ENVIRONMENTAL STRESS, SEX AND ACADEMIC PERFORMANCE AMONG A SAMPLE OF NIGERIAN POLYTECHNIC STUDENTS

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Abstract

This study was a cross-sectional survey that examined the influence of Environmental Stress and sex on Academic Performance among Students of Adamawa State Polytechnic, Yola. A total of 139 students were sampled from various departments in the institution using two sampling techniques. Participants responded to measures of demographic characteristics, Environmental Worry Scale (EWS), which was used to measure environmental Stressors; and students' Academic Performance, which was assessed using their CGPAs. Three hypotheses were formulated and tested using Two-Way Analysis of Variance. Results indicate that students who experienced high level of environmental stress significantly recorded lower mean score on academic performance than their counterparts who experienced average and low stress. However, there was no sex difference in academic performance and no significant interactive effect of environmental stress and gender on academic performance. The study concluded that environmental stress is one of the major reasons accounting for poor academic performance amongst polytechnic students in Nigeria irrespective of sex. Based on these findings, the research recommends for provision of adequate facilities and stress management interventions to reduce environmental stress and consequently improve academic performance of Nigerian higher education students.

Keywords: ***Environmental Stress, Sex, Academic Performance.***

Introduction

Academic performance of students has always been a subject of interest to every educational institution around the world. Globally, research has indicated that, despite increasing concern and attention, educational performance among students, especially at tertiary educational level has remained consistentlypoor (Hijazi & Naqvi, 2016; Shahjahan, Kazi, Ahmed &Rabiul, et al. 2021;Zajacova, 2022). This situation holds in Nigerian context where previous empirical evidences have pointed to persistent decline in academic performance among students of higher institutions, with prevalence rate ranging from 16 to 22% (Yusuf, Okanlawun, & Oladayo, 2020). This increasing prevalence and its imminent consequences is an indication that poor academic performance is a recurring problem that needs continuous research to identify new trends and risks, towards effective intervention.

According to Mohammad, Fadzillah and Kamsah, (2007) academic performance is the extent to which a student, a teacher, or an institution has achieved their short-term or long-term educational goals. Gatersleben, and Griffin, (2017) argued that it is the measurement of students' achievement at the end of the academic year. This achievement can be measured by the final grades earned by a student, standardised test scores, cognitive

tests and dropout rates. Williams (2021) noted that academic performance is defined by students' reporting of past semester CGPA/GPA and their expected GPA for the current semester. The grade point average (GPA) is now used by most tertiary institutions as a convenient summary measure of the academic performance of their students. The GPA is a better measurement because it provides greater insight into the relative level of performance of individuals and different groups of students. Relatedly, poor academic performance according to Asikhia (2010) is any performance that falls below a desired standard. Similarly, poor academic performance is conceived as the performance of an individual or candidate in a learning situation in which he or she fails to attain a set standard of performance in a given evaluation exercise such as a test, an examination or series of continuous assessments. In this perspective, a candidate who scores below the set standard is regarded as showing poor academic performance in school.

In Adamawa State Polytechnic Yola, numerous indicators of low academic performance are visible. Notable among these are; high rate of students dropout, increase in crime, suicidal thought, substance abuse, cultism, and early marriage, which have been observed in the area. This may have potential negative impact on the students, the institution and society in general.According to Aremu (2010) academic failure is not only frustrating to the students and the parents; its effect is equally grave on the society in terms of dearth of manpower in all spheres of the economy and politics. For example, low academic performance among students could lead to high dropout, which may further escalate the security situation in the volatile area. Thus, despite government's efforts to improve academic performance through scholarships, training of the lecturers, and provision of infrastructure and so on, academic performance in the polytechnic has surprisingly remained low.

Poor academic performance among students have previously been associated with demographic, socio-economic and environmental factors. For instance, Kausar, Kiyani and Suleman (2017)implicated low socio-economic status with poor academic performance among secondary school students. Previous researches by Odeh et al. (2015), and Yusuf et al. (2020) have also linked low academic performance with low socio-economic status, alcohol use, gender and school location. However, students' academic performance is not affected by socioeconomic background and other demographic factors alone.There are other factors inherent in the school environment that may negatively affect the performance of students, especially at the higher level of education. One crucial factor that has the potential to influence students' performance at tertiary school level, but which research has given limited attention, especially in the north-east is environmental stress.

Environmental stress refers to a negative subjective psychological response to an environmental stimulus. It involves and interaction and subjective interpretation or response to a stimulus or stressors in an environment (Bilota & Evans, 2013).

According Williams (2021) environmental stressors are things or events that cause stress such as destructive weather, events and crowding. Within the school environment, factors such as noise, lecturer's stress, work overload, epileptic power supply and lack or insufficient teaching aids could constitute stress to students. The transition of students from college to the polytechnic environment is particularly very challenging and can presents numerous physical, financial, intellectual and social stressors that many students may consider as stress. This situation could negatively affect motivation, impair cognitive abilities and ultimately lead to poor academic performance (Olabiyi &Abayomi,2010)

In addition to environmental stress, sex is another factor that has been implicated in academic performance among college students. Studies have reported sex differences in academic performance among university students, with evidences indicating that, when faced with school stress, female students tend to outperform their male counterparts (Khamaineh & Zaza, 2010; Yusuf, et al. 2020). However, within higher institutions of learning, especially in the study area, it is unclear if occupational stress and sexcan influence academic performance that has become a recurring problem. It is based on this that identified knowledge gap that the study objectives were formulated, to examine the role of environmental stress and sex on academic performance among students of Adamawa state polytechnic, Yola. Accordingly, it was hypothesized that; (1) there will be a significant difference in academic performance of students based on their exposure to low, average and high environmental stress, (2) there will be significant sex difference in academic performance of the polytechnic students and (3), there will be significant interactive influence of environmental stress and sex on the academic performance of students of the polytechnic.

METHOD

Design

The present research adopted a cross-sectional survey design to sample eligible students at Adamawa State Polytechnic, which is a tertiary educational institution located in Yola, Adamawa state, Nigeria. The choice of the cross-sectionalsurvey design was informed by its ability to facilitate large, efficient and timely data collection over a short period in order to determine how environmental stress and sex influence academic performance of the participants. Similarly, the research setting was chosen because of personal observations and anecdotal evidences which clearly indicated declining academic performance among students of the polytechnic, thus raising serious research concerns.

Participants and Procedure

Participants for the study comprised 139 eligible and available students currently undergoing Diploma and Higher National Diploma programmes at Adamawa state polytechnic, Yola. The students' age was from 16 to 45 years, with the mean age 38.9, *SD* = 7.056. Majority of the students, 74 (49.7%) were males, while 65(43.6%) were females. About 71% of the students were single. Further information revealed that,

25(16.8%) were in Public Administration department, 2(1.3%) Mass Communication, 16(10.7%) in Banking and Finance, 28(18.8%) in Accounting, 21(14.1%) Business Administration, 25(16.8%) Marketing and 22 (14.8%) were drawn from Social Development. On sponsorship, 72(48.3%) were being sponsored by their parents, 41(27.5%) were self-sponsored students, 12(8.1%) were on scholarship, while 14(9.4%) were being sponsored by relatives. In order to guarantee equal participation, minimize research bias and ultimately ensure external validity of results, the research employed two sampling techniques to recruit research participants. The first stage involved randomly selecting 7 out of 14 departments in the polytechnic. In the second stage, 139 out of 1200 students who met inclusion criteria for the research were selected using convenience sampling method. Inclusion criteria required participants to have experience of environmental stress, be students of the polytechnic and give consent to participate in the research. The Taro Yamani formula for was employed to arrive at the sample size of 150, but only 139 administered questionnaires were returned with usable data.

The researchers sought and obtained permission from the relevant authorities of the institution. Upon this permission, participants were consented, recruited at their various departments. The research employed and trained two students on data gathering protocol who facilitated assisted in administering questionnaires to the participants. Participants were assured of their willingness to decline participation should they feel uncomfortable with the research and the potential benefits accrued to participation. As part of the benefits, the findings of the research would be communicated to relevant authorities for implementation in order to improve academic performance of the students in the polytechnic and beyond. A total of 150 questionnaires were administered to well-consented students across the seven departments. Each questionnaire took approximately 10 minutes of the respondent's time. In all, data collection lasted for approximately two weeks, beginning from 31st October to 13th November, 2022. At the end of approximately two-week data collection period, (139) fully filled questionnaires (out of the 150 administered) were returned, representing 92.6% return rate.

Instruments

A standardised questionnaire was utilised to collect data from participants. Socio-demographic variables were measured in the first section of the questionnaire, with individual items assessing sex, department, age, marital status and source of sponsorship.

Environmental stress was assessed using a 17-item Environmental Worry Scale developed by Bowler and Schwarzer, (1991) to measures environmental stress among individuals including students. Accordingly, Students who were eligible and available responded to the scale with endpoints that ranged from 1 (not at all true) to 4(exactly true). The scale has been revalidated for use in students' population and found to have acceptable psychometric properties. For example, the internal consistency coefficient

of the EWS has been validated in the Nigerian context. Using the Cronbach Alpha method, Adeola (2018) noted that the scale has a Cronbach Alpha of .88, showing a strong reliability score. In the present study, we found a reliability coefficient ($\alpha = 0.84$), indicating that the instrument is a reliable measure of environmental stress in Nigerian polytechnic students.

In other to ensure dichotomous scores for low, average and high environmental stress, total Environmental Worry Scale scores were divided using mean and standard deviation. Thus, participants who scored equal or below the mean ($\bar{x}=26.57\pm4.97$), were dichotomized into low stress, those whose scores were one standard deviation above the mean ($\bar{x}=26.57\pm4.97$), were dichotomized into average stress, while those whose scored two standard deviation above the mean ($\bar{x}=26.57\pm4.97$) were considered to have experienced high environmental stress.

Academic performance. Academic performance was measured using students' Cumulative Grade Point (CGPA) for a session. Students were made to communicate their current CGPA to the researchers to enable them establish the link between environmental stress and academic performance.

Data Analyses

Data were analysed using Statistical Package for Social Sciences (SPSS Version-22), Mean, standard deviations and frequency counts were used to analyse demographic data, while a 3x2 ANOVA was used to determine the main and the interaction effects of environmental stress and sex on academic performance.

Results.

Descriptive Results

The mean scores of the groups of participants on academic performance are shown in Table 1, while Two-Way ANOVA summary table presents results of the independent and interaction effects in Table 2

Table 1: Showing Mean Scores ($\bar{x}$)and Standard Deviation (SD) ofEnvironmental Stress and Sex on Academic Performance of the respondents

Variables	Levels	Mean	SD	N
Environmental Stress	Low	3.23	.95	52
	Average	2.82	.99	44
	High	2.57	1.08	43
Sex	Male	2.77	.98	74
	Female	3.04	1.07	65

The results presented in Table 1 indicated that students who experienced high level of environmental stress recorded lower mean score of academic performance ($\bar{x}$=2.57; SD=1.08) than those who experienced average ($\bar{x}$=2.82;SD.99) and low level of environmental stress ($\bar{x}$=3.23;SD=.95). The results further showed that female students slightly recorded higher mean score on academic performance ($\bar{x}$=3.04; SD= 1.07) than their male counterparts ($\bar{x}$=2.77; SD=.98). Tests of significance of the means are reported in table 2 below.

Table 2: Two- Way ANOVA summary table showing the main and interactive influence of environmental stress and sex on academic performance of the respondents

Source	*SS*	*Df*	*MS*	*F*	*P*	*Eta Sq.*	*Remarks*
Environ. Stress (A)	10.88	2	5.044	5.056**	<.01	.071	Sig.
Gender (B)	1.960	1	1.960	1.965	>.05	.015	Not Sig.
A x B	.746	2	.373	.374	>.05	.006	Not Sig
Error	132.674	133	.998				
Total	1313.732	138					

The table above showed that environmental stress has significant independent influence on academic performance among the polytechnic students. More specifically, we observed a significant difference among students who experienced low, average and high levels of environmental stress on academic performance (F (2, 133) = 5.044, p< .05). The results clearly show that environmental stress reduces the level of academic performance of students by 7.1% (*Etasq*. = .071). This implies that environmental stress is a barrier to effective learning and performance and thus confirmed hypothesis one.

On the contrary**,** results did not show significant difference between male and female students on academic performance (F (1, 138) = 1.965, p> .05). This means that sex is less likely to determine changes observed in the academic performance of students in the study area with a weak size effect of 1.5% (*Etasq*. = .015). The result is not in agreement with hypothesis two and is therefore not confirmed. Similarly, results from the 2-way analysis of variance revealed no significant interaction effect of environmental stress and sex on academic performance (F (2, 138) = .374; p> .05). Thus, the effect of environmental stress on academic performance is same across sex with a minimal difference of 0.6% (*Etasq*. = .006), implying that environmental stress and sex are less likely to jointly influence academic performance of the students in the study area.

Discussion

Over the past two decades, studies have shown persistent decline in academic performance across all levels of education in Nigeria. Despite the findings and

interventions however, low academic performance still remain a serious challenge, especially at tertiary education level. This research therefore examined environmental stress and sex as risk factors to poor academic performance among a sample of conveniently sampled students at a polytechnic in Nigeria. Three hypotheses were formulated and tested using 2x3 analysis of variance. Result of the first hypothesis indicated a significant difference in academic performance based on varying degrees of environmental stress experiences that the students were exposed to. It was specifically observed that, students who experienced higher environmental stress reported diminished academic performance, more than those with average and low stress experience. The result implies that, when students are exposed to unpleasant external stimuli in the environment, such as overcrowded lecture theatres, meaningless materials, limited study time and many others, it may lead to negative reaction that impede academic performance. This result is justifiable on the ground that excessive stress can impair cognitive functions, leading to poor concentration and memory impairment, which will ultimately affect academic performance. The result is corroborated by previous findings by Ahmed, Tayyub and Ismail (2020) and Nepal (2016) which found significant influence of environmental stress on academic performance among students.

However, findings from the research showed that students' sex is not a significant factor in academic performance. There is no sex differences in academic performance among polytechnic students in Nigeria; rather, school-related environmental stress is the major reason accounting for a significant decline in students' academic performance. This finding is corroborated by the findings of Shahjahan et al. (2021) and (Khamaineh & Zaza, 2010), which found significant sex difference in academic performance among urban university students in Bangladesh. Domestically, the study is somewhat in agreement with the research findings of Yusuf et al.(2020), which found gender difference in students' academic performance.

The research findings did not establish significant interaction between environmental stress and students' sex on students' academic performance, thus contradicting what has been documented in previous literature showing significant interaction between demographic characteristics, stress and academic performance of secondary school pupils (Rukhshanda & Afzal, 2018).The implication of this result is that poor academic performance amongst the sampled students is not explained by the interaction of stress and sex. Therefore, reactions to the various school-related stressors such as overcrowded classes, work overload, poor teaching and stressful lecturers can affect the performances of students in higher institutions irrespective of whether they are males or females.

The conclusion drawn from this study is that tertiary education students who experience very environmental or school stress, especially at very high level stands higher chances of reporting low academic performance irrespective of sex. This calls for policy on stress management among

students in higher institutions in Nigeria. Consequently, the recommend that, in addition to provision of relevant facilities that reduce school stress, government and the school authority should design and implement effective stress management programmes for students of all category of students. In addition, given the dearth of empirical work on this very important issue, it is recommended that more research be carried out to fully explore other salient causes of low academic performance among students in Nigeria. Further studies should focus on other factors affecting academic performance and should institute interventions on stress management to reduce the persistent problem of low academic performance among tertiary education students in Nigeria.

Despite these impressive findings, the research is not without limitations. The use of cross-sectional survey and limited sample size (139) are serious limitations that may have affected the validity and the extent to which these findings can be generalised to similar population.

References

Abdu-Raheem B.O., (2015). Parents' socio-economic status as predictor of secondary school students' academic performance in Ekiti state, Nigeria. *Journal of Education and Practice*. 6(1), 123-128.

Ahmed, A., (2018). Assessment Method of Cognitive and Psychomotor Learning. Domain of Students in Higher Education: Presented During Interactive Workshop, Gombe State Polytechnic, Bajoga.

Ahmed, G., Tayyub, M., & Ismail, R. (2020.) Effects of Classroom Environment for Improving Students' Learning at Secondary Level in Punjab Province, Pakistan. *Science Academique.* 1(1), 1-14.

Akomolafe, M. J &Olorunfemi-Olabisi F. A., (2021), Impact of Family Type on Secondary School Students' Academic Performance in Ondo State, Nigeria. *European Journal of Educational Studies*. 3 (3), 481-485.

Ali, N., Jusof, K., Ali, S., Mokhtar, N., & Salamat, A.S. (2019). Factors influencing students' performance at Universiti Teknologi Mara Kedah Malaysia. *Management Science.* 3(4), 81–90.

Aremu, A.O. (2010) *AcademicPerformance5 Factor Inventory*. Stirling-Horden Publishers, Ibadan.

Asikhia, O. (2010). Students and Teachers' Perception of the Causes of Poor Academic Performance in Ogun State Secondary Schools: Implications for Counseling for National Development. *European Journal for Social Sciences. 2(13)*, 229-242.

Bilotta, E., & Evans, G. (2013). *Environmental Psychology*. Chichester: Wiley Blackwell.

Gatersleben, B. & Griffin, I. (2017). Environmental stress handbook of environmental psychology and quality of life research. *Springer*. 20 (4),20-26.

Hansen, N. M., & Mastekaasa, A. (2006). *Socialorigins and academic performance at university*. USA: Oxford University Press.

Hijazi, S.T. & Naqvi, S. M. (2016). 'Factors affecting students' performance: A case

of private colleges'. *Bangladesh E-Journal of Sociology*. 3 (1), 65-99.

Khamaineh, F.,& Zaza, H. (2010). Gender differences in academic performance among undergraduates at the University of Jordan: Are they real or stereotyping? *College Student Journal*. (3) *45-56.*

Nepal, B. (2016). Relationship among school's infrastructure facilities, learning environment and student's outcome. International Journal *Research Social Science Human Res*earch 2(5), 44–57.

Odeh, R.C., Oguche, O., Angelina & Ivagher, E.D. (2015). Influence Of School Environment On Academic Achievement Of Students In Secondary Schools In Zone "A" Senatorial District Of Benue State, Nigeria. *International Journal of Recent Scientific Research*.6 (7),14-22.

Olabiyi, E.O & Abayomi A.A. (2010). Influence of resources allocation in education on secondary school students' outcome in Nigeria. *Journal of social science*. (4)55-59.

Rukhshanda, B., & Afzal, J. (2018). Impact of Classroom Learning Environment on Student's Academic Achievement at Secondary Level. *Education Research*, 3(2),16-30.

Shahjahan, M., Kazi, R. A., Ahmed A & Rabiul, I. et al. (2021).Factors influencing poor academic performance among urban university students in Bangladesh. *International Journal of Evaluation and Research in Education. 2(4), 1140-1148.*

Williams, Y. (2021). Environmental Stressors: Examples, Definition & Types. https://study.com/academy/lesson/environmental-stressors-examples-definition-types.html

Yusuf, A.F., Okanlawun, E.A & Oladayo, R.T (2020) Investigation into Factors Affecting Students' Academic Performance in Tertiary Institutions as Expressed by Undergraduates. *Journal of Education in Black Sea Region, 2(2), 23-31.*

Zajacova, E. (2022), Self-efficiency and Academic Success in College students. *Higher Education Research.* 4 (6), 667-706.

AGE AND GENDER DIFFERENCE IN MEDICATION ADHERENCE AMONG PSYCHIATRIC PATIENTS IN BEHAVIOURAL MEDICINE UNIT KARU GENERAL HOSPITAL FCT-ABUJA

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Abstract

The study examined age and gender difference in medication adherence among psychiatric patients in behavioural medicine unit Karu General Hospital FCT-AbujaNigeria. The consisted of sixty two (62) males and seventy five (75) females with age bracket ranging from 17 years and above. The participants responded to two sets of research instruments these are Illness Perception Questionnaire Brief (IPQ-Brief) and Self report Morisky Medication Adherence Scale (MMAS-8). Two hypotheses were stated and tested. The study employed the use of simple statistical techniques such as Inferential statistics, used for data analysis of the two hypotheses postulated in the study and the result revealed a no statistically significant difference in medication adherence among psychiatric patients at BMU Karu, Abuja $F(2, 134) = 1.030$, $P > .05$. There was no statistically significant difference between male and female psychiatric patients in BMU Karu General Hospital, Abuja; $t(135) = 0.054$, $P > 0.05$. The findings were discussed in line with the existing literature cited in this study. In conclusion, this study reveals that medication adherence does not relatively differ among psychiatric patients. On the basis of the findings, it was recommended among others that, Mental health professionals and the health care policy should work to increase the level of psychotropic medication adherence so as to decrease self- stigma associated with mental illness.

KeyWords: Age and Gender, Medication Adherence, Psychiatric Patient,Behavioural Medicine Unit.

Introduction

Illness perceptions are the organized cognitive representations or beliefs that patients have about their illness. These perceptions have been found to be important determinants of behaviour and have been associated with a number of important outcomes, such as treatment adherence and functional recovery (Leventhal et al., 2017). There is a consistent pattern to the way patients structure their perceptions of illness. Illness perceptions generally contain an identity component, which includes the name of the illness and the range of symptoms that the patient believes are associated with the condition. They also contain beliefs about the cause of the illness and how long it will last. Illness perception components include beliefs about the personal consequences of the condition for the patient and their family, as well as the extent to which the illness is amenable to personal control or to control by

treatment (Leventhal et al., 2008).

People with mental illness are well aware of the societal prejudice toward them and are concerned(Rüsch et al., 2005). The potential stigma anxiety increases among people who have a greater tendency toward self-stigma than in the case of stigmatization by others (Rüsch et al., 2005). An individual expecting rejection or condemnation by others tends to be socially withdrawn (Livingston & Boyd, 2010). Outpatients who adopted these prejudices about psychiatric patients haveshown to have less belief that their mental state will improve, are more depressed, and show poor self-concept (Ritsher& Phelan, 2004).

The beliefs patients hold about how their condition is treated and the effectiveness of the available treatment make up the illness perceptions cure-control component. Patients who have stronger beliefs about the efficacy of treatment and less concerns about the nature of the treatment tend to better adhere to treatment and rehabilitation programmes. Cure-control component beliefs can be divided into perceptions about how much treatment, such as medication, is likely to help their condition and how the patient's own behaviour can influence the course of the illness. Lay beliefs about the effectiveness of treatments for mental health disorders tends to be negative, particularly for psychopharmacological medication and this is likely to influence the adoption of medication treatment and adherence (Lauber et al., 2001).

The final illness perception component is called consequences and characterized as the perceived effect of the illness on the patient's life. The consequences component includes general beliefs about the impact of the illness on the patient's personal life, family, social relationships and finances as well as how disabling the illness is likely to be. The poor level of knowledge in the general public about mental illness and in some cases the nature of the illness itself, such as depression, may influence some patients to adopt overly negative consequent beliefs which in turn can adversely affect the adoption of more active coping strategies.

Weingarten and Cannon (2008) conducted a study on age as a major factor affecting adherence to medication for hypertension in a general practice population. An audit of the treatment of hypertension in a general practice revealed that 51 out of 246 patients prescribed medication did not collect their monthly supply of drugs. There were no significant differences between the adherers and the non-adherers in sex, severity of hypertension, type or complexity of medication. The patient's age was the only factor which was associated with adherence. Patients under the age of 55 years or over 65 years had significantly lower adherence than those aged 66-74 years. Most previous studies coming from hospital-based or clinical trial populations have failed to demonstrate this association with age which may be characteristic of an unselected general practice population. The results may not be applicable to populations of different social or cultural background but they suggest appropriate directions for health promotion efforts in our community.

Marie et al. (2014) evaluates the differences

between women and men in medication use, medication adherence, and prescribing alignment with clinical guidelines. They conducted an analysis of pharmacy and medical claims for 29.5 million adults with prescription benefits administered by a pharmacy benefits manager in the United States, age 18 and older, between January 1, 2010, and December 31, 2010. Prevalence and intensity of medication use were evaluated by sex, age group, and medication type (acute vs. chronic). Medication adherence was measured by the percentage of patients with a medication possession ratio (MPR) $\geq$80%. The percentage of patients receiving guideline-based treatment was measured for diabetes and select cardiovascular conditions. The study population comprised 16.0 million women and 13.5 million men with continuous pharmacy benefit eligibility. Women were significantly more likely than men to use one or more medications during the analysis period (68% vs. 59%, respectively and women used more unique medications, on average, than men (5.0 vs. 3.7 medications per year, respectively. Differences in drug utilization were observed for all age groups and medication types. For all clinical metrics evaluated, women were less likely than men to be adherent in their use of chronic medications, and they were less likely to receive the medication treatment and monitoring recommended by clinical guidelines. They concluded that there are significant disparities between women and men in their intensity of medication use, their adherence to medications, and their likelihood of receiving guideline-based drug therapy. These differences may indicate a need for more personalized drug selection and therapeutic management to improve clinical outcomes.

Generally, the various illness perception components show logical inter-relationships. When illnesses are seen as having large consequences they are usually also perceived as having a longer timeline and poorer treatment efficacy. Symptoms also play a critical role in the development of illness perceptions. When there are no symptoms, it is hard for patients to maintain that they have an on-going illness. Perhaps the most interesting aspect of illness perceptions is how much illness perceptions vary between patients who have similar conditions. It is this individual perspective that lies at the heart of illness perception work. This approach proposes that by understanding the way a patient conceives of their condition can help understand their behaviour and lead to new ways to assist their adjustment to illness (Weinman & Petrie, 1997). Thus, it is plausible that illness perceptions play a role in non-adherence among patient. This can profoundly affect care-seeking behaviour and adherence to recommended interventions (Barrowclough et al., 2001).

Statement of the problem

Previous studies from developed countries attributed the reasons for non- adherence to antipsychotic medications including limited insight, low therapeutic alliance, presence of positive symptoms, comorbid substance abuse, unemployment, low social functioning, and side effects (Dassa et al., 2010). Although there is a dearth of evidence on non- adherence from developing countries, studies from Africa reported that poverty, lack of family support, perspective

of illness and stigma, lack of insight, failure to improve with treatment, and long queues when attending outpatient appointments were the important reasons for non-adherence; meanwhile, developing countries in Asia reported that financial problems, distance from hospitals, social and cultural myths, illiteracy and lack of insight, and side effects were the reasons for non-adherence (Victoria etal., 2008).

Globally, 30% to 65% rate of non-adherence is reported among people with severe mental illness (American Pharmacists Association, 2013). The average rate of 50% had been reported among patients with schizophrenia, with a range of 4% to 74% (Haddad et al., 2014). Among patients with bipolar disorders, the non-adherence rate to long term was reported to range between 20% and 66% (Sajatovic et al., 2007). Also, the estimated non-adherence rates among unipolar depression patients were reported to range from 13% to 52.7% (Stein-Shvachman et al., 2013). 42.2% non-adherence rate was reported in Ethiopia and 74% in Egypt on the African continent (Amr et al., 2013) In Nigeria, the recorded rates of non-adherence among patients with mental illness ranged from 48% to 55.5% in Southern Nigeria, and 49.4% in Kaduna and 34.2% in Jos, North-western and North-central Nigeria respectively (Danladi et al., 2013). These studies have been done but neglected the aspect of the psychiatric patients or patients with mental illness and even if there are, only few studies have been conducted among the psychiatric patients or patients with mental illness. Non adherence among patients with mental illness may be attributed to multifactorial influences such as; age, gender, poor insight, negative attitude towards medications, shorter duration of illness, poor therapeutic alliance and poor social support (Kassis et al., 2014).

Research Questions

The study will be guided by the following research questions

i. What is the difference on Medication adherence between younger and older Psychiatric patients accessing the Behavioural Medicine Unit of Karu General Hospital?
ii. What is the gender difference in Medication adherence among the Psychiatric patients accessing the Behavioural Medicine Unit of Karu General Hospital?

Objectives of the Study

The study will examine the following objectives

i. To determine the difference on Medication adherence between younger and older Psychiatric patients accessing the Behavioural Medicine Unit of Karu General Hospital.
ii. To ascertain the gender difference in Medication adherence among the Psychiatric patients accessing the Behavioural Medicine Unit of Karu General Hospital.

Hypotheses

The following hypotheses will be tested in the study.

i. There will be a significant age difference on Medication adherence between younger and older Psychiatric patients accessing the Behavioural Medicine Unit of Karu General

Hospital.

ii. There will be a significant gender difference in Medication adherence among the Psychiatric patients accessing the Behavioural Medicine Unit of Karu General Hospital.

Methods

Design

The design of choice for this study was a Cross-Sectional survey using the Ex-post facto design. The Ex-post facto design was chosen because the variable of interest (i.e. medication non adherence) already existed in the individual before the study. The independent variables are the illness perception how it influenced the dependent variable medication adherence .

Participants

One hundred and thirty seven(137) patients receiving treatment at the Behavioural Unit Karu were selected respectively to participate in the study of different illness. Their age range was from 18 above and their demographic characteristics were described.

Sample Size / Sampling Technique

Purposive sampling technique was used in selecting the sample size of one hundred and thirty seven (137) patients. This sampling method was used based on the readiness of participants to participate in the study. All the participant were selected based on their willingness to participate in the study.

Instruments

Two instruments for data collection was questionnaire which was divided into four sections. Section A was the biodata, section B, Illness Perception Questionnaire Brief (IPQ - Brief) while section C, Self report Morisky Medication Adherence Scale (MMAS-8).

Section B: Illness Perceptions Questionnaire–Brief (IPQ-Brief): The Brief IPQ developed by Broadbenta et al., (2006). This scale includes eight items and an additional item, which investigates the causal factors. Eight items on the scale, except for the ninth item investigating the causal factors, had a Likert- type scoring between 0 and 10. The first 5-item form the cognitive illness representations, namely, consequences (Item 1), timeline (Item 2), personal control (Item 3), treatment control (Item 4), and identity (Item 5). Two of the items form the emotional illness perceptions, namely, concern (Item 6) and emotions (Item 8). One item assesses illness coherence (Item 7). In computing the score, the scores of Items 3, 4, and 7 are reversed and added to that of Items 1, 2, 5, 6, and 8. A higher score reflects that a person feels more threatened by the illness. (Broadbenta et al., 2006). The content validity of this scale was conducted in Turkey (Tugba et al., 2017). The scale recorded the reliability of 0.78 in this study.

Section C: Self report Morisky Medication Adherence Scale (MMAS-8) developed by Morisky, et al. (1986). It is a 8-item questionnaire that inquires whether or not the participant has problems taking medications. It is a validated assessment tool with psychometric properties. The participant answers Yes or No to a set of seven (7) questions while the 8 question is answered with a 5-item Likert scale. Responses are coded by a designated rule and calculated for

the total obtaining scores of 0 is high adherence, score of 1 to 4 is moderate adherence while a score of less than 4 indicates low adherence. The psychometric properties was developed by Morisky et al; 1986; Kraper et al., 2004; Nelson, 2006; Strirrat et al; (2015) with the internal consistency and validity of the questionnaire was represented by a Cronbach's alpha value of 0.69.

Statistics: Descriptive statistics of Mean, Standard Deviation was employed for demographic data while inferential statistics of Independent t- test and ANOVA, Regression and Pearson Product Moment Correlation was used to test the differences and relationship that exist among the variables.

Results

Data Presentation

Table 1: Frequency and Percentages of the Characteristics of Participants.

VARIABLES	FREQUENCY	PERCENTAGES
Age		
17-25 years	48	35.0
26-35 years	47	34.3
Above 35 years	42	30.7
Total	**137**	**100%**
Gender		
Male	62	45.3
Female	75	54.7
Total	**137**	**100%**
Marital status		
Single	92	67.2
Married	31	22.6
Divorced	14	10.2
Total	**137**	**100%**
Educational status		
Primary	5	3.5
Secondary	48	35.0
Tertiary	84	61.3
Total	**137**	**100%**
Religion		
Christianity	69	50.4
Muslim	68	49.5
Total	**137**	**100%**
Duration of Illness		
Less than 1 month	11	8.0
1-5 months	44	32.1
6-20 months	8	5.8
Above 20 months	78	54.0
Total	**137**	**100%**

Table 1 shows the frequency and percentages of the characteristics of 137 psychiatric patients in Karu General Hospital whose age ranged between 17 to 55 years with a mean age of 30.63 and standard deviation of 8.128; age was further grouped as 17-25 years (N= 48, 35%), 26-35 years (N= 47, 34.3%) and 36 years above (N= 42, 30.7%); Gender: male (N= 62, 45.3%) and female (N= 75, 54.7%); Marital status: single (N= 5, 3.5%), married (N= 31, 22.6%) and divorced (N= 14, 10.2%); Educational status: primary (N= 5, 3.5%), secondary (N=48, 35.0%) and Tertiary (N= 84, 61.3%); Religion: Christianity (N= 69, 50.4%) and Muslim (N= 68, 49.5%) and Duration of illness: Less than 1 month (N= 11, 8%), 1-5 months (N= 44, 32.1%), 6-20 months (N= 8, 5.8%) and above 20 months (N= 78, 54%).

Hypothesis 1: stated that, there will be a significant age difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja. This hypothesis was tested with One-way analysis of variance (One-way ANOVA) in table 2 and 3.

Table 2: Summary of ANOVA Results of the Age Difference in Medication Adherence among Psychiatric Patients in BMU Karu, Abuja.

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	11.125	2	5.563	1.030	.360
Within Groups	723.692	134	5.401		
Total	734.818	136			

Sig. Level @ 0.05

Table 3: Means and Standard Deviations of the Difference in Medication Adherence in BMU Karu, Abuja

Age	N	Mean	Standard Deviation
17-25 years	48	6.77	2.528
26-35 years	47	6.94	2.100
36 years above	42	7.45	2.319
Total	**137**	**7.04**	**2.324**

Table 2 shows the mean difference in medication adherence according to age brackets where the results revealed a no statistically significant difference in medication adherence among psychiatric patients at BMU Karu, AbujaF(2, 134) = 1.030, P > .05. In other words, the hypothesis was not confirmed in this study. This implies that medication adherence does not relatively differ among psychiatric patients in BMU Karu, Abuja. Further analysis in table 3 presents the mean and standard deviation scores of the difference in medication adherence among psychiatric patients in BMU Karu Abuja.

Hypothesis 2: stated that, there will be a significant gender difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja. This hypothesis was tested using Independent Sample-test in table 4.

Table 4: Summary Results of the Difference between Male and Female Psychiatric Patient's on Medication Adherence

Gender	N	Mean	SD	Df	t	P
Male	62	7.05	2.243	135	0.054	.957
Female	75	7.03	2.405			

Sig. Level: P < .05

Table 4 presents the mean and standard deviation scores on the difference between male and female psychiatric patients in medication adherence. The results revealed that, male (M= 7.05; SD= 2.243) and female (M= 7.03; SD= 2.405). Furthermore, the analysis revealed a no statistically significant difference on medication adherence between male and female psychiatric patients in BMU Karu General Hospital, Abujat(135) = 0.054, *P* > 0.05NS. Thus, the hypothesis was not confirmed in this study.

Discussion

The first hypothesis stated that, there will be a significant difference on medication adherence between younger and older psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja. This hypothesis was not confirmed in this study which implies that medication adherence does not relatively differ among psychiatric patients. The finding was consistent with Goldman, Holcomb and Perry, (2004), who in their study found large differences with age in younger patients between 21—50 years. Luscher et al. (2008) found no association with age on medication adherence in Goldman and Colleagues (2004) inpatients and outpatients, but Degoulet et al. (2003) found important differences in a hypertension follow-up clinic, with 1346 patients who were diagnosed of hypertension and research conducted with them. After follow for up to three years, the younger patients showed medication adherence than their counterpart. The first year drop-out rate was 15.5% and the patients were characteristically young males, obese, smokers, with moderate hypertension and of low socioeconomic status.

Similarly, this result is consistent with the studies of Jigar and Rajesh (2014) that examined the Role of Illness Perceptions and Medication Beliefs on Medication Compliance of Elderly Hypertensive Cohorts. And the result indicates that a total of 78 (66%) study samples were found to be noncompliant with their medications. Analysis revealed that perceptions about illness and beliefs about medication jointly played a significant role in the prediction of medication compliance (F ¼ 5.966, P < .05; R2 ¼ .212). Significant bivariate correlations

were observed between Morisky's test score versus Brief Illness Perception Questionnaire measure (r ¼ .332, P ¼ .001), Beliefs of Medication Questionnaire (BMQ) differential score (r ¼ .301, P ¼ .001), and BMQ components, such as specific necessity (r ¼ .250, P ¼ .008), specific concern (r¼_.231, P ¼ .001), and general overuse (r¼_.342, P ¼ .001).

In conclusion, the findings provide practical basis for designing interventions and programs aimed at compliance building in elderly populations having hypertension by incorporating the value and importance of patient perceptions of illness and medications in order to achieve desired patient outcomes.

The second hypothesis states that, there will be a significant gender difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja. The result was not confirmed using Independent Sample-test that there is no statistically significant gender difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit. This means statistically that on medication adherence between male and female psychiatric patients in BMU Karu General Hospital there is no difference. More so, in terms of medication adherence, gender is not a factor in the sense that everybody adhere to medication irrespective of the gender either male or female. This result is not consistent with the study of Marie et al. (2014) who opined that Women were significantly more likely than men to use one or more medications during the analysis period (68% vs. 59%, respectively, and women used more unique medications, on average, than men (5.0 vs. 3.7 medications per year, respectively. Differences in drug utilization were observed for all age groups and medication types. For all clinical metrics evaluated, women were less likely than men to be adherent in their use of chronic medications, and they were less likely to receive the medication treatment and monitoring recommended by clinical guidelines. They concluded that there are significant disparities between women and men in their intensity of medication use, their adherence to medications, and their likelihood of receiving guideline-based drug therapy.

Conclusion

On the basis of the findings of this research, it was concluded that there is no statistically significant age difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja. Also that there is no statistically significant gender difference in medication adherence among psychiatric patients accessing the Behavioural Medicine Unit, Karu General Hospital, Abuja.

Recommendations

The following recommendations were made based on the outcome of the research:

i. Factors influencing treatment adherence, particularly illness perception can be incorporated as one of the teaching topics under caring for psychiatric patients by the Hospital management and the Doctors.
ii. The Federal Government,

Psychologists and the Doctors should ensure integrating patients' subjective experiences in intervention programs which might have meaningful implications for the improvement of treatment adherence and patients' quality of life.

iii. Implementing suitable interventions by the law makers and hospital management to improve illness perception among psychiatric patients on medication adherence may enhance clinical and humanistic treatment outcomes.

iv. Clinical Psychologists educators should teach the psychiatric patients to emphasize each and every dimensions of medication adherence while giving information to patients with psychiatric issues.

References

American Pharmacists Association (2013). Improving medication adherence among patients with severe mental illness. *Pharmacy Today.* 19(6): 69 - 80.

AMR. M., El-Mogy, A., & El-Masry, R. (2013) Adherence in Egyptian patients with schizophrenia: the role of insight, medication beliefs and spirituality. *The Arabian Journal of Psychiatry*. 24(1): 60 - 68.

Barrwclough, J., Petrie, K.J., Moss-Morris, R., & Horne R. (2001). The Illness Perception Questionnaire: A new method for assessing illness perceptions. *Psychology and Health,* 11: 431–446.

Broadbenta, P., Beard, S., Richter, A., & Kane, J. (2006). An economic review of compliance with medication therapy in the treatment of schizophrenia. *Psychiatry Services,* 54:508

Danladi, J., Falang, K.D., Barde, R.A., &Jimam, N.S. (2013), Pharmaceutical care and medication adherence in management of psychosis in a Nigerian tertiary hospital. *Journal of Research in Pharmacy Practice,* 2(2): 83 -87.

Dassa, D., Boyer, L., Benoit, M., Bourcet, S., Raymondet, P., &Bottai, T. (2010). Factors associated with medication non-adherence in patients suffering from schizophrenia: A cross-sectional study in a universal coverage health-care system. *Australia NZ Journal of Psychiatry*, 44:921–8.

Degoulet, P., Menard, J., & Vu H-A.(2003).Factors predictive of attendance at clinic and blood pressure control in hypertensive patients. *British Medicine Journal,*(287): 88-93.

Goldman, A. I., Holcomb, R., & Perry, H .M (2004).Can dropout and other non-compliance be minimized in a clinical trial? *Controlled Clinical Trials*; 3; 75-89.

Haddad, P.M., Brain, C., & Scott, J. (2014). *Non-adherence with antipsychotic medications in schizophrenia:* challenges and management strategies. Patient Related Outcome Measures.; (5): 43 - 62.

Jigar, M. D., & Rajesh, S.R. (2014). "Primary non-adherence of medications: lifting the veil on prescription-filling behaviours," *Journal of General Internal Medicine*, 25(4): 280-281.

Kassis, I.T., Ghuloum, S., Mousa, H., & Bener, A. (2014). Treatment non-compliance of psychiatric patients; are

patients satisfied from their psychiatrist? *British Journal of Medicine and Medical Research.* 4(2): 785 - 796.

Kraper, J., Marcus, S.C., West, J., Countis, L., Hall, R., Regier, D.A., &Olfson, M. (2004). Substance abuse and the management of medication non-adherence in schizophrenia. *Journal of Nerves Mental Disorder,* 194:454–521.

Lauber, C., Nordt, C., Falcato, L., & Rossler W. (2003). Do people recognise metal illness?Factors influencing mental health literacy. *European Archives of Psychiatry and Clinical Neuroscience,* 253: 248–251.

Leventhal, H., Benyamini, Y., & Brownlee, S. (2017). Illness representations: theoretical foundations. In: Petrie KJ, Weinman J, editors. *Perceptions of health and illness*. Amsterdam: Harwood Academic, pp. 155–188.

Leventhal, H., Meyer, D., &Nerenz. (2008). The common sense representation of illness danger. In S. J. Rachman (Ed.), *Contributions to medical psychology: Vol.2* (pp. 7–30). Oxford:Pergamon..

Livingston, J.D., Boyd, J.E. (2010). Correlates and consequences of internalized stigma for people living with mental illness: a systematic review and meta-analysis. *Social Science Medicine,* 71:2150–2161.

Luscher, T., Dorst, K. G., & Vetter, H. *et al.* (2008). Factors determining compliance in hypertensive patients. *Schweitzer Medicine Wohler,* 112; 458-465.

Marie, M., Sophy, W., William, C., Robert, R., Verbrugge, D., Pittman, V., & Amy, S. (2014). Influence of patient sex and gender on medication use, adherence, and prescribing alignment with guideline. *Journal of Women's Health* 23 (2): 112-119,

Nelson, I. (2006). Non-adherence to antipsychotic treatment in patients with schizophrenic disorders. *Neuroendocrinology Letters* 28 (1): 95–116.

Perry, D. A. (2004). Hughes et al., "A new taxonomy for describing and defining adherence to medications," *British Journal of Clinical Pharmacology*, 73(5):691– 706.

Ritsher, J.B., & Phelan, J.C. (2004). Internalized stigma predicts erosion of morale among Psychiatric outpatients. *Psychiatry Research*, 129(3):257–265.

Rüsch, N., Angermeyer, M.C., & Corrigan, P.W. (2005). Mental illness stigma: concepts, consequences, and initiatives to reduce stigma. *European Psychiatry*, 20(8):529–539.

Sajatovic M, Valenstein M, Blow FC, Ganoczy D, Ignacio RV. (2007), Treatment adherence with lithium and anticonvulsant medications among patients with bipolar disorder. *Psychiatry Services.* 58(6): 855 - 863.

Stein-Shvachman, I.S., Karpas, D.S., & Werner, P. (2013), Depression treatment non-adherence and its psychosocial predictors: differences between young and older adults. *Aging and Disease.* 4(6): 329 - 336.

Stirrat, W., & de Wit, J. (2015). Health impairing behaviours. In *Applied Social Psychology.* Edited by: Semin, G.R, Fiedler K. London: Sage, 113-143.

Victoria, O., Yazdani, M., Yaghoubi, M., &

Namdari, M. (2008). Noncompliance and its causes resulting in psychiatric readmissions. *Iranian Journal of Psychiatry,5(*3)37–42..

Weingarten, M.A., & Cannon, B.S. (2008). Age as a major factor affecting adherence to medication for hypertension in a general practice population. *Family Practice*; 5:294-296.

Weinman, J., Petrie, K.J. (1997). Illness perceptions: a new paradigm for psychosomatics? *Journal of Psychosomatic Research*, 42:113–116.

META-ANALYSIS ON KNOWLEDGE ASSESSMENT METHODS

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Abstract

Knowledge assessment could be a derivative of measurement theories involving metric, normative, and descriptive components. Despite soft criticisms that it only increases the precision of quantitative estimates and not a hypothesis-testing activity, meta-analysis was adopted to evaluateits assessment methodsbased on inherent empirical advantages of knowledge space theory and psychometrics. This is because even small effect(s) which do not meet criterion for arbitrary significance that may limit the remits of primary studies also have significant empirical advantage in meta-analysis. Hence,relevant candidate datawere generated from suitable studies via Google search, ScienceOpen, SciSearch, PubMed/Medline, PsycInfo, PsycARTICLES, PsycTests, and PsycEXTRA. The key pre-defined items include protocol development, information search, study eligibility, relevant studies strategy delineation, creating data collection forms, data extraction process,risk of bias assessment, individual results standardization, and overall effect(s) calculation. Initially, 439 candidate studies were identified and subjected to rigorous inclusion-exclusion processes after which only the adequately eligible 41 studies were retained for final inclusion. The result shows consistency in corroborating that knowledge structure is a domain-specific as well as a deterministic knowledge organization. It supported and further advocates for both direct and indirect assessment approaches adjudged as psychometrically appropriate. There is need for more empirical studies to further determine more superior knowledge assessment method(s) or proffer helpful way of integrating the existing ones towards maximizing impact and result.

Keywords: Assessment; Knowledge; Knowledge space; Meta-analysis; Psychometric model(s)

Introduction

The deliberate action of evaluating someone or something is an assessment or (at least) a process of assessment. Hence, assessment refers to systematic method or procedure for ascertaining the psychological characteristics of individuals or phenomena (Evers, Hagemeister, Hostmaelingen, Lindley, Muniz & Sjoberg, 2013). It could be considered, according to Gandi (2018), as a form of measurement which involves investigation and or testing in order to help predict, understand, score, diagnose, and classify the individual(s) or phenomena being assessed. Knowledge assessment is seen as a phrasal construct usually derivable from measurement theories which involve metric, normative, and descriptive components.

Measurement Theories

The measurement theories of psychometric significance are classical test theory and item response theory. Classical test theory (CTT), which originated from Edgeworth's (1888) suggestion on theory of errors, premised on the assumption that an observed score refers to the sum of true and error scores. It is most often used in empirical applications, starting from physics and astronomy to mental test scores. Taking that into consideration, in line with subsequent refinements and axiomatizations, some deliberate improvements have extended the initially formulated CTT (Borsboom, 2005). Typically, axiomatization corroborated the suggestion to decompose observed scores into their corresponding true and error scores. Thisled to formulating one of the most famous equations (i.e. Observe = True + Error) in measurement. Each item of a measurement scale using CTT reflects the construct or any levels underlying it ((Fayers & Machin, 2009). This in knowledge assessment is itself a test thatreflects underlying cognitive and emotional factors alongside their respective levels when assessing knowledge state, knowledge structure, or knowledge space. Some of the items on particular knowledge assessment measures, as might deductively or inductively be anticipated, would elicit responses that on the average are higher or lower than other items (Fayers & Machin, 2009; Doignon & Falmagne, 2015).

Item response theory (IRT), which focuses more on items of a test and not only the test itself, contributes to a great deal of hypotheses for the observed phenomena and the characteristics of persons (Reckase, 2009). Since a proper assembling of the test procedures would facilitate remedying any constraints that must be met when selecting items, Reckase (2009) hints that it is especially appreciated if the trend in test development and scoring emphasizes the item rather thanthe test as a whole. IRT models could be unidimensional or multidimensional, as the case may be. Unidimensional IRT comprises a set of models with a basic premise that the interactions of a person with the test items can be adequately represented by a mathematical expression containing a single parameter describing the characteristics of the person (Reckase, 2009). Despite its usefulness, the unidimensional IRT model is (in some cases)not without deficiency especially with reference to inadequate level of interaction in terms of complex issues. This suggests the need for more complex (i.e.

multidimensional IRT) models which accurately reflect the complexity of interactions between the respondents and the test items in such cases become necessary (Reckase, 2009). Interpreting the complexity of such interactions in knowledge assessment includes appropriate hypotheses concerning violations among individual respondents on a wide range of traits. The perceived subsets of whatever those traits may be are important for performance on specific test items (Rust & Golombok, 2009).

Multidimensional IRTportrays an idealized form of a theorized model that can only be proven false if tested using a number of observations (not just one). The idealized model, as exemplified in knowledge assessments, usually reflects mathematical expression, just as Asimov (1972) earlier described Galileo in a Church observing the swing of lamps that were hanged from the ceiling by long chains. These lamps were allowed free swings like pendulums and Galileo was reported to have recorded (using his own pulse rate) the length of time taken for each swing. From the swinging-timing observations of the lamps, a mathematical formula which idealizes reality in connection to the swing-time ratio for each pendulum was developed. The same process was used in more complex situations, such as multidimensional IRT, for idealization of reality. **M**ultidimensional IRT models provide an approximation to the relationship between the person's characteristics and their responses to test items. In spite of the fact that it has been a complex set of models, the multidimensional IRT remains the most suitable and highly useful in simplifying reality as compared to other models that are somewhat imaginations of reality (Reckase, 2009).

Knowledge Assessment

The models upon which knowledge assessments are premised include knowledge space theory (KST) and knowledge assessment psychometrics (KAP). KST is a set-and-order theoretical framework (Doignon & Falmagne, 1999; Cosyn, Doble & Matayoshi, 2021) which proposes mathematical formalism to operationalize knowledge structures in a particular domain (Spotto, Stefanutti & Vidotto, 2010). Knowledge state, in this case, refers to collection of problems that the person is capable of solving while a knowledge structure is the collection of knowledge states containing(a) one empty set which implies that none of the problems can be solved by the individual and (b)one Q set which implies that all the problems can be solved by the individual. Knowledge space is a combinatorial structure describing the possible states of knowledge of an individual's learning. The formation of knowledge space involves modelling a domain of knowledge asa set of concepts while the feasible state of knowledge is modelled as a subset of the set containing any concepts known or knowable by individuals. Due to prerequisite relations among the set of concepts, not all the subsets are typically feasible. The knowledge space in this case, therefore, refers to a family of all feasible subsets.

Different knowledge spaces are constructed differently, using the querying experts' method, explorative data analysis method, and analysis of problem solving method. An

adaptive assessment of knowledge, being the most relevant applications of KST, aims at uncovering the individual's knowledge state by presenting them with only minimum number of problems. The deterministic adaptive assessment assumes that any response behaviour is determined by the individual's knowledge state. It includes selecting a problem, from problems in some (not all) of the knowledge states, at each step of the assessment process (Degreef, Doignon, Ducamp & Falmagne, 1986). However, deterministic procedures are sometimes not realistic because they do not account for possible inconsistencies between the individual's knowledge state and any corresponding observed responses.

Falmagne and Doignon (1988b) believe that nondeterministic procedures, which include discrete and continuous, take into consideration the issue of careless errors and lucky guesses. In this wise, the discrete nondeterministic procedure premises on a deterministic procedure which provides preliminary knowledge state that seems so close to a true knowledge state (Falmagne & Doignon, 1988b). Researchers such as Anselmi, Robusto, Stefanutti and Chiusole (2016) corroborate that since presented problems update the preliminary knowledge state in accordance with observed responses, it implies that only errors can differentiate a knowledge state from other neighbouring states in the knowledge structure. According to Falmagne and Doignon (1988a), the continuous nondeterministic procedure considers a likelihood function over the knowledge structure which expresses plausibility of the knowledge states. Based on an individual's response to presented problem, the likelihood function is updated at each step of the assessment process. As soon as sufficient likelihoods are concentrated at particular knowledge state, such as uncovered knowledge state, the assessment stops. This led Hockemeyer (2002) to define assessment efficiency as the number of problems required to uncover knowledge state and also defines assessment accuracy based on the proportion of the correctly identified true knowledge states.

While using KST, Hockemeyer (2002) also found in both evaluated dimensions that continuous nondeterministic procedure has an edge over discrete nondeterministic procedure. There have been situations where knowledge structure is available while no information about the error probabilities of the problems or of the knowledge states. This could be a case of knowledge structures derived through “exerts querying” method in the knowledge domain being investigated (Dowling, 1993; Koppen, 1993), or a cognitively theorized skills that are useful/instrumental for solving problems (Duntsch, 2002; Heller, Unlu Albert, 2013). In any case, it affirms, required response data are normally collected from adequate sample to effectively estimate the adaptive assessment parameter values.

The Knowledge Assessment Psychometrics (KAP) emphasizes the models, instruments, processes and quality of its measurement. Assessment of knowledge, using psychometric method, mimics the processes of test development, administration, scoring, analysis and results interpretation. It involves measuring a single attribute with multiple component items, based on validation

methods, which measure the same single attribute (i.e. latent variable). Fayers and Machin (2009) argued that when multiple items are used in assessing a variable(s), there is often a model in mind for their structural relationships. This gave rise to the fact that psychometric thinking focuses on how latent variable (in any case) manifests itself in relation to the observed variables.

In knowledge assessment psychometrics, indicator variables that reflect knowledge being sought for are, according to Borsboom (2009),enmeshedin data collected for exploration and testing to determine whether the variables fit the model. Consequent upon this, suitable training evaluation models emerged at different periods for various purposes. These models, which contribute to knowledge assessment, include Kirkpatrick model, CIRO model, Phillips ROI model, Brinkerhoff model, Kaufman's model, and Anderson model (Deller, 2020). Since psychometric theories presumed that all the items in assessment scales are indicator variables, it therefore emphasizes the construction, validation and testing of models which paves the way for appropriate assessments, analyses and interpretations (Gandi, 2018; 2020).

Psychometric tests are forms of knowledge assessments. This is why Borsboom (2009) submits that "teachers would have students tested, parents would have their children's capacities assessed, countries do test their pupils for school placements, corporate firms as well as industries test applicants and personnel for respective job positions etc". Scholars (such as Amelia, Abdallah, & Mulyadi, 2019) reasoned that the assessment types, based on their purposes, include diagnostic, formative, summative, confirmative, norm-referenced, criterion-referenced, ipsative, and portfolios assessments. The key variables in this case include intelligence, exposure/experience, socioeconomic status, physical/mental health, and others which contribute to determiningthe person's knowledge structure, knowledge state, and knowledge space (Gandi, 2018). Intelligence consists of spatial, verbal, perceptual, numerical and emotional components; exposure/experience could be sequel to learning, study, observation, or personal encounter(s); socioeconomic status defines an individual's level of being such as high, moderate or low in relation to meeting their needs; while physical/mental health explains the health situation in relation to their functioning, among other things.

In the light of the above, there seems to be a cogent need to analyze knowledge assessment methods from the perspectives of Knowledge Space Theory (KST) and Knowledge Assessment Psychometrics (KAP). This is because the Knowledge Space Theory (KST) is a preferred theoretical framework that could effectively premise such analysis (Falmagne, Albert, Doble, Eppstein & Hu, 2013; Cosyn, Doble & Matayoshi, 2021) while the Knowledge Assessment Psychometrics (KAP) is a suitable conceptual framework since such assessments seem as derivatives of measurement theories (Borsboom, 2009; Amelia, Abdallah, & Mulyadi, 2019). This may also help to bring into focus the conceptual-functional integration of knowledge structure and psychometric

techniques for effective assessment that could result into a greater meaningful impact, not undermining the primary focus of meta-analyzing the overall knowledge assessment methods for greater good.

Methods

Research Design and Instruments / Techniques

The study adopted meta-analytic design to investigate knowledge assessment methods. Though seemingly nota hypothesis-testing activity (Charlton, 1996), meta-analysis significantly increases the precision of quantitative estimates and specifically has the advantage of testing the predictions of hypotheses resulting fromprimary studies (Abfalg, Bernstein & Hockley, 2017). While primary research often only culminates in the conclusion that does or does not exist, the meta-analytic study considers even small effects that do not meet arbitrary significance criterion. It is an analytical comparison where known variances of the within-group are compared to unknown variances of large-sample theory, thereby exploring suggested generalizations.

Sundry forms that constitute the study instruments include protocol development form, initial eligibility screening form, data collection and extraction forms, and checklist schedule. The techniques (i.e.methods) adopted to generate the various candidate studies as required data include Google search and accessible databases such as ScienceOpen, SciSearch, PubMed/Medline, PsycInfo, PsycARTICLES, PsycTests, and PsycEXTRA.

The statistical techniques include two one-sided tests (TOST) for two proportions' equivalence ratio test, Neyman-Pearson analysis for testing pre-specified type 1 error rate, and I-squared (I^2) statistic for heterogeneity (consistency) check. These were chosen because of their respective relevance in(a) analyzing equivalence tests, (b) clarifying the ratio of any two proportions, and (c) helping to effectively compute power and effect size (Lakens, 2017; Schirmann, 1987). Thus, these techniques are considered suitable for meta-analysis that seeks to increase the precision of quantitative estimates and the prediction of hypotheses resulting from primary studies.

Sampling of and Data Collection from Selected Candidate Studies

Firstly, an all-inclusive systematic review derived the study candidate data by selecting, evaluating, and synthesizing all available evidences as relates to knowledge assessment methods. Secondly, meta-analysis helped in combining the generated data by collating and coding them towards the most appropriate but simple testing. The meta-analytic review process was based on pre-defined participating candidate studies and the following methodical data collection steps:

Step 1: *Protocol development.* Although the study protocol does not require any formal approvalfrom an IRB or any Ethics Committee, certain aspects required an informed consent from the respective authors.Someincluded papers (considered by the authors as classified) were accorded due privacy and confidentiality, in addition to the informed consent obtained from authors.

Step 2: *Information sources and search*. The databases consist of the dates of coverage, contact with study authors for possible additional studies, dates last searched, and full electronic search strategy for database including any limits used and possibility of repetition were accorded high priority.

Step 3: *Defining eligibility criteria for the data to be included.* The adopted suitable criteria helped in defining compatible articles as well as in selecting those to be assessed for common and reliable outcomes. The generated articles were based on pre-defined keywords which includeassessment, knowledge, knowledge assessment, knowledge space, meta-analysis, psychometrics, and psychometric model(s) in relation to knowledge assessment methods.

Step 4: *Strategy delineation for identifying the relevant studies*. Study selection, i.e.the process for selecting suitable candidate studies, significantly considered the eligibility screening for both systematic review and meta-analysis in line with the research focus and relevance of study. This strategy facilitated selecting particular most appropriate candidate studies for inclusion in the analysis.

Step 5: *Creating standardized form(s)*. At this point, some independent observers who were blinded to all identifying factors have facilitated reliable data extraction. The identifying factors used in this case include: (1) authors and their institutions, (2) names of the journals, (3) sources of funding (if any), and (4) appropriate acknowledgements.

Step 6: *Data extraction and risk of bias assessment*. Respective titles and abstracts were independently screened by two independent peer-reviewers whose inputs and outputs contributed towards avoiding risk of bias in assessment and ensuring appropriate data extraction. Efforts to further eliminate bias led to implementing the extraction process by a different set of other two independent reviewers as added layer of double blind quality assurance. This ensures psychometric optimality to some extent.

Step 7: *Standardizing individual results for comparison between studies*. In order to compare various generated results, after data collection in form of suitable candidate studies, the individual results acceptable for homogeneity were standardized to something homogenous. This was complemented by the extracted mean differencesfor continuous outcomes while the odd ratios (or relative risks) were succinctly considered for binary outcomes.

Step 8: *Overall effect calculation by combining the data.* From a methodological point of view, simple arithmetic averages are not considered asbeing a significantly reliable way of comparing outcomes. Since different sample sizes have different statistical power, the weighted averages of any results with more influence than the smaller ones were used. This has implication for the ever well celebrated models of"fixed effects" and "random effects".

Results

Initial searches identified a pool of 467studies which included Google search (41studies), SciSearch (49 studies),

PubMed/Medline (63 studies), PsycInfo (72 studies), PsycARTICLES (86 studies), PsycTests (44 studies), PsycEXTRA (85 studies), and manual journals (28 studies).

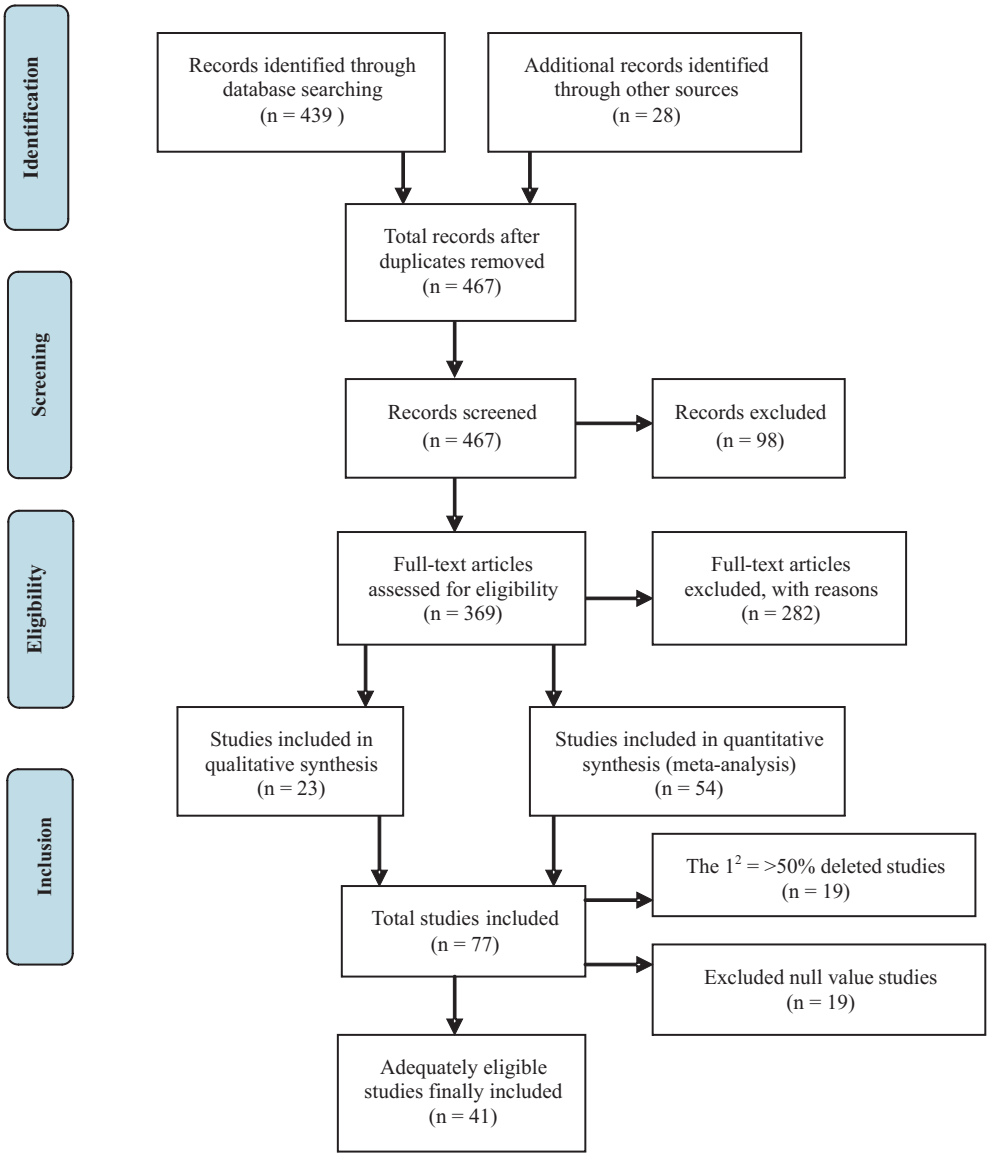

Figure 1. Article selection, screening, eligibility and inclusion flow chart

The 467 studies, following rigorous inclusion-exclusion processes (Figure 1), dropped 98 whileadditional 282 were excluded to avoid possible within-studies risk of bias.The 77 retainedstudies (23 qualitative and 54 quantitative syntheses) were subjected to heterogeneity check for consistency (I^2). The I^2 detected heterogeneity value (>50%)led to deleting 19 studies for inconsistency and another 19 for having/reflecting null values comparable to "crossing vertical line and evidently lying within 95% confidence intervals". Consequently, only 41 adequately eligible candidate studies (see Figure1) were retained for final inclusion.

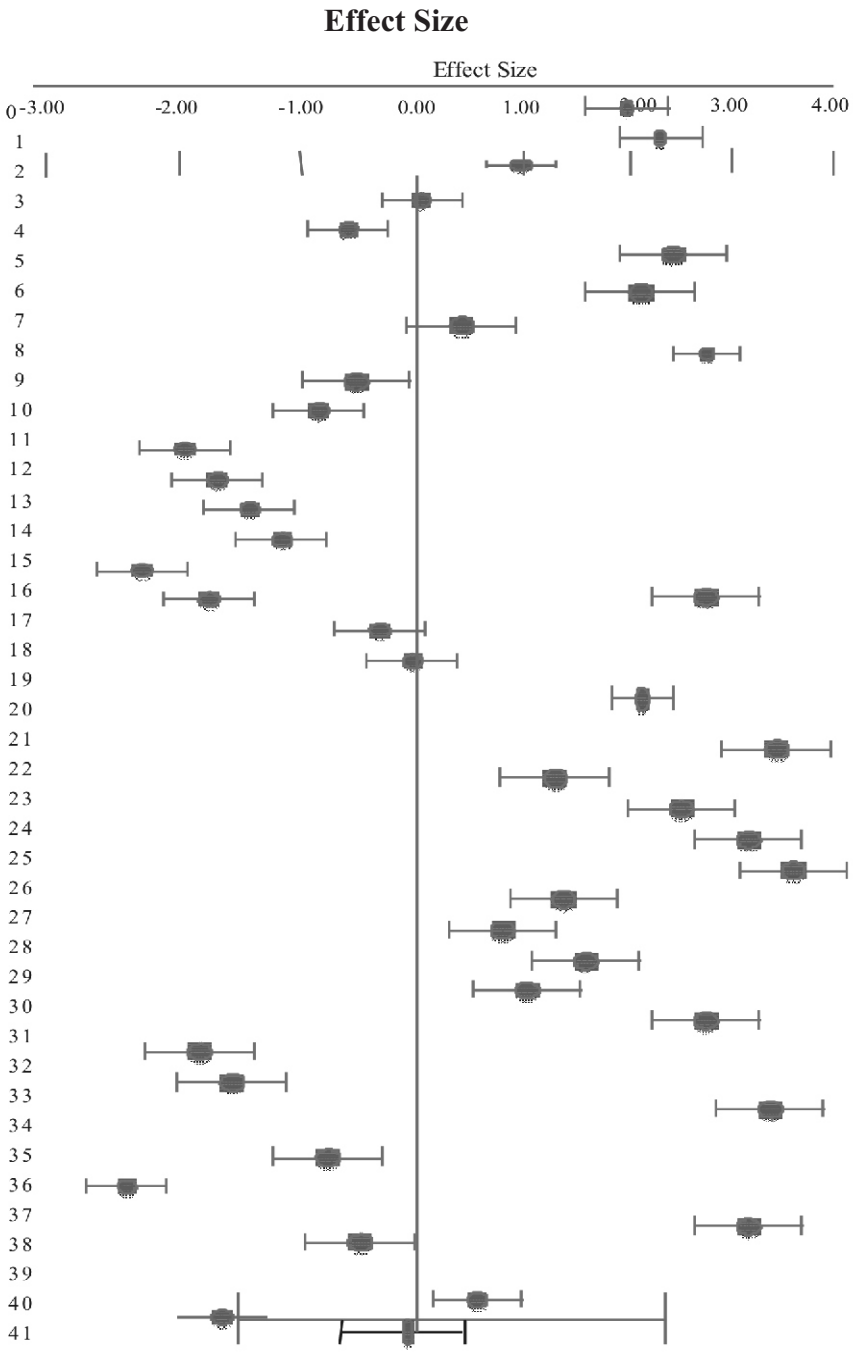

Figure 2. Forest plot showing effect size and confidence intervals

A forest plot was used (Figure 2) and it could be noted that: (a) the results of analysis have been plotted as diamond-like structures, (b) each horizontal line represents individual study with a corresponding 95% confidence interval, (c) individual candidate studies combined at the bottom and reflected their mean, and (d) horizontal points represent the limits of 95% confidence interval which applies to the combined studies as did to the individual studies. Findings from analytical comparison of within-group's known variances to the large-sample theory's unknown variances have been so revealing. It

corroborates the position of Hedges, Cooper and Bushman (1992) that tests based on average effect size are usually more powerful than Stouffer test, if there is no substantial negative correlation between within-study sample size and effect size.

Discussion

The meta-analysis was performed directly on the raw difference in means because of its intuitive meaningfulness and widespread use. Since combined effects (combined p values) and tests of the weighted mean effect size are used for combined information across studies in meta-analysis (Hedges, Cooper & Bushman, 1992), a combined significance test is compared with a test based on mean effect size as the tests of null hypothesis in the study. This meta-analytic review, as succinctly summarized on flow chart (Figure 1) and forest plot (Figure 2), shows efficiency and accuracy of a continuous assessment procedure probably due to consistency check which have helped to avoid heterogeneity. This further corroborates Heller and Repitsch (2012) who observed that incorrect error probabilities (as in false negative) and incorrect prior information have the tendency to hamper efficiency and accuracy of a continuous procedure. It characteristically implies that determining knowledge truth should not necessarily be part of those favored by the initial likelihood. There are situations where knowledge structure might be available without corresponding information about the error probability of the problems, or even of the knowledge states itself. This could be the case of knowledge structures derivable from "experts querying" in a particular knowledge domain that have been under deliberate investigation (Dowling, 1993; Koppen, 1993), or the cognitively theorized skills useful/instrumental for solving problems (Duntsch, 2002; Heller, Unlu & Abert, 2013). A number of the response data collected from adequate suitable candidate studies in this case have effectively shown the adaptive assessment parameter values.

The study re-emphasized (by inference) that choosing assessment method involves ensuring the method has been designed to provide required evidence that determines the extent to which goal and outcome are achieved. Assessments as instruments are tools used for measuring knowledge, while assessments as procedures are the techniques or processes of measuring knowledge. The intended assessment goals and outcomes normally influences the choice of respective methods. This meta-analysis has further shown that there are numerous assessment methods for determining knowledge which have been broadly categorized intodirect and indirect methods.

Direct assessment methods require participants to demonstrate their knowledge, thought processes, or behavior. These are typically preferred for assessing knowledge during or after a learning situation. Typically, diagnostic, formative, confirmative, norm-referenced, criterion-referenced, ipsative, and portfolios assessments. In identifying effective communication as a goal (for instance) the direct method will involve observing and assessing participants, probably via presentation scored with a rubric. The indirect assessment methods require participants to reflect upon their knowledge, thought processes, or behavior.

These are typically preferred for assessing knowledge by way of aptitude testing approach (including diagnostic and evaluative assessments). In identifying effective oral communication as a goal (for example), the indirect method requires participants to indicate how effective they individually think they are, probably using survey-like instrument with a rating scale.

Analysis findings support the fact that deterministic models, just as a knowledge structure is to domain-specific knowledge organization, lacks realistic prediction of the person's responses to problems. The study inferred that this might have informed the introduction of a probabilistic knowledge structure, as emphasized by Anselmi, Robusto, Stefanutti and Chiusole (2016), resulting to probability distribution formula. Knowledge state (a latent construct) and response patterns (a manifest indicator of the latent construct) seems not to show perfect correspondence and this necessitates making a distinction between them. Therefore, it justifies the rationale for introducing a careless error probability and a lucky guess probability in each problem situation (Anselmi et al., 2016).

Conclusions

The study shows consistency in supporting the fact that knowledge structure is a significantly deterministic domain-specific knowledge organisation which lacks required realistic prediction of the person's responses to problems. Hence, for more efficiency and accuracy in assessing knowledge, the knowledge structure needs to be considered alongside the knowledge space and the knowledge state.Among different knowledge assessment methods, this meta-analysis supported and further advocates for diagnostic, formative, evaluative, summative and cumulative methods to be adopted in respective assessment situations. Thus, both direct and indirect methods are psychometrically appropriate as their reliable and validity have been established in the studies meta-analysed herein. This means effective monitoring and evaluation tasks, toward appropriate knowledge assessment, should be strategised in such a way that reliance on knowledge structure as domain-specific as well asknowledge space and state as deterministic factors are properly resolved.

Recommendations and Suggestions

The study has supported and further advocates for diagnostic, formative, summative, confirmative, norm-referenced, criterion-referenced, ipsative, and portfolios assessment approaches. Thesehave been the direct and indirect assessment methods adjudged psychometrically appropriate. Integrating them confirms knowledge structure being defined in the knowledge space theory as critical in effective knowledge assessments. Notwithstanding this analysis, there is need for more empirical studies to further determine more knowledge assessment method(s) or find other suitable ways of integrating the existing ones referred to in this case.

References

Abfalg, A., Bernstein, D. M., & Hockley, W. (2017). The revelation effect: A meta-analytic test of hypotheses. *Psychonomic Bulletin & Review, 24*, 1718-1741.

Amelia, N., Abdallah, A. G., & Mulyadi, Y. (2019). Meta-analysis of Student Performance Assessment Using Fuzzy Logic. *Indonesian Journal of Science & Technology, 4*(1), 21-36.

American Psychological Association (2016). Standards for Educational and Psychological Testing. Washuington DC:APA

Anselmi, P., Robusto, E., Stefanutti, L., & Chiusole, D. D. (2016). An Upgrading Procedure for Adaptive Assessment of Knowledge. *Psychometrika, 81*(2), 461-482.

Asimov, I. (1972). Asimov's new guide to science. New York: Springers.

Borsboom, D. (2005). *Measuring the Mind: Conceptual Issues in Contemporary Psychometrics*.UK: Cambridge University Press.

Borsboom, D. (2009). *Measuring the Mind: Conceptual Issues in Contemporary Psychometrics*. UK: Cambridge University Press.

Charlton, B. G. (1996). The uses and abuses of meta-analysis. *Family Practice, 12*(4), 397-401.

Cosyn, E., Uzun, H. B., Doble, C., & Matayoshi, J. (2021). A Practical Perspective on Knowledge Space Theory: ALEKS and its data. *Journal of Mathematical Psychology, 101*, 1-31.

Cronbach, L. J. (2004). My current thoughts on coefficient alpha and successor procedures. *Educational and Psychological Measurement*, *64*, 391-418.

Cronbach, L. J., Glesser, G. C., Nanda, H., & Rajaratnam, N. (1972). *The dependability of behavioral measurement: The theory of generalizability for scores and profiles*. New York: Wiley.

Degreef, E., Doignon, J.-P., Ducamp, A., Falmagne, J.-C. (1986). Languages for the assessment of knowledge. *Journal of Mathematical Psychology, 30*, 243-256.

Deller, J. (2020). Training Evaluations Models: The Complete Guide. *Kodo Survey*.

Doignon, J.-P., & Falmagne, J.-Cl. (2015). *Knowledge Spaces and Learning Spaces*. arXiv:1511.06757

Doignon, J.-P., & Falmagne, J.-Cl. (1999). *Knowledge Spaces*. Springer-Verlage. ISBN 978-3-540-64501-6

Doignon, J.-P., & Falmagne, J.-Cl. (2015).*Knowledge Space and Learning Space*. arXiv:1511.06757.

Dowling, C. E. (1993). Applying the basis of a knowledge space for controlling the questioning of an expert. *Journal of Mathematical Psychology, 37*, 21-48.

Dunn, T. J., Baguley, T., & Brunsden, V. (2014). From Alpha to Omega: a practical solution to the pervasive problem of internal consistency estimation. *British Journal of Psychology, 105*(3), 399-412.

Duntsch, I., & Gediga, G. (2002). Skills and knowledge structures. *British Journal of Mathematical and Statistical Psychology, 48*, 9-27.

Easton, S. A., & van Laar, D. L. (2012). *User Manual for the Work-Related Quality of Life (WRQoL) Scale: A Measureof Quality of Working Life*. UK: Portsmouth University.

Edgeworth, F. Y. (1888). The Statistics of Examinations. *Journal of the Royal*

Statistical Society, 51, 598-635.

Embreston, S. E., & Reise, S. P. (2010). *Item Response Theory* (2nd ed.). New York: Routledge Academic.

Evers, A., Hagemeister, C., Hostmaelingen, A., Lindley, P., Muniz, J., & Sjoberg, A. (2013). European Federation of Psychological Associations (EFPA) Review Model for the Description and Evaluation of Psychological and Educational Tests-Version4.2.6. EFPA Board of Assessment Document 110c.

Falmagne J.-C., & Doignon, J.-P. (1988a). A class of stochastic procedures for the assessment of knowledge. *British Journal of Mathematical and Statistical Psychology, 41*, 1-23.

Falmagne J.-C., & Doignon, J.-P. (1988b). A Markovian procedure for assessing the state of a system. *British Journal of Mathematical and Statistical Psychology, 32*, 232-258.

Falmagne, J-C., Albert, D., Doble, C., Eppstein, D., &Hu, X. (2013). *Knowledge Spaces: Applications in Education*. Springer: New York.

Fayers, P. M., & Machin, D. (2009). *Quality of Life: The assessment, analysis and interpretation of patient-relatedoutcomes* (2nd Edn). West Sussex: Wiley.

Gandi, J. C. (2012). Empowermental partnership in coping system (EPiCS) index: measuring treatment impacts and quality of life in chronic illness. *African Journal of Applied Psychology, 6* (11&12), 25-44.

Gandi, J. C. (2018). *Development and Validation of Health Personnel Perceived Quality of Life Scale* (Unpublished doctoral thesis). University of Ibadan, Nigeria.

Gandi, J. C. (2020). Psychoperiscope. In: Wiberg M., Molenaar D., Gonzalez J., Bockenholt U., Kim J. (eds) *Quantitative Psychology*, 322, 299-318. IMPS 2019. Springer Proceedings in Mathematics and Statistics, 322, 299-318. Switzerland, Cham: Springer.

Hedges, L. V., Cooper, H., & Bushman, B. J. (1992). Testing the Null Hypothesis in Meta-Analysis: A Comparison of Combined Probability and Confidence Interval Procedures. *Psychological Bulletin, 111*(1), 188-194.Doi:10.1039 /0033-2909.111.1.188

Heller, J., Unlu, A,& Albert, D. (2013). Skills, competencies and knowledge structures. In J.-C. Falmagne, D. Albert,C. Doble, D. Epstein & X. Hu (Eds), *Knowledge Spaces: Applications in Education* (pp 229-242). Berlin, Springer.

Hockemeyer, C. (2002). A comparison of nondeterministic procedures for the adaptive assessment of knowledge. *Psychologische Beitriige, 44*, 495-503.

Hutz, C. S., Bandeira, D. R., & Trentini, C. M. (2015). Psicometria. Porto Alegre, Artmed.

Koppen, M. (1993). Extracting human expertise for constructing knowledge spaces: An algorithm. *Journal of Mathematical Psychology, 34*, 311-331.

Lalanne, C. (2010). Applied Psychometrics with Illustrations in R (1st edn). Downloaded on 24/05/2016 from www.aliquote.org

Rao, C.R., & Sinharay, S. (2007). *Handbook of Statistics on*

***Psychometrics*, 26. Elsevier B. V.**

Reckase, M. D. (2009). *Multidimensional Item Response Theory: Statistics for Social and Behavioral Sciences*. NewYork:Springer.

Rust, J., & Golombok, S. (2009). *Modern Psychometrics: The Science of Psychological Assessment* (3rd edn). London: Routledge.

Spoto, A., Stefanutti, L., & Vidotto, G. (2010). Knowledge space theory, formal concept analysis, and computerized psychological assessment. *Behavior Research Methods, 42*(1), 342-350.

Stevens, S. S. (1951). Mathematics, Measurement and Psychophysics. In S. S. Stevens (Ed.), *Handbook of Experimental Psychology* (pp.1-49). New York: Wiley.

Trochim, W. M. K., & Donnelly, J. P. (2008). *The Research Methods Knowledge Base* (3rd Edition). Atomic Dog, apart of Cengage Learning.

Van der Linden, W. J. (2005). A comparison of item-selection methods for adaptive tests with content constraints. *Journal of Educational Measurement*, *42*, 283-302.

LEVEL OF EDUCATION AND CRIMINALITY AMONG YOUTHS IN JOS METROPOLIS

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Abstract

Youth criminality is increasingly becoming a serious and unbearable situation in Nigeria, but little is known about some of the crucial factors responsible for it. In this research, we examined level of education and criminal behaviour among youths in Jos metropolis. The study adopted a cross-sectional survey design using simplerandom sampling method to recruit 100 youths who had indulged in various acts of criminality within Jos metropolis. A questionnaire containing measures of demographics (which includes level of education) and Criminal Behavior Scale (CBS) were utilized to collect data. One hypothesis was formulated and tested using One-way Analysis of Variance at p<.05 level of significance. Results indicated that criminal behaviours exhibited by the youths in Jos metropolis varies as with their level of educational attainment ($F_{(2,98)=}$10.88 p? .05). Further results on the variations revealed that youths with the least educational qualification (i.e. primary school level) committed higher crimes ($\bar{X}$=19.41; SD= 5.32) compared to those who have secondary ($\bar{X}$= 15.10; SD= 4.83) and tertiary education ($\bar{X}$=13.20; SD= 4.03). These results imply that youths criminality varies across their educational level and those with the least education tend to indulge more in crime. Therefore, government and other stakeholders to provide educational and employment opportunities of the youths, especially those with elementary education so as to tame criminality in Jos and Nigeria in general.

Keywords: Level of Education, Criminal Behaviours, Youths.

Introduction

The menace of crime and criminality among the youths has emerged as one of the disturbing phenomena of the 21st century. It has been estimated that over 200,000 crimes are committed almost daily by youths between 15 to 29 years (World Health Organization, WHO, 2020), making youth criminality the fourth leading cause of death among young people (World Health Organization,2020). The situation has become more precarious and prevalent in unrestrained societies like Nigeria where criminal behaviours among youths have reached unimaginable proportion (Michael, Iyang & Ojeka.2016). Within the last four years, rate of youth criminality in the country has become worrisome and disturbing. This is evident in daily news report of various crime such as robbery, pilfering, burglary, car theft, rape, kidnapping, internet scam and other social media crimes (Ibrahim, 2019; The Punch, 2019). Although crime and criminality in Nigeria is pervasive and cut across different age groups, emerging reports have attributed most criminal behaviours to youths(Osawe, 2015; John, Andrew & Alexander, 2020).

According to Walter and White (1988), criminality is a behavioural life pattern of irresponsible, self-indulgent, interpersonally

intrusive, social rule-breaking behaviour. Crime or criminality is a legal term used in defining a certain behaviour with respect to violation of stated norms and laws of a particular society. This could be in form of misdemeanor or felony and may include examples such as rape, murder, aggravated assault, kidnapping, theft, arson amongst others. Presently, Nigeria is experiencing one of the most disturbing moments in crime and criminality index. Since 2018, crime and criminality amongst Nigerian youths have reached a worrisome level as evident through increasing act of robbery, pilfering, burglary, rape, internet scam and kidnapping (Ibrahim, 2019). This has led to unwarranted consequences, including pain, general anxiety, loss of lives and property and a threat to the security, stability and national unity (Ibrahim, 2019). Thus, Nigeria which was known for its peaceful and tranquil atmosphere has suddenly become chaotic and volatile.

In Jos metropolis, the spate of youth criminality has reached an unimaginable proportion. Criminal activities such as kidnapping,rape, gang killing and most recently "operation Shara" have become very common among the youths (Ibrahim, 2022). For instance, the ever-busy Jos-Bauchi road in Jos North local government area have become endangered route for travelers who are usually ransacked, robbed and even killed (Ibrahim, 2022). This is in addition to many other crimes perpetrated amongst Shara boys, including rape, sexual and drug abuse that have become highly prevalent and a serious threat to peace and development of the area.

Surprisingly, despite its increasing prevalence and consequences, little has been done in area of empirical investigation to unravel associated risk, particularly on whether education may play a role in youth criminality in Nigeria. Although previous research have linked several risks factors, such as unemployment, personality differences and socio-demographic characteristics to crime (Adebayo, 2013; Ajaegbu, 2012), the role of educational level in youth criminality is not well researched. Education has been acknowledged as a powerful tool in the development of human capital, including moral and intellectual knowledge.Scholars such as Kyalo and Kyalo (2011) and Fountain (2000) opines that education promotes the acquisition of knowledge, skills, attitudes and values that eventually lead to behaviour change and harmonious coexistence in society. It is through the transformation of personal characteristics that enable children and youth to curb overt and structural conflicts and violence that ensure conducive and crime-free society. Thus, it is expected that, differences in educational attainment among the youths would impact differentially, their sense of morality, attitudes and sense of reasoning that ultimately influence criminality in the society.

More specifically, disparities in educational attainment has been reported to be among the causes of youths' exclusion from the labour market, which increases frustration and subsequent indulgence in violence and criminality. According to Organization for Economic Co-operation and Development ([OECD], 2015), low educational qualifications has remained a serious threat

to the peace and stability in many countries as it declines employment opportunities for the youths, making them vulnerable to crime.Literature also indicates that the education acquired byindividuals plays a big role in shaping their perceptionsregarding their interaction with the world and furtherinstilling values of citizenship, responsibility andCooperation (Senga & Kiilu, 2022). A survey carried out in theUnited States of America (USA) and Britain to establishthe level of conflict among the youth indicated an escalating rates of crime. In the USA for example, 188,000 criminal cases reported among youths were linked to low level of educational attainment (Nourollah, Fatemeh & Farhad, 2015).Similarly, Fajnzylber, Lederman and Loayza. (2002); Anderson (2012) research findings have linked criminal behaviours such as theft to educational level, with higher educational levels being associated with less crime. In contrast, asurvey of 1,357 adults in the West Bank and Gaza foundthat the better-educated groups who included secondary school graduates and professionals supported terrorism activities against Israeli citizens compared to labourers and illiterate communities (Palestine Center for Policy and Survey Research, 2001; cited in Senga & Kiilu, 2022).

Therefore, given that most criminal activities in Nigeria and Jos in particular are perpetrated by youths (Ibrahim, 2022) whose educational levels may differ, and considering some inconsistent findings on the role of educational level on criminality, further research is needed, especially in this study area. Consequently, our main objective was to examine the disparity in criminal behaviours among youths in Jos metropolis, based on their educational levels. This study was guided by one research hypothesis, which stated whether there would be any significant differences in criminal behaviours among youths in Jos based on their level of education.

Method

Participants and Procedure

The present research was a cross-sectional survey conducted among youths in Jos metropolis. Jos metropolis comprised three local government areas, namely; Jos North, Jos South and Jos East respectively. Participants comprised 100 youths aged 17-53, who reported indulgence in criminality and also met other criteria for inclusion. Further analysis of their demographic information revealed that a total of 51 (51%) were Muslim, while 49(49.0%) were Christians. Majority 39(39%) were sampled from Jos North, 31(31.0%) from Jos South, while 30 (30.0%) were recruited from Jos East local government area. Majority of the youths 56(56.0%) recruited were from polygamous family, while about 61(61%) are currently unemployed. Information on participants' level of education indicated that a total of 28 (28%) had primary education, 48(48%) had education up to secondary school level, while 24(24%) had tertiary educational qualification.

Participants were sampled at six different locations in the three local government areas where criminality has been on the increase. These six locations were randomly picked from several other locations that have been a hub of criminality in the metropolis.

Participants who met inclusion criteria were then selected from the locations after obtaining their consent. Data collection was conducted in adherence with the ethical provisions of Helsinki, which guaranteed voluntariness, confidentiality and anonymous data gathering to the respondents.

A total of 120 questionnaires were administered to eligible participants across the six randomly selected locations in the three local governments. At each location, the researchers approached eligible and available participants, informed them about the study and sought their consent for participation. Respondents who consented to participate in the research were then issued a questionnaire that contained measures of demographic characteristics and criminality. The first section on demographic characteristics also assessed the main independent variable of the study, as it required participants to indicate their level of education. All participants took approximately 5 minutes to personally respond to the questionnaire which was compiled in simple and straightforward English. In order to enhance clarity and validity of data collection, the researchers were always on ground to provide clarification whenever necessary. Although 120 questionnaires were administered, only 100 returned with usable data, representing 83.3% return rate.

Measures

Level of education: Participants' level of education was assessed in the first section of the questionnaire, which was on demographic characteristics. The first item of the section requested them to indicate their educational level, whether they had primary, secondary or post-secondary qualification.

Criminality: Youths' criminal behaviour was measured using the Crime and Violence Scale (CVS) developed by (Conrad, Barth, Riley, Conrad, et al. 2010). This scales measures the types of drug-related, property, and interpersonal crimes that respondent has committed in the past year. The CVS also includes serious crimes such as homicide and rape (White 2005). The CVS consists of four conceptually distinct subscales with a total of 31 dichotomous items. Its subscales are the: 12 item General Conflict Tactic Scale (GCTS), 7-item Property Crime Scale (PCS), 7-item Interpersonal Crime Scale (ICS), and the 5-item Drug Crime Scale (DCS). The items for the GCTS reads: "During the past 12 months, have you done the following things?" Response format is Yes/No (coded: no=0, yes=1). The items for the other scales reads: "During the past 12 months, how many times have you committed a particular crime as indicated" While the response set is in "times", it is dichotomized to as 0 for none and 1 for one or more times for this scale. In the present research, we computed the total scores for all the subscales to obtain a composite scores of criminality.

The Crime and Violence scale has been widely used among youths and found to be a good measure of criminal behaviour, with acceptable psychometric properties (Cronbach's alpha of 0.81 (Conrad, Barth, Riley, Conrad, et al. 2010). In the present study, we obtained a reliability coefficient of 0.78, which makes is acceptable, usable and

suitable for gathering data on youths' criminality in the study area.

Data Analysis

The research hypotheses were analysed using Statistical Package for Social Sciences (SPSS-Version 23). Specifically, we made use of simple percentages to analyse demographic data, while One-Way analysis of Variance was used to determine the significant difference in criminality among the youths based on their level of education.

Results

The first hypothesis of the study stated that there is a significant difference in criminal behaviour manifested by youths in Jos metropolis based on their level of education. This hypothesis is tested and result is presented in Table 1

Table 1: Summary of a One-way Analysis of Variance Showing Significant Difference in Criminal Behaviour by Youths in Jos Metropolis based on their Level of Education.

Dependent	Source	SS	MS	df	F-ratio	P
	Between groups	497.563	248.78	2		
Youth Criminality	Within groups	2126.271	22.86	98	10.88	<.05
	Total	2623.833		100		

As sown in Table 1, there is significant difference in criminal behaviour exhibited by the youths in Jos metropolis due their level of educational attainment (F $(_{2,98)=}$ 10.88 p?.05). However, in order to determine the level of education that has greater association with criminality, the Least Significant Difference (LSD) multiple comparison analysis was used as presented in Table 2

Table 2: LSD Summary table showing the Mean differences in Criminality based on Youth's Educational Level

Variable	1	2	3	Mean	SD	N
Primary	-			19.41	5.32	28
Secondary	.4.31*	-		15.10	4.83	48
Tertiary	6.20*	1.89	-	13.20	4.03	24

As shown in Table 2, there is a significant difference in criminal behaviour exhibited by the youths across their levels of educational attainment. Specifically, criminality mean scores for youths who have primary educational level is significantly higher ($\bar{X}$=19.41; SD= 5.32) compared to those who have secondary school ($\bar{X}$= 15.10; SD= 4.83) and tertiary education ($\bar{X}$=13.20; SD= 4.03). This result means that youths with low education (primary) reported higher indulgence in criminality than those who had advanced education. Also looking at the mean differences, it can be observed that there is a significant mean difference on criminality between youths with primary and secondary educational levels (MD=4.31; $p<.05$*) as well as primary and tertiary educational levels (MD=6.20;$p<.05$*), while the mean difference between secondary and tertiary educational level is insignificant (MD=1.89;$p>.05$). In all, youths' indulgence in criminal behaviour in Jos metropolis varies across their level of educational attainment and the most vulnerable of youths with primary education.

Discussion

The problem of criminality among youths has become very common and devastating. In spite of continuous research to identity risks and ameliorate the problem, youths criminal behaviour has continued to rise, especially in Nigeria. Therefore, in response to identified research gaps and inconsistent findings, we examined whether educational levels could explain variations in criminal behaviours exhibited by youths in Jos metropolis. This research was guided by one hypothesis, which examined whether the reported criminality among the youths varies across their level of educational attainment. One-way analysis of variance was utilized to test the research hypothesis.

Research findings confirmed the hypothesis that criminal behaviours exhibited by the youths significantly varies across their level of education. In other words, educational attainment of the youths related significantly with their level of education. More specifically, youths with the lowest educational level (.i.e. primary education) committed the highest level of criminal activities, followed by those with secondary school education. However, youths with post-secondary education were the least to indulge in criminality in the metropolis. This result has shown that there are disparities in criminality among the youths, and this is due to their level of education. This support the research findings of Nourollah, Fatemeh and Farhad (2015), which linked youths' criminality with low educational attainment. According to these researchers, more than 188,000 criminal cases reported among US youths were linked to low level of educational attainment. Relating this with the views of Kyalo and Kyalo (2011), education provides and promotes the acquisition of knowledge, attitudes and values that transform an individual and influence his peaceful co-existence in the society. It is through such changes that a sense of sound judgement and morality is developed, which tend to discourage crime. Therefore, lack or little educational attainment is likely to deprive youths in this category of such resources, making them more vulnerable to crime.

Similarly, the current finding aligns with

Anderson (2012) results which indicated that most criminal behaviours are mostly linked with youths with lower educational levels. Our research finding is however at variance with a survey of 1,357 adults in the West Bank and Gaza which found that the better-educated groups who included secondary school graduates and professionals supported terrorism activities against Israeli citizens compared to labourers and illiterate communities (Palestine Center for Policy and Survey Research, 2001; cited in Senga & Kiilu, 2022). In all, this research has shown that when young people progressively acquire western education, the possibility of them indulging in criminal behaviours is diminished.

In conclusion, our research has clearly indicated that educational level or qualification of the youths in Jos has significant implication for the crime in the metropolis. Youths who lack adequate formal education are also more likely to have deficiency in understanding the consequences of indulging in crime and therefore tend to commit more crime. On the other hand, those with advanced education may acquire more positive knowledge and attitudes against indulging in criminal activities. It is also possible that, as a result of little education, youths with lower level of education may have limited employment opportunities which could further increase their frustration tendency to involve in crime. Based on this, our study recommends that more educational opportunities should be created and made free for youths to facilitate academic and moral training that ameliorates both criminal intentions and behaviours. The paper recommends also that government and other stakeholders should provide employment opportunities for the youths, especially among those with lower educational qualifications, so as to discourage their involvement in crime within Jos and beyond.

References

Adebayo, A. A. (2013). Youth unemployment and crime in Nigeria: A nexus a n d implications for national development. *International Journal of Sociology Anthropology,* 5(8), 350-357.

Ajaegbu, O. (2012). Rising youth unemployment and violent crime in Nigeria. *American Journal of Social Issues and Humanities*, 2(5), 315-321.

Bell, B., Costa, R., & Machin, S. (2022). Why does education reduce crime? *Journal of Political Economy*, 130(3), 732-765.

Benard, M., (2022). The clear correlation b e t w e e n e d u c a t i o n a n d c r i m e : / / e s f a n d i l a w f i r m . c o m / correlation-between-education-and-crime/

Ibrahim, T,T. (2022).Poor Education, Unemployment and National Security in Nigeria: *Journal of Social Sciences*.8(1): 187–197.

John, A., Andrew, C, B,& Alexander, A, S,. (2020). The Effect of Early Childhood Education on Adult Criminality: Evidence from the 1960s through 1990s.*American Journal of Economic Policy,* 5(2):34-39.

Lochner, L. (2010) *Education Policy and Crime*. Controlling Crime: Strategies and Red off Press.

Ibrahim, R. (2019). Insecurity: Saving Ekiti from Kidnappers, robbers.

Osawe, C. O. (2015). Increase wave of violent crime and insecurity: A threat to socio-economic development in Nigeria. *Journal of Humanities and Social Science (IOSR-JHSS), 20*(1), 123-133.

Fountain, S. **(2000).** The impact of conflict resolution education on children in armed conflict: opportunities and challenges in UNICEF projects. In. The Fourth R, Volume 93, Nov-Dec 2000, pp. 3-6.

Kyalo, N.D.&**Kyalo**, R. (**2011**). Analysis of Rate of Return to Investment in Education: A Comparison between Bachelor's Degree and Diploma in Education in Kenya. Verlag Dr. Müller.

Senga, M. M.,& Kiilu, R. M. (2022). Understanding the effect of educational attainment and unemployment on youthengagement in conflicts in Machakos County, Kenya. *African Educational Research Journal,* 10(1): 46-53.

Mickeal, E. C., Iyang, M. N. & Ojeka, O. G., (2016). Entrepreneurship skills education: A catholicon for youth criminality in Nigeria. *Journal of Educational Research, 4(2), 23-31.*

MEDICATION ADHERENCE MODERATES THE INFLUENCE OF DEPRESSION ON QUALITY OF LIFE AMONG PEOPLE LIVING WITH SCHIZOPHRENIA

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Abstract

The study examined the moderating effect of medication adherence on the influence of depression on quality of life and investigated the gender differences on quality of life among people living with schizophrenia. The study conducted a cross-sectional survey design. A convenience sample of 188 (59.1% Males & 40.9% Females) people living with schizophrenia who were receiving follow-up clinical treatment in psychiatry department, Federal Medical Centre, Lokoja were used. Data were collected using the Morisky Medication Adherence Scale (MMAS–8), Calgary Depression Scale (CDSS), stigma scale of Epilepsy (SSE) and World Health Organization Quality of Life-BREF Scale (WHOQOL-BREF). The data were analysed using Moderation and Conditional Process Analysis. The analyses were carried out with ROCESS Macro for IBM/SPSS Version 22.0. The Results showed positive significant influence of depression on quality of life of people living with schizophrenia. The results further revealed positive significant influence of medication adherence on quality of life people living with schizophrenia and also, the findings further revealed significant negative moderating effects of medication adherence on quality of life of people living with schizophrenia. Lastly, results further showed type of gender has significant difference on patient's quality of life.This study concluded that quality of life of people living with schizophrenia that is influenced by depression is moderated by their medication adherence.

Keywords: Medication adherence, Depression, Schizophrenia

Introduction

One of the topmost ten ailments that were linked as contributors to the general burden of disorder is schizophrenia (Desalegn et al., 2020). Schizophrenia is described as one of the most rigorous, inveterate and incapacitating psychological condition (Kaplan, 2016). It is a psychological disorder that affected people who do not have access to care in developing nations such as Nigeria (Adegbaju, 2014). Notwithstanding, all the phases of life of people with schizophrenia may be affected by the rigorous illness such as work, self-care and capacity to substantiate interpersonal connections which may affects their quality of life. People with schizophrenia may face a lot of tough challenges in dealing with their illness, which may contain bulk and side effects of antipsychotic drugs, clumsy routine procedures of clozapine usage as the case maybe and society's perception about their

illness which may jeopardize their quality of life (Pitkänen, 2010).

Quality of life of people living with schizophrenia can be modified by different reasons which includes socio-demographic variables, nature of psychopathology (Mahmud, et al., 2015) social support and substance use disorders (Aras, Yazar. &Altinbas, 2013). The Quality of life is the universal well-being and pleasure of unfriendly and friendly sides of life, including healthiness, relations, education, work, possessions, spiritual beliefs, economics and the environment (Barcaccia, Barbara, 2013). According to world health organization [WHO, 1997] Quality of Life refers to individuals' perception of their position in life in the context of the culture and worth systems in which they reside and in relation to their purpose, prospects, norms and concerns.

A cross-sectional comparative study in Pakistan revealed that people with schizophrenia had significantly poorer quality of life when compared with individuals without schizophrenia (Bokhari et al., 2015). Previous study by Shafie et al. (2021), carried out in Singapore finds no revealing difference in quality of life between genders. While study which was carried out in Israel that recruited 1624 participants found **advanced** quality of life scores were significantly companied with a reduced trouble of subsequent admissions among males but not among females (Rotstein et al., 2022).

Medication is essential in management of schizophrenia because it is a mental condition that requires long term intervention which normally incorporates antipsychotics and psychosocial interventions (Videbeck, 2020). According to World health organization, [2019] adherence is refers to the extent to which a person's behavior in taking medication, following a diet, and/or making lifestyle changes, is in accordance with agreed recommendations from health care providers. In this study, medication adherence is a behavior that must be followed by drugs prescription (antipsychotics) according to doctor's orders. However, people with schizophrenia may feel tired by the day to day required medication or extrapyramidal side effects of these medications which may cause relapse and deterioration of their mental health.

Previous study by Adelufosi et al. (2012), investigated the medication adherence and quality of life among Nigerian outpatients with schizophrenia. The finding of the study showed that medication nonadherence is common among outpatients with schizophrenia and is associated with poor quality of life. Research by Oladejo (2018) showed that medical adherence significantly predicted quality of life of diabetic patients in Ondo State. Hill and Roberts, (2011) conducted a study on the role of adherence in the relationship between conscientiousness and perceived health. The research findings found out that medication adherence mediated the link between conscientiousness and perceived health. In a study conducted by Ni et al., (2022), found a moderating role of medication literacy between illness perceptions and medication adherence.

Depression has shown to coexist with

schizophrenia and the rate of depression is higher when compared with the general people (Dai et al., 2018; Rahim & Rashid, 2017). The availability of comorbid depression in people living with schizophrenia is related with poor quality of life (Abedi et al., 2015), increased risk of suicide (Duko&Ayano, 2018), poor intervention adherence (Higash et al., 2013), always relapse that require hospital admission (Ayano&Duko, 2017), as compared to those people living with schizophrenia without depression.

Studies have examined the relationship between depression and quality of life of people living with schizophrenia and among other populations. Oladejo et al. (2019), study found depression and medical adherence to have relationship with quality of life. A Portugal study by Ribeiro et al. (2020), which consisted of adults 1765 at baseline and 1201 at follow up concluded that depression and anxiety decisively shape individuals trajectories of quality of life over time. Lia and Sani (2020), research found a significant relationship between depression and social domain such as physical, psychological and environment domain.

Previous findings by Hussenoeder et al. (2021) revealed significant association between depression and quality of life. In as much that depression is considerably common in people living with schizophrenia with its unpleasant outcome to the surfers; to our knowledge there is no study in Nigeria that examined the moderating effects of medication adherence influence of depression on quality of life among people living with schizophrenia. Hence, this study

Objectives of the Study

The study was aimed to examining the moderating effects of medication adherence on the influence of depression on quality of life and also investigated the gender differences on quality of life among people living with schizophrenia.

Methods

Design

The study adopted a cross-sectional survey design. Primary data was collected through the administration of a set of standardised psychological scales on a convenient sample of the study population.

Study Population

The total population of consisted of 369 who were registered outpatients attending clinical follow-up in mental health department of Federal Centre, Lokoja. A total of 188 participants were selected using a sample size of Taro Yemen's formula. Slovin's formula below:

$n = N/(1+Ne^{*2})$

n= Sample size

N= Population size = 369

e= Margin of error = 0.05

Confidence level = 95%

1 = constant value

Hence $n= 369/ (1+ 369(0.05)^2 = 370$ n= 369/ (1+369* 0.0025) =369

n= 369/ (1+0.96) =369 n=369/1.96 = 188.2

Minimum acceptable sample size was 188

Convenience sampling technique was adopted, whereby available potential respondents were approached individually on their clinic days

Instruments

Morisky Medication Adherence Scale (MMAS–8): This instrument was developed by Morisky et al. (1986), which was designed for screening non-adherence in patients with several chronic conditions. It consisted of 8 items, out of which seven must be answered negatively and last one positively, with the last question being answered according to a scale of five options: never, almost never, sometimes often and always. Response choices are "yes" or "no" for items 1 through 7 and item 8 has a five point Likert response scale. Each "no" response is rated as 1 and each "yes" response is rated as 0 except for item 5, I which each "yes" response is rated as 1 and each "no" response is rated as 0. For item 8 the code (0-4) has to be standardized by dividing the result by 4 to calculate a summated score. Total scores on the MMAS-8 ranges from 0 to 8 with high adherence (eight points), average adherence (6 to 7 points) and low adherence (< 6 points). The measurement of medication adherence was proven to be reliable with good concurrent and predictive validly in primarily low income with minority patients with hypertension. The moderate internal consistency was (Crohnbach's alpha a = 0.682) and the test – retest reliability (Spearman's r = 0.928; p < 0.001) was satisfactorily good, (Moharamzad*et al*., 2015).

Calgary Depression Scale (CDSS): This was developed by Addinton et al. (1990), Calgary depression scale was designed to measure depression in patients with schizophrenia, separate from positive symptoms and extra pyramidal symptoms. It has been extensively evaluated in both relapsed and remitted patients and appears sensitive to change. In comparison to the Hamilton Depression Scale, it has fewer factors and less overlap with positive and negative symptoms. It is an observer scale, semi-structured, administered by goal directed interview. It has 9 items rated from 0 to 3. The CDSS depression score is obtained by adding each of the item scores. A score above 6 has 82% specificity and 85% sensitivity for predicting the presence of a major depressive episode.

World Health Organization Quality of Life-BREF Scale (WHOQOL-BREF): developed by World Health Organization, (1998) and is short form of the WHOQOL-100. WHOQOL-BREF contains a total of 26 questions of four domains: physical health, psychological health, social relationships, and environment. The social domain contains 3 items and the environmental domain contains 8 items. The response scale is a 5-point Likert scale, ranging from 'very low'(0), 'low'(1), 'neutral' (2), 'high' (3) and 'very high' (4) scores. The scores on the different domains are transformed into scales to compare between the domains due to the unequal number of items (Skevington, Lofty, & O'Connell 2004). The mean score of the items belonging to one domain multiplied by four are representative for the score on the domain and made comparable with other domains (World Health Organization, 1998).

Collection Procedure

Research ethical approval was applied for and obtained from the Federal Medical Center Lokoja research committee. The study was done in accordance with the institutional and national research

committees' procedure and guidelines. All procedures in the study involved human participation. All respondents were informed of the objectives of the study and assured them the confidentiality of their responses, it was clearly stated to them that participation was voluntary and those who participated completed informed consent forms before the distribution of the study questionnaire and was retrieved from them before the end of the clinic the same days (Fridays) within the hospital premises during their waiting time to see their doctors and clinical psychologist for consultations. The one hundred and eighty eight (188) of questionnaires properly completed were used for data analysis in the study while seven (7) that were not properly completed were discarded.

Data Analysis

Data collected in the study were subjected to statistical analysis using SPSS package. Demographics were analyzed using descriptive statistics such as mean, standard deviation and percentage. Independent samples t-test was used in order to compare mean difference between male and female on quality of life. Moderation and conditional process analysis were carried out with ROCESS macro for IBM/SPSS version 22.0

Results

Table 1: Summary of moderated analysis of Medication Adherence and Depression predicting quality of life (model 1 of PROCESS macro $N = 188$)

	Explained Variables			
	Quality of Life			
Model	.	***SE***	***T***	**95% CI**
				LLCI (ULCI)
Constant	-20.04**	3.15	-6.34	-26.28(-13.81)
Depression	1.42**	0.09	14.46	1.23 (1.62)
Medication Adherence	0.37**	0.06	6.20	0.02 (0.50)
Medication adherence* Depression	-0.01**	0 .01	-9.67	-0.02 (-0.01)
	R^2	0.62		
	F(df)	*F*(3, 184) = 103.4**		

Moderating Analysis

Moderation analysis presented in Table 1 showed positive significant influence of depression on quality of life of people living with schizophrenia (β = 1.42, P< 0.05)[95% CI: 1.23 (1.62)]. The result also showed positive significant influence of medication adherence on quality of life of people living with schizophrenia (β = 0.37, P< 0.05)[95% CI: 0.02 (0.50)]. The results further showed significant negative moderating effects of medication adherence on depression among people living with schizophrenia (β = -0.01, P< 0.05)[95% CI: -0.02 (-0.01)]. This is not a

surprise that the overall model of the moderation analysis accounted for 62% of the total variance of quality of life F(3, 184) =103.4, P< 0.05. This indicates that quality of life of people living with schizophrenia that influenced by depression is moderated by their medication adherence.

Table 2: Independent sample t- test of Quality of Life by Type of gender among persons with Schizophrenia (*N* = 188)

Variable	Groups	N	Mean	SD	Df	*T*	p-value
Types of Gender	Male	111	8.14	4.51	186	-19.7	0.00
	Female	77	30.4	10.5			

Results presented in Table 2 showed difference between male ($\overline{X}$= 8.14, *SD* = 4.51) and female ($\overline{X}$= 30.4, *SD* = 10.5) on patient quality of life. The results further showed that type of gender has significant difference on patient's quality of life *t* = (186)-19.7, *P*>0.05. This implies that female enjoyed more level of quality of life than their male counterparts.

Discussion

Schizophrenia is a chronic disease that has a great negative influence on one's quality of life. The adherence to medication according to the physician prescription may improve the psychological and physical health and also improve the quality of life of the patients. However, the need toexamine the moderating effect of medication adherence on the influence of depression on quality of life and investigated the gender differences on quality of life among people living with schizophrenia necessitated this study.

The first objective was to examine the moderating effects of medication adherence on the influence of depression on quality of life among the people living with schizophrenia. This finding showed that medication adherence moderated the influence of depression on quality of life of people living with schizophrenia. This indicates that quality of life of people living with schizophrenia that influenced by depression is moderated by their medication adherence. The relationship between the medication adherence and depression highlights the effects on the quality of life of the patients especially among the patients of chronic diseases such as schizophrenia. The finding is similar to Okunrinboye et al. (2019), Goldstein et al. (2017) who reported that there is relationship between the medication adherence and depression and affects the quality of life of hypertension and cardio vascular disease patients.

The second objective of this study was to investigate the gender differences on quality of life among people living with schizophrenia. The finding showed that there is gender difference in quality of life of schizophrenia. This implies that female patients of schizophrenia enjoyed more level of quality of life than their male counterparts. This may be attributed that female especially mothers received more care and support from children than the father. This finding is

similar to the Rotstein, et al. (2022), who reported that there is gender difference on the quality of life among patients of schizophrenia. Higher quality of life scores were significantly associated with a reduced risk of subsequent admissions among males but not among females. Furthermore, the result of this study is in consistent with previous findings of Bonsaksen (2012) who reported that there is gender difference on quality of life among patients of severe mental illness. The findings further stated that women with severe mental illness tend to have more depression and lower quality of life than their male counterparts, and combating depression appears to be important for increasing quality of life in women with severe mental illness.

Limitation of the study

The sample size of the study was relatively small and the samples were drawn from one hospital in Kogi state and this can affect generalization of the findings. The collections of data were based on self- report.

Conclusion

The study indicated that medication adherence moderated depression to influence the quality of life among the schizophrenia patients. The study also showed that there is gender difference in quality of life among schizophrenia attending the federal medical hospital in Kogi state.

Ethical Approval

Ethical approval was sought for from the research committee of Federal medical centre and the approval was given. The study was carried out in accordance with national research committee procedure and guidelines.

Conflict of Interest

The authors declare no conflict of interest in this study

References

Abedi, Shargh, N., Rostami, B., Kosari, B., Toosi, Z. &Majelan, G. A. (2015).Study of relationship between depression and quality of life in patients with chronic schizophrenia. Global Journal of Health Science; 8(3):224–9.

Addington, D., Addington, J., &Schissel B. A. (1990).depression rating scale for schizophrenia. Schizophrenia Res; 3:247-5.

Adegbaju. (2014) 1.7 million Nigerians have Schizophrenia. Nigeria Bulletin. www.nigerianbulletin.com, Retrieved on December 2021

Adelufosi, A., Adebowale, T., Abayomi, O. &Mosanya, J. (2012) Medication adherence and quality of life among Nigerian outpatients with schizophrenia. General Hospital Psychiatry. 72–79.

Aras, H.I, Yazar, M. S. &Altinbas, K. (2013).Quality of life among dually diagnosed and non-substance-using male schizophrenia outpatients.South African Journal of Psychiatry. 19(2):35–9. 18.

Ayano, G, &Duko, B. (2017) Relapse and hospitalization in patients with schizophrenia and bipolar disorder at the St Amanuel mental specialized hospital, Addis Ababa, Ethiopia: a comparative quantitative cross-sectional study. Neuropsychiatry Disorder Treatment.13:1527–3.

Barcaccia& Barbara, (2013). "Quality Of Life: Everyone Wants It, But What Is It?".Forbes/ Education.Retrieved, 10, May 2022.

Barcaccia, B. (2013). Quality of life: Everyone wants it, But What Is It? Forbes Education; 2013 Retrieved on December 2021.

Bokhari, S. Q., Bokhari, Q. M. & Mariam, A. (2015).Correlation between quality of life and positive and negative symptoms of schizophrenia.Pakistan Journal of Medical Health Science. 9(1):367–70.

Bonsaksen, T. (2012).Exploring gender differences in quality of life. Mental Health Review Journal, 17, 39–49.

Dai, J., Du, X., Yin, G., Zhang, Y., Xia, H. & Li, X. (2018).Prevalence, demographic and clinical features of comorbid depressive symptoms in drug naive patients with schizophrenia presenting with first episode psychosis. Schizophrenia Resilience; 193:182–7.

Desalegn, D., Girma, S. &Abdeta, T. (2020). Quality of life and its association with current substance use, medication non-adherence and clinical factors of people with schizophrenia in Southwest Ethiopia: a hospital-based cross-sectional study. Health Quality of Life Outcomes 18, 82.

Duko, B, &Ayano, G. (2018). Suicidal ideation and attempts among people with severe mental disorder, Addis Ababa, Ethiopia, comparative cross-sectional study. Annual General Psychiatry. 17:23.

Goldstein, C.M., Gathright, E.C.&Garcia,S. (2017). Relationship between depression and medication adherence in Cardiovascular disease: the perfect challenge for the integrated care team. Patient prefer adherence.11, 547-559

Higashi, K., Medic, G., Littlewood, K. J., Diez, T., Granström, O. & De Hert, M. (2013). Medication adherence in schizophrenia: factors influencing adherence and consequences of nonadherence, a systematic literature review. Therapy Advance Psychopharmacology; 3(4):200–18.

Hill, P. L., & Roberts, B. W. (2011).The role of adherence in the relationship between conscientiousness and perceived health. Health Psychology, 30(6), 797–804.

Hussenoeder, F.S., Jentzsch, D., Matschinger, H., Hinz, A., Kilian, R., Riedel-Heller, S.G. & Conrad, I. (2021). Depression and quality of life in old age: a closer look. European Journal of Ageing 18, 75–83.

Kaplan, B. J. (2016). Kaplan, and Sadock's synopsis of psychiatry. Behavioral sciences/ clinical psychiatry.TijdschriftVoorPsychiatrie. 58(1):78–9.

Lia, J. & Sani, S.W. (2020).The Relationship between Depression and the Quality of Life among Elderly in Nursing Home.International Journal of Caring Sciences.Volume 13 | Issue 3| Page 2048.

Mahmud, M.H.S., Yeasmin, B. & Mandal, S. (2015). Quality of life of schizophrenic patients in a tertiary care hospital in Bangladesh.Bangladesh Journal Psychiatry. 29(1):30–4.

Morisky, D. E., Green, L. W., & Levine, D. M. (1986).Concurrent and predictive validity of a self-reported measure of medication adherence. Medical Care, 24, 67-74.

Ni, H., Lin, Y., Peng, Y., Li, S., Huang, X. & Chen L (2022) Relationship Between Family Functioning and Medication Adherence in Chinese Patients With Mechanical Heart Valve Replacement: A Moderated Mediation Model. Frontiers in Pharmacology. 13:817406

Okunrinboye, H. I., Otakpor A. N. &Ilesanmi, O.S. (2019).Depression and medication adherence in patients with hypertension attending a tertiary health facility in Southwest, Nigeria. Pan Afr Med J.33:27

Oladejo, T. A. (2018). Personality traits and medical adherence as predictors of quality of life among diabetic patients in Ondo state.Unpublished MSc thesis.

Oladejo, T. A., Saka, S. A., &Alao, I. F. (2019).Depression, Medication Adherence and Quality of Life for Patients with Schizophrenia in Nigeria. The Arab Journal of Psychiatry, Vol. 30 No.1 Page (45 – 53).

Pitkänen, A. (2010). Improving the quality of life of patients with schizophrenia in acute psychiatric wards.

Rahim, T. & Rashid, R. (2017).Comparison of depression symptoms between primary depression and secondary-to-schizophrenia depression. International Journal of Psychiatry Clinical Practice; 21(4):314–7.

Ribeiro, O., Teixeira, L., Araújo, L., Rodríguez-Blázquez, C., Calderón-Larrañaga, A. &Forjaz, M. J. (2020). Anxiety, Depression and Quality of Life in Older Adults: Trajectories of Influence across Age. International Journal Environmental Research and Public Health; 17, 9039.

Rotstein, A., Shadmi, E., Roe, D., Gelkopf, M. & Levine, S.Z. (2022). Gender differences in quality of life and the course of schizophrenia: national study. British Journal of Psychiatry Open.1; 8(2):e35.

Rotstein, A., Shadmi, E., Roe, D., Gelkopf, M., & Levine, S. (2022). Gender differences in quality of life and the course of schizophrenia: National study. British Journal of Psychiatry Open, 8 (2).

Shafie, S., Samari, E., Jeyagurunathan, A., Abdin, E., Chang, S., Chong, S.A. &Subramaniam, M. (2021).Gender difference in quality of life (QoL) among outpatients with schizophrenia in a tertiary care setting.BMC Psychiatry 21, 61.

Videbeck, S. L. (2020). Psychiatric/mental health nursing.In Nursing Clinics of North America (Vol. 21, Issue 3).

WHO, (1998). The World Health Organization Quality of Life assessment (WHOQOL): Development and general psychometric properties. SocSci Med. 46:1569–1585.

WHO, (2019).Schizophrenia.www.Who.Int. https://www.who.int/news-room/factsheets/detail/schizophrenia.

World Health Organization. (1946). The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. Social Science Medical; 41(10):1403–1409.

RELIGIOSITY AND HEALTH LOCUS OF CONTROL AS PREDICTORS OF COVID-19 VACCINE HESITANCY AMONG UNDERGRADUATES OF BENUE STATE UNIVERSITY MAKURDI

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Abstract

Coronavirus disease 2019 (COVID-19) vaccine hesitancy refers to a delay in acceptance or refusal of the vaccines despite the availability of vaccination services. A good number of COVID-19 vaccines are in circulation for use in Benue State but the extent of its utilization and associated factors among undergraduate students is unknown. The purpose of this study was to determine if religiosity and health locus of control predict COVID-19 vaccine hesitancy among undergraduate students of Benue State University, Makurdi. A correlation design was used and stratify sampling was employed to select 120 respondents from faculty of social sciences. Data were collected using three standardized scales. Data were analysed using multiple regression and independent t-test. The results of hypothesis one revealed that organizational religiosity (β=.189; P<.05) and Intrinsic/subjective religiosity (β=.280; P<.01) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University Makurdi, F(3,116) = 4.729; P<.01]. It was also revealed that Internal health locus of control (β=.271; P<.01); powerful others health locus of control (β=.327; P<.01) and chance health locus of control (β=.223; P<.05) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University. Further analysis showed that religiosity and locus of control jointly predicted COVID-19 vaccine hesitancy.The study concluded that religiosity with health locus of control appears to have impact in the decision to be inoculated with the COVID-19 vaccine. There is therefore need for guidelines for implementing targeted public health campaigns to increase vaccine uptake among religious dominated students in the University campus.

Key Words: Religiosity, Health Locus of Control, and COVID-19 Vaccine Hesitancy

Introduction

COVID-19 pandemic has ravaged humanity since its inception, recording deaths and survivors. COVID-19 vaccine has been framed as the ultimate solution needed for the pandemic. Religiosity and Health Locus of Control have played majors role in acceptance of this vaccine. A substantial number of vaccines are in circulation as protective measures against the pandemic but the extent of its utilization is unknown in Benue State especially among undergraduate students of BenueState University due to vaccine hesitancy.

WHO (2019) defines vaccine hesitancy as a delay in acceptance or refusal of vaccines despite the availability of vaccination services. It is a continuum ranging from complete acceptance to complete refusal. According toMacDonald& The SAGE Working Group on Vaccine Hesitancy (2015), evidence suggests that the public health benefits of approved COVID-19 vaccines will be undermined by hesitancy from populations to be vaccinated. Vaccine hesitancy is primarily driven by people's exposure to misinformation and that this can be countered by 'inoculating' publics with facts. While vaccines are celebrated as one of the most successful public health measures, an increasing number of people believe vaccines are either unsafe or unnecessary (El-Elimat, et al., 2021).Thisis considered a growing threat to the success of vaccination programmes as vaccine coverage rates are decreasing globally.

Vaccine hesitancy is influenced by a number of factors including issues of confidence (do not trust vaccine or provider), complacency (do not perceive a need for a vaccine, do not value the vaccine), and convenience (access).Additional behavioural factors may shape vaccine uptake, including complacency (perception of risk, severity of disease), sources of information, socio-demographic characteristics, people's level of commitment to risk culture and their level of confidence in health authorities and mainstream medicine. In addition to these factors, religiosity and health locus of control have played a major role in acceptance of COVID-19 vaccine.

Religiosity refers to the various dimensions associated with religious beliefs and involvement. According to Adeyemo and Adeleye (2008), religiosity includes having belief in, reverence for God or a deity, as well as participation in activities in that faith, such as attending service/ worshipping regularly and participating in other social activities with one's religious community. They are three dimensions of religiosity. The first isOrganizational religious activity (ORA) which involves public religious activities such as attending religious services or participating in other group-related religious activity (prayer groups, Scripture study groups, *etc*.). Second is non-organizational religious activity (NORA) and this consists of religious activities performed in private, such as prayer, Scripture study, watching religious TV or listening to religious radio. The third is intrinsic religiosity (IR) which is related to degree of personal religious commitment or motivation. During stressful life events, adversities, and uncertainties like COVID-19, religion offers a source of relief as a means for coping with

uncertainty (Algahtani, et al.,2022). Religious coping involves relying on one's faith, not just for refuge and comfort, but also for possible explanations. Nigerians and people of Benue State are very religious people and it is important to assess the role religiosity plays in their COVID-19 vaccine decision. Empirical evidence suggests that during tragic events, much emphasis is placed on prayer, scripture readings, and closeness to God as the way out of the crisis (Pargament 2004; Keisari, et al., 2022).

Previous studies have shown that religiosity is a strong predictor of anti-vaccine beliefs. For example, Olagoke, et al. (2021) found a significantly negative association between religiosity and COVID-19 vaccination intention. In another study among American Muslim physicians in the USA, Mahdi et al. (2016) found that respondents who sought bioethical guidance from Islamic laws had lower odds of recommending porcine-based flu vaccination to their patients. Wester, et al., (2022) studied Prayer frequency and COVID-19 vaccine hesitancy among older adults in Europe and found that respondents were likely to be vaccine-hesitant when praying weekly or less.Lucia, et al., (2020)'s study found that religious teachings prioritize prayers over medicine, thus resulting in vaccination hesitancy among devotees. Similarly, Baffour-Awuah (2022) has established the growth of vaccine hesitancy among the Ghanaian populace. It was reported that religious leaders, when compared with all categories of prioritized populations sampled for the survey, had a high hesitancy rate. Some 57 percent of religious leaders sampled would not accept the vaccine. In addition to religiosity, health locus of control could affect vaccine utilization.

Health locus of control (HLOC) is a construct representing the degree to which individuals perceive reinforcing events in their lives to be the result of their own actions (an "internal" HLOC) or fate (an "external" HLOC) (Bandura, 1986; Rotter, 1966). It refers to the notion that people view life either as something they can control or something that controls them. People generally have either an internal locus of control or an external locus of control. It may also be possible that people operate with an internal locus of control in some areas of life, while operating from an external locus of control in other areas. Research suggests that people who operate with an internal locus of control are more successful in work and life-enjoying better health, relationships and personal and professional growth.

HLOC is recognized as one of the factors that can explain health promotion behaviour like vaccination. Grotz et al. (2011)found that high internal HLOC is associated with health promotion behaviour like vaccine acceptance whereas Steptoe & Wardle(2011) found that external HLOC, particularly belief in powerful others, may explain preventive and health promotion behaviour. Other studies suggest that HLOC is a complex issue and only interaction between internal and external factors can explain one's health behaviour. Wallston (2005) emphasizes that perception of HLOC depends on the situation, that it is a general orientation of health behaviour, and that each individual will behave differently in each situation. These Studies have found inconsistent results

and were mostly carried in non- student population, there is therefore need to ascertain association of religiosity and health locus of control on vaccine hesitancy among undergraduates of Benue State University.

Aside religiosity and health locus of control, sex and gender are also important factors in understanding immunisation, including vaccine hesitancy (Heidari& Goodman, 2021). Sex and gender differences in immunisation outcomes have been observed across agegroups for other vaccine preventable diseases, with women typically developing higher antibody responses, and reporting more local and systemic adverse reactions, compared with men (Fischinger, et al., 2019). In a systematic and meta-analytic review, Zintel, et al., (2022) found that majority (58%) of papers reported men to have higher intentions to get vaccinated against COVID-19. Meta-analytic calculations from same study showed that significantly fewer women stated that they would get vaccinated than men. Similarly, Galanis, et al., (2020) also found that male gender was associated with increased health workers willingness to get vaccinated against COVID-19.

Statement of the Problem

The novel 2019 coronavirus (COVID-19)COVID-19 has caused global pandemic that led to a dramatic loss of human life worldwide (Shereen, et al., 2020). COVID-19 has spread to over 180 countries (WHO 2020). As of November 23, 2022, there has been a report of 635,709,158 confirmed cases and 6,603,803 deaths globally, with the USA leading in the number of cases (WHO, 2022). The devastating impacts of this pandemic on lives, healthcare systems, social wellbeing, and the economy have led to the introduction of several mitigating measures such as regional lockdown, hygiene promotion, social distancing, travel restrictions, and mass vaccination (Wilder-Smith & Freedman 2020).

Now different vaccines have been rolled out for more than a year now. The World Health Organization has approved safe and effective use of the following vaccine as of April 2021: Astra Zeneca / Oxford vaccine, Johnson and Johnson, Moderna and Pfizer / BionTech vaccine. The importance of mass vaccination is that it helps to achieve herd immunity but not many people arewilling to take the jab due to many factors including religious reasons and the belief that the control of COVID-19 is outside their power (external)or within their control (internal). Vaccine hesitance poses a challenge to achieving herd immunity. If a sufficient number of people in a population reject vaccination and herd immunity is not achieved, the virus will continue to circulate among susceptible individuals, including those who are unable to be vaccinated for medical reasons (Kerr,et al., 2021). Benue State is a religious state, dominated by Christians. Evidence shows that religiosity and health locus of control play vital roles in critical moments of life and that these beliefs are associated with clinical outcomes. However, further studies are needed to assess these beliefs during the COVID-19 pandemic. It is therefore important to understand whether religiosity and health locus of control predict COVID-19 vaccine hesitancy among undergraduates of Benue State University.

Aim and Objectives of the Study

The aim of this study is to examine religiosity and health locus of control as predictors of vaccine hesitancy among undergraduates of Benue state University. Specific objectives of this study are to:

I. Examine if religiosity will be a predictor of vaccine hesitancy among undergraduates of Benue state University.
II. Ascertain the extent to which health locus of control will predict vaccine hesitancy among undergraduates of Benue state University.
III. Investigate the extent to which religiosity and Health locus of control will jointly predict vaccine Hesitancy among undergraduates of Benue state University.
IV. To determine if sex differences exist in vaccine as regard vaccine hesitancy among undergraduates.

Research Questions

This study will attempt to provide answers to the following research questions:

I. To what extent will religiosity predict vaccine Hesitancy among undergraduates of Benue state University?
II. Will Health locus of control predict vaccine Hesitancy among undergraduates of Benue state University?
III. To what extent will religiosity and Health locus of control jointly predict vaccine Hesitancy among undergraduates of Benue state University?
IV. They will be significant sex differences in vaccine hesitancy among undergraduate students of Benue State University.

Hypotheses

The following hypotheses were tested.

I. Religiosity will significantly predict vaccine hesitancy among undergraduates of Benue state University.
II. Health locus of control will significantly predict vaccine hesitancy among undergraduates of Benue state University
III. Religiosity and health locus of control will significantly predict vaccine Hesitancy among undergraduates of Benue state University.
IV. There will be significant sex differences in vaccine hesitancy among undergraduate students of Benue State University.

Methods

Design

The study is a survey research withcorrelational research design. The choice of correlational research design was because the researcher was primarily interested in establishing the relationship between religiosity, health locus of control and vaccine hesitancy among undergraduates of Benue State University.

Instruments

Multidimensional Health Locus of Control Scale

Multidimensional Health Locus of Control (MHLC) Scale (Form A) was used to assess health locus of control in the respondents.

The scale was developed by Wallston, Wallston, Kaplan, &Maides, (1976) to assess the degree to which an individual believe or feel that they are in control of their own Health. The form A of the multidimensional health locus of control has 18 items with three subscales. They are Internal Health Locus of Control, Powerful Others Health Locus of Control, and Chance Health Locus of Control. Each of the three subscales contains six items with a six-point Likert response scale ranging from 1= 'Strongly Agree' to 6 = 'Strongly Disagree'. The subscales are scored by summing respective items for a total scale score. **Internal items:** 1, 6, 8, 12, 13, 17. **Chance items:** 2, 4, 9, 11, 15, 16 and P**owerful others items**: 3, 5, 7, 10, 14, and 18. Chance and powerful others are collectively called external locus of control. Higher scores reflect stronger endorsement of MHLC scales. For instance: If I get sick, it is my own behaviour which determines how soon I get well again, (1=strongly disagree, 2=moderately disagree, 3=slightly disagree, 4=slightly agree, 5=moderately agree, 6=strongly agree).The scale has been used literally in hundreds of studies *(*Wallston, 2005**).** Moshki, Ghofranipour, Hajizadeh, &Azadfallah, (2007) obtained the Validity and reliability of the multidimensional health locus of control scale using college students. It showed a *test –retest r*eliability **of** 0.60 ($p < 0.001$(Internal), 0.58 ($p < 0.002$ (Chance), and 0.74 ($p < 0.0001$(Powerful others). The same study revealed a concurrent validity of 0.57 for Internal ($P < 0.001$), 0.49 for Powerful Others ($P < 0.01$), and 0.53 for Chance ($p < 0.001$).

The Oxford COVID-19 Vaccine Hesitancy Scale

The Oxford COVID-19 Vaccine Hesitancy Scale was developed by Freeman, Loe, Chadwick, Vaccari, Waite, Rosebrock, Jenner, Petit, Lewandowsky, Vanderslott, Innocenti, Larkin, Giubilini, Yu, McShane, Pollard, &Lambe, (2020). The scale is a seven-item measure that assesses intention to received Covid-19 Vaccine. Item specific response options, coded from 1 to 5, are used. A 'Don't know' option is also provided, but is excluded from scoring. For example: would you like to take Covid-19 vaccine (approved for use in the UK) if offered. Responses ranges from definitely, probably, I may I may not, probably not, definitely not to don't know. Higher scores indicate a higher level of vaccine hesitancy. The Cronbach's alpha is 0.97, indicating that the scale is reliable and can be used for this study.

Duke University Religion Index(DUREL)

DUREL is a five-item scale that assesses the three major dimensions of religious involvement. These are organizational, non-organizational,and intrinsic or subjective religiosity. The DUREL is designed to measure religiosity in Western religions (e.g., Christianity, Judaism and Islam). The scoring of the DUREL is particularly important both for analysis purposes and forinterpretation of results. `Subscale´ question 1 is the first question in the DUREL and it measures Organizational religious activity (ORA). `Subscale´ question 2 measure Non-organizational religious activities (NORA). Subscale 3 consists of the final three items that assess intrinsicreligiosity (IR). It is not recommendedto sum all three `subscales´ into a total overall religiosityscore except 3-5

that assess intrinsic religiosity. Instead, each subscale should be examined and scored independently.

Participants

A total of 1224 students of200level from the five departments of faculty of social sciences for 2020/2021 academic session formed the population of the study. A stratified sampling technique was adopted to select sample of 120 participants from the five departments in the faculty of social sciences of Benue State University. Stratified sampling technique was preferred because it gives the researchers the opportunity to select participants from different strata (departments) to provide answers to the research questions. The sample size was derived using the Krejcie, & Morgan (1970) sample size calculation table. Inclusion criteria was that participants must be undergraduates, 18 years and above, in any of the five departments of the social science faculty, must be in 200 level and have not received the COVID-19 vaccine. Exclusion criteria include post graduate students, Lecturers, persons under 18 years, those in other faculties and those that have already received the COVID-19 vaccine.

Procedure

During the administration of the questionnaires, the researchers met respondents in the selected departments. Upon arrival, the researchers briefly explained the purpose of the study to them including necessary information needed to complete the questionnaire and seek their consents to participate in the study.After signing the consent form, they were administered copies of research questionnaire. Participation was optional and participants were free to withdraw their participation any time. After completing the questionnaires, the researchers appreciated participants for their participation, assured them of confidentiality of the information provided and left their contact details behind should any of the participants wants to make clarifications or further enquiry about the study.

Data Analysis

The data collected were analysed using Descriptive Statistics and multiple regression and independent t-test. A statistical package for social sciences (SPSS) was used for all the analysis.

Testing of Hypotheses

In testing of the research hypotheses for the study, multiple regression analysis and independent t-test were used.

Hypothesis one stated that the three dimensions of religiosity (Organizational, non-organizational and intrinsic) will significantly predict COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi and the result is presented below:

Table 1.0: Multiple regression summary scores showing prediction of Religiosity on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi

Predictor variable	R	R^2	Df	F	β	t	Sig
Constant	.330	.109	3 116	4.729		3.098	.002**
Organizational					.189	2.048	.043*
Non-Organizational					.056	.610	.543
Intrinsic					.280	.3.173	.002**

****P<.01; *P<.05**

Results in Table 1.0 above revealed that organizational religiosity (β=.189; P<.05) and Intrinsic/subjective religiosity (β=.280; P<.01) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University Makurdi, F(3,116) = 4.729; P<.01].This result implies that as the level of both organizational and Intrinsic religiosity increases, there is corresponding increase in the level of COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. However, Non-organizational religiosity (β=.056; P>.05) did not predict COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. More so, the result indicated that the overall religiosity accounted for 10.9% (R^2 = .109) total variance in explaining COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. Based on this result, the hypothesis one was confirmed.

Hypothesis two stated that the three dimensions of health locus of control (Internal, powerful others and chance) will significantly predict COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi and the result is presented below:

Table 2.0: Multiple regression summary scores showing prediction of health locus of control on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi

Predictor variable	R	R^2	Df	F	β	t	Sig
Constant	.388	.150	3 116	6.850		9.774	.000**
Internal					.271	3.113	.002**
Powerful Others					.327	3.317	.001**
Chance					.223	2.256	.026*

****P<.01; *P<.05**

Result from Table 2.0 above showed that all the three dimensions of health locus of control positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University Makurdi. Internal health locus of control (β=.271; P<.01); powerful others health locus of control (β=.327; P<.01) and chance health locus of control (β=.223; P<.05) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. This implies that as the level of internal, powerful others and chance health locus of control increases, there is corresponding increase in the level of COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. More so, the result further indicated that the overall health locus of control contributed 15.0% (R^2 = .150) total variance in explaining COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. Following the result therefore, hypothesis two was confirmed.

Hypothesis three sought to find out if religiosity and health locus of control will jointly predict COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi and the result is presented below:

Table 3.0: Multiple regression summary scores showing joint prediction of religiosity and health locus of control on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi

Predictor variable	R	R^2	Df	F	β	t	Sig
Constant	.393	.154	2 117	10.688		13.007	.000**
Religiosity					.230	2.705	.008**
Health Locus of Control					.304	3.569	.001**

****P<.01; *P<.05**

Result in Table 3.0 above revealed that jointly, religiosity and health locus of control positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. This means that as the joint level of religiosity and health locus of control increases, COVID-19 vaccine hesitancy also increase among undergraduates of Benue State University, Makurdi. In addition, the result revealed 15.4 % (R^2 = .154) total variance in joint contribution of religiosity and health locus of control in explaining COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. Following the result therefore, hypothesis three was confirmed.

Hypothesis four stated that there will be a significant sex difference on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi and the result presented below:

Table 4.0 Independent t-test summary table showing sex difference on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi.

	Sex	N	×	SD	df	□	□
Vaccine Hesitancy	Male	67	21.33	9.87	118	1.069	>.05
	Female	53	23.28	10.04			

Table 4.0 showed that there is no significant sex difference on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi [t (1.069) =118; P>.05]. This implies that there is no significant difference between male and female on COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. The result further showed that male undergraduates scored lower mean [x = 21.33] on COVID-19 vaccine hesitancy. Following the result therefore, hypothesis four was not confirmed.

Discussion

The outcome of hypothesis one revealed that organizational religiosity (β=.189; P<.05) and Intrinsic/subjective religiosity (β=.280; P<.01) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University Makurdi, F(3,116) = 4.729; P<.01]. Non-organizational religiosity (β=.056; P>.05) however, did not predict COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. Findings on Non-organizational religiosity is contrary to the findings of Wester, et al., (2022) who found that respondents were likely to be vaccine-hesitant when praying weekly or less. The second hypothesis showed that all the three dimensions of health locus of control (internal, powerful others and chance locus of control) positively and significantly predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University Makurdi. These results largely cohere with the findings of Grotz et al. (2011) who found that high internal HLOC is associated with health promotion behaviour like vaccine acceptance and Steptoe & Wardle, (2011) who found that external HLOC, particularly belief in powerful others, may explain preventive and health promotion behaviour like vaccination acceptance. Hypothesis three revealed that religiosity and health locus of control jointly and positively predicted COVID-19 vaccine hesitancy among undergraduates of Benue State University, Makurdi. Hypothesis four revealed no significant sex difference in COVID-19 vaccine hesitancy.

Conclusion

In conclusion, the present study investigatesreligiosity and health locus of control as predictors of COVID-19 vaccine hesitancy among undergraduate students of Benue State University, Makurdi. Religiosity with health locus of control appears to have impact in the decision to beinoculated with the COVID-19 vaccine. Medical and scientifically sound evidence are influenced

by religious beliefs and personality factors resulting to different responses toward getting vaccination against the COVID-19. There is therefore need for guidelines for implementing targeted public health campaigns to increase vaccine uptake among religious dominated students in the University campus. The findings have significant public health implications for population experiencing COVID-19 vaccine hesitancy especially in a religious dominated state like Benue. Religious leaders have an important role in promoting public health during the COVID-19 pandemic. As pointed out by Olagoke et al., (2021), Government and religious leaders need to sensitize religious community members on their vital role top reserve their health by using faith-based justifications and scriptures. This may help decrease the external locus of control and increase perceived susceptibility to disease and engagement in preventive behaviours (such as vaccination).

Limitations of Study

Several limitations need to be considered when interpreting the results of this study. First is the small sample size. This will make the generalization of the findings beyond the study setting difficult. In addition, generalizability may be limited to the population with similar religious dimensions rather than affiliations or groups given that the association between religiosity and vaccine hesitancy is not the focus for any specific religion group (i.e., Islam, Christianity etc).

References

Algahtani, F. D., Alsaif, B., Ahmed, A. A., Almishaal, A. A., Obeidat, S. T., Mohamed, R.F., Kamel, R. M., Gul, I.& Hassan, N. (2022). Using Spiritual Connections to Cope With Stress and Anxiety During the COVID-19 Pandemic. *Frontiers in Psychology*, 13, 915290. doi: 10.3389/fpsyg.2022.915290

Adeyemo, D.A. &Adeleye, A.T. (2008). Emotional Intelligence, Religiosity and Self-Efficacy as Predictors of Psychological Well-Being among Secondary School Adolescents in Ogbomoso, Nigeria. *Europe's Journal of Psychology*, 4, 2-13.https://doi.org/10.5964/ejop.v4i1.423

Baffour-Awuah, D. (2022). *COVID vaccine hesitancy high among Ghana's religious leaders*. Retrieved from https://allianceforscience.cornell.edu/blog/2022/08/covid-vaccine-hesitancy-high-among-ghanas-religious-leaders.

El-Elimat, T., AbuAlSamen, M. M., Almomani, B. A., Al-Sawalha, N. A., & Alali, F. Q. (2021). Acceptance and attitudes toward COVID-19 vaccines: A cross-sectional study from Jordan. *PLoS ONE,* 16(4): e0250555. doi:10.1371/journal.pone.0250555

Fischinger, S., Boudreau, C. M., Butler, A. L., Streeck, H., Alter, G. (2019). Sex differences in vaccine-induced humoral immunity. Seminar Immunopathology, 41, 239–49. doi: 10.1007/s00281-018-0726-5

Freeman, D., Loe, B.S., Chadwick, A., Vaccari, C., Waite, F., Rosebrock, L., Jenner, L., Petit, A., Lewandowsky, S., Vanderslott, S., Innocenti, S., Larkin, M., Giubilini, A., Yu, L-M., McShane, H., Pollard, A.J., &Lambe, S. (2020). COVID-19 vaccine hesitancy in the

UK: The Oxford Coronavirus Explanations, Attitudes, and Narratives Survey (OCEAN) II. *Psychological Medicine.*https://doi.org/10.1017/S0033291720005188

Galanis, P. A., Vraka, I., Fragkou, D., Bilali, A., Kaitelidou, D. (2020). Intentionof health care workers to accept COVID-19 vaccination andrelated factors: a systematic review and meta-analysis. medRxiv. https:// doi. org/ 10. 1101/ 2020. 12. 08. 20246 041.

Heidari, S., &Goodman, T. (2O21). Critical Sex and Gender Considerations for Equitable Research, Development and Delivery of COVID-19 Vaccines. World HealthOrganization (2021). Retrieved from https://cdn.who.int/media/docs/default source/immunization /sage/covid/gender-covid-19-vaccines-sagebackground-paper.pdf?sfvrsn =899e8fca_15&download=true.

Keisari**, S.,** Biancalani, G. Tavelli, E. Fassina, S., &Testoni, I.**(2022).**Spirituality during COVID-19 in Northern Italy: The experience of participating in an online prayer group. *Pastoral Psychology*, 71:201–215. https://doi.org/10.1007/s11089-022-00998-1

Kerr, J. R., Freedman, A. J., Marteau, T. M., & van der Linden, (2021). Effect of information about covid-19 VACCINE effectiveness and side effects on behavioural intentions: Two online experiments. *Vaccine*, 9(4), 379. Doi.org/10.3390/vaccines9040379.

Krejcie, R.V., & Morgan, D.W., (1970). Determining Sample Size for Research Activities. *Educational and Psychological Measurement*.

Lucia, V. C., Kelekar, A., &Afonso, N. M. (2020). Covid-19 vaccine hesitancy among medical students. *J Public Health (Oxf),* 1–5. doi: 10.1093/pubmed/fdaa230.

MacDonald, N. E. & The SAGE Working Group on Vaccine Hesitancy, (2015). Vaccine hesitancy: Definition, scope and determinants. *Vaccine*, 33; 4161–4164. http://dx.doi.org/10.1016/j.vaccine.2015.04.036

Moshki, M., Ghofranipour, F., &Hajizadeh, (2007). Validity and reliability of the multidimensional health locus of control scale for college students. *BMC Public Health,*7, 295. https://doi.org/10.1186/1471-2458-7-295

Olagoke, A.A., Olagoke, O.O. & Hughes, A.M. (2019). Intention to Vaccinate Against the Novel 2019 Coronavirus Disease: The Role of Health Locus of Control and Religiosity. *J Relig Health*, 60, 65–80 (2021). https://doi.org/10.1007/s10943-020-01090-9 a cross-sectional survey.

Pargament, K. I., Koenig, H. G., Tarakeshwar, N., & Hahn, J. (2004). Religious coping methods as predictors of psychological, physical and spiritual outcomes among medically ill elderly patients: A two-year longitudinal study. *Journal of Health Psychology*, 9(6), 713–730. https://doi.org/10.1177/1359105304045366

Shapiro, G.K., Tatar, O., Dube, E., Amsel, R., Knauper, B., Naz, A. &Rosberger, Z. (2018). The vaccine hesitancy scale: Psychometric properties and validation. Vaccine, 36, 660–667.

Shereen, M. A., Khan, S., Kazmi, A., Bashir, N., & Siddique, R. (2020). COVID-19 infection: Origin, transmission, and

characteristics of human coronaviruses. *Journal of Advance Research,* Doi: 10.1016/j.jare.2020.03.005.

Wallston, K. A. (2005). The validity of the multidimensional health locus of control. *Journal of Health Psychology,* 10(4):623–31. doi:10.1177/1359105305055304.

Wallston, B. S., Wallston, K. A., Kaplan, G. D., Maides, S. A. (1976). Development and validation of the health locus of control (HLC) scale. Journal of Consultation in Clinical Psychology, 44(4), 580-585. doi: 10.1037//0022-006x.44.4.580.

Wilder-Smith, A., & Freedman, D. O. (2020). Isolation, quarantine, social distancing and community containment: pivotal role for old-style public health measures in the novel coronavirus (2019-nCoV) outbreak. *Journal of Travel Medicine,* 27(2):taaa020. doi: 10.1093/jtm/taaa020.

World Health Organization [WHO] (2019). *Ten health issues WHO will tackle this year*. *https://www.who.int/news-room/spotlight/ten-threats-to-global-health-in-2019*Larson, H.J.; Cooper, L.Z.; Eskola, J.; Katz, S.L.; Ratzan, S. Addressing the vaccine confidence gap. *Lancet,*2011(378), 526–535.

Zintel, S., Flock, C., Arbogast, A. L., Forster, A. Wagner, C. V., &Sieverding, M. (2022). Gender differences in the intention to get vaccinated against COVID-19: a systematic review and meta-analysis. *Journal of Public Health*, 1-25. https://doi.org/10.1007/s10389-021-01677-w

SELF-EFFICACY AND PERSONALITY TRAITS ON RISK-TAKING BEHAVIOUR AMONG YOUNG ADULTS IN PORT HARCOURT METROPOLIS

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Abstract

Introduction: Risk-taking behaviour has continued to be a source of concern to scholars and stakeholders in developed and developing nations like Nigeria. This is because of the disruptive tendencies the behaviour is capable of having on the individual and society at large. This prompted this study to examine the role of self-efficacy and personality traits on risk-taking behaviour among the youths in the Port Harcourt metropolis.

Methods: A cross-sectional survey design was utilised in the study. The participants, comprising 733 (aged: 16 to 39 years) youths, were purposively selected from Port Harcourt metropolis.

Results: The study found that there was a high prevalence of high risk-taking behaviour, 648(88.4%) among youths. The study also found that extroversion ($\beta = -0.20$, $p<.01$), agreeableness ($\beta = -0.10$, $p<.05$), conscientiousness ($\beta = 0.11$, $p<.05$) and openness to experience ($\beta = 0.13$, $p<.05$), self-efficacy ($\beta = 0.18$, $p<.05$) predicted risk-taking behaviour. The study also found that there was a significant difference between male scores ($M = 105.45$ $SD = 26.49$) and female scores ($M = 89.73$, $SD = 21.71$) on risk-taking behaviour $t(731) = 8.53$, $p = 0.001$, 95% CI (12.10, 19.33), $d = 0.64$.

Conclusion: The study concluded that self-efficacy, personality traits (openness to experience, extroversion, agreeableness, conscientiousness), and gender play key roles in risk-taking behaviours.

Keywords: Risk-taking behaviour, personality traits, gender, self-efficacy, youths

Introduction

Risk-taking behaviour issues among young adults have become a global concern to parents, teachers, and other persons in society. The concepts of 'risk' and 'risk-taking' are now crucial in attempts to comprehend contemporary patterns of behaviour and societal attitudes. Although today's world is safer in many respects, Beck (1992) labelled modern society as a "risk culture". To Furedi (2007), this is due to our risk aversion. Environmental hazards, financial instability, suicide bombings, terrorist attacks, lifestyle experimentation, and high-risk sports are all mentioned in the media and scholarly works (Torres & Rees, 2017), all of which led to a new, larger, and more complicated global risk picture, if not to a risk-society.

According to the American Psychology Association (APA, 2022), risk-taking involves unnecessarily and repeatedly engaging in activities or behaviour patterns highly subject to chance or danger. This pattern of behaviour is often associated with risky sexual behaviour, substance abuse, gambling, extreme sports (for instance, mountain climbing and skydiving), and accepting a daunting task that simultaneously involves the potential for accomplishment or personal benefit as well as for failure. It is often linked with being creative and taking calculated risks in educational settings or the workplace.

Risk-taking behaviour can also be seen as the tendency to involve in activities that are potentially dangerous or harmful (Salama & Elsayed, 2017). People are perplexed as to why someone would engage in possibly harmful risk-taking behaviour, given that such behaviour is potentially dangerous. Risky patterns of behaviour for adults, adolescents, and children occur in diverse settings. The ability to access risky situations changes over time as people mature, become exposed to divergent environments, and are equipped with the financial power to participate in risky behaviour. Risky behaviour though affording participants the opportunity to experience a perceived positive outcome, on the one hand, puts them in harm's way on the other (Universal Children Education Fund - UNICEF, 2021). For example, while risky behaviour like substance use or driving fast may lead to

overdoses or auto-mobile accidents, they could equally elicit positive feelings like the excitement one gets from the use of a drug or the thrill of a fast ride. Risk-taking behaviour can be considered to include having unprotected sex with strangers, thus leaving one open to sexually transmitted diseases (STDs) or unplanned pregnancies. It also includes gambling, with its potential of losing more than can be handled. Most people who engage in risky patterns of behaviour involve in extreme recreational activities or sports. Risk-takers who engage in widely-practised patterns of behaviour, such as cigarette smoking or drinking, endanger their lives. Such individuals contract terminal diseases linked to these patterns of behaviour by using illicit and hard drugs. More so, risk-takers often ignore the consequences of their behaviour (Peacock *et al*., 2018).

As risk-taking is an important aspect of human behaviour, researchers have examined it for a number of reasons. Also, the role of gender in the likelihood of taking risks has been noted in a large volume of experimental studies and questionnaires. For instance, a meta-analysis by Byrnes *et al*. (1999), analysed about 150 papers relating to gender differences in the perception of risk. It was concluded that the literature "clearly" showed that "male participants are more likely to take risks than female participants" (p. 377). A study by Lighthall *et al*. (2012) discovered that gender differences are more pronounced under stress. In comparison, males take more risks when under stress, and females take less when under stress. A possible reason for this is that there are gender differences in brain activities that compute risk and prepare the person for action. Women are noted to abhor risk more; that is, women are less supported when it comes to risk-taking.

Many decisions in life are hinged on balancing between anticipated reward and risk. Male and female risk-takers share the same personality traits, like aggression-hostility, sociability, and impulsive sensation-seeking (Zuckerman & Kuhlman, 2000). Past researchers have conceptualised risk-taking to be a domain-specific phenomenon. This perspective implies that different domains like recreation, finance, ethics, health and safety, and society prompt different risk-taking behaviour (Weber *et al.*, 2002). For example, an avid gambler, already prone to financial risk, may be unwilling to take to cigarette smoking due to its health implication. However, recent research has backed risk-taking's domain-general perspective. For instance, Frey *et al*. (2017) presented evidence of a general risk factor that explained the common variation among 39 risky measures. According to the study's findings, risk variables like personality might be seen as a psychological feature that is domain-general and constant in different situations (Highhouse *et al*., 2017).

It is widely acknowledged that self-efficacy, or a person's confidence in their ability to accomplish tasks and roles, is a major factor in determining whether they pursue vocations and engage in risk-taking behaviour. Most experts view self-efficacy as domain-specific, targeted at a particular behaviour or result like creative tasks or one's career, consistent with Bandura's (1997) conceptualization of the construct. However,

some researchers have looked at general self-efficacy (a belief about a person's ability to handle future tasks) to understand its effects (Terry *et al*., 2019).

Self-efficacy is an aspect of personality that describes a person's capacity to control risks and the course of events (Galla & Wood, 2012). According to Barbosa *et al*. (2007), "self-efficacy" and risk-taking behaviours have a positive association. Those who have high "self-efficacy" prefer to take more risks because they tend to overestimate opportunities and underestimate threats. On the other hand, low "self-efficacy" levels are more likely to adopt a reduced risk propensity by overestimating hazards and underestimating opportunities. Similarly, Rashid and Boussabaine (2019) hypothesized that "self-efficacy" and cognitive styles affect people's behaviours and inclination for risk.

Self-efficacy was found to have a significantly negative relationship with risk-taking behaviours in a study by Sourani (2018) on the role sensation-seeking and self-efficacy play in assessing adolescents' propensity to risk-taking behaviours (using second-grade high school students in the fifth region of Tehran as a case study). These results can be explained using Bandura's self-efficacy theory from 1997. Hence, those who have confidence in their talents put forth more effort to complete their responsibilities than those who have concerns actively. As a result, when given assignments, the former shows greater responsibility.

Cervone and Pervin (2022) opined that "personality represents those characteristics of the person or of the people that generally account for a consistent pattern of responses to the situation". It is the totality of one's behaviour towards oneself as well as towards others. There exists a persistent and long-standing belief about risk-taking being a stable personality trait, often called risk preference or risk attitude. The belief indicates that a given person will take similar risks across various situations and that across various situations, some people tend to be more risk-averse (or risk-seeking) than others.

Review of Personality Traits

Openness to experience: According to McCrae (1993), experience openness can be considered a universal personality construct that includes feelings, thoughts, fantasies, values, behaviours, and aesthetics. Similarly, Ashton *et al*. (2004), proposed the following characteristics of openness to experience: inventiveness, curiosity, love of beauty, and unconventionality. They both agreed that being open to new experiences is closely related to having a sensation-seeking nature. Hence, young adults with low openness to experience will likely have low-risk propensities and include a risk-averse attitude. In contrast, individuals with strong openness to experience will likely have high-risk propensities and be more risk drawn.

Conscientiousness: According to Thompson (2008), it is the capacity of a person to be goal-oriented, watchful, thorough, and diligently aiming for achievement. Young adults with high conscientiousness may consequently be predisposed to low-risk behaviour and acquire risk-averse attitudes when they are more engaged in planning and

analysing events than taking on new experiences.

Extroversion: Most personality models consider the extroversion factor, often known as the extroversion-introversion characteristic. This feature is seen to exist on a continuum, and people cannot simultaneously be extroverts and introverts. Extroverted people are friendly, outgoing, and gregarious because they transmit their personality attributes outward (Thompson, 2008). Jung (2014) remarked that although people can have extroverted and introverted traits, one will predominate over the other. High extroverted people are frequently forceful, enthusiastic, and outgoing. According to Lee *et al*. (2005), extroverts frequently draw attention to themselves and are rewarded for their actions. It follows that young adults with high levels of extroversion are more prone to taking risks and are more likely to adopt a risk-seeking mindset to achieve their goals and be rewarded for their successes.

Agreeableness: according to Rashid and Boussabaine (2019), it is the capacity for empathy, dependability, and tolerance for others. According to Thompson (2008), those scoring highly on the agreeableness scale are likelier to be honourable, courteous, and compassionate toward others. On the other hand, those who have low agreeableness are more sceptical of the beliefs and intentions of others (Hollebeek *et al*., 2019). Frankness, trust, altruism, humility, and obedience were listed by Matsumoto and Juang (2012) as aspects of agreeableness. The six characteristics of agreeableness proposed by Lee and Ashton (2006) are patience, forgiveness, altruism, gentleness, and flexibility. Young adults who are highly agreeable are, therefore, more likely to have low-risk propensities and to be risk-averse since they tend to agree with others, maintaining relationships at the expense of trying out novel concepts and undertaking new challenges.

Neuroticism: Rashid and Boussabiane (2019) define neuroticism as the tendency for people to get emotionally agitated and unstable. This includes worry, anxiety, jealousy, dread, and irritability. People with strong neuroticism frequently consider hazards as threatening to them and have a negative perception of events and risks. On the other side, people with less neuroticism are associated with more emotional stability and have better emotional control when presented with danger (Rashid & Boussabiane, 2019). According to Passer and Ronald (2009), people with high neuroticism and extraversion frequently go through "emotional roller coasters" that include both intensely joyful and intensely negative emotions. The trait of emotionality, which relates to people's emotional instability and comprises features including reliance, fearfulness, anxiety, and sentimentality, was proposed as a replacement for the neuroticism trait by Ashton *et al*., (2004). Since they are more emotionally unstable and less prone to take risks without thorough consideration, young adults with high emotionality (high neuroticism) are likely to have a low-risk propensity and be more risk-averse.

Extroversion alone accounted for 44% of the variance in emotional intelligence, according

to research by Anglim *et al.,* (2020). According to Credé *et al*. (2016)'s findings, risk-taking is generally a rather distinct construct and may be better understood as a compound trait made up of several Big Five components. According to Credé *et al*. (2016), a risk-taker has a personality that is outgoing, emotionally stable, open to new things, disagreeable, and irresponsible.

Risk specialists frequently try to comprehend how people deal with risk daily and how and why people actively take risks. Many authors (Bunton *et al*., 2004; Marston & King, 2006) have argued that paying attention to the dynamics and practices of risk-taking in daily life and how these are infused into wider social dynamics is necessary for a deeper understanding of risk-taking. In addition, one may speculate about the roles that gender, personality traits, and self-efficacy play in each.

Objectives of study

The objectives of the study were to determine

i. the prevalence of risk-taking behaviour among young adults in the Port Harcourt metropolis.
ii. examine the predictive role of personality and self-efficacy on risk-taking behaviour; and
iii. investigate gender differences in risk-taking behaviour.

Hypotheses

1. There will be a significant prediction of risk-taking behaviour by personality traits and self-efficacy among youths in the Port Harcourt metropolis.

2. There will be significant gender differences in risk-taking behaviour.

Methodology

Design

This study employed a descriptive research design, with the aim of examining the influence of self-efficacy and personality on risk-taking behaviour amongst young adults in Port-Harcourt, Rivers State, Nigeria. The independent variables are self-efficacy and personality traits with five dimensions (openness, extroversion, neuroticism, agreeableness, and conscientiousness), while the dependent variable is risk-taking behaviour.

Participants

The population for this study were youths residing within the Port Harcourt metropolis. A multistage sampling technique was adopted to select the study's respondents. A total of seven hundred and thirty-three (733) respondents participated in the study. Their age ranges from 16 to 39 years (M = 27.12 years; SD = 3.41). Their gender revealed that 494 (67.4%) were male while 239 (32.9%) were female. In terms of religion, 620 (84.6%) were Christians, 104 (14.2%) are uninvolved, and 9 (1.2%) practised traditional religion. In terms of marital status, 55 (7.5%) were married, while 678 (92.5%) were single. Their ethnic background shows that 596 (81.3%) were from the Riverine area of the state, 109 (14.9%) were Uplanders, 9 (1.2%) were not sure, and 19 (2.6%) were from other tribes.

Instruments

Risk-taking Behaviour: The 30-item

Domain-Specific Risk-Taking Scale (DOSPERT) by Blais and Weber (2006) was used to measure risk-taking behaviour in the study. The DOSPERT comprises five domains: health and safety, ethical, social, financial, and recreational risks. Participants assess their "likelihood of engaging in each activity or behaviour if [they] were to find [themselves] in that situation" using a 7-point Likert-type scale, ranging from extremely unlikely to extremely likely. Extremely unlikely was assigned the lowest score of one (1), while extremely likely was assigned the highest score of seven (7). Representative of the domains includes "riding a motorcycle without a helmet," "passing off someone else's work as your own," "betting a day's income on the outcome of a sporting event," "disagreeing with an authority figure on a major issue," and "taking a skydiving class", respectively. The scale was originally validated by comparing the participants' likelihood to engage in 40 activities to their ratings of the risk behind each activity and their scores on Zuckerman's Sensation Seeking Scale (Weber, Blais & Betz, 2002). The original DOSPERT was revised to be more applicable to diverse adult populations and shortened the scale to 30 items (Blais & Weber, 2006). The current study found a reliability coefficient of 0.83 for young adults.

Self-efficacy: The General Self-Efficacy Scale (GSEs) was developed by Schwarzer and Jerusalem (1995) and used to measure self-efficacy in the study. The GSEs is a 10-item scale designed to assess general and optimistic self-belief to cope with a variety of difficult demands in life and measure the strength dimension of self-efficacy. The scale has a 1–4 point Likert-type response format for each item of the GSEs. Scores are summed up to give a total range from 10 to 40; higher scores represent greater self-efficacy. Internal reliability for GSES = Cronbach's alphas between 0.76 and 0.90. Ike (2007) reported a reliability coefficient of 0.74 with a Nigerian sample of 83. A concurrent validity index of 0.57 was obtained by Ike (2007), indicating that the scale is useful in measuring self-efficacy in the Nigerian context. The current study found a reliability coefficient of 0.83 for young adults.

Personality: The 10-item version of the Big-five personality inventory (BFI-10) by Rammstedt and John (2007), was used to measure Personality in the study. The 10-item short version personality inventory measures five (5) dimensions of personality, which are: Openness to experience, Conscientiousness, Extraversion, Agreeableness, and Neuroticism. Each item on the questionnaire is scored using a 5-point rating scale, ranging from "Disagree strongly", "Disagree a little", "Neither agree nor disagree", "Agree a little strongly", and to "Agree strongly". **Extraversion** was assessed with items 1R, 6 (R denotes reverse-section); Agreeableness: 2, 7R; Conscientiousness: 3R, 8; Neuroticism: 4R, 9; Openness: 5R; 10 (R -item is reversed-scored; that is items 6-10 is reversed-scored). The 10-item short version of the Big Five was constructed, and a comparison was made in the USA and Germany. The BFI–10 has been used in Nigeria (Tamuno-opubo & Aloba, 2019). The current study found a composite reliability coefficient of 0.68 for young adults.

Procedure

In collecting data for this study, a letter of introduction was sought by the researchers prior to data collection. Through the community heads, other members of the community were reached, mainly to enable them to participate fully in the research. Once this arrangement was made, participants were briefed about the nature and purpose of the study, after that, their consent was obtained. A guarantee of confidentiality of information and appreciation of the participants was also expressed at the end of the findings. Regarding the administration of the questionnaire, the researcher personally went from household to household with the help of three research assistants trained in data administration and collection. In all, a total of 750 questionnaires were distributed in five local government areas in Port-Harcourt, but only 733 were retrieved, and seventeen were not retrieved. The data collection spanned six weeks across locations.

Data Analysis

Data collected in the study were analysed using both descriptive and inferential statistics. Descriptive statistics such as mean, standard deviation, frequency, and percentage counts, were used to describe the respondents and aggregate the data. Inferential statistics such as SEM and t-test for the independent measure were used to test the hypotheses postulated in the study. The analysis was carried out with sub-programmes of the IBM/SPSS AMOS Version 23.0.

Result

Objective 1: The Prevalence of risk-taking behaviour among young adults in the Port Harcourt metropolis

The mean and standard deviation of the overall score on risk-taking behaviour were used to determine the prevalence rate of risk-taking behaviour among young adults. The mean scores of 100.33 and SD of 26.08, respectively, were obtained for the overall risk-taking behaviour. The statistics of the standard deviation above and below the mean ($\bar{x}\pm1SD$) were then used to categorise the participants into low and high risk-taking behaviour. The lower cut-off point was set at 175.00 – 26.08=74.25 (approximately to a score of 74), and the higher cut-off point was set at 175.00 + 26.08 = 126.41 (approximately to a score of 126). Going by this procedure, any respondent with a score between 30—73 was categorised as having low-risk behaviour, and scores between 74—175 were categorised as having high risk-taking behaviour.

Table 1a: Mean Score and Standard deviation

	N	Minimum	Maximum	Mean	Std. Dev
Prevalence of risk-taking behaviour	733	30.00	175.00	100.33	26.08
	733				

Table 1b: Prevalence of risk-taking behaviour

Prevalence	Score Range	Frequency	Percentage
Low	30—73	85	11.6
High	74—175	648	88.4

The analysis revealed that 85 (11.6%) of the participant have low risk-taking behaviour, while 648 (88.4%) have high risk-taking behaviour. It can be deduced that the prevalence rate of risk-taking behaviour is high in the study.

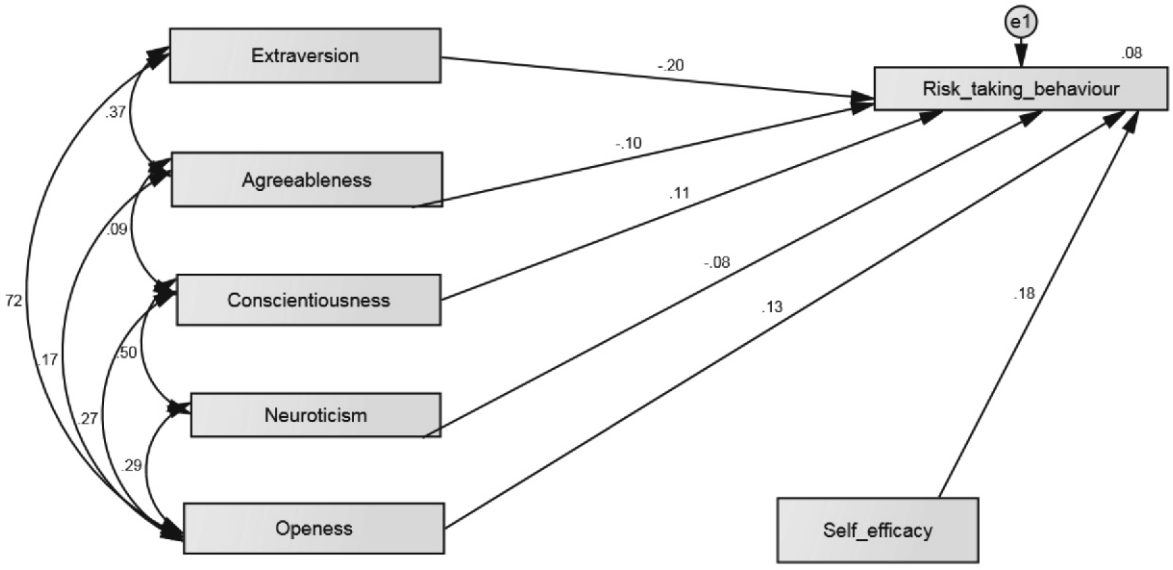

Figure 1. SEM showing the predictive role of personality traits and self-efficacy on risk-taking behaviour

Figure 1 above shows the simple predictive strength of personality traits (extraversion, neuroticism, conscientiousness, openness to experience, and agreeableness) on risk-taking behaviour. Also, the figure shows the predictive strength of self-efficacy on risk-taking behaviour.

Table 2 Final model fit measures

Measures	**Estimate**	**Threshold**
?2 / df	1.573	Between 1-3
GFI	0.903	>0.95
CFI	0.825	>0.90
NFI	0.921	>0.90
RMSEA	0.067	<0.07

Note: $\chi 2$/df normed chi-square statistic; GFI, goodness-of-fit index; CFI, comparative fit index ; NFI: Normalized Fit Index; RMSEA: Root Mean Square Error of Approximation

Table 2 shows that the structural model met the requirement for a model fit according to Hair, Black, Babin, and Anderso's (2010) criteria. The present study achieves a satisfactory fit of $\chi 2$ /df=1.573; GFI = 0.903; CFI = 0.825; NFI = 0.921; RMSEA =0.067. Thus, the hypothesis process was done in order to interpret the structural relationships among variables.

Hypothesis Testing

Hypothesis One

There will be a significant prediction of risk-taking behaviour by personality and self-efficacy among young adults in the Port Harcourt metropolis

Table 3: Direct effects of personality traits and self-efficacy on risk-taking behaviour

		β	S.E.	C.R.	P
Risk-taking behaviour <---	Extraversion	-.20	.861	-3.363	***
Risk-taking behaviour <---	Agreeableness	-.10	.568	-2.564	.010
Risk-taking behaviour <---	Conscientiousness	.11	.617	2.562	.010
Risk-taking behaviour <---	Neuroticism	-.08	.598	-1.831	.067
Risk-taking behaviour <---	Openness Experience	.13	.970	2.205	.027
Risk-taking behaviour <---	Self-efficacy	.18	.190	5.136	***

The results of the analysis presented in Table 3 show that extraversion (β = -0.20, t =-3.363, *p*<.01) independently predicted risk-taking behaviour. The result also shows that agreeableness (β = -0.10, t=-2.546, p<.05) predicted risk-taking behaviour. Conscientiousness (β = 0.11, t =2.562, p<.05) significantly predicted risk-taking behaviour. Neuroticism (β = -0.08, t = -1.831, p>.05) did not predict risk-taking behaviour. Openness to experience (β = 0.13, t = 2.205, p<.05) predicts risk-taking behaviour. Self-efficacy also predicted risk-taking behaviour (β = 0.18, t-5.136, p<.05). Furthermore, it was deduced from Figure 1 that the R^2 =0.08 indicates that the independent variables (personality and self-efficacy) jointly explained 8% variation in dependent variable (risk-taking behaviour).

Hypothesis Two

There will be significant gender differences in risk-taking behaviour among young adults

Table 4: Summary Table of Independent t-test of gender difference in risk-taking behaviour

DV	Gender	N	Mean	SD	df	t	p	95%CI	Cohen's d
Risk-taking behaviour	Male	494	105.45	26.49	731	8.53	.001	[12.10, 19.33]	0.64
	Female	239	89.73	21.71					

The results presented in Table 4 showed that the difference between male scores (M = 105.45; SD = 26.49) and female scores (M = 89.73, SD = 21.71) on risk-taking behaviour was statistically significant, t (731) = 8.53, p = .001, 95% CI (12.10, 19.33), d = 0.64. The mean score of the male young adults is higher than their female counterpart and this justify the reason for the significant differences. The effect of this difference can also be seen as medium effect size as seen from the Cohen's d value of 0.64.

Discussion

The study examined the place of personality and self-efficacy in the risk-taking behaviour of young adults in Port Harcourt. The study discovered that personality traits (agreeableness, openness to experience, extroversion, conscientiousness, and self-efficacy) predict risk-taking behaviour in line with the hypothesis. The result aligns with Sekano's (2014) findings, which showed that personality traits like neuroticism, extroversion and risk-taking behaviours had a statistically significant link. The study did not support the findings of George *et al*. (2010), who found that teenagers with high psychoticism scores tended to drink more frequently, in larger amounts, and in a more damaging way than those with low scores. It was also inconsistent with the findings of Barkus *et al*. (2013), who discovered that psychoticism predicts later risk-taking behaviours and criminal convictions as well as a decline in adolescents' well-being over time.

The study's findings somewhat agreed with those of Neudeckeret *et al*. (2007), who discovered that extroversion and neuroticism were associated with risk-taking behaviours like smoking, using illegal drugs, and having difficulties with alcohol. However, the study was in line with Kuhlman and Zuckerman (2000), who discovered that extroverts engaged in a variety of risky behaviours such as reckless driving, smoking, abusing drugs and alcohol, engaging in antisocial behaviour, performing risky experiments, engaging in sports, pursuing dangerous careers, and engaging in sexual behaviour in order to feel stimulated. The study supported Sekano's (2014) finding that high neurotic scorers are more likely to engage in risk-taking behaviours when they feel confident in themselves.

The study's findings concurred with those of Rimande *et al*. (2021), who discovered that risky sexual behaviour among school-aged teenagers in the Makurdi metropolitan was strongly predicted by self-efficacy. Asqari (2015) in his study, demonstrated that students' self-efficacy was critically linked to their risk-taking behaviours, consistent with the current study's findings. Also, Jalali and Ahadi (2015) found a basic connection between teenage drug misuse and self-efficacy in their study, which aligns with the current study's findings. Sajjadpoor *et al*. (2013) found a link between adolescents' social self-efficacy and willingness to take risks. Also, a study by Abbasi and Azari (2010) found that students' self-efficacy predicts risk-taking behaviours.

The study's second conclusion was that males exhibit riskier behaviour than females. This result is consistent with Erol and Orth's (2011) findings that male adolescents exhibit higher levels of risk-taking behaviour and

higher levels of self-esteem than female adolescents. The results concur with Batista-Foguet *et al*. (2008), who found that boys are more likely than girls to consume and abuse alcohol regularly. The findings were in line with those of Morrongiello and Sedore (2005), who found that boys tend to take more risks than girls and suffer more severe and frequent injuries. However, the study did not support Baker and Yardley's (2012) claim that gender moderated risk-taking behaviours. The high levels of testosterone that males have, which have a detrimental impact on their emotions and behaviours and may incline them to risk-taking behaviours, maybe the reason for these findings.

Conclusion and Recommendations

Based on the findings of the study, it was concluded that there was a high prevalence of risk-taking behaviour in Port-Harcourt. The study also concluded that self-efficacy and personality traits (openness to experience, extroversion, conscientiousness, agreeableness) play a significant role in risk-taking behaviour among the youths in the Port-Harcourt. Therefore, this implies that some personality traits and self-efficacy may serve as important factors influencing youth risk-taking behaviour. Therefore, trained psychologists should develop some personality assessment tests that can help identify youths with high traits like openness to experience, extroversion, agreeableness, and conscientiousness such that possible interventions can be tailored towards reducing risk-taking tendencies among these youths. It is also recommended that the government provide counselling services that inculcate self-efficacy skills, as this will serve as a buffer to resist any form of risk-taking behaviour by youths. Finally, the study also recommends that seminars and workshops on coping skills that can be utilised should be organised for male youths to reduce their risk-taking behaviour.

References

Abbasi, M., & Azari, M., (2010). Prediction of risk -taking behaviors in students through personality traits. *The first nationwide gathering of students in connection to the social factors affecting health.*

American Psychological Association (2022). APA Dictionary of Psychology. https://dictionary.apa.org/risk-taking

Anglim, J., Morse, G., Dunlop, P. D., Minbashian, A., & Marty, A. (2020). Predicting trait emotional intelligence from HEXACO personality: Domains, facets, and the general factor of personality. *Journal of personality*, *88*(2), 324-338.

Ashton, M. C., Lee, K., & Goldberg, L. R. (2004). A hierarchical analysis of 1,710 English personality-descriptive adjectives. *Journal of Personality and Social Psychology*, *87*(5), 707.

Asqari, F., Sadeqi, A., Ghasemi Jobaneeh, R., & Dargahi, S., (2015). Role of parental control and self -efficacy in high school students' hanging out with delinquent peers and risk -taking behaviors. *Criminal Justice Research Letter*, 6 (2), 33 - 48.

Baker, J.R., & Yardley, K. (2012). The Moderating Effects of Gender on the Relationship between Sensation Seeking-Impulsivity and Substance Use in Adolescents. Journal of Child and Adolescent Substance Abuse, 12,

26- 39

Bandura, A. (1997). Self-efficacy: The exercise of control. New York: Freeman.

Barbosa, S. D., Gerhardt, M. W., & Kickul, J. R. (2007). The role of cognitive style and risk preference on entrepreneurial self-efficacy and entrepreneurial intentions. *Journal of Leadership & Organizational Studies*, *13*(4), 86-104.

Barkus, E., Ciarrochi, J., Heaven, P.C.L., & Leeson, P. (2013). Agreeableness, Conscientiousness and Psychoticism: Distinctive influences of three personality dimensions in adolescence. British Journal of Psychology, 104, 481- 494.

Batista-Foguet, J.M., Calmeiro, L., Matos, M.G., & Simoes, C. (2008). Alcohol use and abuse in adolescence: proposal of an alternative analysis. Child Care, Health and Development, 34(3), 291-301

Beck, U. (1992). Modern society as a risk society. *The Culture and Power of Knowledge. Inquiries into Contemporary Societies*, 199-214.

Benjamin, O. A., & Samuel, O. O. (2014). Personality Attributes as Predictors of Nigeria Customer. International Journal of Business and Management Invention.

Blais, A. R., & Weber, E. U. (2006). A domain-specific risk-taking (DOSPERT) scale for adult populations. *Judgment and Decision making*, *1*(1).

Bunton, R., Green, E., & Mitchell, W. (2004). Introduction: young people, risk and leisure-an overview. *Young people, risk and leisure: Constructing identities in everyday life*, pp-1.

Byrnes, J. P., Miller, D. C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological bulletin*, *125*(3), 367.

Cervone, D., & Pervin, L. A. (2022). *Personality: Theory and research*. John Wiley & Sons.

Connor, J.P., George, S.M., Gullo, M.J., & Young, R. McD. (2010). A prospective study of personality features predictive of early adolescent alcohol misuse. Personality and Individual Differences, 49, 204- 209

Credé, M., Harms, P. D., Blacksmith, N., & Wood, D. (2016). Assessing the utility of compound trait estimates of narrow personality traits. *Journal of personality assessment*, *98*(5), 503-513.

Erol, R.Y., & Orth, U. (2011). Self-esteem development from age 14 to 30 years: A longitudinal study. Journal of Personality and Social Psychology, 3, 607-619

Frey, R., Pedroni, A., Mata, R., Rieskamp, J., & Hertwig, R. (2017). Risk preference shares the psychometric structure of major psychological traits. *Science advances*, *3*(10), e1701381.

Furedi, F. (2007). The only thing we have to fear is the 'culture of fear'itself. *American journal of sociology*, *32*(2), 231-234.

Galla, B. M., & Wood, J. J. (2012). Emotional self-efficacy moderates anxiety-related impairments in math performance in elementary school-age youth. *Personality and Individual Differences*, *52*(2), 118-122.

George, S. M., Connor, J. P., Gullo, M. J., &

Young, R. M. (2010). A prospective study of personality features predictive of early adolescent alcohol misuse. *Personality and Individual Differences*, *49*(3), 204-209.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). Multivariate data analysis: A global perspective (Vol. 7).

Highhouse, S., Nye, C. D., Zhang, D. C., & Rada, T. B. (2017). Structure of the Dospert: Is there evidence for a general risk factor?. *Journal of Behavioral Decision Making*, *30*(2), 400-406.

Hollebeek, L. D., Islam, J. U., Macky, K., Taguchi, T., Costley, C., & Smith, D. (2019). Personality-based consumer engagement styles: conceptualization, research propositions and implications. In *Handbook of research on customer engagement*. Edward Elgar Publishing.

Jalali, I., & Ahadi, H. (2015). Relationship of cognitive adjustment of emotions, excitation, and social skills with drug abuse in adolescents. *Addiction Research,* 9 (36). 95 -109.

Jung, C. G. (2014). Analytical psychology. In *An Introduction to Theories of Personality* (pp. 53-81). Psychology Press.

Kuhlman, D.M., & Zuckerman, M. (2000). Personality and risk-taking: common biosocial factors. Journal of Personality, 68 (6), 1000-1028

Lee, K., & Ashton, M. C. (2006). Further assessment of the HEXACO Personality Inventory: two new facet scales and an observer report form. *Psychological assessment*, *18*(2), 182.

Lighthall, N. R., Sakaki, M., Vasunilashorn, S., Nga, L., Somayajula, S., Chen, E. Y., & Mather, M. (2012). Gender differences in reward-related decision processing under stress. *Social cognitive and affective neuroscience*, *7*(4), 476-484.

Marston, C., & King, E. (2006). Factors that shape young people's sexual behaviour: a systematic review. *The lancet*, *368*(9547), 1581-1586.

Matsumoto, D., & Juang, L. (2012). Culture and Psychology. 5-th ed. *NY, Cengage Publ*.

McCrae, R. R. (1993). Openness to experience as a basic dimension of personality. *Imagination, Cognition and Personality*, *13*(1), 39-55.

Morrongiello, B.A., & Sedore, L. (2005). The influence of child attributes and social-situational context on school-age children's risk-taking behaviours that can lead to injury. Applied Developmental Psychology, 26, 347-361

Neneh, B. N. (2022). Entrepreneurial passion and entrepreneurial intention: the role of social support and entrepreneurial self-efficacy. *Studies in Higher Education*, *47*(3), 587-603.

Neudecker, J., Pilarski, C., Pytlak, K., & Skeel, R.L. (2007). The utility of personality variables and behaviourally-based measures in the prediction of risk-taking behaviours. Personality and Individual Differences, 43, 203- 214

Passer, M. W., & Ronald, E. S. (2009). *Psychology: The Science of Mind and Behavior*.

Peacock, A., Leung, J., Larney, S., Colledge, S., Hickman, M., Rehm, J., ... & Degenhardt, L. (2018). Global

statistics on alcohol, tobacco and illicit drug use: 2017 status report. *Addiction*, *113*(10), 1905-1926.

Rammstedt, B., & John, O. P. (2007). Measuring personality in one minute or less: A 10-item short version of the Big Five Inventory in English and German. *Journal of research in Personality*, *41*(1), 203-212.

Rashid, A., & Boussabiane, H. (2019). Conceptualizing the influence of personality and cognitive traits on project managers' risk-taking behaviour. *International Journal of Managing Projects in Business*.

Rimande, U., Tomen, E., & Dzer, B. (2021) Peer Pressure and Self-Efficacy as Predictors of Risky Sexual Behaviour among in-School Adolescents in Makurdi Local Government. International Journal of Research and Innovation in Social Science, V, (VIII) 41-48

Sajjadpoor, H., Mehrabi, H., Hosseinalizadeh, M., & Abdolmohammadi, K., (2013). Examination of the relationship between components such as students' social self -efficacy with tendency towards risk -taking behaviors. *Northern Khorasan' Discipline Knowledge Quarterly,* 63 -73.

Salama, L. A., & Elsayed, A. (2017). Risk taking Behaviors and the related Factors among Female Adolescents' Student enrolled in the Secondary Schools. *Madridge J Nurs*, *2*(1), 34-43.

Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. *J. Weinman, S. Wright, & M. Johnston, Measures in health psychology: A user's portfolio. Causal and control beliefs*, *35*, 37.

Sekano, N. (2014) Personality Traits and Risk-Taking Behaviours of Adolescents in Ventersdorp: The Moderating Roles of Self-Esteem and Gender. Dissertation submitted in partial fulfilment of the requirements for the degree Master of Social Sciences in Psychology at the Mafikeng Campus of the North-West University

Sourani Yancheshmeh, R. (2018). Role of Self-Efficacy and Sensation-Seeking in Predicting Adolescents' Tendency towards Risk-Taking Behaviors (Case Study: high school second-grade students in the fifth region of Tehran). *Iranian journal of educational sociology*, *1*(8), 86-94.

Tamuno-opubo A. T., & Olutayo A. (2019). Psychosocial Factors Associated with Workplace Related Stress: A Nigerian University Academic Staff Experience. *IOSR Journal of Humanities and Social Science (IOSR-JHSS).* 21 (6) 41-52; e-ISSN: 2279-0837

Terry, D., Peck, B., Smith, A., & Nguyen, H. (2019). Occupational self-efficacy and psychological capital amongst nursing students: a cross sectional study understanding the malleable attributes for success. *European Journal of Investigation in Health, Psychology and Education*, *10*(1), 159-172.

Thompson, E. R. (2008). Development and validation of an international English big-five mini-markers. *Personality and individual differences*, *45*(6), 542-548.

Torres, P., & Rees, M. (2017). *Morality, foresight, and human flourishing: An introduction to existential risks*. Pitchstone Publishing (US&CA).

United Nations Children's Fund (UNICEF) (2021). *On My Mind the State of the World'S Children 2021. Promoting, protecting and caring for children's mental health*. https://www.unicef.org/media/114636/file/SOWC-2021-full-report-English.pdf

Weber, E. U., Blais, A. R., & Betz, N. E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of behavioral decision making*, *15*(4), 263-290.

Zuckerman, M., & Kuhlman, D. M. (2000). Personality and risk-taking: common bisocial factors. *Journal of personality*, *68*(6), 999-1029.

SUBSTANCE USE DISORDER AND RISKY SEXUAL PRACTICES AMONG STREET INVOLVED ADULTS IN SELECTED LOCATIONS IN NIGERIA

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Abstract

This study investigated the risky sexual practices among street involved adults with substance use disorder in selected locations in Nigeria and how to facilitate efficacy of psychological intervention of harm reduction among them in order to reduce the negative impact on individuals and the society. There is dearth of qualitativeand observation studies among this population becauseprior studies focused on inpatients and outpatients' populations that are easily reachable to scholars and clinicians, consequently, this study focused on the pattern of the risky practices and possible strategy for harm reduction among street involved adults. Direct Field Observation, Focus Group Discussion (FGD) and In-depth Interview (IDI) was used to bring about information from male and female participants aged 18-65 with over 10 years' active use of polysubstance drugs that are active in sexual practices. The use of different substances concurrently and simultaneously as sexual enhancing substance with multiple sexual partners and unsafe sexual activities increased the risk of catching, contracting and spreading Sexually Transmitted Disease (STD), particularly HIV/AIDS.

Keywords: substance-related disorder, Sexually Transmitted Disease, Sexual behavior,Street Involved Adults

Word count: 167

Introduction

Co-occurring and multiple occurring psychological disorders have been a major concern of mental health practitioners such as the challenges associated with substance use and sexual misconduct. Polysubstance use problem has been shown to complicate the sense of judgement in the practice of safe sexual conduct among the general population, but among street involved adults there are dearth of qualitative studiesthat involved hard to reach population, therefore, this study investigated the pattern of risky sexual practices among street involved adults with polysubstance use disorder in selected locations in Nigeriaand how to facilitate efficacy of psychological intervention of harm reduction among them in order to reduce the negative impact on individuals and the society.

Sexually risky conduct has a variety of effects on one's sexual health and risk of sexually transmitted diseases, including HIV/AIDS. Some relevant research has concentrated on single locations or certain chosen areas. Individual with polysubstance use disorder are more prone to different types of STDs because the impairment in judgment usually have an influence on the capacity to employ appropriate and consistent safe sexual practices. Evidence has shown that many adults are sexually active and partake in dangerous, unprotected sexual behavior (Desmennu, Titiloye & Owoaje, 2018; Starks, MacDonell, Pennar, *Dinaj-Koci, Millar, & Naar,* 2020; Cleland, Gwadz, Collins, Wilton, Sherpa, Dorsen, Leonard, Cluesman, Martinez, Ritchie, & Ayvazyan, 2021). Studies show that unsafe sexual behavior is associated significantly with drinking and using drugs (Foundation THJKF, 2002; Staton, Dickson, Pike, Surratt, Young, 2022). It has been documented that drug abuse is linked to several sexual partners, unprotected sex, and casual sex in various parts of Africa. Additionally, a link has been found between substance abuse and unsafe sexual conduct (Campbell, 2003; (Beckham, Glick, Schneider, Allen, Shipp, White, Park, Sherman, 2022). There are significant connections between sexual risk-taking, substance abuse, and mental health (Donenberg & Pao, 2005).Through its link to sexual risk-taking, substance use increases the chance of contracting HIV; it also interferes with cognitive functions crucial to HIV prevention and decreases the likelihood of proper condom usage (Dermen et al., 1998). People in mental health treatment report higher sexual activity, more partners, more drug use, and less condom usage than their counterparts (Brown et al., 1997; Smith, 2001). The number of sexual partners and drug and alcohol use during intercourse are both reported by young people (Donenberg et al., 2002; Victoria, Votaw, McHugh, Vowles, & Witkiewitz, 2020; Roba, Gebremichael, Adem, Beyene, 2021),Donenberg et al., also found that risky sexual behavior and negative peer influence are linked to drug and alcohol use in the previous three months.2001). Despite these associations, little research has been done on specific risk factors and mechanisms that protect street involved adults with mental health and substance use problems.A deeper comprehension of the mechanisms that put troubled individuals at risk for HIV infection will result from additional research into the role that substance abuse plays in sexual risk taking by individuals. Emphasis have been placed on

risk-taking behaviors as been influenced by dispositional factors (Jessor, 1991).While Bronfenbrenner (1986) emphasizes the influence of multiple interconnected systems (such as the individual, family, and community), he does not take mental health into account. Donenberg and Pao (2005) use ecological, health behavior (Fisher & Fisher, 1992), and developmental psychopathology theories to describe a social-personal framework for understanding HIV-risk behavior among adolescents in psychiatric care (Cicchetti, 1999).As predictors of unsafe sex among troubled adolescents, this framework emphasizes the interconnected influences of family context, mental health, substance use, peer and partner relationships, and personal attributes(Fredericksen, Whitney, Trejo, Nance, Fitzsimmons, Altice, Carrico, Cleland, Del Rio, Duerr, El-Sadr, Kahana, Kuo, Mayer, Mehta, Ouellet, Quan, Rich, Seal, Springer, Taxman, Wechsberg, Crane, Delaney, 2021).

Methods

Direct Field Observation, Focus Group Discussion (FGD) and In-depth Interview (IDI) was used to elicit information from male and female participants aged 18-65 with over 10 years' active use of polysubstance drugs.

Study Site, Participants and Interview

This study was conducted in selected high density areas where adults in street situation gathered in Ibadan, Oyo State. Three Focus Group Discussion (FGD) was conducted with 33 males and 2 females (aged 18 to 65) between 2018 and 2022, the willing thirty-five (35) of the participants were hustlers (engaging in any form of transactions that could generate money). This study included thirty-five participants since those were the willing adults in street situation members and they were very careful and reluctant to participate due to law prohibits the use of those substances that they engaged in until they were convinced that this was purely research based activity. These participates certify the following conditions of inclusion they abuse multiple substance for period over ten years, they are adults between the ages of 25 and 65 years of age. This study obtained approval (IRB number UI/EC/20/0498), participants filled and signed the informed consents. Participants were anonymized with the use of code instead of names.

Participants were recruited after contacts were made with an informant who served as one of the "seeds", Respondent-Driven sampling technique (Crawford, 2016; Heckathorn, 2011; Heckathorn, 1997) was used to recruit other participants using coupons giving to the "seeds", proper briefing was done for the participants before data was collected. Using an interview guide, the recorded FGD lasted about 75 minutes, (1) What are the risk that you can associate with your heavy use of different substance over this period of use? (2) in your own view**,** what are the common consequences ofheavypolysubstance use that you have experienced? What do you think could be done for you to reduce the frequency of use? What do you think could be done for you to reduce the quantity that you normally use? Do you think you can reduce the use of multiple substance together? In accordance with (Pietkiewicz and Smith, 2014) additional probing was done on some of the question asked.

Data Analysis

Verbatimtranscribe was done on the recorded interviews and note. The shared themes and subthemes were outlined with Interpretative Phenomenological Analysis (IPA) method to generate a comprehensive narrative of themes and subthemes (Smith,1999; 2011, Pietkiewicz and Smith, 2014).

Results

This study with the primary goal of using qualitative in exploring pattern of risky sexual practices of hard to reach street involved adults discovered that abuse of polysubstance among street involved adults' influenced some identified sexual conduct such as using some of the substances used concurrently or simultaneously sex enhancing substances / aphrodisiacs, Unprotected sexual activity, Multiple sex partners, Sexual activities with partner that abuse substance, casual sex, Risky sexual behavior. The results from this study are hereby presented below.

As sex enhancing substances/aphrodisiacs

Tramadol used as sexual enhancing substance to with the aim of having lengthened sexual intercourse as stated in the illustration below.

> "I normally use tramadol for sexual performance and combine it with alcohol to get a woman drained''

Different doses of tramadol were used by different individual to attained their desired duration and to proof a point of their sexual prowess to a woman or whether the singular need to have a drawn out sex with a woman that he has being looking at over a significant stretch and particularly on the off chance that she has play so difficult to get or on the other hand assuming they had been participated in verbal revolting sexual suggestion as well as playing with one another over a time of term. The utilization of tramadol in this present circumstance is either to deserve admiration of the woman or to rebuff her or to demonstrate the masculinity of the male that utilization the substance.

Unprotected sexual activity

Participants communicated their sexual practices which is helped with the utilization of substances. Taking report of one of the Participants as expressed underneath:

"Condom do get pulled off during extended sexual intercourse and at time it gone slit"

Under the influence of substance use, their reports show carelessness and poor judgement in the use of condom during sexual intercourse.

Multiple sex partners

Street involved adults do not have permanent partner and usually sought for sex partners based on the need to have sex

"When I want Woman, I look for them, they are plenty"

The philosophy that there are large number of women that they can approach whenever they need sexual partner was demonstrated in their lifestyle.

Sexual activities with partner that abuse substance

The ladies that admire them were discovered to also use substances

"Both of us will have taken our preferred substances for the sexual act"

Ladies who participated in the studies also use substance before engaging with men that also use substances for sexual activities, this is also true of the Men too.

Casual sex

They demonstrated little attachment so hence they could always seek out any available opposite sex for sexual activities when they have the urge.

"Any one available serves, since it just for me to satisfy my urge"

This attitude makes it easier for them to be ready for friend with benefit or any other form of arrangement to get a sexual partner on as the need arises.

Risky sexual behavior

The longing to fulfill sexual desire are being filled mostly by seeking out commercial sex workers.

"I pay women that are in brothel to have sexual intercourse with them whenever I have the urge"

They typically sought for the services of commercial sexual workers and pay for sex whenever they have cash. The cost varies due to prevailing situation

The figure below shows some illustration of unsafe sexual activities and the use of substances such as tramadol, 'man power' Indian hemp with stout 'kenubo' with alcohol, Colorado and Indian hemp with alcohol or alcohol with tramadol were used for sexual prowess and to deal with hard to get sexual partner.

Discussion

This paper adopted an exploratory qualitative study among street involved adults in different locations in Nigeria, all participants reported long term misuse of substance, they use different variants of substances. Findings of this study shows pattern of risky sexual practices of hard-to-reach street involved adults discovered that abuse of substance among street involved adults influenced some identified sexual conduct such as using some of the substances used concurrently or simultaneously sex enhancing substances/aphrodisiacs, unprotected sexual activity, multiple sex partners, Sexual activities with partner that abuse substance, casual sex, risky sexual behavior. affirmed the discoveries of a portion of the past exploration that recognized unsafe sexual activities (Campbell, 2003; Desmennu, Titiloye and Owoaje, 2018), various sex accomplices (Brown et al., 1997; Smith, 2001; Donenberg et al., 2002), unfortunate adherence of condom use and other safe sex rehearses (Dermen et al., 1998; Brown et al., 1997; Smith, 2001).

Conclusions

This paper viewed that as, individuals with drug use issue in Nigeria are at risk against different sorts of sexually transmitted

diseases considering the way that the deterrent in judgment because of substance abuse, do influence the knack and ability to use good and consistent safe sexual practices. This paper is principal for strategy creators and clinicians, analyst, researcher toward making and coordinating damage decrease intervention that integrate control instruments for both substance abuse and hazardous sexual behaviour. The information on substance supported sexual activities would be useful in planning intervention and in figuring out fit policy. Integration of harm reduction would be essential in caring for both the polysubstance use and risky sexual behavior. This paper recommendation based on the nature of the street involved adults in terms of "hard to reach" and "hard to engage", they are likely to benefit from Life Skill Training Intervention (information model and skill set building) and Blended Telepsychology intervention for accessibility and benefit of artificial intelligence in capturing ongoing real life challenges with substance use disorder and risky sexual practices(Griffin, Williams, Botvin, Sousa, and Botvin, 2022; Haug, Castro, Wenger, and Schaub, 2021), therefore mental health care professionals could explore the integration of Life Skill Training Intervention and Blended Telepsychology intervention.

Research limitations

This presents study has some limitations. (1) it used four focus group discussions with street involved adults, but this was strengthened by the use IPA (Pietkiewicz and Smith, 2014), probing further to reach level of saturation and observing this group in their natural hideout, therefore, more Focus Group Discussions and in-depth interview needed to be conducted at different locations, therefore this study serves as a forerunner to other studies to be conducted.

(2) this subgroup was difficult to reach because of a number of factors which include fear of being arrested in view of this, present study explored the opportunity of the contact to obtained the information which justified the number of participants.

Contribution to knowledge

This exploratory research contributed to knowledge of risky sexual behavior of unprotected sexual intercourse, multiple sex partners and sexual activities under the influence of substance use.

References

Beckham, S.W., Glick, J. L., Schneider, K. E., Allen, S.T., Shipp, L., White, R. H., Park, J. N.,

Sherman, S. G. (2022). Latent Classes of Polysubstance Use and Associations with HIV Risk and Structural Vulnerabilities among Cisgender Women Who Engage in Street-Based Transactional Sex in Baltimore City. *International Journal of Environmental Research and Public Health, 19*, 3783.

Cai, Y., Dai, Z., Wen, S. Bhandari, R., (2020). Risk factors associated with infection of blood-borne virus among people who used methamphetamine. *BMC Infectious Diseases* ***20***, 742.

Campbell, E. K. (2003). A Note on Alcohol Consumption and Sexual Behaviour of Youths in Botswana, *African Sociological Review / Revue Africaine de Sociologie, 7*, (1), 146-161.

Cleland, C. M., Gwadz, M., Collins, L. M., Wilton, Leo., Sherpa, D., Dorsen, C., Leonard, N. R., Cluesman, S. R., Martinez, B. Y., Ritchie, A. S., & Ayvazyan, M. (2021). African American/Black and Latino Adults with Detectable HIV Viral Load Evidence Substantial Risk for Polysubstance Substance Use and Co-occurring Problems: A Latent Class Analysis. *AIDS Behavior* ***25***, 2501–2516.

Crawford, F. W. (2016). The graphical structure of respondent-driven sampling, *Sociol Methodol,. 46* (1), 187-211.

Dawit, A., Debella, A., Dejene, A., Abebe, A., Mekonnen, Y., Degefa, A., Ketema, L.(2006). Is khat-chewing associated with HIV risk behaviour? A community-based study from Ethiopia. *African Journal of AIDS Research, 5* (1), 61-9.

Desmennu, A. T., Titiloye, M. A., Owoaje, E. T. (2018). Behavioural risk factors for sexually transmitted infections and health seeking behaviour of street youths in Ibadan, Nigeria, *African Health Sciences, 18* (1), 180-187.

Foundation THJKF (2002). Substance Use and Risky Sexual Activity: The Henry J. Kaiser Family Foundation.

Fredericksen, R.J., Whitney, B.M., Trejo, E. Nance R M. Fitzsimmons, E., Altice, F. L., Carrico, A. W, Cleland, C. M., Del Rio, C., Duerr, A., El-Sadr, W. M., Kahana, S., Kuo, I., Mayer, K., Mehta, S., Ouellet, L. J., Quan, V. M., Rich, J., Seal, D. W., Springer, S., Taxman, F., Wechsberg, W., Crane, H. M., Delaney, J. A. C., (2021). Individual and poly-substance use and condomless sex among HIV-uninfected adults reporting heterosexual sex in a multi-site cohort. *BMC Public Health* ***21***, 2002.

Jackson, C., Geddes, R., Haw, S.,& John Frank, J. (2012**).** Interventions to prevent substance use and risky sexual behaviour in young people: a systematic review**.***Addiction, 107* (4), 733–747.

John-Lengba, J., Ezeh, A., Guiella, G., Kumi-Kyereme, A., Neema, S. (2004). Alcohol, Drug Use, and Sexual-risk Behaviors among adolescents in four Sub-Saharan African countries.

Heckathorn, D. D. (2011). Snowball versus respondent-driven sampling. *Sociol methodol,. 41* (1), 355-366.

Heckathorn, D. D. (1997). Respondent-driven sampling: a new approach to the study of hidden populations. *Social Problems, 44* (2), 174-199.

Henderson, M., Nixon, C., McKee, M. J., Smith, D., Winght, D., and Elliott, L. (2019). Poly-substance use and sexual risk behaviours: a cross-sectional comparison of adolescents in mainstream and alternative education settings. *BMC Public Health* ***19***, 564.

Kebede, Y. (2002). Cigarette smoking and Khat chewing among college students in North West Ethiopia. *Ethiopian Journal of Health Development, 16* (1), 9-17.

Pietkiewicz, I.,& Smith, J. A. (2014). A practical guide to using interpretative phenomenological analysis in qualitative research psychology, *Czasopismo Psychologiczne – Psychological Journal, 20 (*1), 7-14.

Roba, H. S., Gebremichael, B., Adem, H. A., Beyene, A. S., (2021). Current Substances Use Among Students in Ethiopia: A Systematic Review and Meta-Analysis of 20-Years Evidence. Substance Abuse: Research and Treatment. 15.

Starks, T. J., MacDonell, K.K., Pennar, A.L., *Dinaj-Koci, V., Millar, B. M., & Naar, S.* (2020). Drug use among adolescents and young adults with unsuppressed HIV who use alcohol: Identifying patterns of comorbid drug use and associations with mental health. *AIDS Behavior* ***24***, 2975–2983.

Staton, M., Dickson, M.F., Pike, E., Surratt, H., Young, S. (2022). An Exploratory Examination of Social Media Use and Risky Sexual Practices: A Profile of Women in Rural Appalachia Who Use Drugs. *AIDS Behavior* ***26****,* 2548–2558.

UNFPA Ethiopia. Preventing HIV / AIDS. 2007; Available from: http://countryoffice.unfpa.org/ethiopia/2008/12/30/278/prev enting_hivaids/.

Victoria, R., Votaw, R., McHugh, K., Vowles, K. E., & Katie Witkiewitz, K. (2020). Patterns of Polysubstance Use among Adults with Tranquilizer Misuse, Substance Use & Misuse, 55:6, 861-870.

World Health Organization. (2002). Reducing *risks, promoting healthy life*. Geneva.

THEORETICAL MODELS OF VIOLENCE AND TRAUMA:CONCEPTUAL REVIEWS AND TRAUMA INTERVENTION STRATEGIES

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Abstract
The study provides a conceptual review of theoretical models of violence and trauma, with a focus on trauma intervention strategies. The objectives of the study were to examine the psychosocialtheories of violence, provide a frame work for understanding trauma, describe the sequence of violence and trauma, explore implications of violence and trauma, highlight the dimensions of violence and trauma and examine some notable cases of violence and trauma in Nigeria. The study employed a qualitative research approach, using a review of literature and case studies to analyse the theorectical models and trauma intervention strategies. The findings reveal that psychosocial theories of violence provide insights into the factors that contributes to violent behavior, while a frame work for understanding trauma highlights the complex nature of traumatic experiences and the need for comprehensive interventions.The study also reveals that violence and trauma have significant implications for individuals and society, with a range of dimensions that require attention. Furthermore the study highlights some notable cases of violence and trauma in Nigeria, including terrorism, political violence, domestic violence and communal conflicts.The study concludes by emphasizing the importance of trauma intervention strategies in addressing psychological and social consequences of violence and trauma, and the need for comprehensive approaches that involve multiple stakeholders.

Keywords: Violence, Trauma, Psychosocial, Trauma management,Posttraumatic Stress Disorder

Introduction

Violence and trauma have their consequential roles on individuals, families and societies at large. The two terms collectively work hand in glove as 'cause and effect' in the life situation of groups or individuals involved. They can be the origin of a case or as a result of the case at hand. Violence can be a cause or aftermath of a trauma likewise trauma. They can be commonly experienced by any child or adult in groups or communities and equally lead to a lasting negative effects as well as traumatic reactions by the affected individuals.

Violence involves intentional use of physical force or power, threatened or actual against oneself, another person or against a group or community, that either results in or has a high likelihood of resulting in injury, death,

psychological harm, maladjustment or deprivation (WHO, 2002).Violence became a public health issue in 1965 when homicide and suicide consistently appeared on the top list leading cause of death in United States; likewise reaching the epidemic stage in 1980s made it more of a concern to Public health (Centre for Disease Control and Prevention, 2008; 2009).

WHO (2002), divides violence into three broad categories according to who the perpetrators and victims are of violent acts:

1. Self-directed violence refers to violent acts a person inflicts upon him- or herself, and includes self-abuse (such as self-mutilation) and suicidal behaviour (including suicidal thoughts, as well as attempted and completed suicide).
2. Interpersonal violence refers to violence inflicted by another individual or by a small group of individuals. It can be further divided into two subcategories:
    i. Family and intimate partner violence – violence largely between family members and intimate partners, usually, though not exclusively, taking place in the home. This includes forms of violence such as child abuse, intimate partner violence and abuse of the elderly.
    ii. Community violence – violence between individuals who are unrelated, and who may or may not know each other, generally taking place outside the home. This includes youth violence, random acts of violence, rape or sexual assault by strangers, and violence in institutional settings such as schools, workplaces, prisons and nursing homes.
3. Collective violence can be defined as the instrumental use of violence by people who identify themselves as members of a group – whether this group is transitory or has a more permanent identity – against another group or set of individuals, in order to achieve political, economic or social objectives. This can manifest in a number of forms, such as genocide, repression, terrorism and organized violent crime.

Further these categories were divided into more specific types as:

i. Physical violence as the intentional use of physical force, used with the potential for causing harm, injury, disability or death. This includes, but is not limited to: scratching, pushing, shoving, grabbing, biting, choking, shaking, slapping, punching, hitting, burning, use of a weapon, and use of restraint or one's body against another person. This type of violence does not only lead to physical harm, but can also have severe negative psychological effects – for example, if a child is frequently a victim of physical violence at home, he or she can suffer from mental health problems and be traumatized as a consequence of this victimization.
ii. Sexual violence involves a sexual act being committed or attempted against a victim who has not freely given consent, or who is unable to consent or

refuse. This includes, but is not limited to: forced, alcohol/drug-facilitated or unwanted penetration, sexual touching, or non-contact acts of a sexual nature. A perpetrator forcing or coercing a victim to engage in sexual acts with a third party also qualifies as sexual violence. This type of violence can also lead to physical harm, and in most cases has severe negative psychological effects too.

iii. Psychological violence (also referred to as emotional or mental abuse) includes verbal and non-verbal communication used with the intent to harm another person mentally or emotionally, or to exert control over another person. The impact of psychological violence can be just as significant as that of other, more physical forms of violence, as the perpetrator subjects the victim to behaviour which may result to some form of psychological trauma, such as anxiety, depression or post-traumatic stress disorder. This includes, but is not limited to: expressive aggression (e.g., humiliating and degrading),coercive control (e.g., limiting access to things or people, and excessive monitoring of a person's whereabouts or communications), threats of physical or sexual violence, control of reproductive or sexual health, exploitation of a person's vulnerability (e.g., immigration status or disability).These not only leads to mental health problems, but also to severe physical problems, such as psychosomatic disorders.

iv. Neglect, or deprivation, is a type of abuse which occurs when someone has the responsibility to provide care for an individual who is unable to care for him- or herself, but fails to do so, therefore depriving them of adequate care. Neglect may include the failure to provide sufficient supervision, nourishment, or medical care, or the failure to fulfil other needs for which the victim cannot provide themselves. Neglect can lead to many long-term side effects such as: physical injuries, low self-esteem, attention disorders, violent behaviour, physical and psychological illness, and can even result death.

Trauma on the other hand, has to do with the emotional response to a terrible event like an accident, rape, or natural disaster. Immediately after the event, shock and denial are typical. Longer term reactions include unpredictable emotions, flashbacks, strained relationships, and even physical symptoms like headaches or nausea (APA, 2022).

Trauma can occur early to an individual. Early childhood trauma generally refers to the traumatic experiences that occur to children ages 0-6 and they can experience various types of trauma including: Natural disasters, sexual abuse, physical abuse, domestic violence, medical injury, illness, or procedures, community violence, neglect, deprivation, traumatic grief, victim of crime, kidnapping, accidents, school violence, loss.

Trauma, which may manifest as an acute, chronic or complex in category and can be experienced directly or indirectly, differs in mode of feelings to people. While some

people with traumatic experience may have clear symptoms of Post Traumatic Stress Disorder (PTSD), many others could exhibit resilient responses or brief subclinical symptoms or consequences that fall outside of diagnostic criteria. The impact of trauma can be subtle, insidious, or outrightly destructive. How an event affects an individual depends on many factors, including characteristics of the individual, the type and characteristics of the event(s), developmental processes, the meaning of the trauma, and sociocultural factors (Center for Substance Abuse Treatment (US: 2014).

In a psychological context, a person subjected to trauma may respond in several ways. They may be in a state of shock, extreme grief, or denial. Apart from the immediate or short-term response, trauma may also give rise to several longer-term reactions in the form of emotional lability, flashbacks, impulsiveness, and strained relationships. Besides the psychological symptoms, trauma can lead to physical symptoms, such as headaches, lethargy, and nausea. Some people may be affected a lot more than others. Such people may be entrapped in the emotional impact of the trauma and find it difficult to move on with their lives. Such long-term manifestation of trauma can lead to a psychological condition called Post-Traumatic Stress Disorder(Allarakha& Pallavi, *2021).*

Objectives of the study

The general objective of this study is to evaluate the role violence and trauma play in human socity and the burden it leaves on the wellbeing of people and society and how it can be mitigated. Below are specific objectives of the study:

i. examine the psychological theories of violence
ii. provide framework for understanding of trauma.
iii. describe the sequence of violence and trauma.
iv. explain the implications of violence and trauma.
v. examine notable cases (in Nigeria) and intervention strategise for trauma.

Psychosocial Theories of Violence

Social Learning Theory of Bandura (1977), believes that people can learn from each other through observation, imitation and modeling. Bandura explains that children must not be rewarded or frustrated in order to behave, rather they could learn that behaviour by observing a model doing it. This explains that violent behaviours that lead to some traumatic experiences are learned from the environment by the perpetrators. Observational learning is achieved with the five principles; observation, attention, retention, reproduction and motivation by which when applied would replicate the learned behaviour or a superior one. These behaviours are copied or replicated as seen. If an individual happens to be in an environment that practices violent behaviour or use violence in expressing aggression, this individual could replicate violence when triggered as a way of expressing the displeasure. It could be learned via exposure or video games. In terms of partner violence, social learning theory emphasizes that the tendencies of having physical aggression against one's partner exist because close relatives and friends of the perpetrator approve or engage in such conduct

themselves.

Social learning also occurs through external rewards and punishments and also through the internalization of group-defined values and expectations. Gang violence, for example, exhibits many of these social learning processes. Young people who see older, respected people join gangs and engage in violence also tend to join gangs. Young people often join gangs to obtain social rewards such as respect, power, and a sense of safety and belongingness as envisaged in cult activities on campus

Social Exchange Theory of Homans (1958), believes that violence is motivated by the principle of cost and benefit, through abuse when the reward is greater than the cost. Environmental factors like family orientation, culture, religion etc. of the perpetrator allows the use of violence in expressing and producing the significant reward of social control or power.This theory maintains that the goal is to gain or maintain control and power over the relationship through abusive behaviour. The repeated act of violent towards the victim leads them to feel vulnerable and helpless in the abusive relationship as victims deal with many forms of abuse. The victim develops learned helplessness and use various coping method to survive the mistreatment even as in Stockholm syndrome.

The Subculture of ViolenceTheory of Cohen (1972), Cohen proposes that youths as a means of coping with their particular circumstances and of resisting the dominant values of society develop a cultural style (violence). They know they cannot do more to change situations but through resistance they gain subjective satisfaction which can be shown through their lifestyle. They express their dissatisfaction through riot, demonstrations, hair styles, cloth pattern, music etc. Cohen argued that these styles are deeply layered in meaning as they indirectly use the means in expressing their grievances. These individuals use violent behaviour as an approved means of expression in the environment because they believe it works. Perpetrators of violence and trauma embark on violence once they are displeased, not satisfied or unfavoured in expressing their feelings and achieving their goals. Violence like communal clashes, homicide, arson, rape, kidnap, rituals, etc are powered by this belief.

Psychobiological Theory of Violence; this theory believes that violence occur as a result of psychobiological and temperamental vulnerabilities and by instinct. It proposes that brain dysfunction, autonomic functioning, hormones, neuropsychology, and temperament are contributing factors to violence. It explains the relationship between psychological and behavioral processes aswell as the underlying physiological mechanisms of these individuals perpetrating violence. Violence can be as a result of sickness or illness, personality attributes, and the animalistic response to stimuli for survival. In all these, an individual's biological makeup or conditions contribute to violence.

Violence has shown to be a complex phenomenon and it needs to be understood differently by people in different contexts. People from various countries, cultures,

belief systems, etc., have diverse views on what is called violence or a violent act same with traumatic feelings. It is pertinent to have a clear understanding of violence and feelings of trauma from the context in which it occurs and the victims perspective in developing effective prevention and treatment strategies. The right approach will lead to better understanding in managing.

Dimensions of Violence

Conflict Triangle theory of Violence by Galton (1969), viewed violence from three perspectives: direct / personal violence, indirect / structural violence and symbolic/cultural violence. These he suggest to be seen as three arms of violence triangle.

i. Direct/personal violence is the violence the primary committer is known. It is the obvious among all the dimensions. It encompasses all of the attributes of violence from threats and psychological abuse to rape, murder, war, and genocide. It is called direct or personal because the committers are seen or could be traced in person, hence personal.

ii. Indirect / structural is the violence where the committer is less obvious. The perpetrators may be known but subtly covered by the structure that harbors the power of violence unequally and consequently manifest as unequal chances. Basically, it holds none responsible of the violence rather the blame is on the structure. This type of violence shields the perpetrators most times could be as deadly, or deadlier, than direct violence.

Violence is an integral part of the very structure of human organizations in social, political, religious and economic. Structural violence is usually invisible not because it is rare or concealed, but because it is so ordinary and unremarkable that it tends not to stand out. Such violence fails to catch our attention to the extent that we accept its presence as a "normal" and even "natural" part of how we see the world (Afzaal, 2012).Identifying structural violence is by paying attention to the consequences rather than intents. This is because it shields the committers while the victims are known. Apparently this removes any question pertaining intents of these committers that are unknown as the Western legal and ethical system are more interested in getting an offender in direct violence for punishment. Therefore, identifying structural violence is by focusing on the consequences instead of intents.

iii. Symbolic/cultural violence which wasadded later by Galton involves using those aspects of culture that represent or symbolize the individual's existence in justifying legally and morally the violence of these perspectives; direct / personal and indirect / structural violence. The committers of this type of violence based the rationale of committing the violence on the justification that it is legally acceptable or religiously supported. For instance committing murder for the country could be seen as right while for self is wrong likewise in committing murder for protecting religious rights could be seen as right for defending the religion but wrong if personal. Afzaal, (2012), identifies that

this perspective changes the clear situation of violence into not violence situation, or having an opaque view of at least not as violence as assumed thereby changing the reality or fact to unreal, the moral color from red (wrong) to green (right) and at least to yellow (acceptable).

Galton (1969), used these three perspectives of violence to demonstrate how these violence are causally connected. Violence of any type has its support on the belief system or culture of the perpetrators.

Framework for understanding Trauma

Reseachers have developed various theoretical frameworks that can aid the understanding of trauma in human society. Each framework emphasizes different aspects of traumatic experiences. Some of those theories are reviewed as follows:

i. Posttraumatic Stress Disorder (PTSD) Framework: This emphasizes the role of exposure to traumatic events as key factors in the development of PTSD. According to this framework, traumatic events are outside the range of normal human experience and can overwhelm an individual's ability to cope, leading to symptoms such as re-experiencing the trauma, avoidance, and hyper arousal (APA, 2013).

ii. Polyvagal theory framework: This framework emphasizes the role of autonomic nervous system in regulating responses to stress and trauma. Traumatic experiences can dysregulate the autonomic nervous system, leading to chronic states of flight, or freeze. (Porges, 2011).

iii. Cognitive Behavioural Framework: The emphasizes here is on the role of maladaptive thoughts and behaviours in maintaining symptoms of trauma. Putting the cognitive behavioural framework in perspective, those traumatic experiences can lead to negative beliefs about one's self, others and the world, which can perpetuate symptoms such as avoidance and hypervigilance. (Resick, Monson, & Chard,2016).

iv. Attachment Theory Framework: This theory emphasizes the role of early childhood experiences in shaping an individual's capacity to form secure attachment and regulate emotions. Traumatic experiences can disrupt these processes and lead to difficulties in forming healthy relationships and regulating emotions(Bolby,1988).

v. Social Constructivist Framework: The focus of this theory is on the social and cultural context in which traumatic events occur and the ways in which they are constructed and interpreted by individuals and communities. This theory argues that traumatic events are not inherently traumatic but become so through their interpretation and meaning within a particular cultural context.

Dimensions of Trauma

Trauma experiences be it in children, adolescents and adults affects the individual's wellbeing in seemingly dimensions of physical, psychological, emotional, spiritual, personal, and professional. It could manifest and be measured by physical-neglect, emotional-abuse, physical-abuse, sexual-

abuse, and emotional-neglect retrospectively from childhood as they are linked to PTSD (Bernstein, Stein, Newcomb, Walker, Pogge, Ahluvalia, Zule, 2003).

1. Physical-neglect includes not being provided proper shelter, food, or medical care,
2. Emotional-abuse includes being verbally attacked,
3. Physical-abuse includes having one's body assaulted by another such as being hit or slapped,
4. Sexual-abuse involves inappropriate touching or rape,
5. Emotional-neglect) parents and family not providing appropriate help or care at appropriate times.

Recalled childhood trauma especially from sexual and emotional abuse has the susceptibility to PTSD symptoms and dysregulated drinking (Patock-Peckham, Belton, D'Ardenne, Tein, BaumanInfurna, et. al.,2020).

There are three main types of trauma: Acute, Chronic, or Complex (Allarakha& Pallavi, *2021).*

A. Acute Trauma:

It mainly results from a single distressing event, such as an accident, rape, assault, or natural disaster. The event is extreme enough to threaten the person's emotional or physical security. The event creates a lasting impression on the person's mind. If not addressed through medical help, it can affect the way the person thinks and behaves. Acute trauma generally presents in the form of:

1. Excessive anxiety or panic 2. Irritation, 3.Confusion, 4. Inability to have a restful sleep, 5. Feeling of disconnection from the surroundings, 6. Unreasonable lack of trust, 7.Inability to focus on work or studies, 8. Lack of self-care or grooming, 9. Aggressive behavior

B. Chronic trauma:

It happens when a person is exposed to multiple, long-term, and/or prolonged distressing, traumatic events over an extended period. Chronic trauma may result from a long-term serious illness, sexual abuse, domestic violence, bullying, and exposure to extreme situations, such as a war. Several events of acute trauma as well as untreated acute trauma may progress into chronic trauma. The symptoms of chronic trauma often appear after a long time, even years after the event. The symptoms are deeply distressing and may manifest as labile or unpredictable emotional outbursts, anxiety, extreme anger, flashbacks, fatigue, body aches, headaches, and nausea. These individuals may have trust issues, and hence, they do not have stable relationships or jobs. Help from a qualified psychologist is necessary to make the person recover from the distressing symptoms.

C. Complex trauma:

It is a result of exposure to varied and multiple traumatic events or experiences. The events are generally within the context of an interpersonal (between people) relationship. It may give the person a feeling of being trapped. Complex trauma often has a severe impact on the person's mind. It may be seen in individuals who have been victims of childhood abuse, neglect, domestic violence, family disputes, and other repetitive situations, such as civil unrest. It affects the person's overall health, relationships, and

performance at work or school.

Whatever be the type of trauma, if a person finds it difficult to recover from the distressing experiences, they must seek timely psychological help. A qualified psychologist can help the person with a traumatic experience lead a fulfilling life.

Over the years, there are records of improvement of trauma care where experiences gotten from warfare, medical research, technological advancements in imaging and critical care, and the swift transfer of trauma victims to appropriate centres for definitive management, leading to improved trauma survival (Lendrum & Lockey, 2013). Records of significantly improved and organized regional trauma care system manifested in the definitive care, mortality and morbidity rates from the US and UK(Okereke, Zahoor &Ramadan, 2022). While many different trauma systems seem to be developed in various countries by the slow adaptation of existing hospital systems; the trauma system is structured around the initial pre-hospital management and triage, in-hospital care, and rehabilitation (associated with teaching and research) of trauma victims within a defined geographic area and integrated into a regional public health system. The seeming increase of violence and trauma in Nigeria due to the high occurrence of events of such lately pose the need in having a formal trauma system in Nigeria.This involves emergency services (EMS), dispatch and pre-arrival instructions, EMS field triage and transport (ground or air), trauma system hospital, an inter-hospital transfer (ground or air), trauma centre and team activation, operating room or interventional radiology, intensive care unit (ICU), general care and early rehabilitation, outpatient or inpatient rehabilitation, home and follow-up care, injury epidemiology and prevention (Okereke, Zahoor & Ramadan, 2022).

Sequence of Violence and Trauma

Violence and trauma seemingly have been proved to having high connection in manifesting psychological disorders. In sequence of violence, individual reactions manifest among the individual victims. Some people have immediate reactions, whilst for others reactions are delayed and might occur after a period of time. There might be concerns of how it feels even how other close relatives feel in their reaction to violence. Acknowledging the normalcy in reacting with different emotions as being triggered by such difficult events is therapeutic. However, people's reactions to violence depend on the individual, but there are reactions which are more common, especially if the person is or has been subjected to repeated violence.

In the same vein, Centre for Substance Abuse Treatment (2014), identifies that sequence of traumatic reactions in the aftermath of trauma as quite complicated and affected by the victims' experiences. They begin to seek help of natural supports and healers, trying different coping and life skills, seeking help and advice from immediate family, and the responses of the larger community in which they live. Although reactions range in severity, even the most acute responses are natural responses to manage trauma. They are not a sign of psychopathology. Coping styles vary from action oriented to reflective

and from emotionally expressive to reticent. Clinically, a response style is less important than the degree to which coping efforts successfully allow one to continue necessary activities, regulate emotions, sustain self-esteem, and maintain and enjoy interpersonal contacts. Indeed, a past error in traumatic stress psychology, particularly regarding group or mass traumas, was the assumption that all survivors need to express emotions associated with trauma and talk about the trauma; more recent research indicates that survivors who choose not to process their trauma are just as psychologically healthy as those who do. The most recent psychological debriefing approaches emphasize respecting the individual's style of coping and not valuing one type over another.

Initial reactions to trauma can include exhaustion, confusion, sadness, anxiety, agitation, numbness, dissociation, confusion, physical arousal, and blunted affect. Most responses are normal in that they affect most survivors and are socially acceptable, psychologically effective, and self-limited. Indicators of more severe responses include continuous distress without periods of relative calm or rest, severe dissociation symptoms, and intense intrusive recollections that continue despite a return to safety.

Apparently, these individuals with the distressing feelings of violence and trauma have diverse ways in understanding and expressing them as pains or symptoms. Hence, psychologists advise that considerations should be made on conceptualizing and interpreting these feelings from the individual's cultural perspective.

Specifically, the violence and traumatic events experience by these individuals although cut across cultural boundaries, the context should be understood and explained using their cultural lens. The interpretations, preventions and treatments have to be made via the culture of the affected individuals. Understanding violence and trauma therefore involves both universal and contextual overtone. The contextual meaning then gives meaning to the events that made these individuals victims of the violence and trauma. It prepares the victims reactions to the events, and decide approaches to apply in managing or handling the feelings as it pertains to their everyday affairs. Integration of both the universal and the contextual understanding in approaching violence and trauma seems beneficial as it gives those affected the best possible chance of survival in the future (Adimula&Ijere, 2018). This article equally addresses the consequential similitudes and peculiarities of violence and traumatic events on the victims. That the approaches can help towards gaining insight into the conceptualization of violence and trauma in Nigerian context or culture and its psychological impacts as experienced by Nigerians.

Implications of Violence

Violence-induced injuries have been associated with greater inflammation and higher sympathetic nervous system activation, worse posttraumatic stress disorder (PTSD) and depression outcomes, and poorer social-environmental outcomes, such as lower socioeconomic status, higher exposure to community violence, and lower

rates of returning to work (National Academies of Sciences, 2018).

Violence has been recorded to be among the leading cause of death in the world as it accounts for more than 1.6 million deaths each year. Public health experts stipulates that the statistics are just the tip of the iceberg with the majority of violent acts being committed behind closed doors and going largely unreported. This report aims to shed light on these acts. In addition to the deaths, millions of people are left injured as a result of violence and suffer from physical, sexual, reproductive and mental health problems, (WHO, 2002). The violence caused deaths majorly occur in low-to-middle-income countries with internal conflicts .

Rutherford, Zwi, Grove, & Butchart ,2007)

The economic costs of violence include the direct costs of medical, policing and legal services, and the indirect costs of lost earnings and productivity, lost investments in human capital, life insurance costs and reduced quality of life. Estimates of costs across countries vary widely due to the use of different methodologies, including the measurement of productivity losses via foregone wages and income, which tends to undervalue losses in low income countries (Rutherford, Zwi, Grove & Butchart, 2007). Etc.

Experiencing violence can range from feelings of grief, shame and guilt for what has happened to them, to feelings of anger and powerlessness. Seemingly, physical responses as headaches, stomach aches, sleeping difficulties, eating disorders and exhaustion can be among the feelings. Intellectual capacity can also be impaired and the affected person may become confused and suffer memory loss. It may also cause a loss of trust, changes in sexual behaviour or feelings of loneliness and alienation.It is established that being subjected to violence and having lived with extreme stress can lead to post traumatic stress disorder (PTSD) and fatigue.

Among Nigerian civilian population, violent injuries are on the increase, almost approaching an epidemic level. This is attributable to the rising violent crime rate as a result of hardship, high level of unemployment, political crisis, religious and ethnic conflicts, police brutality and high incidence of armed robbery (Chukwuneke & Anyanechi, 2012). Sexual violence and vicarious trauma have been identified among the symptoms of posttraumatic stress disorder among Nigerian youths (Ilesanmi & Eboiyehi, 2012).

Violence and crime as commonly used togetherhas a strong link. In order not to confuse them some types of crime are violent as per definition (such as armed crime or contact crimes, including murder, assault and rape), while other crimes involve no direct violence at all (such as tax evasion or illicit drug use). Similarly, not all types of violence are criminal, such as the previously mentioned structural violence, or many forms of psychological violence (WHO, 2002).

Specifically, not every violence case is a criminally related case likewise not every crime is violent. Consequently, the needs to

separate between violence and crime as they commonly are but should be on check for they can lead to each other. For instance illicit use of drugs may not be a violent act but it can be used when perpetrating violent crimes or after (those offenses that involve use of force or threat of force like armed robbery, rape, homicide, suicide etc).

Implications of Trauma

Exposure to traumatic events causes Post-Traumatic Stress Disorder (PTSD). In the previous versions of DSM it was classified as an anxiety disorder, subsequently reclassified as a "trauma and stressor related disorder" in DSM-5 (American Psychiatric Association (APA), 2013).

PTSD is estimated to affect about 2% of Western world population although, estimates are considerably higher amongst specific risk groups such as first responders, soldiers, and populations affected by war and political violence (Berger et al., 2012; Breslau, 2009; Muldoon & Downes, 2007). Nigeria has no clear-cut records of PTSD but records showed the prevalence ranges between 2.7% and 66.7%(Sekoni, Mall &Christofides, 2021). Sexual abuse in childhood, past year intimate partner violence and anxiety were significantly associated with higher PTSD scores among female urban slum dwellers in Western Nigeria (Sekoni, Mall, &Christofides, 2021).

Diagnosing PTSD demands the symptoms that arise because of a trauma be severe, prolonged and interfere with social and/or occupational functioning (Muldoon, *et al*, 2019).PTSD is characterized by the presence of multiple persistent symptoms across four symptom clusters. Symptoms from all four clusters must be present to warrant diagnosis (APA, 2013). These comprise (1) intrusion symptoms (e.g., flashbacks, nightmares), (2) persistent avoidance of stimuli associated with the trauma (e.g., avoiding "trigger" situations), (3) negative alterations in cognition and mood associated with the traumatic event (e.g., guilt, difficulty concentrating), and (4) alterations in arousal and reactivity that are associated with the traumatic event (e.g., difficulty sleeping; APA, 2013).

Trauma has been linked to affect brain development. Researchers have shown that trauma has a negative effect on the children's brain particularly because of their rapidly developing brain. Experiencing traumatic episodes by a child exposes the child's brain into a heightened state of stress that activates secretions of fear-related hormones (Chen, Miller, Kobor, & Cole, 2011; Delima &Vimpani, 2011; Nemeroff, 2016). Obviously, stress has been accepted to being part of normal life but when a child faces chronic trauma especially of abuse and neglect from childhood, the child's brain remains heightened in that pattern and consequently, can change the emotional, behavioral and cognitive functioning of the child in survival. The Adverse Childhood Experiences Study (ACEs) underscores the impact of trauma on physical and mental health over time and reported that the greater the number of ACEs the greater the risk for the following problems later in life including alcoholism, depression, multiple sexual partners, suicide attempts, smoking and liver disease among other negative health related issues (UNICEF, 2019; Meeker, O'Connor,

Kelly Hodgeman, Scheel-Jones & Berbary, 2021).

Trauma-induced changes to the brain can result in varying degrees of cognitive impairment and emotional dysregulation that can lead to a host of problems, including difficulty with attention and focus, learning disabilities, low self-esteem, impaired social skills, and sleep disturbances (Nemeroff, 2016). Since trauma exposure has been linked to a significantly increased risk of developing several mental and behavioral health issues including posttraumatic stress disorder, depression, anxiety, bipolar disorder, and substance use disorders—it is important for practitioners to be aware of steps they can take to help minimize the neurological effects of child abuse and neglect and promote healthy brain development (Shonkoff, 2011).

Also, persistence of childhood trauma as insecurity widens in Nigeria particularly Northeast and part of the Northwest has been recorded (Ibrahim, 2021) Etc. Omigbodun, Bakare & Yusuf (2008), identified traumatic experiences to be having dire consequences for the mental health of young persons. Among Nigerian women, traumatic experiences include the barbaric genital mutilation also known as female circumcision, gender driven poverty; polygamy; work place sexual harassments; domestic violence, limited social or religious sanctions, lack of social support, cultural norm of widowhood, wife rape, social perception of women as property owned by father then the husband, not being able to inherit lands from their birth families which is categorized as social trauma (Adimula & Ijere, 2018). This includes other conditions led by being internally displaced by Boko haram, herders' crises as well as communal clashes and flooding.

Annually, the worldwide record of traumatic injuries affect about5.8 million people and identified as the leading cause of lost years of life, estimated to result in 500 years of lost productivity annually per 100,000 population (Celso, Tepas, Langland-Orban, Tepas, Langland Pracht, Papa, Lottenberg & Flintl,2006; Gupta, Wong, Nepal, Shrestha, Kushner, Nwomeh& Wren, 2015).Also exposure to trauma is pervasive in societies worldwide and is associated with substantial costs to the individual society, making it a significant global public health concern (Magruder, McLaughlin & Elmore Borbon, 2017).

Public health has identified Low-Middle-Income Countries (LMIC) like Nigeria of being affected by traumatic injuries where industrialization and urbanization without concurrent developments in the health systems have caused a shift in disease epidemiology towards more chronic illnesses and acute traumatic injuries. The unexpected high population movement in LMIC leads to unequally higher death rates from trauma than countries with higher-income. Sub-Saharan Africa (SSA) records more than 50% of all injuries as LMICs account for 90% of the global trauma morbidity and mortality rates. Trauma kills 68 people per 100,000 in SSA, compared to 6.4 people per 100,000 in higher-income European countries (Ekenze, Anyanwu & Chukwumam, 2009). The most significant factor of disparity in mortality rates between LMICs and high income

countries is the variation in wealth distribution and healthcare funding. Another factor that precipitates the dwindling outcomes of LMIC is the unfair sharing of resources as the major cities have the highly skilled personnel and medical facilities, depriving the rural populace from these high-level services.

Early traumatic experience may increase risk of substance use disorders (SUDs) because of attempts to self-medicate or to dampen mood symptoms associated with a dysregulated biological stress response.

Some Notable Cases of Violence and Trauma in Nigeria

1. Boko Haram Insurgency: Nigeria is currently facing a serious security challenge due to the activities of the Boko Haram terrorist group. The group has been responsible for numerous violent attacks, including suicide bombings, kidnappings, and mass killings. The insurgency has caused a great deal of trauma and suffering for the people of Nigeria, particularly those in the northeastern part of the country where the group is most active.
2. Police Brutality: The #EndSARS protests in Nigeria in 2020 brought to light the issue of police brutality in the country. Many young Nigerians have experienced violence and trauma at the hands of the police, often leading to long-term psychological effects.
3. Conflict in the Middle Belt: The Middle Belt region of Nigeria has experienced ongoing conflict between farmers and herders, leading to numerous incidents of violence and displacement. The trauma experienced by those caught up in the conflict can have significant long-term effects on their mental health.
4. Gender-Based Violence: Nigeria has a high prevalence of gender-based violence, including domestic violence, rape, and sexual assault. Victims of such violence often experience trauma that can last for years, affecting their mental health and well-being.
5. Communal Clashes: Nigeria has also experienced communal clashes between different ethnic and religious groups, leading to significant loss of life and displacement. The trauma experienced by those affected by these clashes can be long-lasting and have a profound effect on their mental health.

Research Method

The major strategy in collection data for this study was a secondary data approach. Two relevant strategies delineated for the data collection include:

Annotation: Where key quotes emanating from original works were edited and presented to suffice issues raised in the study. Other annotations written by other scholars and editors relevant to our conceptualization. Author abstracts were also searched and reviewed for relevant ideas concerning our study.

Data based searches: Abstracts and information relevant to the study were sought for through the following data base searches: Sociofile: Sociological abstracts; Public affairs information services; pubmed search base.

The Role of Intervention in trauma cases. Intervention refers to the action taken to address or mitigate the effects of a traumatic event. In the context of trauma, intervention can take many forms, including medical treatment to address physical injuries, psychological couselling to address emotional trauma, and support services to help individuals cope with the aftermat of a traumatic event. The goal of trauma intervention is to help individuals recover from the effects of the traumatic event and to promote their overall wellbeing and functioning. Effective intervention can help individuals process their emotion , develop coping skills and rebuild their sense of safety and security. It can also help to prevent the development of long term psychological disoreders, such as Post Traumatic Stress Disoders (PTSD). There are many different approaches to trauma intervention, including eye movement desensitization reprocessing, narrative exposure therapy, somatic experiencing, cognitive behavior technique, brain spotting, etc.The specific approach used will depend on the individual's needs and the severity of their symtoms.

Eye Movement Disensitisation Reprocessing (EMDR) was developed by Frances Shappiro (1989) and consist of eight phases for the treatment of PTSD. The eight stages according to Hooman (2005) include:History taking, client preparation, assessment, desensitization, installation, body scan, closure and reevaluation of treatment effect, the core is stage four in which stress experience has to be processed.Bilateral stimulation is used here as in other methods.

Some studies (for e.g. Barth,Stoffers& Beugel,2003; Sack,Lempa, &Lemprecht, 2001) have confirmed the effectiveness of PTSD, also the international Society for trauma and traumatic stress (ISTSS) classified the method as effective and reliable in the treatment of ptsd as well as WHO in 2013 (Foa, Keane & Friedman, 2000).

Narative Exposure Therapy (NET) as captured by Scauer, Neuner & Elbert, (2011) was developed within the field as part of the new Neuro scientific theories. The fundamental element in this method relates to interpersonal sharing of the experience (recalled and newly actualized emotions, thoughts, facts and feelings) from the autobiographical memory available information is retrieved (Neuner, Schauer & Elbert, 2009). The therapist is needed to help the traumatized in overcoming speechlessness that often go along with traumatized people. The effectiveness and feasibility of NET has been demonstrated in several studies (for e.g.Schaal, Elbert & Neuner, 2008; Nuener, Schauer, Karunakara, Klaschik, Robert & Elbert, 2004).

Another approach is the Somatic Experiencing (SE) of Levine, (1997). This method is body oriented and based on biological functioning. The focus of this approach is on the biological residue of trauma and pattern by which the body response to threat and fear. According to Levine PTSD occurs as a result of incomplete defense-response and cross genre survival strategy. SE has the following objectives.; to affect the regulation of stimuli; to reduce excessive and inappropriate reaction in the nervous system and finally the restructuring

of inappropriate cognitive interpretations or reviews. Several studies have also shown promising outcome with the application of the somatic experiencing to traumatic experiences for e.g. (Leitch,2007; Leitch, Van Slyke & Allen, 2009).

Cognitive Behavioural Therapy (CBT): This type of therapy has consistently been found to be the most effective treatment of PTSD both in the short and long term. CBT for PTSD is trauma focused which means that the trauma events are the center of the treatment. It focuses on restructuring the faulty thinking pattern of the individuals passing through traumatic experiences or events. This approach like other psychological techniques takes between 30 – 40 sessions within a period of 6 – 9 months (Benkert, Hautzanger& Graft- Morgenstern, 2008).

Brain Spotting is a recent development in the treatment of persons with post traumatic stress disorder.This method is expected to provide a reduced period of treatment sessions (1-3 sessions). Brain spotting builds on EMDR and SE (which has been described above), however it also has connections with neuropsychology (Corrigan & Grand,2013). One can aptly define this method as a neuropsychological tool which aid in the discoverey of neuro physiological sources of emotional or physical discomfort, truama dissociation and myriads ofsymptoms by processing them and engendering the expected change. In demonstrating its effectiveness in the management of traumatic experiences a study was conducted by (Grand, 2011).

With the aim of providing a complete resolution of blocked arousal in the brain and body as this oftentimes return to traumatic experiences with the individual, showing eye movements, either with both or one eye, the socalled brain spots are identified. This method combines other treatment methods like EMDR as developed by Shapiro (2001) and SE as developed by Levine (1997). It is therefore refered to as a Dual Model of affect regulation. Beyond the Psychotherapy methods described above. A combination of pharmacotherapy and psychotherapy provide a faster recovery pt for victims of trauma. The role of serotine reuptake in stress management have been studied. (Tucker et al., 2001). Studies demonstrating the efficacies of pharmaco therapy are well noted for e.g as provided by (Kampthammer,2011).

In summary, intervention can play a critical role in helping individuals recover from the effects of traumatic experiences and can help to promote their overall well-being and functioning.

Conclusion and Recommendation

Violence and trauma have been x-rayed above and depicted as being very unhealthy to any individual or society, hence people are advised to regulate their emotions which in most instances remain at the spur of violence and trauma. Both have also become a public health concern that should attract the attention of the government. The Nigerian society and citizens have been under increasing perpetual violence with its attendant traumatic experiences. It is therefore recommended as follows:

i. Government should set up agencies to handle the epidemiology of violence

and trauma with a view to studying their root causes and nipping them in the bud before they excalate.

ii. Violence and trauma should be formally incoporrated into our education curriculum.

iii. Trauma treatment should be given priority at the primary care level, considering its public and mental health implications.

iv. Government should engage experts for e.g psychologist, media practioners, sociologist in mitigating the rate of violence and incidences of trauma among the citizenry

v. That trauma managers should ensure the use of psychotherapy and pharmacotherapy where appropriate and based on severity toachieve faster and more enduring recovery in trauma cases.

References

Adimula, R. A. &Ijere, I. N. (2018), Psycho-social traumatic events among women in Nigeria*Madridge Journal of AIDS*: 2638-1958

Afzaal, A. (2012). The violence triangle. https://ahmedafzaal.com/2012/02/20/the-violence-triangle/

Allarakha, S..& Uttekar, P.S. .*(2021).What are the three types of trauma? Retrieved from https://www.medicinenet.com/what_are_the_3_types_of_trauma/article.htm on 18/08/2022*

American Psychiatric Association (APA). (2013). *Diagnostic and statistical manual of mental disorders (DSM-5®)*. USA: American Psychiatric Pub.

Barth, J., Stoffers, J. &Bengel, J. (2003). Efficacy of EMDR in patients with PTSD. A meta- analytic review of randomized controlled trials. Paper presented at the European conference on traumatic stress, Berlin, Germany, May.

Benkert, O., Hautzinger, M. & Graf-Morgenstern, M. (2008). *Psycho-pharmacological guide for psychologists and psychotherapists.* Heideberg: Springer- Verlag.

Berger, W., Coutinho, E. S. F., Figueira, I., Marques-Portella, C., Luz, M. P., Neylan, T. C., Mendlowicz, M. V. (2012). Rescuers at risk: A systematic review and meta-regression analysis of the worldwide current prevalence and correlates of PTSD in rescue workers. *Social Psychatry and Psychiatric Epidemiology*, 47, 1001–1011.

Bernstein D. P., Stein, J. A., Newcomb, M. D., Walker, E., Pogge, D., Ahluvalia, T., Zule W. (2003). Development and validation of a brief screening version of the childhood trauma questionnaire. *Child Abuse & Neglect.* 27(2), 169–190.

Boko Haram insurgency. Council on Foreign Relations. https://www.cfr.org/backgrounder/boko-haram-insurgency.

Bolby, J. (1988). A secure base: Parent-child attachemnet and healthy human development. Basic Books.

Breslau, N. (2009). The epidemiology of trauma, PTSD, and other posttrauma disorders. *Trauma, Violence, & Abuse*, 10, 198–210.

Celso, B., Tepas, J., Langland-Orban, B.,Pracht, E., Papa, L.,Lottenberg, L., & Flint, L. (2006). A systematic review and meta-analysis comparing outcome of severely injured patients treated in

trauma centers following the establishment of trauma systems, *J Trauma.* 60, 371–378.

Center for Substance Abuse Treatment (US: 2014). *Trauma-Informed Care in Behavioral Health Services*. Rockville (MD): Substance Abuse and Mental Health Services Administration (US). (Treatment Improvement Protocol (TIP) Series, No. 57.) Chapter 3, Understanding the Impact of Trauma. Available from: https://www.ncbi.nlm.nih.gov/books/NBK207191/

Centers for Disease Control and Prevention (2008). Leading causes of death. National Center for Health Statistics. 1900-1998. *http:// www.cdc.gov/nchs/data/dvs/lead1900_98.pdf.*

Centers for Disease Control and Prevention (2009). Web-based Injury Statistics Query and Reporting System (WISQARS). National Center for Injury Prevention and Control. *http://www.cdc.gov/ncipc/wisqars*.

Chen, E., Miller, G. E., Kobor, M. S., & Cole, S. W. (2011). Maternal warmth buffers the effects of low early-life socioeconomic status on pro-inflammatory signaling in adulthood. Molecular Psychiatry, 16(7), 729–737.

Cherry, K. (2020). Five important concepts in Social Psychology. https://www.verywellmind.com/things-you-should-know-about-social-psychology-2795903

Chukwuneke, F, &Anyanechi, C. (2012). Violent injuries in Nigeria: increasing occurrence but low priority on preventive measures. *Injury Prevention* 18(Suppl 1):A141.4-A142.

Cohen, P. (1972). *Sub-cultural Conflict and Working Class Community. Working Papers in Cultural Studies. No.2.* Birmingham: University of Birmingham.

Corrigan, F. & Grand, D. (2013). Brain spotting: Recruiting the midbrain for accessing and Healingsensiromotor memories of traumatic activation. *Medical Hypotheses* , 80, 759 - 766

Delima, J., & Vimpani, G. (2011). The neurobiological effects of childhood maltreatment. *Family Matters,* 89, 42–52.

Ekenze, S. O., Anyanwu K. K.,Chukwumam D. O. (2009). Childhood trauma in Owerri (south eastern) Nigeria. http://www.ncbi.nlm.nih.gov/pubmed/19485155. *Niger J. Med.* 18, 9–83.

End SARS Movement. Human Rights Watch. https://www.hrw.org/tag/end-sars-movement.

Foa, E. B., Keane, T. M. & Friedman, M. J. (2000). *Effective treatment for PTSD: Practice guidelines of the international society for traumatic stress studies*. New York: Guilford press.

Galtung, J. (1969). "Violence, Peace and Peace Research". *Journal of Peace Research*. 6 (3), 167–191.

Gender-Based Violence in Nigeria. United Nations Population Fund. https://nigeria.unfpa.org/en/topics/gender-based-violence-nigeria.

Grand, D. (2011). Brain spotting: A new dual regulation model for the psychotherapeutic process. Trauma and Violence, 3,276-285.

Gupta S, Wong E. G., Nepal, S., Shrestha, S.,Kushner, A. L, Nwomeh, B. C.,&Wren, S. M. (2015). Injury

prevalence and causality in developing nations. Results from a countrywide population-based survey in Nepal. *Surgery,* 157:843–849.

Hofman, A.,(2005). *EMDR in the treatment of psycho traumatic stress syndrome*. Stuttgart: Theome

Homans, G. C. (1958). Social Behaviour as Exchange. *American Journal of Sociology* 63, (6) 597-606

Ibrahim, B. Z, (2021). *Childhood trauma persists as insecurity widens*. Retrieved from https://humanglemedia.com/childhood-trauma-persists-as-insecurity-widens-in-nigeria/ on 12/08/2022.

Ilesanmi, O.O & Eboiyehi, F.A (2012). Sexual violence and vicarious trauma: a case studyugvb *Gender and Behaviour* 10 (1).

Kampfhammer, H.D. (2011). *Adjustment disorder, acute and post traumatic stress disorder* in H.J. Moller, G. Laux, & H. P. Kampfhammer (Eds.), psychiatry, psychosomatic medice, psychotherapy (pp. 605-679). Berlin, Heidelberg: Springer- verlag.

Leitch, L. M. (2007). Somatic Experiencing treatment with tsunami survivors in Thailand Broadening the scope of early intervention. *Traumatology*, 13, 11 - 20

Leitch, L. M., Vanslyke, Y., & Allen, M. (2009). Somatic experiencing treatment with social services workers following hurricanes Katrina and Rita. *Social Work*, 54 (1), 9-18.

Lendrum, R. A & Lockey D. J. *(*2013). Trauma system development. *Anaesthesia*; 68 (1), 30–39.

Levine, P. A. (1997). *Waking the tiger*. Berkely, CA: North Alantic Books.

Magruder K. M, McLaughlin K. A & Elmore Borbon D. L. (2017). Trauma is a public health issue. *European Journal of Psychotraumatology*, 98(1).

Meeker E.C., O'Connor B.C., Kelly L.M., Hodgeman D.D., Scheel-Jones A.H., Berbary C. (2021). The impact of adverse childhood experiences on adolescent health risk indicators in a community sample. *Psychol Trauma.*13(3), 302-312.

Muldoon, O. T., & Downes, C. (2007). Social identification and post-traumatic stress symptoms in post-conflict Northern Ireland. *The British Journal of Psychiatry*, 191, 146–149.

Muldoon, S. Alexander, H., Catherine, H., Tegan, C., Michelle, K. & Jolanda, J. (2019) . The social psychology of responses to trauma: Social identity pathways associated with divergent traumatic responses, *European Review of Social Psychology*, 30 (1), 311-348.

Nemeroff, C. B. (2016). Paradise lost: The neurobiological and clinical consequences of child abuse and neglect. *Neuron*, 89(5), 892–909.

Neuner, F., Schauer, M .& Elbert, T. (2009).*Narrative Exposure*. In Maercker A. (eds). Post traumatic stress disorder (pp.301–318). Heidelberg: Springer.

Neuner, F., Schauer,M., Karunakara, U., Klaschik, C., Robert, C., & Elbert, T. (2004). Psychological trauma and evidence for enhanced vulnerability for PTSD through previous trauma in West Nile refugees. *BMC Psychiatry*, 4(1), 34.

Nigeria's Middle Belt crisis: Violence and

displacement." Al Jazeera. https://www.aljazeera.com/news/2018/6/25/nigerias-middle-belt-crisis-violence-and-displacement.

Omigbodun O, Bakare K, Yusuf B. (2008). Traumatic events and depressive symptoms among youth in Southwest Nigeria: a qualitative analysis. 20(3), 243-53.

Patock-Peckham, J. A., Belton, D. A., D'Ardenne, K., Tein, J.Y., Bauman, D. C., Infurna, F. J., Sanabria, F., Curtis, J., Morgan-Lopez, A. A., & McClure, S. M. (2020). Dimensions of childhood trauma and their direct and indirect links to PTSD, impaired control over drinking, and alcohol-related-problems. *Addictive Behaviors Reports, 12.*

Porges, S.W. (2011).The Polyvagal Theory: Neurophysiological foundations of emotion, attachement, communication, and self-regulation. Norton.

Resick, P.A., Monson, C. M., & Chard, K .M. (2016). Cognitive processing therapy for PTSD: A comprehensive manual. Guilford Press.

Rutherford, A., Zwi, A. B., Grove, N. J.,Butchart, A. (2007). Violence: A priority for public health? (part2). *Journal of Epidemiological Community Health*. 61(9), 764-70

Sack, M., Lempa, W., Lamprecht, F.(2001). Study quality and effect sizes – a meta analysis of EMDR treatment for PTSD. *Psychotherapy, Psychosomatic Medical Psychology*, 51 (9-10), 350–355.

Schaal, S., Elbert, T. &Nuener, F.(2009). Narrative exposure therapy vs Group interpersonal Psychotherapy a controlled clinical trial with orphaned survivors of the Rwandan genocide. *Psychotherapy and Psychosomatics*, 78, 208 – 306.

Schauer, M., Neuner, F. & Elbert, T. (2011). *Narrative Exposure Therapy (NET). A short term intervention for traumatic stress disorders*. Cambridge / Gottinger: Hogrefe & Huber Publishers.

Sekoni, O., Mall, S. &Christofides, N. (2021). Prevalence and factors associated with PTSD among female urban slum dwellers in Ibadan, Nigeria: a cross-sectional study. *BMC Public Health* 21.

Shapiro, F. (2001). *Eye movement dissensitisation and reprocessing: Basic principles, protocols and procedures* (2nd ed.) New York: Guilford Press.

Shonkoff, J. (2011). Protecting brains, not simply stimulating minds. *Science*, 333(6045), 982–983.

Tucker, P., Zanineli, R., Yehuda, R., Ruggiero, L., Dillingham, K. & Pitts, C.D. (2001). Paroxetine in the treatment of chronicpost traumatic stress disorder: Results of a placebo – controlled, flexible dosage trial. *Journal of Clinical Psychiatry,* 62, 860 – 968.

UNICEF, (2019).*Adverse Childhood Experiences (ACE) Study Research on Adverse Childhood Experiences in Serbia*. UNICEF Serbia Belgrade.

Waters, H., Hyder, A., & Rajkotia, *(2004). The economic dimensions of interpersonal violence*. Geneva: Department of Injuries and Violence

Prevention, World Health Organization,

World Health Organization, (2002).*New WHO report presents more complete picture of global violence.*https://www.who.int/news/item/03-10-2002-first-ever-global-report-on-violence-and-health-released on 18/08/2022

WELLBEING AND WORK ENGAGEMENT AMONG PRIVATE SECONDARY SCHOOL TEACHERS IN MAKURDI METROPOLIS

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Abstract

Work engagement is a significant problem among teachers especially those in private secondary schools. The rate of lack of work engagement, particularly changing schools and quitting teaching is substantially high among private school teachers and is being linked with numerous deleterious effects. However, there is still paucity of studies examining the predictors of work engagement among private secondary school teachers in Nigeria. Therefore, this study investigated the role ofpsychological wellbeing in work engagement among (N=261) purposively selected private secondary school teachers in Makurdi metropolis. Well-Being at Work Questionnaire (KDSP) and Utrecht Work Engagement Scale(UWES) were used for data collection. Result from multiple regression analysis indicated that work fit and development significantly and positively predicted work engagement (β = .158, t = 5.094, P<.001). Also, interpersonal relationships emerged as a significant and independent predictor of work engagement, and was positively related to work engagement among teachers (β =.826, t = 26.625, P<.001). Additionally, work fit and development and interpersonal relationships were significant and joint predictors of work engagement R = .925, R^2 = .855, [F (2, 224) = 653.304, P<.001]. The study's findings are in line with previous studies on work engagement. Based on the findings, it was recommended that, private school proprietors prioritize work fit and development and positive interpersonal relationships of their teachers in order to have them engaged.

Keywords: Wellbeing, work engagement and Teachers

Introduction

In recent time, the work engagement of teachers has become a central concern in international psychosocial literature as psychologists and other social scientists have continued to research to identify the factors affecting this important work behaviour. This is imperative because the teaching profession has been associated with high attrition and turnover globally. For instance, in the US, 16% to 20% of all teachers choose to leave the school in which they are teaching that year (Ruzuvika, 2022). A similar pattern is turnover is reported in United Kingdom as 44% of teachers plan to leave the profession by 2027 (National Education Union, 2022). In Kenya, Kilozo, Were and Odhiambo (2018) reported that 13.7% and 14.0% of secondary school teachers had no commitment and vigor respectively to their work.

The problem of work engagement among teachers in Nigeria is worrisome. This is particularly evident among private school teachers due to many factors such as poor remuneration and heavy workload. Many teachers are not fully engaged in their work as they can be seeing leaving one school to the other, some even are quitting teaching completely. For instance Obasi and Adieme (2021) and Adiele (2014) in their various studies, reported poor remuneration, heavy workload and work-life imbalance among teachers. Obviously, these negate the conducive teaching atmosphere that guarantees positive, fulfilling and work-related state of mind that stirs vigor, dedication and absorption in private schools which account for a great part of employer of labour in the Nigerian economy. This is disturbing, considering that the high reported prevalent incidences of lack of engagement can lead to a lot of deleterious consequences.

Work engagement is referred to as a state of mind that demonstrates vigour, dedication and absorption in the job (Bakker & Demerouti, 2008). Teachers' work engagement is beneficial to both the students and the teachers themselves. According to Tyler and Boelter (2008), engaged teachers search for new ideas, implement best teaching practices, modify instruction to meet the instructional needs of their students, have high expectations for their students, frequently monitor students' progress, provide students with feedback, and actively taking opportunities to discuss work-related improvements with their colleagues at work. Contrastingly, work disengagement is characterized by absenteeism, turnover intention and early retirement of teachers (Khushboo & Puja, 2015), which affects the students, as students who observe teachers demotivated become themselves unenthusiastic (Atkinson, 2000).

Suffice to say that several studies have examined work engagement in studies (*Dehaloo& Schulze, 2013;* Aiello& Tesi, 2017; Roper, 2007) and Nigeria context (Obasi, et al., 2021; Ukaigwe&Adieme, 2017; Adekola, 2010). However these studies have failed to sufficiently explore the role of salient psychological factors which may have great influence on the extent to which a teacher will be fully engaged in his work. This has obviously creates a knowledge gap that needs research attention.

One variable that has influential role in work engagement but surprisingly has not been extensively researched is wellbeing. Verma and Verma (1989) defined wellbeing as the subjective feeling of contentment, happiness, satisfaction with life's experiences and of one's role in the world of work, sense of achievement, utility, belongingness, and no distress, dissatisfaction or worry. Wellbeing is the goal of every individual including teachers and it is critical for full work engagement and optimum performance. Wellbeing is cauterized into four; positive organization, work fit and development; positive relationships with colleagues and contribution to the organization (Czerw, 2014).

However, only work fit and development and positive interpersonal relationship will be considered in this study. The researchers are more interested in these components of wellbeing because they are more relevant to

the study. Work fit and development deals with the level of satisfaction with one's work role and how one's development in that role is perceived. A teacher is more engaged when he is satisfied with what he has been asked to do, the workload, remuneration and the perceived chance of development in that role. While positive interpersonal relationship has to do with teacher's perception of his or her workplace ties with other people. A feeling of good, friendly and open relationships with colleagues and with the school management can make teachers to be more engaged in their work.

Theoretically, this study is premised on the hierarchy of needs theory by Maslow (1943). The theory proposed that people are motivated to achieve certain needs and some needs take precedence over others. The theory states that human needs are arranged in an order of hierarchy based on the importance with which each emerged as a determinant of behaviour. The hierarchy begins with the physiological needs, safety needs, love needs, self-esteem needs and self-actualization needs as highest. However, for the purpose of this study, only the physiological needs and self-esteem needs are applicable and will be used. The physiological needs reflect the basic human needs such as food, water and shelter. When the remuneration receives is seen as not been sufficient to meet this need, it affect the teachers' satisfaction with his job role and chances of development and can result to work disengagement while the need for self-esteem is the fourth in the hierarchy of needs characterized by the need for respect, status, recognition, strength and freedom. Thus, a teaching atmosphere where the interpersonal relationship is characterized with hostility and abuse of the teachers by the school proprietor, can diminish self-esteem and result to work disengagement.

Within the teaching context, several empirical studies have linked wellbeing with work engagement (Socha, Farnicka & Nowosad, 2019; Sarath& Manikandan, 2014). Research on the work engagement of private secondary school in RiversState Nigeria revealed a significant low prediction by wellbeing (Obasi &Adieme, 2021). The researchers observed that there is limited existing research exploring these variables on the population of study as those available seemed to focus more on public secondary schools (Adekola, 2010). Thus there is need for an investigation in this area with a particular interest on the influence wellbeing on work engagement. Developing an improved understanding of these associations may facilitate the modification of the work atmosphere to reduce work disengagement that is unarguably high among this population. Thus, the purpose of the current study was to address this gap in the literature by examining wellbeing and work engagement among private secondary school teachers in Makurdi metropolis.

It was therefore hypothesized that;

1. Wellbeing (work fit and development) will significantly predict work engagement among private secondary school teachers in Makurdimetropolis
2. Wellbeing (Interpersonal relationship with colleagues) will significantly predict work engagement among private secondary school teachers in Makurdi metropolis

3. Work fit and development and interpersonal relationship will jointly and significantly predict work engagement among private school teachers in Makurdi metropolis

Method

Design / Participants

The research adopted a cross-sectional design. The population of this study comprised 803 teachers randomly selected from 11 out 22 registered private secondary schools in Makurdi metropolis (Record from Benue State Teaching Service Board, 2020). The sample of 261 teachers was determined using Roasoft Sample Size Calculator. Multi-stage sampling method was used in this study.Stratified sampling technique was used to group Makurdi metropolis into settlements; Wurukum, High level; North bank; Modern Market; Wadata and Ware fell quarters. The schools were selected using simple random sampling techniqueswhile purposive sampling approach was adopted to select teachers.

Measures

Wellbeing: Wellbeing was assessed using a 43 item Well-Being at Work Questionnaire (Czerw, 2014). This is a widely used measure designed to specifically assess one's work and its place. The scale consist of four dimensions; (1) Positive organization (12 items); (2) Work fit and development (10 items); (3) Positive relationships with colleagues (13 items); and Contribution to the organization (8 items).The items are rated on a 5-point scale (1= I completely disagree, 7= I completely agree), with high score indicating the level of measure of thatdimension. In the present study, the reliability coefficient of α=.82 and α=.77 were reported for work fit and development and positive relationships with colleagues respectively. In the present study, the researchers used only two dimensions: work fit and development and positive relationships with colleagues because they are more relevant to the study.

Work engagement. Work engagement was measured using Utrecht Work Engagement Scale (UWES) developed by Schaufeli and his colleagues (2002). This scale consists of three subscales: absorption (6 items); vigor (6 items); dedication (5 items). Altogether the scale consists 17 items which are rated on a 6-point frequency based scale (0=never, 6=daily). Samples of items include "I have a good relationship with co-workers", "The atmosphere at my work is welcoming and friendly" and "I think that my colleagues and I are guided by similar values".The reliability coefficient of 0.92 was reported by Schaufeli and his colleagues (2002).The reliability of .73 was reported in the present study. In this study, the global scale was used.

Procedure

The researcher visited the private schools that were studied. Potential participants who met criteria for inclusion were provided with relevant information about the study. Those who read and gave their consent were thereafter given informed consent to fill. Questionnaire were administered and collected on the same day. Completed data were retrieved and analyzed using Statistical Package for Social Sciences (SPSS) Version-23.

Data Analysis

Multiple linear regression was used to test the research hypothesis, the result of which is presented in table 2.

Results

Table 1: Inter-correlations among study variables

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Results

The result in Table 1 indicated that work engagement is positively related to work fit and development (r = .625, P<.001) and positive interpersonal relationship (r = .915, P<.001). Also, the result in Table also revealed that work fit and development is positively related to interpersonal relationship (r = .566, P<.001).

Table 2

Variable	R	R^2β	t	F	P	
Constant	.925	.855		1.850	653.304	.000
Work fit and development			.158	5.094		.000
Interpersonal relationships			.826	26.625		.000

The presented result as captured in Table 2 revealed that work fit and development significantly and positively predicted work engagement (β = .158, t = 5.094, P<.001). This implies that work fit and development has independent predictive influence on work engagement, such that the more teachers are satisfied with their job role and perceives subsequent development on the role, the more they are engaged. Also, positive interpersonal relationships emerged as a significant and independent predictor of work engagement, and was positively related to work engagement among teachers (β =.826, t = 26.625, P<.001), implying that high positive interpersonal relationships was a predictive of work engagement. Finally, work fit and development and positive interpersonal relationships proved to be significant joint predictors of work engagement R = .925, R^2 = .855, [F (2,224), 653.304, P<.001]The result indicated that work fit and development and interpersonal relationships jointly accounted for 85.5% of the variance in work engagement among private secondary school teachers in Makurdi metropolis.

Discussion

This study examined work wellbeing as a predictors of work engagement among private secondary school teachers in Makurdi

metropolis. The study was necessitated owing to perceiveddearth of empirical studies on the factors that lead to work engagement problem among private secondary school teachers. Consequently, it was hypothesized that wellbeing (work fit and development and positive interpersonal relationships) will significantly, independently and jointly predict work engagement among private secondary teachers in Makurdi metropolis. Result from multiple regression confirmed this hypothesis as it revealed positive, independent and joint prediction of wellbeing (work fit and development and positive interpersonal relationships) and work engagement. The result implies that teachers who are satisfied with their job role and also perceived development on their job role are likely to feel good, friendly and have open relationships with colleagues and the school management, and stay engaged in their work.

The findings of this study corroborate with Abraham Maslow's hierarchy of needs theory which states that people (including teachers) are to achieve certain needs and some needs take precedence over others. Teachers who receive attractive remuneration to meet their psychological needs will be more satisfied with their job and will be more convinced on their chances of development on their job role, and in turn be dedicated, absorbing and vigorous in their work.

Additionally, Teachers who enjoy positive interpersonal relationship from colleagues and the school management, devoid of yellingand verbal abuse will have more self-esteem and tend to stay engaged in their work.

Empirically, the findings of the present study coincide with Socha, et al., (2019) and Sarath, et al., (2014) that wellbeing influence work engagement among teachers. Based on the findings, it is recommended that, private school proprietors should prioritize work fit and development and positive interpersonal relationships of their teachers in order to make them engaged.

The present study has its limitations. First the study was limited to a cross-sectional investigation and cannot explain causality or change in the relationship overtime. The self-report measure could have made it possible for faking response, thereby affecting the validity of the findings. Despite the aforementioned, the study has highlighted the facilitating role of wellbeing, particularly work fit and development and interpersonal relationship with colleagues in teachers work engagement. This could serve as guide to recognized and integrate in the design of the teaching job and also to help clinicians to prioritize and assess for wellbeing of teachers to identify those who may not be doing well for possible intervention.

References

Adiele, E. E. (2017). Planning teachers' workload for effective service delivery in the school system. *International Journal of Scientific Research in Education, 10 (3), 272-277.* Retrieved from http://www.ijsre.com/assets/vol.%2c-10 (3)-adiele.pdf

Aiello, A., & Tesi, A (2017). Psychological Well-Being and Work Engagement among Italian Social Workers: Examining the Mediational role of Job

Resources. *Social Work Research* DOI: 10.1093/swr/svx005

Atkinson, E.S (2000). An investigation into the relationship between teacher motivations and pupil motivation. *Educational Psychology*, 20(1), 45-47.

Bakker, A.B & Schaufeli, W.B (2008). Positive organizational behaviour: engaged employees in flourishing organizations. *Journal of Organizational Behavior*, 29,174-154.

Dehaloo, G., & Schulze, S (2013). Influences on the work engagement of secondary school teachers in rural Kwazulu-Natal. *The Journal for Transdisciplinary Research in Southern Africa,* 9 (2) pp. 225-240

Dehaloo, G., & Schulze, S. (2013). Influences on the work engagement of secondary school teachers in rural Kwazulu-Natal. *The Journal for Transdisciplinary Research in Southern Africa,* 9(2), pp. 225-240.

Ewing, R.A., & Smith, D.L (2003). Retaining quality beginning Teachers in profession: English Teaching: *Practice Critique*, 2, 15-32

Khushboo,R., Puja, K., (2015). Faculty engagement in higher education: prospects and areas of research. *On the Horizon* 23 (4), 285-308.

Ingersoll, R.M. (2001). Teacher turnover and teacher shortages: An organisational analysis. *American Educational Research Journal,* 38(3), 499-534.

Kilozo, T.M., Were, S. & Odhiambo, R (2018). Influence of employee woek engagement on performance of Teachers in Secondary schools in Machakos County in Kenya. International Journal Research in Humanity and Social Sciences, 5, (1), PP. 52-71

Maslow, A. H. (1943). A theory of human motivation. *Psychological Review,* 50, 370-396.

Obasi, K.K., &Adieme, F.G (2021). Work-Life Balance and Teacher Engagement in Private Senior Secondary Schools in Rivers State, Nigeria. *Isagoge*, 1 (7), pp. 86-106

Roper M. (2007). School Safety – turning the tide! *Education Southern Africa. Life LongLearning*, 5, 20-21.

Ruzuvika, M (2022). A Study of Teacher Turnover in International Schools was conducted to know the Choices. *Educational Research* 13, 1

Sarath, P. & Manikandan, K. (2014). Work engagement and work related Wellbeing of school teachers. *SELP Journal of Social Science, 5, 22*

Schaufeli, W., Salanova, M., Gonza´lez-Roma, V., & Bakker, A. B. (2002). The measurement of engagement and burnout: A two sample confirmatory factor analytic approach. *The Journal of Happiness Studies*, 3, 71–92.

Socha, R., Farnicka, M., &Nowosad, I. (2019). Well-being and work engagement: teachers' professional advancement and how to manage it over time. *Acta Medicina et Sociologica 8,* DOI**:** 10.19055/ams. 2017.8/25/7

Tyler, K. M., & Boelter, C. M. (2008). Linking black middle school students' perceptions of teachers' expectations to academic engagement and efficacy. *Negro Educational Review, 59* (1), 27-44.

Ukaigwe, P. C. &Adieme, F. G. (2017). Time management skills for work stress reduction among secondary school teachers in Imo State, Nigeria. *Nkumba Business Journal, 17, 116-124.*

MENTORING IN THE WORK PLACE: PROSPECT AND CHALLENGES IN A CHANGING WORLD

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Abstract

Mentoring is one among the basic part of organisational continuity and success. An organisation that do not prioritise this factor tend to put its future in jeopardy. Personnel development depend on it mostly.Different scholars have given different opinions on what they opinedto what mentoring is. Redmond (2009)view it as a professional bond between an elderly friend, tutor or a counsellor to a growing person in an organisation. Another viewed it to be serving as a guide, counsellor and teacher for another person usually in academics or occupational capacity. As important as mentoring is, the actors allowed the effect of extraneous variable to set in and mask the wrong/unacceptable behaviour as mentoring. With the advent of time, the mentors have become stingy with knowledge, and those that are ready to mentor usually end up with unserious mentees. More so, pride, superiority perception, and egoism has taken the lead were the upcoming colleagues are not ready to learn and the experienced are forcing or selfishly commanding for respect. Mentoring is a process that softly teaches humility to both parties for effective learning and development. Few of these menace were looked into and intended solution were outlined.

Keywords: Mentoring Workplace and changing world.

Introduction

The future of every organization depends 80% on this psychological factor called mentoring. Many people have attended / achieved or perform excellently well in their fields of endeavor because they pass through adequate mentoring. The initial intends of mentoring is to groom the young breeds to adapt, adjust, perform and be conversant with their roles in/on duties. But with the advent of technology and passage of time, people have logically changed the original focus into what is called master and slave venture. Selfishness has eroded the true meaning of mentoring. People have become selfish with knowledge to a point where only few want to share. For the purpose of this paper, this active factor will be looked into critically. What then is mentoring in a workplace or what is workplace mentoring?

Jeff (2016) defines it as a learning partnership between employees for purposes of sharing technical information, institutional knowledge and insight with respect to a particular occupation, profession, organization or endeavour. If this process is done correctly, the organization may reduce turnover and increase productivity. Ragins (2012) argued that workplace mentoring is not confined to a certain age and is a relationship that develops though close interactions with a mentor and their protégé (mentees). Mentoring practices differ from other developmental relationships in the workplace, such as supervision and leadership. As being observed in our today practices, people havechanged the original function of mentoring into relationships that will not yield any adequate profit to the organisation. Remember! The essence of mentoring in the first place is for maximisation of profits.

People have become so selfish these days that only few are ready to teach, guide and mentor the young ones in the profession of endeavour. No one want to be displaced from his/her seat of honour so therefore they make policies that are so rigid in nature and difficult to attain a height within a short period of time. These undesirable behavioursis not adequate. It has distorted the mental perception of people/workers toward their commitment to work. No wander corruption keeps growing both in size and weight. This is a big call to all organisational / industrial psychologists. This problem calls for urgent attention where psychological techniques will be applied to control the effect of this mighty extraneous variable. Mentor has a great influence on his mentee. This is seen in bandura's experiment. He placed two different children in a different room. Those in room A watched an adult playing with a doll while those in room B watched an adult being aggressive toward the doll. When he gave the children direct access to the doll, he noticed that those who watched an adult playing with the doll, where actually playing with the doll but the other group were harsh to the doll because the watched an adult being harsh to the doll. His experiment proved the strong will of mentoring process. Mentees sometimes tend to unconsciously dress like their mentors, speak like their mentors and even plan their routines like their mentors.

Types of Mentoring

There are different types of mentoring ranging from group, reverse, formal, informal, relational and one on one mentoring. For the purpose of this paper, the focus will be on reverse and relational mentoring.According to Reeves (2023) reverse mentoring is the type of mentoring that if only adequately handled, it will yield to positive outcome. It is a type that teaches humility and enhances quick learning.This type of mentoring takes place when a younger member of an organisation is the mentor to an older member of the same organisation. The essence is to foster a better pipeline of leadership in a company (Jeff, 2016). The mentor has less overall experience in comparison to the mentee due to age. But in the particular mentoring area the mentor has more experience which reverses some dynamics of the mentorship. Examplea retired person goes back to work part time to stay busy at the local security outfit and gets assigned a mentor who is 30 or

less than 30 years younger. A lot of people do have issues with this type of moulding. Ego of self-pride do take dominance. The aged will not want to learn under the young mentor because they feel that they are older and they deserve more. Though not all processes are like that. The matured ones are glad and willing to learn under a young mentor.

Relational mentoring - his is a style of mentoring that is based on peer interaction. This type can be defined as an interdependent and generative developmental relationship that promotes mutual growth, learning, and development within the career context Eric (2007). Whether it be an older associate or their boss, the mentoring comes from a close bond with another associate. Example: coaches, advisors, and teachers.

False beliefs on Mentoring

Mentoring is a developmental approach that connects mentors with experience, knowledge and skills with mentees who want to learn from them. Despite its many advantages, mentoring is still not a must-have development tool across organizations, because there are many misconceptions about it. The following myths will be looked into.

Time consuming – a lot of perception about mentoring is that it is time consuming. Even though, in a formal mentoring, time frame might be assigned. Note that mentoring is not completely the same as training. Were an organisation will send its employees to school, or to attain seminars etc. in order to add knowledge on the job. Mentoring is much more beyond that. Mentoring has no time limit so long as both parties are still in the organisation, learning continues. The timing in this process is flexible and light in nature. Both parties decide when and how.

One can only be a mentor or a mentee – as the saying goes, no man is an island. Every individual is blessed with one or two skills that the next person needs to survive. A mentor in a particular area of work can be a mentee in another so also a mentee can be a mentor in another facet. That is how mentoring operates. In fact, in the same organisation, a mentee will in the passage of time be a mentor to the young ones in the organisation. The ladder is very long and before one claim to the next step/level he/she will have to be a mentee for some time and become mentor subsequently.

Mentor must be older or more senior than the mentee – this statement is a myth that mislead peoples' thought. In the reversal type of mentoring, a young person can be a mentor to an aged person. Forinstance,it is a known fact that most of the young employees are conversant with computer operations compare to the aged ones. And today the world is digital. The age will have to learn or be mentored by the young in order to stay relevant in the work place. Remember, Mentoring is about humility and learning.

The mentor dictates the relationship -A mentoring relationship is based on mutual trust, respect and openness a partnership. If the mentor determines the course of the relationship or always tells the mentee what to do, it takes away from the equality inherent in a partnership. It can also put too much of a burden on the mentor to have all the answers. The mentor's role is to provide perspective,

challenge the mentee's thinking, and provide support and encouragement. The mentee also needs to bring his or her views and experiences to the relationship. In fact, the mentor should actively seek feedback from the mentee. Together, they should acknowledge when they do not have answers and jointly explore issues to gain clarity.

The mentor needs to be an expert - Mentors must have experience, knowledge or skills that can benefit another person. They do not need to be experts; in fact, they must be open to the idea that they do not have all the answers. Mentoring skills can be learned; in fact, mentoring programs should be supported by training for the mentors, followed by regular check-ins.

Morals to Maintain in a Workplace Mentoring

Deduced from the literature, we outline come up with the following as the principles that both mentor and mentee should observe and maintain during the mentoring process as opined by

1. Humility
2. Integrity and maintenance of integrity
3. Flexibility
4. Respect
5. Selflessness/ Genuineness
6. Listening ability
7. Openness/Free mindedness
8. Willingness/Freedom of Expression

Benefits of Mentoring

There are so many benefits or prospects attached to mentoring in an organisation. This benefit cut across both the mentor and the mentee. This paper will look into the following few:

Enlightenment –mentoring is like a guiding light that exposes/remove one from darkness and makes him/her understand the target. It broadens the mentee's mental abilities and make him see things in a broad and different perspective from the initial perception.

Cognition – psychologically speaking, mentoring has gone beyond overt exhibition. It also has to do with the cognition of the mentee. Piaget (1980) emphases on the importance of cognition to learning. As one gets matured his cognition too develops. Mentoring in a way is a process of learning which has to do with the mental capacity of an individual. The process spur for cognitive thinking, reasoning, decision marking, and problem solving etc. mentoring enhances mental abilities toward that which one is mentored on.

Continuity – one among the benefits of mentoring is continuity. Life they say is a stage where everyone acts and go. Mentoring process affirm that old adage. Ones the old/elderly mentor the young ones in the profession or in any other task, even when they are not there, the young ones will pick up perfectly with the task and there will be progress in the line of duty.

Challenges of mentoring

In spite of the benefits of mentoring observed above, it still has its limitation. This paper will look at the following:

Mentors often do not have the time to schedule set meetings and provide feedback for their mentees. Some research has shown that there may be no benefit to formal mentorship. Recently, many organization

employees work from home, and that can make it difficult to establish a consistent relationship. As the distance or globalization increases, then barriers to effective communication arise impeding the understanding between mentor and mentee. The termination of mentor-mentee relations can be awkward. Studies show that over half of all mentees reported a negative experience with their mentor. Dysfunctional mentoring relations are those in which the relationship is not beneficial for either the mentor, mentee, or both.

Conclusion / Recommendation

Mentoring is gradually dying in the 21st century, most especially in Africa and particularly in Nigeria. Mentoring is a developmental approach that connects mentors with experience, knowledge and skills with mentees who want to learn from them. This means that willingness to participate in the mentoring program is key. Despite its many advantages, mentoring is still not a must-have development tool across organizations, because there are many misconceptions about it.The plethora of information on mentoring has helped dispute some myths. For instance, we now understand that mentoring is as beneficial for the mentee as it is for the mentor and that mentoring can be conducted virtually. Nonetheless, there are still many common misconceptions that hold organizations back from implementing mentoring training and people back from participating in them. Being in tune with the ethics of mentoring is key for successful productivity in an organization. It was recommended that the morals of mentoring should strictly be adhere to in order to combat or reduce the problems of mentoring.

References

Baken, L. (2014). The Piaget theory of cognitive development: An educational implication. *Journal of Educational Psychology, 1(1),* 9-16.

Eby, L.T.; McManus, S.E.; Simon, S.A.; Russell-Joyce, E.A. (2000). The Protege's Perspective Regarding Negative Mentoring Experiences: The Development of a Taxonomy. *Journal of Vocational Behaviour.* ***57*** *(1), 1–21.*

Jeff, S. (2016). Real world mentoring fundamentals: A practical guide to building up security professionals. *The Business & Management Review.* ***7*** *(4), 13–16.*

Raabe, B., & Beehr, T. A. (2003). Formal mentoring versus supervisor and co-worker relationships: differences in perceptions and impact. *Journal of Organizational Behaviour.* ***24*** *(3), 271–293.*

Ragins, B. (2012). *The Oxford Handbook of Positive Organizational Scholarship. pp. 519–536.*

Ragins, B.R. (2016). *From the ordinary to the extraordinary. Organizational Dynamics.* ***45*** *(3)228–244.*

Redmond, E. (2009). Mentor: mythology. Microsoft Encarta, Microsoft® Encarta.

Reeves M. (2023). *What is the purpose of mentoring program?*

Scandura, A. (1998). Dysfunctional mentoring relationships and outcomes. *Journal of Management. 24 (3),449–467.*

NURSING INFORMATICS: THE TEACHING AND LEARNING OF BASIC NURSING / MIDWIFERY EDUCATION IN COLLEGE OF NURSING AND MIDWIFERY, JALINGO TARABA STATE NIGERIA

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Abstract
Information and communication technology nowadays is wifely acceptable in almost every profession, nursing and midwifery profession is inclusive. The rapid development in computer technology and wide availability of personal computers together with the internet has become an integral part of health care. The World Bank (2012) defined ICT as "the set of activities that facilitate the capturing, storage, processing, transmission and display of information by electronic means". Ebijuwa (2015) defined ICT as "tools used for collection, processing, storage, transmission and dissemination of information". The importance of ICT to people in general and nursing profession in particular cannot be overemphasized. This is so because ICTs facilitate quick and access to a wide range of information resources worldwide. The provision and use of ICT by nursing and midwifery students is being considered to know the extent they put into use in their studies. Upon gaining admission into the college, students have varied level of competence in the use of computers. The nursing and midwifery curriculum provides mandatory courses in nursing informatics/skill and entrepreneurship in midwifery for basic computer skills. This College is linked to the internet to help departments, staff and students gain access to all sorts of updated information that is relevant to their learning and research activities in the college. All departmental members and students have easy and free unrestricted access to computers and internet.

Key words: Nursing informatics, Teaching and learning and Basic Nursing and Midwifery

Introduction

ICT plays a vital role in our information and communication process and their outcomes, as played by other technologies in making our life comfortable and purposeful. ICT in education has tremendous potential to serve and help the people connected with the process and product of education in many ways.

Nursing informatics technologies are for information storage, information retrieval, and information display and information transmission by means of electronics. The use of technology in education has made both students and tutors to achieve new possibilities because of the inherent advantages which range from support of conventional classroom work, design, development of learning materials to accessing virtual libraries. Coupling these benefits places a great deal of demand on both the tutors and students to improve the teaching-learning and experience.

The use of ICT in teaching and learning cannot be over stated. Adeosun (2020) highlighted some ways in which ICTs have

been harnessed in education to include supporting conventional classroom work, design and development of learning materials. Furthermore, ICT aids in gaining access to electronic teaching materials such as e-book, journals, accessing virtual libraries or providing access to a plethora of resources especially in electronic form. Access and availability of computers connected with the internet in the college has greatly influenced on the use of electronic resources, with this, the students were able to surf the net to find and materials they are looking for.

Nursing information and communication technologies have given rise to new modes of organizing the educational environment in schools and new concepts in the educational process.

Information Communication Technology (ICT) is a process of transmitting media data from a source to a destination through electronic means. Nursing service delivery in the present dispensation demands a combination of nursing science, computer science and information science in relation to the diagnosis and treatment of human response to health & illness which has been defined as Nursing Informatics [NI] (Tellez, 2012). Nurse educators are vested with the responsibility of producing the crop of nurses who have the capabilities to fit into the current trend of nursing practice.

Shortliffe& Blois (2001) affirmed that healthcare informatics is an umbrella terminology, which describes the "capture, retrieval, storage, presenting, sharing & use of biomedical information, data & knowledge for providing care, problem solving and decision making".

Importance of Nursing Informatics, Teaching and Learning Process

ICT in education has tremendous potential to serve and help the people connected with the process and product of education in many ways.

i. ICT can bring the existing educational system in alignment with the knowledge-based, information-rich society by providing services of sophisticated tools, techniques and methods at its disposal.

ii. Use of ICT can bring about a paradigm shift in traditional views and methods of teaching and learning process. Some of the changes are as follows:

- ✓ It will in transitioning from broadcast model of learning to interactive learning, thus making the students active and participate in the teaching-learning process i.e. student centered learning.
- ✓ Helps in the process of transitioning from teacher-centered instruction to learner-centered instruction. Student becomes self-reliant and self-directed in acquisition and application of knowledge and skills.
- ✓ Shifts emphasis from teaching to self-learning thereby creating a more interactive and engaging learning environment for both teachers and students.
- ✓ Changes the role of teachers from a mere knowledge-

transmitter to that of a learning-facilitator, knowledge guide or navigator and an active co-learner along with students.

- ✓ Enables students to become more responsible about their learning as they seek out relevant information and knowledge through their own efforts, synthesize and share their knowledge with others. It makes them realize their educational potentials.
- ✓ ICT helps students to think critically and creatively and to reflect on their own learning process. They even set their individual goals for growth and development of their potentials.

iii. ICT prepares teachers to meet challenges of the teaching-learning task of modern age. It helps teachers in proper execution of their multi-dimensional responsibilities in various areas of education.

iv. ICT can be beneficial not only to teachers for their own education and training but also to use it creatively for accelerating the educational growth of their students.

v. Colleges, schools or students that have no access to computer devices like PCs, laptops, tablets or smart-phones can especially utilize ICT in the form Radiobroadcasts and Telecast. There are specific educational programmes such as Gyanvani and gyandarshan hosted by Akashvani and Doordarshan respectively to cater for the subjects of a college or school curriculum. For such students, traditional ICT tools such as pictures, charts, models, graphs, blackboard, newspapers, educational visits, excursions or educational fairs and exhibitions can be utilized for learning and applying school subjects.

vi. In schools, or students that have access to computer but no internet connection:

- ✓ Pre-recorded CDs and DVDs containing useful content may be used.
- ✓ Various word processing programmes such as MsWord can be used by both teachers and students alike. Teachers can prepare their lesson plans, write questionnaire, and prepare evaluations and diagnostic test to check performance of the students. Students can make their assignments using MsWord using creative designs and templates.
- ✓ Ms Excel can be used by teachers in middle and primary school for data collection, analysis and presentation. It is especially important in teaching students the importance of data collection and representation in the form of bar charts, graphs, pie charts, histograms etc.
- ✓ PowerPoint presentation can be prepared by teachers as well as students using Ms PowerPoint application to present and demonstrate their lessons in effective and efficient manner.
- ✓ Interactive whiteboard (IWB) also known as smart-boards are

electronic and digital boards that help in showing what's presented on a computer desktop with the help of a projector. It helps to control the computer with the help of a pen to conduct a lecture in an interactive manner.

- ✓ Software such as Interactive Geometry Software, Instructional Software, Simulation, Gaming and recreational software provides for rich alternative source for teaching and learning. They can help to remove fear and phobias related to study of a subject at the same time providing those opportunities to learn while playing or engaging in virtual applications of the principles and processes of a subject. Intelligent software while interacting with students in tutorial may tell where an error was made on the part of the student while solving problems and offer suggestions for reaching a correct based specifically on the student's incorrect answer.

vii. In case of students who have computer services in school with internet facilities, the amount of information available to them is immeasurable.

- ✓ World Wide Web (www) is updating the knowledge warehouses for students, teachers and scientist due to enormous progress of ICT. Anybody can refer the latest information and research every day.
- ✓ Open universities and distance education through ICT are new openings for working people to acquire knowledge to study at home also.
- ✓ The manpower, the human mistakes can be avoided by online examination. It maintains objectivity of examination. And requires minimum time even examination can be conducted on demand Maharashtra state board is conducting online examination for Information Technology subject XII standard. Maharashtra Knowledge Corporation (MKCL) also conducts online examination for MSCIT course and the result is declared as soon as student clicks the end exam button.

ICT can be Useful for Teachers in the following ways:

i. It is helpful in the professional development of the teachers. A teacher can learn various language skills with the help of ICT. They can do various certification programs run by the famous educational institutions like Cambridge University, British Council etc. these programs help in enhancing his capacity to teach his subject content easy, economic and more understandable.

ii. A teacher can increase his domain of knowledge with the help of e-journals, e-magazines and e-library that can be achieved only through the use of ICT. He can also participate in discussions and conferences with the experts of his

subject teaching to improve his knowledge and skills through audio and video conferencing.

iii. ICT helps teachers to learn innovative methods of teaching. He can work with the students on various project and assignments. It also helps him in providing teaching contents, home works etc.

iv. He may participate in various in-service training programs and workshops which are essential for his professional development with the help of ICT.

v. ICT helps a teacher to guide his students about the learning materials available on internet, e-books, e-journals, e-magazines and social sites like linked-in which are helpful in better learning of subject skills.

vi. ICT also helps him framing curriculum subjects. He can study curriculums of different countries to study their pros and cons, challenges as well as sociological and psychological issues related to learners. All these things help him in framing a curriculum that leads to achievement of the aims and objectives of subject of teaching.

ICT can be Useful for Students in the following ways:

i. Students can study through online resources. There are different resources through which it will be helpful for students to understand topic. Student can learn from their place and at any time.

ii. Students can meet teachers online and get required knowledge about the subject.

iii. Students can have no limit of time and place.

In this way, there are different apps through which teaching and learning process is becoming easier. These apps help teachers and students to communicate with each other and get knowledge of particular subject. Teachers are also learning different apps use for teaching and students are using learning process. In this way, ICT tools are helpful in this pandemic situation. These tools are helping teachers as well as students.

Current Situation and Importance of ICT Today:

i. Online Education – due to Covid-19, there is no option without online education. As lockdowns don't allow opening schools, colleges, and so online education is only one option through which education can be continued.

ii. Use of Apps – different apps nowadays are used for online education. These apps are helpful for students and teachers to reach. Such types of apps are also used for meetings, online teaching and learning process. Ex. Zoom, Google meet, Webex etc.

iii. Platforms for Online Education – there are different platforms available for online education. Though these platforms, online classes can be taken, videos can be uploaded, recorded videos can be sent. So these platforms are helpful to the students as well as teachers. Ex. Swayam, Webex, Impartus etc.

iv. Use of Different e-Content – due to online education, there is no time limit as well

as place restriction for learning. Anyone can learn from any place and at any time. So many type of education anyone can take. And different e-contents are also prepared for students. These are helpful for them to enrich their knowledge.

v. Tools for teaching – GeoGebra can construct almost every conceivable geometrical object, even in 3D, object drawing is interactive and can be moved around, modified and measured. PHET Simulations are interactive computer programmes which allow a user to change variables and see the effect of the changes on the system. These are very useful in helping students explore the subject, solve problems and can also become a useful self-assessment tool. Using a tool or creating a tool calls for a clear view of the end result which the exact task can be accomplished. Working back from this, the ability to understand the process or procedure of accomplishing the task together with the skill to view the tool is to be gained. Therein lies the challenges, therein lies the fascination.

Needs for the Use of ICT in the Teaching and Learning Process in College of Nursing and Midwifery, Jalingo

The advantage of ICT in education, nursing and midwifery inclusive, is to create a familiarity of how these tools work and how to put them into better use for the optimal benefits of both the learner and the educator (Watson, 2006). In modern times, teachers will need effective and efficient information resources. The use of ICT will aid them to perform their roles much more efficiently and effectively (Adeoye & Popoola, 2011). The information and communication technology revolution has gone viral throughout the world. The information and communication technologies no doubt have introduced new methods of teaching and conducting research and have been brought into education facilities for online learning, teaching and research collaboration.

The internet is a global platform that allows the communication and connections of computer systems for the purpose of information resource sharing among students (Davidson, 2013). There are numerous resources in the internet and the World Wide Web with which users information needs can be met. Resources such as conference proceedings, e-book, preprint services, archived scholarly articles etc are increasingly being made available on the net. ICT provides students with tools they need to discover and own knowledge. ICT give students the hooks and templates they need to fasten information to the long-term memory. There are benefits of using ICT in education as revealed by (Blog, 2010):

i. Motivating benefits – ICT can act as a motivating tool for many students. Young people are very captivated with technology. Educators must capitalize on this interest, excitement and enthusiasm about the internet for the purpose of enhancing learning. For already enthusiastic learners, ICT allows the teacher to provide students with additional learning activities not readily available in the classroom.

ii. Fast Communication - ICT promotes fast communication across geographical barriers. Students can join collaborative projects that involve students from different states, countries or continents. This type of

learning experience was not possible before the ICT. This is a unique learning experience very essential for each student as the world is becoming one big community.

iii. Cooperative Learning – ICT facilitates cooperative learning, encourages dialogue, and creates a more engaging classroom. For example, an internet programme in one class may allow other students to get involved in class discussions through e-mails in a way not possible within the four walls of the classroom.

iv. Locating Research Materials – apart from communication, research is what takes many people to the internet. There are many more resources on the internet than the school library can provide.

v. Acquiring Varied Writing Skills – if students are required to publish their work on the internet, they have no develop hypertext skills. These skills help students gain experience in non-sequential writings. Moreover, and since the internet is open to all with access, students publishing their work on the internet are forced to be mindful of their language and to write to non-expert audience.

Effective Use of ICT in the Teaching and Learning Process in College of Nursing and Midwifery, Jalingo

The healthcare system is growing more reliant on technology. As a result, nurses in all parts of the globe are required to improve their information and communication technology (ICT) abilities (Shen et'al, 2018). In this modern age, it is critical to develop the informatics abilities of nurses and midwives (Austria, 2017). To begin, ICT should be included into nursing curriculum and nursing and midwifery students should be computer savvy (Pilarski, 2010). Most areas of healthcare are accelerated and advanced by using information and communication technology (ICT) throughout the globe. These include the use of electronic medical records, virtual office visits, scheduling appointments online as well as paying for services, and getting medication prescribed electronically (Onu &Agbo, 2013). Studies revealed that healthcare providers largely find ICT advantageous for continuous professional development (Rouleau, Gagnon & Cote, 2015).Health care providers, especially nurses and midwives are better able to communicate and relate with patients using ICT thereby increasing their access to healthcare, consolidating the relationship between the patient and the nurse culminating in a better care (Nilsson & Skar, 2010). According to Project Reserves (2021) on the use of e-Health in nursing practice among nurses in Cape Coast. The study conducted aimed at identifying e-health usage among registered nurses in Cape Coast. It opined that most of the nurses (65.5%) had good knowledge and more than half of them (67.5%) generally demonstrated good attitudes towards e-health. The majority (54.9%) of respondents also demonstrated a good skill in the use of ICT in health service delivery.

Resources on health were available to most nurses. The study adopted a descriptive cross-sectional study using a quantitative approach. A multistage sampling technique was employed. Data collected from 206 registered nurses in Cape Coast revealed that

respondents were predominantly female (61.7%) and (38.3% were males.

Today health systems are more efficient and more responsive to client's need due to the incorporation of ICT. This is evident in the reduced healthcare costs, improved delivery and effectiveness of healthcare services and the increase in patient safety and decision support for clinicians (Remlex, 2007, O. Carroll, Yasnoff, Ripp& Martin, 2007, Acheampong, 2012).

Nursing form the greatest percentage of health care professionals worldwide and so play a crucial role in championing health care reforms such as the adoption of ICT (Institute of Medicine, 2004). In high income countries, nurses interact most with ICT systems due to the demands of their work. They are indispensable when it comes to helping patients set up their own health records, or explaining to them how they can use a patient's portal (Onu &Agbo, 2013). In order to obtain the greatest benefit from ICT, nurses must play a leading role to its adaptation.

However, studies have proven that nurses are dissatisfied with electronic health solutions provided for them due to lack of consultation. Other reasons were that the computer systems were laborious to use, illogical, slow, complex and undependable sometimes (Adams, Thorogood, Buckingham & Azza, 2015).

The use of ICT is getting special emphasis in the education of health workers, especially in nursing and midwifery education since they are with the patient 24 hours a day (Halliaet'al, 2014). As a result, Nurse Educators must teach students skills that are suitable for the degree of competence needed at various phases of their careers. Surprisingly, ICT is changing the health care sector and is now an essential component of health care delivery (Canadian Nurse Association, 2006). According to studies, health care professionals see e-health as a valuable tool for continuing their education (Rouleau, Gagnon & Cote, 2015).

The youths and students including students' nurses and midwives tend to prefer the use of ICT in leisure and other social communication, with less regard on its use for education and health care delivery as their profession demands. They value its use in social activities and see it as boring and cumbersome in education and delivery of health care. With the emergence of Covid-19, with its associated precautions such as social distancing, avoiding unnecessary movements by staying at home, e-learning, tele nursing and tele-medicine has become imperative to both the students, lecturers and patients.

It is therefore of utmost importance to ensure that student nurses and midwives are well equipped in the use of ICT in health care delivery, to enable them to become relevant to the fast changing method of healthcare in the global world. According to Huges, Joshi &Lipke (2014), despite the fact that ICT is quickly growing in the healthcare system and nurses and midwives make up the bulk of the healthcare team, studies indicate that nurses have not kept up with technological advancements.

The researcher observed that student nurses and midwives in Taraba state are uninterested in using information and communication technology in health care delivery. The development of ICT skills among studentnurses and midwives in Taraba state has been hampered by a variety of obstacles. According to Bello and Colleagues (2017), this is due to lack of understanding about how to use it, the absence of ICT equipment, restrictions on its usage to prevent damage and improve maintenance, lack of power supply and lack of information seeking abilities. It is on this note that the study was aimed at investigating the use of ICT and the teaching and learning of nursing and midwifery in College of Nursing and Midwifery Jalingo, Taraba state.

Ofudu, (2007) in (Ajayi, Ekundayo &Haastrup, 2009) enumerated ICT tools used by both teachers and students to include: computers specifically; internet, telephone, digital camera and overhead projector. Other ICT materials include: compact disc-read only memory (CD-ROM), teleconferencing, audio-cassette tapes and video tapes interactive television, electronic board, optical fibres, electronic notice board, slides, radio among others.

Teachers and students turn to ICT for various reasons such as removing distance from education and making knowledge more accessible to all. Development of lifelong learning culture and capacity to empower learners by providing them with multiple pathways that offer choices and channels to meet their education and training needs (UNESCO, 2003) is another reason why people use ICT. ICT is cost-effective as it offers greater flexibility regarding time and location of training delivery. ICT also provides greater flexibility to adapt teaching and learning to meet learners' cognitive and learning styles.

Teachers and nursing/midwifery students have the obligation to know access and use various instructional aides including modern ICT tools during their course of teaching and learning. This is because ICT is redefining the way almost everything is done and is a ready tool for all strata of society including education. ICT is changing the way people teach and learn, thereby offering new alternatives to the traditional classroom methods of teaching and learning. Teachers and students who are unaware of existing ICT may lose an important opportunity to make use of the positive features (cheap, safe, effective and accessible) of ICT as well as teach and learn accordingly.

Teachers and students may not be able to harness all the benefits of ICT in Nigeria. Ofodu (2007) noted that Nigeria is a nation with constant power outage and poor infrastructural material supply in every stratum; her institutions of learning are not exempted as well. There may be lack of general information, access or misinformation about ICT used by both teachers and students during teaching and learning.

In summary, student nurses/midwives can use ICT equipment (medical devices) for checking vital signs, students can use clinical information system to input all patient records, students have competency in the use of intravenous devices, mobile charts, drug

retrieval and delivery systems and capable of interacting with patients through the use of ICT as it relates to their health.

Global and National issues in nursing informatics education

In the United States, in 1996, National Advisory Council on Nurse Education and Practice, created the Informatics, national agenda for education and practice which made five recommendations as follows:

i. Educate nursing students and practicing nurses on core informatics content.
ii. Prepare nurses with specialized skills in informatics.
iii. Enhance nursing education and practice through informatics projects.
iv. Preparing nursing faculty in informatics
v. Increase collaborative efforts in nursing informatics" (Health & Services, 1996).

In 2008, the National League for Nursing (NLN) published a position paper which outlined the recommendations for preparing nursing faculty, deans/ directors/chairs and NLN to work in an environment utilizing technology. Among the recommendations was the need for faculty to acquire competencies in informatics and inclusion of informatics into the nursing curriculum. The American Association of Colleges of Nursing (AACN) formed a list of core competencies which include use of information and communication technologies, use of ethics in the application of technology and enhancement of one's knowledge through information technologies (AACN, 2006, 2008, 2011).

Formal nursing training in Nigeria started in 1946 with the establishment of the Nursing Council of Nigeria. Nursing education takes into consideration the National policy on education for developing sound principles which are important to the preparation of nurses to function, independently / interdependently as members of interdisciplinary/intersectoral teams (Adebanjo & Olubiyi, 2008). Nursing education is at various levels in Nigeria, the first level is the basic nursing/midwifery level which leads to the award of the Registered Nurse (RN)/Registered Midwife (RM) certificate, the second level is made up of the post basic programmes in Midwifery, Opthalmic / Perioperative / Psychiatry / Public health / Orthopaedic nursing programmes. These programmes lead to specialization in Nursing. Next to this are first degree programmes which is obtainable either part/full time or as a distant learning programme or at the National Open University of Nigeria (NOUN). A few Universities currently run Masters and PhD programmes in nursing as well. Nursing education at the basic and post-basic levels is regulated by the Nursing and Midwifery Council of Nigeria (N&MCN) while undergraduate and postgraduate/graduate programme are jointly regulated by National University Commission (NUC) and N&MCN. West African Health Examination Board (WAHEB) regulates post basic public health programmes in collaboration with N&MCN. The past decade has witnessed significant increase in the use of electronic media in educational settings in most developed countries. It has been affirmed that computer technologies have opened the door to many new teaching approaches to nurse

educators. Cuing into this development will be of great advantage to the nursing education system in Nigeria (Axley, 2008).

The Nursing education system should produce graduates that are well equipped to work in an evolving highly technological environment. This calls for integration of Information Communication Technology (ICT) into nursing education curricula at all levels. In line with this the Nursing and Midwifery Council of Nigeria revised the curriculum for General Nursing and Midwifery in 2013. Information Communication Technology (ICT) and Use of computers in Midwifery Practice courses were added to the basic Nursing and Midwifery curricular respectively (NMCN, 2013a; NMCN, 2013b). The National Universities Commission (NUC) also mandated all Universities in Nigeria to include introduction to computers and computer programming as one of the undergraduate courses. In addition to this a few Universities have nursing informatics courses integrated into their curriculum. The courses expose students to theoretical and hands on experiences on computer science. Furthermore, both NUC and N&MCN has stipulated in their minimum accreditation requirement for basic and undergraduate nursing programmes, provision of adequate number of computers in Schools / Departments of nursing/midwifery and linkage of the institutions to internet facilities. It should be noted that although these efforts are in the right direction, nursing informatics is not just computer science, word processing, clinical documentation or use of the internet (ANA, 2008). A study carried out among 540 nursing deans/directors and 1557 faculty revealed that online course offerings and information literacy skills were wrongly equated to informatics (NLN, 2008). The Nigerian Association of University Nursing Programmes (NAUNP) at its 10th National Scientific conference, focused on nursing informatics as the cutting edge for modern day nursing. This was to create awareness and update nurse academics' knowledge about nursing informatics (NAUNP, 2014). A comprehensive nursing informatics agenda is therefore required for Nigeria to address students' needs at all levels as well as faculty needs. A descriptive study which examined Nursing Informatics (NI) preparedness of graduate nurses in Calabar, Nigeria reported that only 51.0% of nurse educators were knowledgeable about nursing informatics while only 25 (24.8%) of the respondents considered their level of computer literacy adequate (Akpabio & Ella, 2014) Importantly, the practice settings should be well equipped to give opportunities to nursing students to practice in an ICT compliant environment, which is largely lacking in most health institutions in Nigeria. The practitioners who should mentor the students too should have basic informatics competencies.

Types of Information and Communication Technology (ICT)

There are varieties of technologies that can be used in education. Each of these technologies has its own redeeming qualities and limitations and different situations calls for different technologies according to (UNESCO, 2003) are as follows:

i. ***Internet/Web-Based Training*** – this provides an environment where

students and teachers access and study course materials online. It may involve the use of live e-learning tools such as application, sharing, internet, telephone, online whiteboards, discussion boards and chat and messaging programmes that allow real time interaction between instructors and learners. It can also be used to transmit text, graphics, images, animation or video. The required tools for online learning include a personal computer and internet connection. There are several ways a user can connect to the internet; standard analog modem, Digital Subscriber Line (DSL), Cable Modem, Integrated Service Digital Network (ISDN), Local Area Network (LAN), Cellular, and Wireless broadband (fixed wireless and satellite).

All the above connections, except for a standard analog modem connect are considered broadband connections. All these methods allow connections to an internet service provider (ISP) that provides a gateway to the rest of the internet. An analog modem and ISDN require a "dial up" connection where a user must dial into connect to the ISP, whereas the other internet access method denoted as "always on" connections, require on dialing.

ii. ***CD – ROM and DVD*** – (Compact Disc-Read Only memory) store on any computer equipment with a CD-ROM drive (Hampton and Bartram, 2002 in UNESCO, 2003). DVD (Digital Video Disk or Digital Versatile Disk) are similar to CD_ROMs and can be used the same way as CD-ROMs but contain more information. Most CD-ROMs have 650 or 700 megabytes storage space whereas most DVDs have room for 4.7 gigabytes, which equals approximately seven times more storage space than a CD-ROM. DVDs are not widely used yet, mainly because of different standards for writing to DVDs.

CD-ROMs have a large capacity and can support the storage of information in a variety of formats including text, animation, video, audio and graphics. Thus, learning materials can be presented in different ways. This allows the material to cater to multiple styles of teaching (UNESCO, 2003).

CD-ROM or DVD is very durable and quality, it does not degrade after repeated used. However, scratching the surface or other abuse on medium may prohibit it from being read by the CD-ROM drive. A major limitation with CD-ROM and DVD is that a computer with CD-ROM drive (in the case of DVD, a DVD drive) is required to access the information. This equipment may not be available to learners in developing countries.

iii. ***Teleconferencing*** – this refers to interactive electronic communication among people located at two or more different places. There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology: audio

conferencing, audio graphic conferencing, video conferencing and web-based conferencing.

iv. ***Audio Conferencing*** – this involves the live (real time) exchange of voice messages over a telephone network. When low-bandwidth text and still images such as graphs, diagrams, or pictures can also be exchanged along with voice messages, then this type of conferencing is called audio graphic. Non-moving visuals are added using a computer keyboard or by drawing and writing on a graphics tablet or whiteboard.

Audio conferencing allows two-way, real-time communication between instructors and learners through audio. Older audio-conferencing technology uses the telephone system infrastructure, where the key component is an electronic device called an audio-conferencing bridge. Using internet telephony where digitized voice packets are sent between individuals over the internet. Individuals can use computer programmes such as instant messenger, Microsoft net-meeting or MSN messenger to converse with individuals. Older audio-conferencing technology simply includes local or long-distance telephone costs and the cost of the bridge itself.

Internet audio conferencing incurs the cost of internet access and the internet telephony equipment and or programmes. The main advantage of audio conferencing is that it allows for direct, two-way interaction between participants. Discussion occurs in real time where learners can ask questions and instructors can respond immediately.

Conclusion

Information and communication technologies (ICT) emergence in the society has made the world a global village. Its relevance in a globally competitive society cannot be overemphasized as ICT has become common place entities in all aspect of life. The emergence of ICT in this century is a significant development in education and as well has an impact on the teaching and learning process in College of Nursing and Midwifery Jalingo, Taraba State. The use of ICT in the teaching and learning process in nursing and midwifery education has greatly enhances intellectual capacity building of students to meet up with the demands of a 21st century Nigeria.

Recent worldwide trends suggest wider use of informatics in nursing curricula to improve the quality of nursing education. The emerging rise in the use of technology demands that nursing Schools, Colleges and Departments adopt ICT in the teaching-learning process. Simborio (as cited in Intel, 2010), emphasized that the growth of ICT in higher education is showing that traditional instruction is slow, time consuming and provides limited access to information. Its use should therefore be de-emphasized in nursing education. The use of ICT in classroom teaching as earlier highlighted is dynamic, innovative and creative; it also extends students learning experience to any

location with access to a wireless network.

It is therefore no longer an optional choice for use in the teaching-learning process in nursing education. Nurse educators who are vested with the responsibility of producing competent nurses, well suited to function in highly technological environment should endeavour to be digitally literate in spite of the impediments. In this way, they will significantly change the existing teaching strategies in nursing education.

According to Saba (2011), technological revolution is here to stay and should be embraced by all nurses regardless of area of specialization. The rapid growth of the digital age will certainly continue; therefore, faculty development is crucial in ensuring that nursing education administrators and faculty alike enhance students' learning and retains faculty members.

References

Abbot, P., (2011). In John Hopkin's and Eclipses announcement at John Hopkin's University School of Nursing in Baltimore, Maryland, USA.

Adebanjo, F and Olubiyi, K., (2008). Reforms in nursing education: The national open University of Nigeria experience. Retrieved August 01, 2015, from www.nou.edu.ng

Akpabio, I. I and Ella, R. E., (2014). Nursing Informatics Preparedness of Graduate Nurses in Calabar, Nigeria. A paper presented at the 10th National Scientific conference: Nigerian Association of University Nursing Programmes (NAUNP).

Retrieved July 10, 2015 from www. Researchgate.net/…./270784787.

American Association of Colleges of Nursing (2006).The essentials of doctoral education for advanced nursing practice. Retrieved July 28, 2011, from http://www.aacn.nche.edu/DNP/pdf/ Essentials.pdf

American Association of Colleges of Nursing (2008). The essentials of baccalaureate education for professional nursing practice. Retrieved June 10, 2010, from http://www.aacn.nche.edu/education/pdf/ baccessentials08.pdf

American Association of Colleges of Nursing., (2011). The essentials of master's education in nursing. Retrieved July 10, 2015, from http://www. aacn. nche.edu/Education /pdf/Master'sEssentials11.p df

American Nurses Association., (2008). Nursing informatics: Scope and standards of practice, Silver Springs, MD, American Nurses Association. P.65.

Anja, M., (2002). Information system development in developing countries, risk management and sustainability analysis in Nigeria software companies, ed. by S. Puuronen (Department of Computer Science and Information Systems, University of Jyvaskyla, Marja-Leena Tynkkynen and pekkaOlsbo, 27-54.

Arikpo, I., Mboto, I., Okoro, A., James, U., Aquaisus, E., nwa, K., Usie, M., Enang, E., Esu, E., MAsangasi, I and Meremikwu, M. (2013). Optimum hardware, software and personnel requirements for a paperless health and

demographic survellannce system: a case study of Cross River HDSS, Nigeria. Information and knowledge management, 3, (3): 77- 83.

Canadian Association of Schools of Nursing. (2012). Nursing Informatics Entry-to-Practice Competencies for Registered Nurses. CASN.

Daniel, O. G and Oyetunde, M. O., (2013). *Nursing Informatics*: A key to improving nursing practice in Nigeria. International Journal of Nursing & Midwifery, 5, (5): 90-98.

Graves, J. R and Corcoran, S., (1989). The study of nursing informatics. image: The Journal of Nursing Scholarship, 21, (4): 227-231.

Gugerty, B and Delaney, C., (2009). Tiger Technology informatics guiding educational reform (TIGER) Initiative. Informatics Competencies Collaborative (T1CC) Final Report 2009.

Federal Ministry of Health (FMOH)., (2014). National Health Information System Strategic Plan 2014 2018. FMOH.

Hannah, K. J., Ball, M. J and Edwards, M. J., (1999). Introduction to Nursing Informatics (2nd ed.). Springer New York, 171- 188.

National League for Nursing (NLN) (2008). Position statement: Preparing the next generation of nurses to practice in a technology-rich environment: An informatics agenda. Retrieved July 10, 2015, from http://www.nln.org/aboutnln/PositionStatements/informatics_052808.pdf

Idowu, P. A and Ajayi, A. S., (2008). GSM based referral system for primary health care centers in Nigeria. International Journal of Soft Computing, 3, (6): 421-427.

Idowu, P., Cornford, D and Bastin, L., (2008). Health informatics deployment in Nigeria.

Journal of Health Informatics in Developing Countries, 2, (1): IDRC/CRDI., (2013). Governance for equity in Health System. Retrieved July 15, 2015 fromhttp://www.idcr.ca/EN/Programs/Socialand_

International Medical Informatics Association (IMIA). (2009). Nursing informatics special interest group definition. Retrieved June 15, 2015 from http://www. imiani. origindex. phpoption =com content & task=view&id=27&Itemid=5.

INDEHELA., 1(989). Informatics Development for Health in Africa. Retrieved June 15, 2015 from http://www.uku.fi/indehela/.

Nursing and Midwifery Council of Nigeria., (2013a) Curriculum for general nursing education revised, p.46.

Nursing and Midwifery Council of Nigeria., (2013b). Basic Midwifery Curriculum for Nigeria, revised, p.53.

Nwankwundo C., Oguejiofor U. & Nwankwo C. (2006). NUC Executive Secretary Commission ICT Centre, Unizik

Obanya PAC (2002). Revitalization of Education in Africa, Lagos: Stirling-Harden Publishers (Nig.) Ltd.

Ohanyido, F., (2012). Health Informatics: A Bird's eye view of Nigeria. A paper presented at the West African Health Informatics Fellowship Programme (WAHIFP) Inauguration, January, 2012.

Saba. V. K., 2011. Nursing informatics: yesterday, today and tomorrow, International Nursing Review, 48, 177-187.

Sewell, J and Thede, L. Q., (2013). Informatics and Nursing: Opportunities and Challenges. (4th ed.). Philadelphia. Lippincott Williams & Wilkins.

Tellez, M., (2012). Nursing informatics education past, present, and future. Computers informatics Nursing, 30(5), 229-233.