGAs) namely Egor, Ikpoba-Okha and Oredo.

Study population

Adolescent students aged 16-19yrs in the final year of the Senior Secondary School in Oredo Local Government Area (LGA) were selected by process of multi-stage random sampling: the first stage was the selection of the local government area by simple random sampling (balloting); then the selection of the 18 mixed-gender participating schools (since all the private schools in the LGA are mixed-gender schools) from Oredo LGA by stratifying the schools into public and private schools to ensure appropriate school representation; stage three used proportional representation method to calculate the number of students to be selected from each of the participating schools; finally, using the class register, simple random sampling technique was used to select the students from each arm of the final year classes (see Akanni and Adayonfo (2014) for details). Those students who assented to participate and either obtained a signed written consent from their parents/guardians, or signed the consent if older than 17yrs were recruited for the study. The choice of final year secondary school students was informed by varied considerations which include ability to comprehend contents of the test materials, the cut off age for the chosen instrument, and to make for easy comparison of findings with existing studies in the literature.

Study Instruments

A self-administered socio-demographic data collection sheet was used to obtain the subjects' age, sex, family structure, religion, and school type.

The Big-Five Inventory (BFI-44): the 44-item version of this instrument developed by John and Srivastava (1998) was used for personality trait assessment. This is a self-report inventory that reliably measures the five-factor personality traits, namely: Extraversion, Agreeableness Conscientiousness, Neuroticism and Openness. The items are rated on a 5−point scale ranging from 1="disagree strongly" to 5="agree strongly". The instrument has the advantage of being relatively quick to complete, usually within five minutes. The BFI-44 was modified in an earlier study to make it more culture sensitive, and Oyesoji (2009) found it to have good reliability with a Cronbach alpha of 0.60 among late adolescents in a Nigerian sample.

The Ironson–Woods Spirituality/ Religiousness Index (IWSRI): The 25-item short form with two subscales measuring spirituality and religiousness, and derived from the 89-item long form was used. Two factors, namely: 'Sense of Peace' (items 1-9) and 'Compassionate View of Others' (items 21-25) assess spirituality. This spirituality scale is characterized by a serene outlook to life, a sense of meaning and connectedness with God/Higher power. Compassionate View of Others assesses tolerance, compassion and a feeling of connectedness with humanity. On the Religiousness scale, "Religious Behaviour" (items 16-20) assesses

participation in religious rituals and services hence it is a measure of public religiosity; "Faith in God" (items10-15) on the other hand is a measure of private religiosity and characterized by belief in God which plays a role in aiding recovery from illness. Co-efficient alpha for each of the factors is as follows: Sense of Peace= 0.86, Faith in God= 0.72, Religious Behaviour= 0.63 and Compassionate View of Others= 0.84. All the items of this scale are self- rated on a 5- point scale that range from 1=strongly disagree to 5=strongly agree. Higher scores indicate higher spirituality and religiousness.

For a misunderstood word 'rituals' in the Religious Behaviour subscale, it was substituted with the word "routine activities" to enhance the face validity and cultural sensitivity of the instrument.

The General Health Questionnaire (GHQ-28) is a self- rated factor- derived 28-item screening instrument used to detect mental health morbidity and developed by Goldberg (Goldberg (1972). Each question has four possible responses from which the respondent chooses only one that best fits how he/she has been feeling recently. The conventional Likert scoring in which first two responses are scored zero while the last two are scored "1" each was used. A score of "1" is considered positive, and a score of zero negative. Ohaeri et al (1994) in their study found a score of 5 or more as indicative of 'GHQ-caseness' or probable psychiatric morbidity. Aderibigbe and Gureje (1992), Gureje et al (1992), Ohaeri et al (1994), Saheeb and Otakpor (2005) and Fatoye (2005) have used it as a useful screening instrument, and have validated the GHQ against the criterion of structured clinical psychiatric interview in a number of psychiatric morbidity surveys in Nigeria. Among late adolescents in Nigeria, Ikegwuonu (2009) and Osasona (2011) have also used this

instrument, thus making it appropriate for this study.

Procedure

Following approval by the Ethics Committee of the University of Benin Teaching Hospital, permission was obtained from the Ministry of Education and the authorities of the selected schools. All assenting participants aged 18 and 19 yrs gave written consent, while same was obtained from the parents/guardians of students aged 16 and 17 years. The questionnaires were administered to 412 students in their classrooms in batches during break time with the help of two experienced and trained research assistants with tertiary education.

Statistical analyses

The data were coded and analyzed using the Statistical

Package for Social Sciences (SPSS) version 16. Descriptive statistics (frequencies, means, and standard deviations) were used to summarize the data and presented in tables. Other statistical computations such as "t" test, Pearson Product Moment Correlation Coefficient (PPMCC) and logistic regression were employed in the analysis of the independent variables with level of significance set at p< 0.05.

RESULTS

A total of 412 questionnaires were administered, 36 were either incompletely filled or contained inconsistent responses, or both and were therefore discarded. Thus 376 properly filled questionnaires were analyzed, giving a proper response rate of 91.3%.

Socio-demographic characteristics of the respondents

Table 1: Socio-demographics variables of respondents

Variables		No. of Respondents	Percentage(%)	
Gender	Male	206	54.8	
	Female	170	45.2	
School	Public	136	36.2	
	Private	240	63.8	
Age	16	168	44.7	Mean (SD): 16.9 years
	17	121	32.2	(0.9 years)
	18	58	15.4	
	19	29	7.7	
Religion	Christianity	361	96.0	*Others include
	Islam	12	3.2	Traditional Religion
	*Others	3	0.8	
Christianity	Orthodox	90	24.9	**Others include Jehovah
	Pentecostal	246	68.1	witness, Latter Day Saints
	**Others	25	7.0	

Table 1 above shows that of the 376 students that participated, there were 45.2% females and 54.8% males, giving an approximate female to male ratio of 1:1.2. The mean age of the respondents was 16.9 years (SD = 0.9), and the age- group with the largest representation was 16 years (44.7%). The proportion of respondents decreased with increasing age. The majority of the respondents were Christians (96.0%) and a higher proportion of

them belonged to the Pentecostal (68.1%) than the Orthodox Christian denominations (24.9%).

Five factor personality traits and psychopathology

The performance scores of the subjects on the five factor personality traits were compared between individuals with psychopathology and those without psychopathology as defined by their GHQ scores.

Table 2: Comparison between GHQ Non-cases and Cases on the five-factor personality traits- Extraversion, Agreeableness, Conscientiousness, Neuroticism and Openness

Variables	GHQ	Mean	SD	t	P
Extraversion				1.29	0.200
	Non-cases	23.0 2	3.82		
	Cases	22.47	3.93		
Agreeableness				3.25	0.001*
	Non-cases	36.00	4.84		
	Cases	34.23	5.00		
Conscientiousness				4.06	0.000*
	Non-cases	35.38	5.07		
	Cases	32.97	5.80		
Neuroticism				-6.65	0.000*
	Non-cases	20.00	4.66		
	Cases	23.59	5.19		
Openness				0.13	0.900
	Non-cases	40.15	4.95		
	Cases	40.08	5.62		

Note: GHQ non-cases (n=260), GHQ cases (n=116), df=374; *=Significant difference

Table 3: Comparison between GHQ Non-cases and Cases on Religiousness/Spirituality scores

Variables	GHQ	Mean	SD	t	P
IWSRI				5.81	0.000*
	Non-cases	115.22	10.30		
	Cases	107.34	15.54		
Sense of peace				4.44	0.000*
	Non-cases	41.41	4.68		
	Cases	38.84	6.20		
Faith in God				3.89	0.000*
	Non-cases	28.31	2.92		
	Cases	26.91	3.86		
Religious behavior				6.52	0.000*
	Non-cases	22.02	3.04		
	Cases	19.41	4.58		
Compassionate view of others				3.80	0.000*
	Non-cases	23.48	2.48		
	Cases	22.19	4.01		

Note: GHQ non-cases (n=260), GHQ cases (n=116), df=374; *=Significant difference

Table 4: Logistic regression analysis of variables with predictive influence on psychopathology

	B	S.E.	Wald	df	Sig.	Exp(B)
Agreeableness	.014	.030	.215	1	.643	1.014
Conscientiousness	-.012	.026	.197	1	.657	.988
Neuroticism	.148	.029	25.644	1	.000*	1.160
Sense of peace	.007	.033	.051	1	.821	1.007
Faith in God	-.035	.045	.576	1	.448	.966
Religious Behaviour	-.173	.043	16.148	1	.000*	.841
Compassionate view of Others	.024	.053	.197	1	.657	1.024

*= Significant predictive influence

Table 2 shows that adolescents with psychopathology had significantly lower mean scores on Agreeableness and Conscientiousness but higher score on Neuroticism [t (374)=-6.65, p=0.00] than those without psychopathology.

Religiousness/Spirituality and Psychopathology

Part of the objective of the study was to compare the IWSRI and its subscale scores between adolescents with (cases), and those without psychopathology (non-cases).

The above table shows that there is a significant difference (t=5.81, p=0.00) in the IWSRI mean scores of GHQ Cases and the Non-cases. Also, the adolescents with psychopathology had significantly lower mean scores on the 4 subscales of the IWSRI.

Variables that were significant during bi-variate analyses were subjected to model logistic regression equation at which Religious Behaviour (= -0.173; p=0.000) and Neuroticism (= 0.148; p=0.000) made significant contributions to the prediction of psychopathology. While the influence was negative (inverse) for Religious Behaviour, it was positive (direct) for Neuroticism.

Inter-correlation of five factor personality traits and religiousness/spirituality

The relationship between each of the five-factor personality traits and religiousness/spirituality represents the third objective of this study and was ascertained using the Pearson Product Moment Correlation Co-efficient (PPMCC). The results are as presented in table 5 below.

Conscientiousness and agreeableness correlated positively and moderately strong with both religiousness and spirituality; openness similarly correlated with both constructs weakly except for Sense of Peace in which the relationship was fairly strong (r=0.328, p<0.01). Neuroticism correlated negatively and weakly with both religiousness and spirituality. Extraversion correlated positively and weakly with only one subscale of spirituality (Sense of Peace).

Table 5: Inter-correlation of personality traits and religiousness/spirituality in the study subjects

Parameter	1	2	3	4	5	6	7	8	9
1. Extraversion	1								
2. Agreeableness	0.101*	1							
3. Conscientiousness	0.032	0.393**	1						
4. Neuroticism	-0.131*	-0.392**	-0.324**	1					
5. Openness to experience	0.193**	0.240**	0.234**	-0.063	1				
6. Sense of peace	0.128*	0.377**	0.313**	-0.225**	0.328**	1			
7. Faith in God	0.057	0.290**	0.242**	-0.123*	0.179**	0.549**	1		
8. Religious behavior	0.028	0.251**	0.359**	-0.159**	0.193**	0.582**	0.471**	1	
9. Compassionate view of others	0.050	0.305**	0.285**	-0.182**	0.218**	0.611**	0.466**	0.574**	1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

DISCUSSION

Personality traits and psychopathology

The findings in this study with respect to personality traits and psychopathology are largely similar to the findings by Trull & Sher (1994) and Lockenhoff et al (2009) except that we found no association between extraversion and openness with psychopathology. Certain methodological differences that were noted between these studies could have contributed to the observed disparity in the findings. For example, Lockenhoff et al (2009) studied a clinical sample of late adolescents and adults with a diagnosis of HIV, while Trull & Sher (1994) studied a non-clinical sample of young adults with an average age of 21 years, and they assessed the personality traits of subjects in whom specific psychiatric diagnoses were identified, unlike our study which only screened for probable psychiatric morbidity. Finally, it is worth noting that while Lockenhoff et al (2009) found low openness to be associated with mental illness, Trull and Sher (1994) reported the opposite effect which is, that high openness was associated with DSM-III-R Axis I disorders. The implication is that "openness" as a personality trait differentially impact on an individual's mental health, probably as a function of other contextual variables.

Our study found that of the five-factor personality traits, only high neuroticism was significantly predictive of psychopathology. This is in keeping with the finding of John et al (1994) in early adolescents in whom high neuroticism and low conscientiousness predicted internalizing disorders like depression and anxiety disorders. Persons high in neuroticism trait were reported by Costa et al (1980) to experience more negative affect while Hong & Paunonen (2011) noted that such persons tend to ruminate passively on their negative moods. Consequently adolescents with a dominant personality trait of neuroticism would be expected to be at risk for psychiatric morbidity.

Religiousness/spirituality and psychopathology

The two constructs- religiousness and spirituality- were found to be significantly and negatively associated with psychopathology; this is consistent with the finding by Lockenhoff et al (2009) who also used the IWSRI in their study to assess religiousness and spirituality. They however, used different mental health variables such as hopelessness, optimism, depression, state anxiety and perceived stress to identify mental wellbeing. Despite these differences, the similarity in the findings suggests that this pattern may generalize across different populations. Therefore, ensuring that adolescents are raised to be religiously or spiritually inclined will help to stem the rising tide of adolescent psychopathology.

That public religiosity or "religious behaviour" predicted lower GHQ score or absence of psychiatric morbidity while private religiosity did not, is similar to the findings of Jarvis et al (2005). This finding aligns with the mechanisms proposed by Dew et al (2008) on how religiosity may influence adolescents' mental health: that public religiousness provides social support and learning experiences in the form of leadership and coping skills. Even though public religiosity has been found to be protective, conflicting reports about the influence of public/private religiosity on adolescents' mental health exist. Evidence from a longitudinal study of adolescents' health by Nonnemaker et al (2003) showed that religiosity was differentially (depending on whether it is public or private) associated with adolescents' mental health-related outcomes with public religiosity being associated with lower emotional distress while private religiosity was significantly associated with a lower probability of having had suicidal thoughts or made suicidal attempts.

Even though only religiosity or religious behaviour was found to have predictive influence on adolescents' psychopathology in this study, other researchers have reported similar effects with spirituality. Cotton et al (2005) reported that spirituality may contribute more than religiosity in its association with depression. Specific differences in research findings between spirituality, religiousness and mental health point to the complexity of the relationship. Also, disparity in research findings could be due to other factors such as difference in the definition of religion and spirituality. For example what was termed 'religiosity' and assessed by "belief in God/Higher power" in Cotton et al (2005) study, would fit into item 7 of the spirituality subscale of IWSRI used in this study. There is thus variability in the way spirituality and religiousness constructs are measured in the different studies. To facilitate comparison and make it easier to draw conclusions across studies, there is need to harmonize definition and standardize the measurements of these constructs.

Personality traits and religiousness/spirituality

The positive association between Conscientiousness and all spirituality/religiousness subscales in this study replicated the findings of Lockenhoff et al (2009) who also used IWSRI in their study. Openness showed positive association with both spirituality subscales, but associated weakly with only one of the religiousness subscales- Faith in God. The reverse was true for agreeableness which related moderately well to the two religiousness subscales and weakly to one of the spirituality subscales- Sense of Peace. Neuroticism and extraversion showed relatively little association with spirituality/religiousness.

The report of this study about conscientiousness and agreeableness is in keeping with the findings of McCullough et al (2005) who opined that "conscientiousness makes people to abide by rules and conventions because their behavior tends generally to be rule-governed while agreeableness also motivates people to abide by conventions, particularly out of concern for the feelings and rights of others". Therefore, adolescents dominated by these traits might understandably move toward religiousness since they tend to exhibit conformity, orderliness, or prosociality.

Similar to this study, Saroglou (2002) observed the general lack of strong association of religiousness with extraversion and openness, and suggested that religion is not overall concerned with these other key functions of human personality (e.g. plasticity and growth). Furthermore, religiousness expresses a human concern for personal and social stability and moral self-transcendence but not the human needs for playfulness, personal growth, and social change which are expressions of extraversion and openness traits. It is not unexpected therefore that those adolescents who are high on these two traits should score low on religiousness. However the high association between openness and spirituality in this study is understandable as adolescents with high openness score according to Lockenhoff et al (2009), are likely to show more appreciation of beauty and intellectual curiosity and thus more likely to report higher spirituality. Lockenhoff et al (2009) had suggested that because adolescents that are high on spirituality show vivid imagination, appreciation for beauty, and receptiveness to their inner feelings, they are endowed with characteristics within the domain of openness.

Neuroticism, an individual's predisposition to unstable response to stressful situations is not expected to be compatible with religiousness as found in this study. Certain aspects of neuroticism trait involving emotional instability may however relate to specific forms of religiousness. For example, Lockenhoff et al (2009) found association between religiousness and impulsiveness which is an aspect of neuroticism.

Study limitations

The results obtained were based on self report. There could have been recall and social desirability bias in responses.

The GHQ is a screening instrument for general minor psychiatric morbidity. This means that cases of psychoses were excluded. Also, a second stage structured clinical interview would be necessary in future studies, to delineate the specific mental disorders.

The study design was cross-sectional and thus no causal conclusion can be drawn from the findings. A longitudinal study would be more appropriate to establish causal relationships.

Finally, having highlighted our limitations, the overall relevance and conclusion of this study is not in any way compromised that in seeking to promote adolescents mental health, an understanding of their personality and degree of spirituality/religiousness along with the wide array of other risk factors will be of benefit and should be explored.

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The Use of Physical Restraint in the Care of the Mentally Ill by Nurses in a Psychiatric Hospital in Southeast Nigeria

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ABSTRACT

Background: The use of physical restraint as an intervention in the care of psychiatric patients is as old as psychiatry and remains one of the common procedures in psychiatry. Nurses play crucial roles in the application.

Aim: To evaluate the practice of physical restraint by nurses in a tertiary psychiatric hospital.

Methods: Sixty-seven nurses who work at the emergency clinic, the male and female acute wards of the hospital, were administered a questionnaire that asked about their practice of physical restraint.

Results: Sites of the restraints were mostly bilateral at the wrist and ankle restraint (56.5%), and wrapper was the most commonly used material for physical restraints. About 97% of physical restraints were to protect staff and other patients from injury.

Conclusion: There is the need to ensure that protocols are developed by different psychiatric services centres, in addition to the training and retraining of nurses to ensure safe and effective use of physical restraint.

INTRODUCTION

A restraint is any manual method, physical or mechanical device, material, or equipment that immobilizes the ability of a patient to move his or her arms, legs, body, or head freely or a drug or medication when it is used as a restriction to manage the patient's freedom of movement and is not a standard treatment or dosage for the patient's condition" (Department of Health and Human Services, CMS, 2006). Though this appears to go against the rights and wishes of the individual, in patient management, however, this may become very necessary and at times, life-saving.

In the management of a mentally ill, in order to control the display of aggression or violence which may threaten the life of the patient and that of others or even property, the patients could be restrained. The restraint becomes particularly necessary when psychiatric patients do not respond immediately to drug treatment and leaving them without restraint poses a danger to self or others. It could also become necessary when it is clinically difficult or unsafe to administer antipsychotic or sedatives to a patient such as in cases of life-threatening medical conditions (Moosa & Jeenah, 2009). It is commonly agreed that physical restraint (PR) should not be the first choice among the methods intended to ensure patients safety or treatment compliance (Mayhew et al. 1999). Apart from being emotionally distressing and ethically problematic for the mental healthcare professional because of the associated fear, shame and concern over abusing the rights of the patient (Bonner et al, 2002), a number of risks such as bruises, decubitus ulcers, respiratory complications, increased dependence in activities of daily living and increased risk of mortality from strangulation have been associated with the use of physical restraint (Macpherson et al. 1990; Jonhson & Beneda, 1998).

Despite these issues, research and clinical reports indicate that physical restraints have continued to be considered and used by professionals for various reasons particularly during emergency to manage patient's disturbed emotions and behaviour in a variety of clinical setting (Evans & FitzGerald, 2002).

In a Nigerian study, the majority of patients with urgent presentations in the emergency psychiatric services were brought in with mechanical restraint (Adeosun, 2014). Many of these patients in the psychiatry emergency rooms and acute wards would require physical restraint in the course of their treatment.

It would have been expected that the use of physical restraint would be rendered obsolete by advances in the field of psychiatry especially with respect to psychopharmacology and the therapeutic milieu. (Moosa & Jeena 2009; Davison, 2005), however, various reasons have continued to be given for the use of PR in patient management especially in the Nigerian context (Nuhu, Yusuf & Aremu, 2010). It seems that for now and for a long time to come, physical restraint would continue to be relevant in the management of violent and severely disturbed mentally ill in our environment given the shortage of materials, space and adequately trained mental health personnel in our hospitals which would be needed for the effective implementation of the alternatives to physical restraint.

Nurses, most often, get involved at the various points of implementing the use of physical restraint on a patient. Their proper understanding of how to apply the procedure, therefore, is of utmost importance. It is, therefore, imperative to evaluate the current practice of physical restraint by nursing staff involved in the care of the acute and severely mentally ill patients in our

mental health facilities. The findings of this study would be very relevant for the planning and the execution of training, and retraining programs for the nurses who care for psychiatric patients, to ensure safe and effective use of this method of intervention.

METHODS

Research setting and Design

This cross-sectional descriptive study was conducted at the Federal neuropsychiatric hospital Enugu. This is a tertiary mental health institution that provides mental health services for all the Southeast Nigeria and beyond, thereby serving as a referral centre as well as a training centre for psychiatrists, mental health nurses and other cadres of health professionals that undertake rotations in mental health. This 138-bed capacity hospital has six wards, with 159 nurses working in the hospital. Twenty of them work in the emergency and crisis intervention unit, 27 in the male acute ward and 20 in the female acute ward.

Sampling

Purposive sampling was used to select three wards in the hospital for this study. At the time of data collection, all the nurses that were working in the emergency unit, the male acute and the female acute wards, who were available and willing to participate in the study were included in for the study. These wards were chosen for the study because acutely ill patient, who often require physical restraint are usually managed in those wards.

Instruments

The study made use of a questionnaire that was developed by the researchers based on literature. It has a section for the Sociodemographic characteristics of the respondents such as gender, age, marital status, rank and years of experience. It also has a section that had items that addressed the objectives of the study. Items of the questionnaire elicited information on the prevalence of use of physical restraint, types of physical restraint commonly used by the nurses, factors that influence the decision to use physical restraint, their use of other less restrictive approaches in dealing with a violent patient and the principles that guide application of physical restraint. The instrument was pretested on six nurses working in the psychiatric unit of Enugu State University Teaching Hospital, Enugu. The items of the questionnaire were well understood by the nurses.

Procedure

Ethical approval was obtained from the Institutional Review Board of Federal Neuropsychiatric Hospital Enugu. The consent of the ward heads whose wards were used for the study was sought. The principles of confidentiality, voluntary participation and anonymity were applied in the conduct of the study. All participants gave informed consent. The questionnaire was delivered by hand to the respondents by LNN. The wards were visited twice daily during the morning and afternoon shifts and questionnaire kept for those on night shift and completed questionnaires were collected the following morning. The data collection lasted for three weeks in order to allow for those on night off returning to work.

Data analysis

Data obtained was analyzed using the Statistical Package for Social Science (SPSS) for Windows version 16 (IBM, USA). Simple frequency tables were generated for the variables.

RESULTS

A total of 62 out of the 67 nurses in the three wards completed the questionnaire, representing 92.5% response rate. Three nurses were on their annual leave, and two declined participation in the study.

All the respondents were Christians except one (1.5%) who was a Muslim. Table 1 shows the distribution of the characteristics of the participants. The majority of the participants were females, and 32 (49.2) of the participants were nursing officers I or II while 12 (18.5%) of the participants belong to the very senior nursing cadres.

Three (4.6%) of the participants declined from answering questions that was aimed at eliciting the type of restraints commonly used.

Table 1. The distribution of the characteristics of the respondents (N = 65)

Variable	Frequency	Percentage (%)
Gender		
Male	18	27.7
Female	47	72.3
Age group (in years)		
21-30	10	15.4
31-40	35	53.0
41-50	19	29.2
51 and above	1	1.5
Marital status		
Single	17	26.5
Married	45	69.2
Divorced	2	3.1
Separated	1	1.5
Rank		
Nursing officer I/Nursing officer II	32	49.2
Senior nursing officer/Principal nursing officer	21	32.3
Assistant Chief nursing officer/Chief nursing officer	12	18.5
Years of experience		
Below 5	20	30.8
5-10	28	43.0
11-15	7	10.8
16 and above	10	15.4

As shown in Table 2, only 7 (10.8%) of the participants claimed that they have never seen physical restraint applied to a patient on the ward while the majority (80%) of the participants described the use of physical restraint on their ward as seldom. Eleven (16.9%) of the participants have never applied physical restraint on a patient themselves. Bilateral wrist and ankle restraint 35(56.5%) was the most common restraint utilized, and the wrapper 42(64.6%) was the most common material utilized in the application of physical restraint followed by bed sheets 37(56.9%) . Only 2(3.0%) of the participants reported using other materials such as chains in restraining patients.

Nine (13.8%) of the participants believed that physical restraint highly reduced the aggressive behaviour of the patient while 11(16.9%) believed that physical restraint did not reduce aggression in the patient. The majority (69.2%) of them believed that physical restraint reduced the aggression in the patient.

As shown in Table 3, the most common reason given for applying physical restraint was to protect staff and other patients from injury (96.9%) followed by preventing the patient from wandering away (86.2%). Patient- related reasons such as to manage their agitation (73.8) and to create a quiet time/opportunity to rest for the overactive patient (70.8%) were in the middle of the ranking of reasons given for physically restraining patients. The majority of the participants did not agree that physical restraint was to substitute for staff observation of patients (84.6%) or due to insufficient drugs and materials to work with (81.5%).

As shown in Table 4, the most commonly practiced less restrictive alternatives to physical restraint was managing the environment to minimize confusion and overstimulation (80.0%) followed by use of relaxation technique on the patient (75.4%). Only about half of the participants 36(55.4%) obtain written order from the physician before applying physical restraint on the patients. Sixty–one (93.8%) of the participants would remove patients from restraint as soon as behaviour is under control while 54(83.1%) of them would document the behaviour leading to restraint application, the duration and type of restraint utilized.

Table 2. Pattern of practice of physical restraint by the participants (N=65)

Variable	Frequency	Percentage (%)
How often do you see physical restraint applied on the ward		
Always	2	3.0
Very often	4	6.2
Seldom	52	80.0
Never	7	10.8
How often physical restraint is used by participant on a patient		
Very often	10	15.4
Seldom	44	67.7
Never	11	16.9
Type of restraint commonly applied (N=62)		
Bilateral wrist	18	29.0
Bilateral ankle	9	14.5
Bilateral wrist and ankle	35	56.5
Material commonly utilized in applying physical restrained (could give more than one option)		
Bed sheet	37	56.9
Pillow slip	4	6.2
Wrapper	42	64.6
Forcefully holding patient down	36	55.4
Others (e.g. Chains)	2	3.0

Table 3. The reasons for applying physical restraints (N =65)

Reasons	Frequency (n)	Percentage (%)
To protect staff and other patients from injury		
Strongly agree/ agree	63	96.9
Disagree/strongly disagree	2	3.1
To manage agitation in the patient		
Strongly agree/ agree	48	73.8
Disagree/strongly disagree	17	26.2
To provide safety when judgment is impaired		
Strongly agree/ agree	49	75.4
Disagree/strongly disagree	16	24.6
To create a quiet time or opportunity to rest for the overactive patient		
Strongly agree/ agree	46	70.8
Disagree/strongly disagree	19	29.2
To prevent patient from wandering		
Strongly agree/ agree	56	86.2
Disagree/strongly disagree	9	13.8
To keep a confused or disoriented patient from bothering others		
Strongly agree/ agree	47	72.3
Disagree/strongly disagree	18	27.7
Substituting for staff observation		
Strongly agree/ agree	10	15.4
Disagree/strongly disagree	55	84.6
Insufficient drugs and materials to work with		
Strongly agree/ agree	12	18.5
Disagree/strongly disagree	53	81.5

Table 4. Observation of other restraint related measures by the participants (N= 65)

Practice	Yes n (%)	No n (%)
Use of less restrictive alternatives		
Talking down the patient	45(69.2)	20(30.8)
Manage the environment to minimize confusion and overstimulation	52(80.0)	13(20.0)
Use relaxation technique	49(75.4)	16(24.6)
Presentation of limit and consequences of violation for patient	30(46.2)	35(53.8)
Observation of principles guiding application of physical restraint		
Get a written order from the physician before application of restraint	36(55.4)	29(44.6)
Strict observation of physical safety every 15-30 minutes	44(67.7)	21(32.3)
Exercise limbs every 2 hours	39(60.0)	26(40.0)
Attend to the basic needs of patient on restraint	43(66.2)	22(33.8)
Remove patient from restraint as soon as behaviour under control	61(93.8)	4(6.2)
Document behaviour leading to restraint, type and duration of restraint	54(83.1)	11(16.9)

DISCUSSION

Participants in this study were mainly females, and most were in the early years of their career with 6-10 years of experience. As reported by Gallinagh et al. (2002), participants in this study in the course of providing care to their patients sometimes find it necessary to apply physical restraint on their patients.

Most of the participants in this study reported that they seldom employ physical restraint in the management of their patients. This low utilization of physical restraint found in this study contrasts with that by Chien and Lee (2007) who reported that two-thirds of nurses believed that patients should be restrained for their safety and to ensure treatment compliance. Whereas this finding could reflect a better standard of practice expected from a tertiary mental health facility in which they work, it is likely that their responses may have been influenced by the need to give socially desirable answers.

In addition, the setting of the study being a psychiatric service centre could limit assessment of care thereby patients with physical co-morbidity, who would more likely present the need for physical restraint over chemical restraint. Such physically ill psychiatric patients get referred to surrounding teaching hospital for optimal care.

Therefore, there may need to replicate the study in a general hospital setting with psychiatric services.

This study finds bilateral wrist and ankle type of restraint to be the most commonly practiced. This finding agrees with Demir (2007 a; 2007b) who reported that wrist and ankle ties were the most commonly practiced physical restraint. The restraint of both hands and feet reflects the need to reduce maximally violence in the patients. The frequent use of a wrapper, bed sheets and forceful holding down of patients as found in this study reflects the non-availability of requisite instruments and equipment for physical restraint in our facilities.

These could have negative consequences for the safety of patients being physically restrained. Many factors are known to influence the decision to apply physical restraint on a patient. This study finds that considerations of safety of the staff and the environment ranked high in the reasons for applying physical restraint rather than using it as substitute for staff observations or to supplement for inadequate drugs and materials required for the care of the mentally ill. It is not clear the extent to which negative evaluation and stigmatization of the mentally ill contributed to being physically restrained in this study. However, since there is prevalent negative attitude towards the mentally ill as

recorded in this culture, (Adewuya et al. 2011, Atilola & Olayowola, 2011; Audu et al. 2013), it is likely that these factors contributed to the use of physical restraint on the patients. There would be a need to clarify this in further studies.

Participants in this study apply physical restraint on their patients for the appropriate reasons and their level of training could have contributed to this as most of them have acquired post-basic psychiatric nursing training.

That the participants mostly reported managing the environment to minimize confusion and overstimulation as the less restrictive measures adopted before a patient is physically restrained reaffirms the importance placed on safety to be a reason to put a patient on restraint and their level of training.

The study finds that most observed principle that guides the application of physical restraint is the removal of restraint whenever behaviour is under control followed by documentation of the reason for applying restraint on the patient. About half the times, physical restraint was applied without a written order from the physicians.

This agrees with Turgay et al. (2009) who found that improved mental state is the most important reason for removal of restraint from a patient and that most nurses used physical restraint without any verbal or written order. The low reliance on the physician order to apply physical restraint could reflect the high level of specialist training received by most of the nurses and the emergency nature of the need to restrain severely disturbed patients.

However, in view of the frequent inter-professional struggles between the doctors and the other members of the healthcare team, this attitude could reflect an extension of this struggle to the patient management especially when there are no clear-cut protocols for the use of physical restraint in most centers.

CONCLUSION

Considering the dangers inherent in the use of physical restraint on the patient, there is the need to ensure that protocols are developed by different psychiatric services centers to ensure safe and effective physical restraint practices. There is, therefore, need to train and retrain nurses on the use of physical restraint since they are critical to the safe and effective use of physical restraint in the management of the mentally ill patients.

Limitations and strength of the study

The strength of this study lies in the setting being a referral centre for mental health provision in the southeast Nigeria and the participants work in the areas where patients requiring physical restraint were more likely to be encountered. The weakness of the study, however, lies in the fact that this is a questionnaire-based study with its inherent problems such as social desirability bias among the respondents. The small number of participants could also weaken the extent to which the findings could be generalized.

Conflict of interest:
We declare no conflict of interest.

Funding:
We received no funding for this study.

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Persistent Psychosis Occurring in a Patient Receiving Cycloserine for the Treatment of Multidrug Resistant Tuberculosis

C. I. OKPATAKU

ABSTRACT

A case report of a patient on treatment with Cycloserine for multidrug resistant tuberculosis but who developed persistent psychosis was made.

INTRODUCTION

Cycloserine is an antibiotic used in the treatment of mycobacterium tuberculosis. It inhibits bacteria cell wall synthesis in this regard. Its status at present is in the management of multidrug resistant tuberculosis (MDR-TB) where it is used as a second line drug.

Shortly after its introduction, physicians started to observe neurological and psychiatric side effects associated with the use of the drug (Vallade et al, 1959; Bankier, 1965), notably psychosis. From a 3year hospital review, the major adverse effect of cycloserine and other second line anti-tuberculosis agents were neurologic (including psychosis, depression and seizures) with less favorable outcome and risk of death (Baqhaei et al, 2011).

Psychosis is now known to be produced by the antagonistic effect of cycloserine at the glycine recognition site of the N-Methyl D-Aspartate (NMDA) receptor (Van Berckel et al, 1999). Glutamatergic and NMDA receptor hypofunction has been hypothesized for schizophrenia which is the prototype psychotic disorder (Faber, 2003; Van Berckel et al, 1999). Research has shown that non-competitive NMDA receptor antagonism produces cardinal symptoms of schizophrenia (Guochuan and Joseph, 2002).

The neuropsychiatric effects described have been documented to generally clear up after a few days, not requiring aggressive intervention. The earliest case to be described which needed hospital admission was that of a young Caucasian with acute paranoid psychotic reaction, but her symptoms cleared up after 4 days (Bankier, 1965). Another case of psychotic symptoms occurring after 2 months of treatment with cycloserine was said to have disappeared after stoppage of the drug (Fujita et al, 2008). Recently, a report was made of another young woman with tuberculosis who developed delusions and hallucinations after 3 days of commencing cycloserine administration. Her symptoms disappeared 2 days after discontinuing the drug (Sharma et al, 2014).

In this report however, psychiatric symptoms developed after a relatively extended period of treatment with cycloserine. After discontinuation of the drug, the symptoms progressed into a more established disorder, which eventually disrupted patient's treatment for tuberculosis and his entire functioning.

Case Report

Mr PA is a 26year old unemployed, Nigerian Christian man who was being managed in a tuberculosis reference hospital for multidrug resistant tuberculosis. He was being administered 2nd line antituberculosis agents including daily doses of cycloserine 500mg, pyrazinamide 1.2g, proteonamide 500mg, kanamycin 750mg, levofloxacin 750mg and vitamin b6 200mg. He was to be on these drugs for 20 months (8months in hospital, 12months at home).

PA was relatively doing well at inception of his treatment, aside from minor complains of poor appetite and nausea. At the 6th month of treatment, he was said to have been having difficulty falling and remaining asleep at night. After about 5 day of this complains, he sneaked out of the hospital one midnight, wandering around and claiming other patients were plotting to kill him and that he was "led by the spirit" to move out of the hospital after seeing a vision of the plot. He said the behaviors of his doctors and nurses had special meaning to him and was being persecuted by them. He also heard strange voices which he claimed was the voice of God but refused to elaborate on this. He denied having other strange experiences. He had periods of alternating restlessness and social withdrawal and occasionally displayed verbally aggression to his nurses. There was no history of a sustained period of irritability, elation or low mood. He does not use psychoactive substances. He complained occasionally about right sided chest pain aggravated by coughing. There was no past history of mental or other chronic medical illnesses. He is the 5th of his mother's 8 children who are apparently doing well in a polygamous setting with 9 other step siblings. His parents are alive and well. Family history of mental illness was denied. PA early and adolescent life was said to be uneventful and comparable to his other siblings. He has recently completed a national certificate of

education programme and is searching for a job at present. On mental state examination, he was restless, spoke in low tone and had a blunt affect. He had delusions of persecution and 2nd person auditory hallucinations. He was well oriented in time place and person with poor insight into his problem. Key findings from physical examination include: Weight of 46kg and right tracheal deviation. Pulse rate was 90 beats per minute and blood pressure 100/80 mmhg. Investigations done included retroviral screen which was non-reactive, white blood cell count of 41×10^9/l, Packed Cell Volume 36.2%, right lung collapse on chest x-ray, a normal blood chemistry and liver enzymes.

Cycloserine use was maintained throughout the period of psychotic manifestations and at no other time was the drug suspended by his doctors. On invitation by the hospital, a psychiatrist evaluated him within the first week of symptoms and made an assessment of cycloserine-induced psychotic disorder. He placed him on a daily dose of Haloperidol 10mg and Benzhexol 5mg. After 5 days of treatment, his psychiatric symptoms subsided significantly which enabled the continued use of all the antituberculosis agents including cycloserine for at least 7 weeks. He was discharged on the 8th month of treatment.

About five weeks after he was discharged from hospital, his antipsychotic drugs got finished but he didn't return to hospital for reassessment and drug refill. He then had exacerbation of psychotic symptoms during which time he completely abandoned all his anti-tuberculosis medications including cycloserine and clinic visits, claiming he was well and so not in need of drugs. He started wandering aimlessly in the community, neglecting self-care, talking to unseen people and having difficulty maintaining a line of conversation due to significant thought

Table 1. Naranjo adverse reaction normogram in our patient

		yes	no	Don't know	Our patient
1	Are there previous conclusive reports on this reaction?	1	0	0	1
2	Did the adverse event appear after the suspected drug was administered?	2	-1	0	2
3	Did the adverse reaction improve when the drug was discontinued or a specific antagonist was administered?	1	0	0	0
4	Did the adverse reaction reappear when the drug was readministered?	2	-1	0	0
5	Are there alternative causes (other than the drug) that could have, on their own, caused the reaction?	-1	2	0	2
6	Did the reaction appear when a placebo was given?	-1	1	0	0
7	Was the drug detected in the blood (or other fluids) in concentration known to be toxic?	1	0	0	0
8	Was the reaction more severe when the dose was increased or less severe when dose was decreased?	1	0	0	0
9	Did the patient have a similar reaction to the same or similar drugs in any previous exposure?	1	0	0	0
10	Was the adverse event confirmed by any objective evidence?	1	0	0	1
	Definite e" 9, Probable 5-8, Possible 1-4, Doubtful d"0	total			6

disturbance for at least 7 months. He was taken to a spiritual healing center in his village by his family where he has remained bound with metal chains and is receiving prayers, though without improvement at present and is yet to seek or get hospital psychiatric evaluation and care, which is generally not provided for patients of this kind in that community.

The Naranjo normogram for adverse drug reaction was applied to establish the validity of this case. A total score of 6 was generated (table 1).

DISCUSSION

Reports on the occurrence of psychosis and other psychiatric symptoms associated with the use of cycloserine in the treatment of tuberculosis infection have been documented. In these previous reports, the symptoms of psychosis were noted to have resolved or stopped after the discontinuation of the drug (Bankier, 1965; Fujita et al 2008; Sharma et al, 2014). In the current report, symptoms persisted despite discontinuation and progressed into what now appear to

be a major psychotic disorder. This is an aberration of some sort, going by what has been typically documented in the past. Although, symptoms of psychosis have been reported within the first 2 weeks of treatment in about 30-50% of cases (Bangar 2011), the current report in addition to a few others (Bankier, 1965; Fujita et al 2008) have documented the occurrence of psychotic symptoms during the use of cycloserine at 6 and 2 months respectively. Even as the patient's mental status was deteriorating, psychiatric consultation was not further sought or provided.

Cycloserine acting through some key processes and areas of the brain may have a potential to cause enduring psychotic experiences. Besides its antibiotic properties, cycloserine is a selective partial agonist of the N-Methyl D-Aspartic Acid (NMDA) glutamatergic receptors (Michael, 2004). NMDA receptor antagonism or hypofunction produces a clinical syndrome resembling schizophrenia and exacerbates psychotic symptoms in patients with chronic schizophrenia (Bergeron & Coyle, 2012). In a controlled study, D-

cycloserine was found to increase positive symptoms in chronic schizophrenic patients even when administered concurrently with antipsychotic drugs (Van Berckel et al, 1999). Neurotoxic as it seemingly is, it is pertinent that cycloserine is being investigated for its benefits in the treatment of negative symptoms of schizophrenia. In a recent study, a once weekly 50mg dose of D-cycloserine significantly reduced negative symptoms in outpatients with schizophrenia who were taking antipsychotics (Goff et al, 2008).

The patient in this case had received a total daily dose of 500mg of cycloserine for at least 6 months which is a significant cumulative amount of the drug. Though he was on other medications such as levofloxacin which has been documented to cause psychotic symptoms, this is a rare occurrence with a frequency of less than 0.1% when used at maximum therapeutic doses (Carbon, 2011). In addition, evidence shows that cycloserine has a higher frequency of causing psychiatric and CNS-related adverse events than other second-line medications the patient was receiving (Hwang et al, 2013).

A total score of 6 on the Naranjo normogram suggests that this is a probable case of adverse drug reaction. However, it is important to note that the reports of cycloserine-induced psychosis from the literature were retrospective and made after excluding other possible causes. Considering the fact that patients with MDR-TB who are receiving cycloserine do so along with many other medications, some of which are neurotoxic, as well as the physical and metabolic derangements in these kinds of patients and their comorbidities, all of which could cause psychiatric symptoms, it is often not feasible to make a clear and definitive diagnosis of psychosis induced by cycloserine. For this reason, the case described here is not intended to establish a direct causal relationship between cycloserine and a major psychotic disorder, but to report and document a rather unusual association which contributes modestly to what is currently known about the neuropsychiatric effects of cycloserine.

MDR-TB is an emerging epidemic and a growing health problem in the world today. Cycloserine is an important 2nd line medication used in the treatment of MDR-TB. Therefore, there is likely to be increasing use as well as accompanying severe psychiatric effects of cycloserine. When patients develop major psychotic disorders while using cycloserine, it impair patients' ability to use the antituberculosis drugs effectively and could potentially threaten drug adherence, jeopardizing the current effort at ensuring adherence to antituberculosis agents, which has been implicated as the major cause for drug resistance necessitating cycloserine use in the first place.

CONCLUSION

This report stresses the need for caution with the use of cycloserine and emphasizes pharmacovigilance and collaboration with the mental health specialties in the management of MDR-TB patients.

Declaration of interests
No known conflict of interest for this report.

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APPRECIATION OF REVIEWERS

On behalf of the Editorial Board, the Editor-in-Chief of the Nigerian Journal of Psychiatry appreciates the reviewers for the year 2014 as listed below: