



UNIVERSITI PUTRA MALAYSIA

***EFFECTIVENESS OF PEER-LED EDUCATIONAL INTERVENTION
PROGRAM IN IMPROVING KNOWLEDGE, ATTITUDE AND PRACTICE
ON HEPATITIS-B AMONG UNDERGRADUATE STUDENTS IN NIGERIA***

YAKUBU HUSSAINI ANKA

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By

YAKUBU HUSSAINI ANKA

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia,
in Fulfilment of the Requirements for the Degree of Doctor of Philosophy**

September 2016

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DEDICATIONS

I dedicated this research work to my beloved parents, wives, children, relations and my entire friends.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in fulfilment of the requirement for the degree of Doctor of Philosophy

EFFECTIVENESS OF PEER-LED EDUCATIONAL INTERVENTION PROGRAM IN IMPROVING KNOWLEDGE, ATTITUDE AND PRACTICE ON HEPATITIS-B AMONG UNDERGRADUATE STUDENTS IN NIGERIA

By

YAKUBU HUSSAINI ANKA

September 2016

Chairman : Professor Lekhraj Rampal, DrPH
Faculty : Medicine and Health Sciences

Introduction: The infectious hepatitis-B virus (HBV) has become one of the most important infectious disease pandemics of this millennium. It is one of the major causes of liver disease morbidity and mortality worldwide, accounting for over 360 million cases of chronic infection and 620,000 deaths yearly. It is hyper-endemic in Sub-Sahara Africa (SSA) causing up to 44% liver disease such as cirrhotic and 47% of hepatocellular carcinomas. In Nigeria, varying estimates of HBV prevalence among different risk groups has been reported.

The objectives of the present study were, to develop, implement, and evaluate a peer-led education intervention module on improving knowledge, attitude and practice on HBV among undergraduate students of Usman Danfodiyo University Sokoto Nigeria.

Methodology: A randomised single-blind, placebo-controlled community trial study design was used in this study. The study location was Usman Danfodiyo University Sokoto (UDUS) Nigeria. A total of 390 university students were randomly selected and allocated to intervention and the control arms using SPSS computer generated randomization method. The intervention arm received 12-hour peer education program on HBV information and life skill on HBV prevention while the control arm received a session of the importance of physical activities. A validated pretested questionnaire was used to measure knowledge; attitude and practice related to HBV at baseline, immediately post-intervention, three months post intervention and six months post-intervention. Data was analysed using SPSS version 22. Chi-square test was used to test for the homogeneity of variance between the intervention and the control arms at baseline. One way ANOVA and two-way repeated measure ANOVA test were used to assess the effectiveness of the intervention. A p-value of less than 0.05 was considered the significance and partial eta square used as a measure of effect size.

Results: The results showed there was a significance improvement in respondents HBV knowledge in the intervention arm immediately two weeks after the intervention, three months and six months follow-up assessment with large effect size (partial eta $\eta^2 = 0.709$, $p = 0.001$). The intervention was also effective in improving attitude related to HBV at immediately two weeks after the intervention, three months and six months follow-up assessment with large effect size (partial eta $\eta^2 = 0.818$, $p=0.001$). Similarly, the intervention module was also effective in improving practice related to HBV at immediately two weeks after the intervention, three months and six months follow-up assessment with large effect size (partial eta $\eta^2 = 0.623$, $p=0.001$).

Conclusion: The present study is effective in improving knowledge, attitude, and practices of the undergraduate students on HBV infection. The module developed can be adopted by the university as part of their curriculum of studies.

Key words: Peer-led, knowledge, attitude, practice, education module.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Doktor Falsafah

**KEBERKESANAN PEER-LED PENDIDIKAN INTERVENSI PROGRAM
DALAM MENINGKATKAN PENGETAHUAN, SIKAP DAN AMALAN
HEPATITIS-B KALANGAN PELAJAR UNIVERSITI PRASISWAZAH
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Pengenalan: Berjangkit hepatitis-B virus (HBV) telah menjadi salah satu yang paling penting wabak penyakit berjangkit alaf ini. Ia adalah salah satu punca utama morbiditi penyakit hati dan kematian di seluruh dunia, menyumbang lebih 360 juta kes jangkitan kronik dan 620,000 kematian setiap tahun. Ia adalah hyper-endemik di Sub-Sahara Afrika (SSA) menyebabkan sehingga penyakit hati 44% seperti cirrhotic dan 47% daripada karsinoma hepatocellular. Di Nigeria, anggaran yang berbeza-beza kelaziman HBV di kalangan kumpulan risiko yang berbeza telah dilaporkan. Objektif kajian ini adalah untuk membangun, melaksana, dan menilai pendidikan campur tangan modul rakan setugas untuk meningkatkan pengetahuan, sikap dan amalan mengenai HBV di kalangan pelajar ijazah Usman Danfodiyo University Sokoto Nigeria.

Metodologi: A rawak tunggal buta, reka bentuk kajian percubaan masyarakat plasebo terkawal telah digunakan dalam kajian ini. Lokasi kajian adalah Usman Danfodiyo University Sungai-sungai (UDUS) Nigeria. Seramai 390 pelajar universiti telah dipilih secara rawak dan diperuntukkan kepada campur tangan dan kawalan senjata menggunakan komputer SPSS dijana kaedah rawak. Cabang campur tangan menerima program pendidikan rakan sebaya 12 jam di HBV maklumat dan kehidupan kemahiran kepada pencegahan HBV manakala lengan kawalan menerima sesi kepentingan aktiviti fizikal. A soal selidik selidik disahkan telah digunakan untuk mengukur pengetahuan; sikap dan amalan yang berkaitan dengan HBV pada garis dasar, serta-merta selepas campur tangan, tiga bulan selepas campur tangan dan enam bulan selepas campur tangan. Data dianalisis dengan menggunakan perisian SPSS versi 22. ujian Chi-square digunakan untuk menguji untuk homogeneity varians antara campur tangan dan kawalan senjata pada garis dasar. ANOVA satu hala dan dua hala langkah mengulangi ujian ANOVA telah digunakan untuk menilai keberkesanan campur tangan. A-nilai p kurang daripada 0.05 dianggap kepentingan dan separa persegi eta digunakan sebagai ukuran saiz kesan.

Dapatan kajian: Hasil kajian menunjukkan terdapat peningkatan yang signifikan dalam pengetahuan responden HBV di lengan campur tangan dengan segera dua minggu selepas campur tangan, tiga bulan dan enam bulan susulan penilaian dengan saiz kesan besar (sebahagian eta $\eta^2 = 0,709$, $p = 0.001$). Campur tangan juga berkesan dalam meningkatkan sikap yang berkaitan dengan HBV di segera dua minggu selepas campur tangan, tiga bulan dan enam bulan penilaian susulan dengan saiz kesan besar (sebahagian eta $\eta^2 = 0,818$, $p = 0.001$). Begitu juga, modul campur tangan itu juga berkesan dalam meningkatkan amalan yang berkaitan dengan HBV di segera dua minggu selepas campur tangan, tiga bulan dan enam bulan penilaian susulan dengan saiz kesan besar (sebahagian eta $\eta^2 = 0,623$, $p = 0.001$).

Kesimpulan: Kajian ini adalah berkesan dalam meningkatkan pengetahuan, sikap dan amalan pelajar sarjana muda mengenai jangkitan HBV. Modul yang dibangunkan boleh diguna pakai oleh universiti sebagai sebahagian daripada kurikulum pengajian mereka.

Kata kunci: Rakan setugas, pengetahuan, sikap, amalan, modul pendidikan.

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The thesis was submitted to the Senate of the Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Doctor of Philosophy. The members of the Supervisory Committee were as follows:

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LIST OF ABBREVIATIONS

AFAO	Australian Federation of Aids Organization
AIDS	Acquired Immune Deficiency Syndrome
ANOVA	Analysis Of Variance
CDC	Centre for Chronic Disease Control
DNA	Deoxyribo Nucleic Acid
DOH	Department of Health
FCT	Federal Capital Territory
HAV	Hepatitis A Virus
HBsAG	Hepatitis B surface antigen
HBV	Hepatitis B virus
HCV	Hepatitis C virus
HCWs	Health Care Workers
HFI	Hepatitis Foundation International
HIV	Human Immunodeficiency Virus
IMB	Information Motivation Behavior
KAP	Knowledge Attitude Practices
NGO's	Non-Governmental Organizations
PPSS	Probability Proportion to Size Sample
SPSS	Statistical Package for the Social Sciences
SSA	Sub-Saharan Africa
STIs	Sexually Transmitted Infections
UDUS	Usmn Danfodiyo University Sokoto
UNICEF	United Nations Children Fund
UNFS	United Nation Fact Sheet on Youth
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

This chapter describes the problem of interest regarding the content of this study. It provides the rationale for the study, primary objective and specific objectives and the hypothesis to be tested.

1.1 Background

Viral Hepatitis B infection (HBV) has become one of the most significant infectious disease epidemics of this millennium since its discovery in the year 1963 (Blumberg B. S, 2002). This infection has become an important challenge to both science and humanity that threatens the most gains by a man in medicine and to the life expectancy in the last century. It is the 8th leading cause of death worldwide with significance increase in the disease burden from 378 million chronic cases in 2009 to 500 million chronic cases in 2011 globally (World Hepatitis Day, 2013). The endemicity of the infection is common in sub-Saharan African and Asia with about 8% carriers while in low endemic areas like South America HBsAg prevalence is less than 2%. In the Middle East, some Eastern European Countries are considered areas of intermediate endemicity with a carrier's rate range 2-8% (WHO, 2009). It is estimated that over 50% of cancer new cases worldwide were attributable to HBV (WHO, 2012). In sub-Saharan Africa, an average carrier rate of 10-20% has been reported an indication for high endemicity in the region even within the general population (WHO, 2002). Approximately about 70 to 95% of adults in Sub-Saharan African population have at least one marker of hepatitis-B virus (WHO, 2012). Similarly, an estimation of 40% of children in West African countries was infected with HBV infection at the age of two years and above and 90% at ages of ten years with other 20% chronic carrier rate among those children (WHO, 2012). Chronic carrier rate above the level of 7% in a defined population is considered and classified as hyperendemic.

Nigeria with a population of over 163 million people (Global Policy Report, 2011), has been identified as one of the countries with high prevalence of HBV infection in the world as reported by Ezegbudo (2004) with the carriage rate in the range between 9% to 39%. Since the first case was reported in 1986 in Nigeria, the prevalence of HBV among adults is continuously increasing from 2.6% in 1990 to 5.6% in 1999, and increases to 9.2% in 2004 to 39% in 2011 (Ezegbudo et al., 2004; Ukaeje et al., 2005; WHO, 2012). The current prevalence rate indicates that there are an estimated 2.50 million (1.4 – Male, 1.1- Female) people living with HBV in Nigeria within the period of 1991 to 2002 (Global Policy Report African Region, 2005). The prevalence increases to 3.6 (Male - 2.1, Female -1.5) million people within the period of 2007 to 2011 (WHO, 2012) living with HBV, cumulative HBV deaths 3.05 million, 900,000 new infections, 90,000 liver cancers, 500,567 thousand cirrhosis due to HBV infections in Nigeria (World Health Report African Region, 2008). In Nigeria, over two-third of people are living in poverty and have a fragile

health structure; many patients cannot afford the cost of treatment. The estimated cost of treatment of hepatitis B and C are 286.6 billion nairas nationally per annum (WHO, 2012). As a result of that, the Nigerian public under-reacted to the news regarding HBV and the government neglected to put an effort in control measures for preventing the spread of the disease (Global Policy Report, 2008).

Due to the negative perceptions of the public about HBV and lack of government concern regarding HBV, no intervention measures put in place by the government in matters regarding child vaccination, screening of blood donors, screening of youth and adolescent, and awareness of the mode of its transmission (Jombo et al., 2005). As a result of that, the virus continues to spread silently and unnoticed through young people, in the hospitals during blood transfusion, and from mothers to their newborn child through placental transfer. Nigeria being a developing country has less valid health indicators (WHO, 2012).

The major fuelling factors for HBV transmission in Nigeria were identified as due to the low level of knowledge, attitude and preventive practices of its modes of transmission and prevention among Nigerians especially towards issues related to immunization, screening of HBV, inadequate health education, lack of interventions from the government on HBV (WHO, 2012; Global Health Report, 2013).

There are more than 1.7 billion people within this age group 15 to 24 years. Globally.

In Nigeria, about 41% of the country's population is made up of youth between 15-24 years, indicating that one out of every third person is a youth (National Population Commission, 2006). Young people experience certain changes at the period of childhood to adulthood which are called transition period. The changes include social and psychological changes especially at puberty and the desire for sexual intercourse and issues of relationship are always at their peak at this stage of life. In other words, it is called the phase of experimentation and discovery. It is the stage where children imitate adult's characteristics. As a result of the volatile nature of this stage, children becomes exposed to certain risks such as pre-marital sexes, drugs use, tattooing, piercing, smoking and excessive alcohol consumption which may lead to the contraction of sexually transmitted infections (STIs) including HIV/AIDS, gonorrhoea, syphilis, hepatitis B and many others.

Despite the possible serious complications, hepatitis-B has the advantage of being preventable with relatively low-cost interventions, such as health education, immunization, and environmental measures.

In Nigeria, there are little or inadequate efforts on raising awareness about hepatitis B and its modes of prevention. To create awareness of hepatitis B virus and its preventive measures, we need to assess gaps regarding health education. The

information will serve as a guide for development of information, education and communication activities for prevention and control of hepatitis B.

Young people are the best target hope of halting the spread of HBV, yet the majority of youth in Nigeria remain inadequately informed about the transmission modes of hepatitis B infection. To reduce the transmission of hepatitis B in Nigeria, it is important to increase the population knowledge, attitude and practice about the disease especially towards modes of transmission, control, and preventive measures. Studies have shown that the knowledge about HBV is minuscule in Nigeria, and there is no sufficient research on hepatitis in Nigeria (Daniel et al., 2008; WHO, 2013).

In order to achieve a greater success for an intervention program, it is recommended that such interventions should be conducted in school settings since they are places where people regularly attend especially young people (Frantz, 2015). Presently school-based intervention programs evaluating hepatitis B in Nigeria are not well documented or do not exist in the literature. Similarly, there is no government institution or local and international NGO's involved in the implementation of school hepatitis B educational intervention programs. Young people are the key target population for preventive measures regarding HBV infection since this group are more predisposed to sexual and other related reproductive health problems in Nigeria and are always targeted as potential donors in the hospitals (Fatusi, 2005). There is an urgent need for effective monitoring of the trend of the infection within the entire general population as a supportive tool for initiating effective intervention measures to overcome the situation.

1.2 Problem statement

There has been little increase in understanding and awareness of HBV in Nigeria, knowledge, attitude, and practice of the general population are very low regarding its modes of transmission and prevention especially among youth (Odimayo et al., 2015). However, high rates of none protective attitude and behaviours among the general population who are HBV positive with known or unknown status involved in certain relationships that expose partners who are HBV negative or of unknown status are noted. These high rates have serious consequences and are associated with poor knowledge of the individual status and lack of awareness regarding its modes of transmission pattern.

HBV awareness campaign remains one of the most effective preventive tools in the control of HBV epidemic since it has a direct link with behaviour change. Such behaviour includes; reuse of syringes and needles, transfusion of not screened blood for HBV, unprotected sex, none receive of HBV vaccine, and tattooing (Majolagbe et al., 2014).

A study conducted by Akafyi et al (2015) in a tertiary institution in Zaria Nigeria among undergraduate students reported a high prevalence of HBV among students who had sex without condom 14.43% , the prevalence of 20% were reported among those that received an injection from unprofessional, the prevalence of 10% reported from those who received blood .

Knowledge, attitude and behaviour change remain the most effective driving tool against HBV in Nigeria; thus, there is an urgent need for interventions targeted at changing the attitude and behaviours of the youth regarding HBV infection and improving their knowledge of the major risk factors of HBV.

Furthermore, few available research conducted has given very little attention to the awareness campaign on the modes of transmission and preventive measures of HBV infection.

It becomes very necessary to plan an intervention program for primary prevention of this disease especially among young people in the University. The present study intends to develop, implement and evaluate the effectiveness of peer-led education intervention; on improving related knowledge, attitude, and practices of youths regarding HBV infection among undergraduate students of Usman Danfodiyo University Sokoto Nigeria.

1.3 Significance of the Study

Results from this study would improve preventive interventions in the transmission of hepatitis B infection by behavioural change modification among youth, their peers, their family members, and the entire general population at risk of infection. It would also enlighten youth on the need for their urgent involvement in the counselling process. The study results will also generate valuable information on evaluating and further developing national training programs regarding HBV infection to be adopted in the university settings in their curriculum.

1.4 Research questions:

1. What is the level of knowledge regarding Hepatitis B among undergraduate students of Usman Danfodiyo University Sokoto, Nigeria?
2. What are the attitudes towards hepatitis B among undergraduate Students of Usman Danfodiyo University Sokoto, Nigeria?
3. What are the practices regarding hepatitis B among undergraduate students of Usman Danfodiyo University Sokoto, Nigeria?
4. Is there any difference in hepatitis B knowledge, attitudes, and practices among undergraduate Students of Usman Danfodiyo University Sokoto after receiving educational intervention program (pre and post-test)?

5. Is student educational intervention program among undergraduate students of Usman Danfodiyo University Sokoto effective in the prevention of hepatitis B

1.5 Study objectives

1.5.1 General objective

The general objectives of this study are

To develop, implement and evaluate the effectiveness of peer-led educational intervention program on improving knowledge, attitude and practice related to hepatitis-B virus among undergraduate students of Usman Danfodiyo University Sokoto in Northern Nigeria.

1.5.2 Specific Objectives

The specific objectives of this study are:

1. To compare the socio-demographic characteristics of the respondents in the intervention and control group at baseline.
2. To develop and implement educational intervention module on increasing knowledge, attitude and practice related to hepatitis B.
3. To evaluate the effectiveness of the educational intervention program related to hepatitis B among the respondents.
4. To compare knowledge, attitude and practices related to hepatitis-B at baseline, immediately post-intervention, three months and six months post-intervention within the intervention group and within the control group.
5. To compare knowledge, attitude, and practices related to hepatitis-B at baseline, immediately post-intervention, three months and six months post-intervention between the intervention group and the control group.

1.6 Research Hypotheses

1. There is a significant difference in hepatitis B related knowledge within the intervention group and the control group after intervention and during follow-up assessment (immediately, after three and six months).
2. There is a significant difference in hepatitis B related attitude within the intervention group and the control group after intervention and during follow-up assessment (immediately, after three and six months).
3. There is significance difference in hepatitis B related practice within the intervention group and the control group after intervention and during follow-up assessment (immediately, after three and six months).
4. There is a significant improvement in knowledge, related to hepatitis B among undergraduate students of Usman Danfodiyo University Sokoto after intervention and during follow-up assessment between the intervention group and the control group.
5. There is a significant improvement in attitude related to hepatitis B among undergraduate students of Usman Danfodiyo University Sokoto after intervention and during follow-up assessment between the intervention group and the control group.
6. There is a significant improvement in practice related to hepatitis B among undergraduate students of Usman Danfodiyo University Sokoto after intervention and during follow-up assessment between the intervention group and the control group.

REFERENCES

- Acquaye JK, Tettey-Donkor D (2000). The frequency of hepatitis C virus antibodies and elevated serum Alanine Transaminase levels in Ghanaian blood donors. *West African Journal of Medicine*, 19(4), 239-241
- Adekanle, O., Ndububa, D. A., Ayodeji, O. O., Paul-Odo, B. & Folorunso, T. A. (2010). Sexual transmission of the hepatitis B virus among blood donors in a tertiary hospital in Nigeria. *Singapore Medical Journal*, 51, 944-947.
- Adekeye, A. M., Chukwuedo, A. A., Zhakom, P. M. & Yakubu, R. S. (2013). Prevalence of hepatitis B and C among blood donors in Jos South LGA, Plateau State. *Asian Journal of Medical Sciences*, 5, 101-104.
- Adeleke, S., Adebimpe, M. A., Sam-Wobo, W. O., Wahab, S. O., Akinyosoye, A. A. & Adelowo, T. O. (2013). Seroprevalence of malaria, hepatitis B and syphilis among pregnant women in Osogbo, Southwestern Nigeria. *Journal of Infectious Disease Immun*, 5, 13-17.
- Adjei A, Armah B, Gbagbo F, Ampofo K, et al. (2006). Prevalence of human immunodeficiency virus, hepatitis B virus, hepatitis C virus Syphilis among prison inmates and officers at Nsawam and Accra, Ghana. *Journal of Medical Microbiology*, 55, 593-97.
- Ado, A., Alhassan, S., Chonoko, U. G. & Samaila, A. U. (2010). Seroprevalence of hepatitis B surface antigen (HBsag) among blood donors attending Ahmadu Bello university teaching hospital (ABUTH), Zaria, Nigeria. *Bajopass Journal*, 3, 20-22.
- Adoga, M. P., Banwat, E. B., Forbi, J. C., Nimzing, L., Pam, C. R., Gyar, S. D., Agabi, Y. A. & Agwale, S. M. (2009). Human Immunodeficiency Virus, Hepatitis B Virus, and Hepatitis C Virus: Sero-prevalence, Coinfection, and Risk Factors among Prison Inmates in Nasarawa State, Nigeria. *Journal of Infect Dev Ctries*, 3, 539-547.
- Adoga, M. P., Gyar, S. D., Pechulano, S., Bashayi, O. D., Emiasegen, S. E., Zungwe, T, et al. (2010). Hepatitis B virus infections in apparently healthy urban Nigerians: Data from pre-vaccination tests. *Journal of Infect Dev Ctries*, 4, 397-400.
- AFAO (2008). Briefing Paper on Hepatitis B by Australian Federation of Aids Organization. Online. https://www.afao.org.au/__data/assets/pdf_file/0011/4511/BP0108_Hepatitis_B.pdf Accessed: 08/02/2016.
- Akafyi, D. E., Oko, J. O., Audu, J. A., Ibrahim I, Danzarami, D. & Esther, O. (2015). Seroprevalence of the hepatitis-b virus and its associated risk factors among students of a higher institution of learning in Zaria-Nigeria. *International Journal of Development Research*, 5(10), 5766-5769.

- Alao, O. O., E. E. Okwori, C, Egwu, and F. Audu. (2008). Seroprevalence of hepatitis B surface antigen among prospective blood donors in urban areas of Benue State. *International Journal of Hematology*, 5(2) Available: <http://www.ispub.com/IJHE/5/2/3040>
- Alikor, E. A. & Erhabor, O.N. (2007). Seroprevalence of hepatitis B surface antigenemia in children in a tertiary health institution in the Niger Delta of Nigeria. *Nigerian Journal of Medicine*, 16, 326-329.
- Allain J P, Candotti D, Soldan K, Sarkodie F, Phelps B, Giachetti C, et al.,(2003).The risk of hepatitis B virus infection by transfusion in Kumasi, Ghana. *Ghana Medical Journal*, 4, 354-359.
- Aminu, M., Okachi, E. E., Abubakar, S. M. & Yahaya, A. (2013). Prevalence of hepatitis B virus surface antigen among healthy asymptomatic students in a Nigerian University. *Ann African Medicine*, 12, 55-56.
- Anjali S, Shikha J (2011) Prevention of Hepatitis B; knowledge and practices among Medical students. *Healthline-ISSN 2229-337X*, 2(2): 8-11.
- Atkinson and Hilgard, (2003).Introduction to Psychology: Australia Belmont, C A: Wad worth/Thomson Learning, p658-64.
- Bam, R. A., Birkus, G., Babusi, D., Cihlar, T., Yant, S. R. (2014). Metabolism and antiretroviral activity of tenofovir safinamide in CD4(+) T-cells and macrophages from demographically diverse donors. *Antiviral Therapy*, 19(7), 669-77.
- Barth, R. E., Huijgen, Q., Taljaard, J. & Hoepelman, A. I. (2010). Hepatitis B/C and HIV in sub-Saharan Africa: An association between highly prevalent infectious diseases. A systematic review and meta-analysis. *International Journal of Infectious Diseases*;14, 1024-1031.
- Blumberg, B. S. (2002): Hepatitis B - The hunt for a killer virus. Princeton: Princeton University Press.
- Blumberg, B. S., Gerstley, B. S., Hungerford, D. A., London, W. T. & Sutnik, J. (1967). A Serum Antigen (Australian Antigen) in Down's syndrome, Leukemia, and Hepatitis. *Ann Int Med*, 66, 924 - 931
- Braithwaite R, Robillard A, Woodering T, et al. (2001).Tattooing and body piercing among adolescent detainees: relationship to alcohol and other drug use. *Journal of Substance Abuse*; 13, 5-16.
- Brian J. M. (2009). The Natural History of Chronic Hepatitis B Virus Infection *Journal of Hepatology*, 49(5), 545-555 Online Available at <https://www.med.upenn.edu/gastro/documents/HepatologyHBVnaturalhistory2009.pdf>. Accessed: 08/02/2016.

- Bruss, V. (2007). "Hepatitis B virus morphogenesis". *World journal of Gastroenterology*, 13(1), 65-70
- (BSS, 2000). Behavioural Surveillance Survey: Guidelines for Repeated Behavioural Survey in Populations at Risk of HIV. Family Health International.
- Bukbuk, D. N., Bassi, A. P., Mangoro, Z. M. (2005). Seroprevalence of hepatitis B surface antigen among primary school pupils in rural Hawal valley, Borno State, Nigeria. *Journal of Community Medicine Primary Health Care*, 1, 20-23.
- Busari A.O. & Danesy A.H, (2004). Adolescence and HIV/AIDS in contemporary issues and researcher on adolescence.
- Buseri, F., Seiyaboh, E. & Jeremiah, Z. (2010). Surveying infections among pregnant women in the Niger Delta, Nigeria. *Journal of Global Infectious Diseases*, 2, 203-211.
- Bwogi, J., Braka, F., Makumbi, I., Mishra, V., Bakamutumaho, B., Nanyunja, M., Opio, A., Downing, R., Biryahwaho, B. & Lewis, R. F. (2009). Hepatitis B infection is highly endemic in Uganda: findings from a National serosurvey. *African Health Sciences*, 9, 98-108.
- Campbell, R., Starkey, F., Holliday, J., Audrey, S., Bloor, M., Parry-Langdon, N., Hughes, R. & Moore, L. (2008). An informal school-based peer-led intervention for smoking prevention in adolescence (ASSIST): a cluster randomized trial. *The Lancet*, 371(9624), 1595-1602. Online Available at: [http://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(08\)60692-3/fulltext?rss=yes](http://www.thelancet.com/journals/lancet/article/PIIS0140-6736(08)60692-3/fulltext?rss=yes)
- Carroll S T, Riffenburgh R H, Roberts T A, (2002). Tattoos and body piercing as indicators of adolescents risk-taking behaviors. *Pediatrics*; 109:1021-7.
- Centre for Disease Control and Protection (2008). Online Available at: <https://www.cdc.gov/hepatitis/partners/pdfs/hepatitisprevcoordinit2008-2012.pdf> Accessed: 20/10/16.
- CDC (2002).Hepatitis B fact sheet. [Cited 3rd July 2010].Available at: www.cdc.gov/ncidod/diseases/Hepatitis/b/factvax.htm.53
- CDC (2005). A comprehensive immunization strategy to eliminate transmission of hepatitis B virus infection in the United States: recommendations of the Advisory Committee on Immunization Practices (ACIP).Part 2: Immunization of adults.MMWR. In press.
- CDC (2006).Hepatitis B fact sheet-signs, symptoms and Facts about Hepatitis B. Available at www.aids.about.com/od/hepatitisb/a/hepbfacts1.htm

- CDC (2006).Hepatitis B fact sheet-signs, symptoms and Facts about Hepatitis B. [cited 12th August 2010]. Available at:www.aids.about.com/od/hepatitisb/a/hepbfacts1.htm.
- Centre for Disease control and prevention (2003). Division of Viral hepatitis, National Centre for Infectious Disease, Viral Hepatitis B, Available at <http://www.cdc.gov/ncidod/diseases/hepatitis/b/fact.htm>
- Chukwuka, J. O., Ezechukwu, C. C., Egbouonu, I. & Okoli, C. C. (2004). Prevalence of hepatitis B surface antigen in primary school children In Nnewi, Nigeria. *Nigerian Journal of Clinical Practice*, 2004(7), 8-10.
- Chun, H. M., Roediger, M. P., Hullsiek, K. H., Thio, C. L., Agan, B. K., Bradley, W. P, et al. (2012). Hepatitis B virus coinfection negatively impacts HIV outcomes in HIV seroconverters. *Journal of Infectious Diseases*, 205(2), 185–93.
- Church, D. Viral. Elson, R., Conant, M., Church, D., Lett, S. & DeMaria, A. (2009). A viral hepatitis immunization initiative in Massachusetts correctional facilities. Abstract, the 2009 National Immunization Conference.
- Cox, A. D., Cox, D., Cyrier, R., et al. (2012). Can self-prediction overcome barriers to hepatitis B vaccination? A randomized controlled trial. *Health Psychology*;31:97–105.
- Custer, B., Sullivan, S. D, Hazlet, T. K., Iloeje, U., Veenstra, D. L. & Kowdley, K. V. (2004). Global epidemiology of hepatitis B virus. *Journal of Clinical Gastroenterol*, 38, S158-68.
- Cydulka R, Mathews J, Bohm M, Moy A, Parker M (1991): Paramedics: Knowledge base and attitudes towards Aids and hepatitis. *Journal of Emergence Medicine*, 9, 37-43.
- Daniels, D., Grytdal, S. & Wasley, A. (2007). Surveillance for acute viral hepatitis - United States. *MMWR Surveill Summ*, 58, 1-27
- David, O. M., Oluduro, A. O., Ariyo, A. B., Ayeni, D. & Famurewa, O. (2013). Seroepidemiological survey of hepatitis B surface antigenemia in children and adolescents in Ekiti State, Nigeria. *Journal of Public Health and Epidemiology*, 5(1), 11-14. Available online at <http://www.academicjournals.org/JPHE>
- Deakin, T., McShane, C. E., Cade, J. E., & Williams, R. D. (2005). Group based training for self-management strategies in people with type 2 diabetes mellitus. The Cochrane Database of Systematic Reviews, (2), CD003417. Online Available at: <http://dx.doi.org/10.1002/14651858.CD003417.pub2>
- Dey, I (2007): Qualitative Data Analysis: A User-friendly Guide for Social Scientists, London: Routledge.

- Diederike WG, Lucia E V, Kofi A, Jos Van R (2003). Trends in maternal mortality: a 13-year hospital-based study in rural Ghana. *European Journal of Obst & Gynecol and Repro Biology*, 107, 135-39.
- Dirisu, J. O., Alli, T. O., Adegoke, A. O. & Osazuwa, F. A (2011). Survey of the prevalence of serum antibodies to human immunodeficiency deficiency virus (HIV), hepatitis B virus (HBV) and hepatitis C virus (HCV) among blood donors. *New American Journal of Medical Science*, 3(1), 35-38.
- Diseases Health Manual Web: Online Accesses:
- Do, E. C. & Ghany, M. G.(2010). Hepatitis B virology for clinicians. *Medical and Clinical North American Journal*, 14, 397-408.
- Dobson S, Scheifele D, Bell A (1995). Assessment of a universal school-based hepatitis vaccination program. *Journal of American Medical Association*, 274(15), 1209-1213.
- Donatelle, R. (2009), *Promoting Healthy Behaviour Change. Health: The basics*, (8th edition), San Francisco, CA:Pearson Education, inc. pp4.
- Egah, D. Z., Banwat, E. B., Audu, E. S., Iya, D., Mandong, B. M., Anele, A. A. & Gomwalk, N. E.(2007). Hepatitis B surface antigen, hepatitis C, and HIV antibodies in a low-risk blood donor group, Nigeria. *East Mediterr Health Journal*, 13, 961-966.
- Ejele OA, Ojule, A. C. (2004). The Prevalence of Hepatitis B Surface Antigen (HBsAg) among prospective blood donors and patients in PortHarcourt, Nigeria. *Nigerian Journal of Medicine*, 2(5), 22-29.
- Eke, A. C., Eke, U. A., Okafor, C. I., Ezebialu, I. U. & Ogbuagu, C. (2011). Prevalence, correlates and pattern of hepatitis B surface antigen in a low resource setting. *Virology Journal*, 2011, 8:12.
- Eleanor, M. & Jessica P. B. (2010). Peer-led interventions to reduce HIV risk of youth: A review. *Elsevier Journal*, 33(2), 98-112. Online Available at: <http://www.sciencedirect.com/science/article/pii/S0149718909000615>
- European Association for the Study of the Liver. (2012). EASL Clinical Practice Guidelines: management of chronic hepatitis B virus infection. *Journal of Hepatology*, 57, 167-185.
- Famuyiwa, S. A. & Buko, I. O. (2015). Effect of Health Education on Knowledge and Prevention of Hepatitis Infection Among Secondary School Students In Ibadan North Local Government Area Of Oyo State. *African Journal for the Psychological Study of Social Issues*, 18(2), 1-10
- Fasola, F. A., Kotila, T. R. & Akinyemi, J. O. (2008). Trends in transfusion-transmitted viral infections from 2001 to 2006 in Ibadan, Nigeria. *International Journal of Virology*, 51, 427-431.

- Fisher, J. D., & Fisher, W. A. (1992). Changing AIDS-risk behavior. *Psychological*
- Fisher, J. D., Fisher, W. A., & Shuper, P. A. (2009). The information-motivation-behavioral-skills model of HIV prevention behavior. In R. J. DiClemente, R. A. Crosby, & M. C. Kegler (Eds.), *Emerging theories in health promotion practice and research* (pp. 21e63). San Francisco, CA: Jossey-Bass.
- Fisher, J. D., Fisher, W. A., Amico, K. R., & Harman, J. J. (2006). An information motivation-behavioral skills model of adherence to antiretroviral therapy. *Health Psychology, 25*(4), 462e473. <http://dx.doi.org/10.1037/0278-6133.25.4.462>.
- Forbes GB (2001). College students with tattoos and piercing: motives, family experience, personality factors and perception by others. *Psychol Rep; 89*:774-86.
- Forbi, J. C., Vaughan, G., Purdy, M. A., Campo, D. S., Xia, G. L., Ganova-Raeva, L. M. , *et al.* (2010). Epidemic history and evolutionary dynamics of hepatitis B virus infection in two remote communities in rural Nigeria. *PLoS One*;5:e11615.
- Fox, M. P. (2009). A systematic review of the literature reporting on studies that examined the impact of interactive, computer-based patient education programs. *Patient Education Counselling*;77:6–13.
- Frantz, J. M. (2015). A peer-led approach to promoting health education in schools: The views of peers. *South African Journal of Education, 35* (1), 7, Online Available at: <http://www.sajournalofeducation.co.za>
- Gay L. R. & Airasian, P. (2006). 8th Edition *Educational research: Competencies for analysis and application*. Upper Saddle River, NJ: Merrill Prentice Hall.
- Gelberg L., Robertson, M. J., Leake, B., Wenzel, S. L., Bakhtiar, L., Hardie, E. A., *et al.* (2001). Hepatitis B among homeless and other impoverished US military veterans in residential care in Los Angeles. *American Journal of Public Health, 115*(4), 286–291.
- Ghana Political Map, updated, December 23, 2010. [Cited 28th December 2010]. Available at: <http://www.mapsofworld.com/ghana/ghana-political-map.html>
- Ghana Statistical Service (2000): Population and housing census. [Cited 22nd December 2010]. Available at: www.statsghana.gov.gh/.
- Ghana Statistical Service (2010): Population and housing census. [Cited 23rd February 2011]. Available at: www.statsghana.gov.gh/.
- GHBF (2007). Ghana Hepatitis B Foundation: About us, 2007. [Cited 5th September 2010]. Available at: www.hepatitisbghana.org/aboutus.

- GHS (2009) Annual Report- Ghana Health Services. [Cited 22nd December 2010]. Available at: www.ghanahealthservice.org/.../Final_Draft_2009_GHS_Annual_Report%20final%final
- Gish, R. G. & Gadano, A. C. (2006). Chronic hepatitis B: current epidemiology in the Americas and implications for management. *Journal of Viral Hepatology*, 13, 787-798
- Glanz, K (2002). Health Behavior and Health Education: Theory research and practice, 3d. Jossey-Bass.
- Global Christianity (2015): A Report on the Size and Distribution of the World's Christian
Available. http://www.pewforum.org/uploadedFiles/Topics/Religious_Affiliation/Christian/Christianity-fullreport-web.pdf
- Global Policy Report on Hepatitis B Virus (2013). WHO African region Online Available at www.globalpolicyreportontheventioncontrolHepatitis.
- Grob P (1995): Introduction to Epidemiology and risk of hepatitis B. *Vaccine* 13. *Suppl, 1*, 541-5.
- Hagedorn, H., Dieperink, E., Dingmann, D., et al. (2007). Integrating hepatitis prevention services into a substance use disorder clinic. *Journal of Substance Abuse Treatment*;32:391–398.
- Hagedorn, H., Leighton, T. & Heim, L. (2010). Assessment of a hepatitis educational group for veterans with substance use disorders. *American Journal of Drug Alcohol Abuse*;36, 57–60.
- Hart-Malloy, R., Carrascal, A., DiRienzo, A., Flanigan, C., McClamrock, K., Smith, L. (2012). Hepatitis C virus associated morbidity and mortality in New York State: the current and future burden. Poster. American Public Health Association Conference. San Francisco.
- Harman, J. J. Fisher, J. D., Fisher, W. A. & Amico, K. R. (2006). Information motivation-behavioral skills model of adherence to antiretroviral therapy. *Health Psychology*, 25(4), 462e473. <http://dx.doi.org/10.1037/0278-6133.25.4.462>
- Hauri A, Armstrong G, Hutin Y, (2003). The global burden of disease attributable to contaminated injections is given in health care settings. *International Journal of STD AIDS*, 7, 453-458.
- Hauri, A., Armstrong, G. & Hutin, Y. (2003). The global burden of disease attributable to contaminated injections given in health care settings. *International Journal of STD AIDS*, 7, 453-58.

- Hawkins, C., Christian, B., Ye, J., Nagu, T., Aris, E., Chalamilla, G, et al. (2013). Prevalence of hepatitis B co-infection and response to antiretroviral therapy among HIV-infected patients in Tanzania. *Journal of AIDS*, 27(6), 919–927.
- Heisy-Grove D, Church D, Haney G, DeMaria A. (2011). Enhancing surveillance for hepatitis C through public health informatics. *Public Health Reports*, 126: 13-18.
- Hepatitis Foundation International (2006). Hepatitis. [Cited 12th June 2010]. Available at: www.Hepfi.org/Hepinfo.htm
- Higgins R, (1996): *Approaches to Research: A Handbook for Those Writing Dissertation*; London: Jessica Kingsley.
- Hislop, T.G., et al., (2007a). Hepatitis B knowledge, testing and vaccination levels in Chinese immigrants to British Columbia, Canada. *Canadian Journal of Public Health*, 98(2), 125-129.
- House of Commons Hansard (2005). Debates for 5 December 2005. Immigrant Health Professionals Language requirement. Available at: www.publications.parliament.uk
- Holtzman, D., Holmberg, S. & Tohme, R. (2011). Risk factors for hepatitis C virus infections among young adults – Massachusetts, *MMWR*, 60, 1457.
- Hwang, J.P., C.-H. Huang & Yi, J.K (2008). Knowledge about hepatitis B and predictors of hepatitis B vaccination among Vietnamese American college students. *Journal of American College Health*, 56(4), 377-382.
- Ijaz, H., Waquaruddin, A. & Syed, E. A. (2012). Comparison of Different ICT Kits for HBsAg and Anti HCT Using Gold Standard ELISA. *Pakistan Journal of Medicine Research*, 51(3), 72-76. Online Available at: [http://www.pjmr.org.pk/ICT%20Kits,PJMR-2012%20\(3\),p72-76.pdf](http://www.pjmr.org.pk/ICT%20Kits,PJMR-2012%20(3),p72-76.pdf)
- IOM (2010). (Institute of Medicine). Hepatitis and liver cancer: A National strategy for prevention and control of hepatitis B and C. In: IOM, editor. Washington DC: Institute of Medicine.
- James M.C. (2008). Experimental Studies: Randomization and counterbalancing with SPSS. Randomization Ch. 8 – 1 Online Available: http://ion.uwinnipeg.ca/~clark/research/C08_RAND.pdf
- Jombo, G. I., Egah, D. Z. & Banwat, E. B. (2005). Hepatitis B virus infection in a rural settlement of northern Nigeria. *Niger Journal of Medicine*, 14, 425-428.
- Jonas, M. M. (2003). The Liver and Bile Ducts In, Rudolph C. D., Rudolph A. M., Hosteller M. K et al. (eds) *Rudolph's Pediatrics*. New York: Mc Graw Hill Companies 21st ed, pp. 1497–517.

- Joshi, D., Grady, J., Dieterich, D., Gazzard, B. & Agarwal, K. (2011). Increasing burden of liver disease in patients with HIV infection. *Lancet*, 377(9772), 1198–1209.
- Kaplan, L. A.(2003). *Coping with pressure*. New York: Resen publishing group inc
- Kapoor, R. & Kottilil, S. (2014). Strategies to eliminate HBV infection. *Future Virology*, 9(6), 565–585.
- Kenneth, F. S. & David, A. G. (2002). Blinding in randomized trials: hiding who got what. *The Lancet*, 359(2), 696-700. Available at: http://apps.who.int/rhl/LANCET_696-700.pdf
- Klein SJ, Flanigan CA, Cooper JG, Holtgrave DR, Carrascal AF, Birkhead GS. (2008). Wanted: An effective public health response to hepatitis C virus in the United States. *Journal of Public Health Management Practice*, 14, 471–475
- Konopnicki, D., Mocroft., A, de, W. S., Antunes, F., Ledergerber, B., Katlama, C, et al. (2005). Hepatitis B and HIV: prevalence, AIDS progression, response to highly active antiretroviral therapy and increased mortality in the EuroSIDA cohort. *AIDS*, 19(6), 593–601.
- “Knowledge Is The Best Prevention” Graft n' Arts Project, Second Youth Drug Summit 2001.
- Kruglanski A W and Higgins E T. (2007).Social Psychology. Handbook of basic principles. New York: Guilford Press.
- Larios, S., Masson, C., et al. (2013). Education and counseling in the methadone treatment setting improve knowledge of viral hepatitis. *Journal of Substance Abuse Treatment*, 46(4), 528-531.
- Lassey A, Damale N, Bekoe V, & Klufio C, (2004). Hepatitis C virus seroprevalence among mothers delivering at the Korle-Bu Teaching Hospital, Ghana. *East African Medical Journal*, 18, 198-201.
- Liaw, Y. F., Leung, N., Kao, J. H., Piratvisuth, T., Gane, E, Han, K. H, et al.(2008). Asian-Pacific consensus statement on the management of chronic hepatitis B: a 2008 update. *Hepatology International*, 2(3), 263–283.
- Lok, A. S. & McMahon, B. J. (2009). Chronic hepatitis B: update 2009. AASLD Practice Guideline update. *Hepatology*, 50(3), 1–30.
- Lum, P. J., Ochoa, K. C., Hahn, J. A., Shafer, K. .P, Evans, J. L., Moss, A. R. (2003). Hepatitis B virus immunization among young injection drug users in San Francisco, Calif: The UFO study. *American Journal of Public Health*, 93(6), 919–923.

- Ma, G.X., et al., (2008a). *Knowledge, attitudes, and behaviors of Chinese hepatitis B screening and vaccination*. *American Journal of Health Behaviour*, **32**(2): p. 178-187.
- Ma, G.X., et al.,(2007a). Knowledge, attitudes, and behaviors of hepatitis B screening and vaccination and liver cancer risks among Vietnamese Americans. *Journal Of Health Care For The Poor And Underserved*, **18**(1), 62-73.
- Mahat, G, Scoloveno, M. A., De, L. T. & Frenkel, J. (2008). Preliminary Evidence of an Adolescent HIV/AIDS Peer Education Program. *Journal of Paediatric Nursing*, **23**(5), 358-363. Online Available at: [http://www.pediatricnursing.org/article/S0882-5963\(07\)00444-7/abstract](http://www.pediatricnursing.org/article/S0882-5963(07)00444-7/abstract)
- Majolagbe, O. N., Oladipo, E. K. & Daniel, L. E. (2014). Prevalence and Awareness of Hepatitis B Infection Among Blood Donors in Abubakar Tafawa Balewa University Teaching Hospital (ATBUTH), Bauchi, Nigeria. *International Journal of Multidisciplinary and Current Research*, **2**, 955-960 Available at: <http://ijmcr.com>
- Margolis, H. S., Handsfield, H. H., Jacobs, R. J., et al. (2000). Evaluation of officebased intervention to improve prevention counseling for patients at risk for sexually acquired hepatitis B virus infection. *American Journal of Obstetric Gynecology*; **182**:1–6.
- Martel S, Anderson J, (2002). Decorating the” human canvas”, body art and your patients. *Contemp Pediatr*, **19**, 86-102.
- Martin, L. R., Haskard-Zolneierek, K. B., & DiMatteo, M. R. (2010). *Health behaviour change and treatment adherence: Evidence-based guidelines for improving healthcare*. New York: Oxford University Press.
- Mary S. F, Kathy K., Aul. S., Richard M. M., Andy N., Mijna, H. A., Berthold K. & Alan L. (2013). How much loss to follow-up is acceptable in long-term randomized trials and prospective studies. *Arch Dis Child*, **93**(6), 458-461
- Matthews, G & Robotin, M. B. (2008). All You Wanted to Know About Hepatitis B: A Guide for Primary Care Providers, G. Matthews and M. Robotin, Editors, *Australian Society for HIV Medicine (ASHM)*: Darlinghurst, NSW.
- Mayers L, Judelson D, Moriarty B (2002). Prevalence of body art (body piercing and tattooing) in university undergraduate and incidence of medical complications. *Mayo Clin Proc*, **77**, 29-34.
- McBride, G. (2008). Hepatitis B virus-induced liver cancer in Asian Americans: a preventable disease. *Journal of Natl Cancer Inst*, **100**, 528-529
- McDonald, J. & Jill, G. (2001). Youth Advisory Forum Members, “Youth for Youth: Piecing Together the Peer Education Jigsaw”, Second International Conference on Drugs and Young People, 4-6.

- Medley A, Kennedy C, O'Reilly K, Sweat M. (2009). The effectiveness of peer education interventions for HIV prevention in developing countries: A systematic review and meta-analysis. *Aids Educ Prev*, 21(3), 181-206
- Mellanby, A. R., Rees, J. B., Tripp, J. H. (2000). Peer-led and adult-led school health education: a critical review of available comparative research. *Pub Med*, 15(5),533-545 Online Available at: <https://www.ncbi.nlm.nih.gov/pubmed/11184213>
- Millner V, Eichold B (2001). Body piercing and tattooing perspectives. *Journal of Clinical Nursing Res*, 10, 424-6.
- Misovich, S. J., Martinez, T., Fisher, J. D., Bryan, A., & Catapano, N. (2003). Predicting breast self-examination: A test of the information-motivation-behavioral skills model. *Journal of Applied Social Psychology*, 33(4), 775-790. <http://dx.doi.org/10.1111/j.1559-1816.2003.tb01924.x>
- Monica, C. Robotin (2011). Hepatitis B prevention and control: Lessons from the East and the West. *World Journal of Hepatology*, 3 (2), 31-37 Available at: www.wjgnet.com
- Moore, Z. S., Schaefer, M. K., Thompson, S. C., et al. (2011). Transmission of hepatitis C virus during myocardial perfusion imaging in an outpatient clinic. *American Journal of Cardiology*, 108(1), 126-132.
- Musa, B.M., Bussell, S., MM Borodo, AA Samaila, OL Femi (2015). Prevalence of hepatitis B virus infection in Nigeria, 2000-2013: A systematic review and meta-analysis. *Nigerian Journal of Clinical Practice*, 18(2), 163-172
- Naing, I., Winn, B. N. & Rusli, I. (2006). Practical Issues in Calculating the Sample Size for Prevalence Studies, 9-14.
- National Institute for Health and Clinical Excellence (2006). Chronic Hepatitis B. Available at: www.guidelinecentral.com/.../nation-institute-for-health-and-clinical-Excellence.
- Newman, S., Steed, E., & Mulligan, K. (2008). Chronic physical illness: Self-management and behavioral interventions. Maidenhead, UK: Open University Press.
- Nickell, S., Winter, K., Talarico, J., Bolan, G., Miller, J., McLean, R, et al. (2010). The Adult Hepatitis Vaccine Project --- California, 2007—2008. Morbidity and Mortality Weekly Report. *Atlanta: Centers for Disease Control and Prevention*, 59(17), 514-516.
- Nikolopoulos, G. K., Paraskevis, D., Hatzitheodorou, E., Moschidis, Z., Sypsa, V., Zavitsanos, X., et al. (2009). The impact of hepatitis B virus infection on the progression of AIDS and mortality in HIV-infected individuals: a cohort study and meta-analysis. *Clinical Infectious Disease*, 48(12), 1763–1771.

- Norton, W. E. (2009). Relative efficacy of a pregnancy, STI, or HIV prevention-focused intervention on changing sexual risk behavior among young adults. Unpublished doctoral dissertation. Storrs: University of Connecticut.
- Nyamathi A, et al. (2009). Effects of a nurse-managed program on hepatitis A and B vaccine completion among homeless adults. *Nursing Research*, 58, 13–22.
- Nyamathi A, et al. (2013). The impact of Nursing Intervention on Improving HIV, Hepatitis Knowledge and Mental Health among Homeless Young Adults. *Community Mental Health Journal*, 49(2), 178–184.
- Nyamathi, A., Tyler, D., Sinha, K., et al.(2010). Predictors of hepatitis knowledge improvement among methadone maintained clients enrolled in a hepatitis intervention program. *Journal of Community Health*; 35:423–432.
- Odimayo, M. S., Nwadioha, S. I. & Utoo, P. M. (2015). The level of Awareness of Hepatitis B Viral Infection among a Subset of Makurdi Community in Benue State, Nigeria. *British Microbiology Research Journal*, 7(1), 28-34.
- Odimayo, M. S., Nwokedi, E. O. P., Nwadioha, S. I., Araoye, M. A. (2010). Prevalence of Hepatitis B Seropositivity among adults in Makurdi, Nigeria. *Journal of Medicine and Medical Sciences*, 10(2), 1-5.
- Okochi, K. & Murakami, S. (1968). Observations on Australia Antigen in Japanese. *Vox Sang*, 15, 375 – 85.
- Okpalugo, C. E. & Oguntibeju, O. O. (2008). Prevalence of human immunodeficiency virus and hepatitis B virus in preoperative patients: Potential risk of transmission to health professionals. *Pakistan Journal of Biological Sciences*, 11, 298-301.
- Onofrey S, Church D, Kludt P, DeMaria A, Cranston K, Beckett G, Holmberg S, Ward J, Holtzman D. (2011). Hepatitis C Virus Infection Among Adolescents and Young Adults – Massachusetts, 2002-2009. *MMWR*, 60, 537-541.
- Osborn, C. Y. (2006). Using the IMB model of health behavior change to promote self-management behavior in Puerto Ricans with diabetes. Unpublished doctoral dissertation. Storrs: University of Connecticut.
- Osborn, C. Y., Amico, K. R., Cruz, N., O'Connell, A. A., Perez-Escamilla, R., Kalichman, S. C., et al. (2010). A brief culturally tailored intervention for Puerto Ricans with type 2 diabetes. *Health Education and Behavior*, 37(6), 849-862. <http://dx.doi.org/10.1177/1090198110366004>
- Otegbayo, J. A., Fasola, F. A. & Abja, A. (2003). Prevalence of Hepatitis B surface and e antigens, risk factors for viral acquisition and serum transaminase among blood donors in Ibadan, Nigeria. *Trop Gastroenterol*, 24, 196-197.
- Parent Action on Drugs (2016). Backgrounder: Evidence Basis for Effectiveness of Peer-Led Interventions Selected studies from the literature. Online Available

at <http://parentactionondrugs.org/wp-content/uploads/2016/03/Peer-Ed-Literature-Review-FINAL-2.pdf>

- Parker, R. & Aggleton, P. (2003). HIV and AIDS-related stigma and discrimination: conceptual framework and implications for action. *Journal of Social Science & Medicine*, 57, 13-24.
- Parry, J. (2010). At last a global response to viral hepatitis. *Bulleting of World Health Organ*, 88, 801-802
- Pobee J. O. M. (2006).The Heart of the Matter. Community Profile of Cardiovascular Diseases of a sub- Saharan African Country. Accra: Commercial Associates Ltd.
- Population Reference Bureau (2010). The World's Youth 2010. Washington, D.C.: Population Reference Bureau. Online Available at www.prb.org/pdf/worldsyouth_eng.pdf.
- Population Reference Bureau (2010). The World's Youth 2010. Washington, D.C.: Population Reference Bureau. [Cited 19th August 2010]. Available at: www.prb.org/pdf/worldsyouth_eng.pdf.
- Puoti, M., Spinetti, A., Ghezzi, A., Donato, .F, Zaltron, S., Putzolu, V, et al. (2000). Mortality for liver disease in patients with HIV infection: a cohort study. *Journal of Acquired Immune Deficiency Syndrome*, 24(3), 211–17.
- Rollnick, S., Miller, W. R., & Butler, C. C. (2007). Motivational interviewing in health care: Helping patients change behavior. New York: The Guilford Press.
- Rosner, B. (2010). *Fundamental of Biostatistics*, Chapter 10. pp 416-417 (6th Edition). Available online.
- Sagoe, M., Eastwood, J., Conroy, R., Naicker, S., West, P., Tutt, R. & Plange-Rhule, J. (2002). Lose of health professionals from sub-Saharan Africa: the pivotal role of the UK.
- Saidu, A.Y., Salihu, Y., Umar, A.A., Muhammad, B. S., & Abdullahi, I.(2015). Seroprevalence of Hepatitis B Surface Antigen among Pregnant Women Attending Ante-Natal Clinics in Sokoto Metropolis. *Journal of Nursing and Health Science (IOSR-JNHS)*, 46. Online Available at: www.iosrjournals.orgDOI:10.9790/195904454650 www.iosrjournals.org
- Salmon-Ceron, D., Lewden, C., Morlat, P., Bevilacqua, S., Jouglu, E., Bonnet, F, et al. (2005). Liver disease as a major cause of death among HIV-infected patients: the role of hepatitis C and B viruses and alcohol. *Journal of Hepatology*, 42(6), 799–805.
- Sax, P. E., Zolopa, A., Brar, I., Elion, R., Ortiz, R., Post, F, et al. (2014). Tenofovir alafenamide vs. tenofovir disoproxil fumarate in single tablet regimens for

initial HIV-1 therapy: a randomized phase 2 study. *Journal of Acquired Immune Deficiency Syndrome*, 67(1), 52–58.

Schwarz, et al. (2008). Positive Impact of a Shelter-based Hepatitis B Vaccine Program in Homeless Baltimore Children and Adolescents. *Journal of Urban Health*, 85 (2), 228-238.

Schenker, Y., Fernandez, A., Sudore, R., et al. (2011). Interventions to improve patient comprehension in informed consent for medical and surgical procedures: a systematic review. *Medical Decision Making*;31:151–173.

Seal, K. H. & Edlin, A. (2003). The risk of hepatitis B infection among young injection drug users in San Francisco: opportunities for intervention, *Western European Journal of Medicine*, 172, 16–20.

Seroepidemiological survey of hepatitis B surface antigenaemia in children and adolescents in Ekiti State. *Journal of Public Health Epidemiology*, 5, 11-14.

Shang G, Seed C, Wang F, Nie D, Albert F (2007). Residual risk of transfusion-transmitted viral infections in Shenzhen, China, 2001 through 2004; 47:529-39.

Shah, H. A., et al. (2013). Education provides significant benefits to patients with hepatitis B virus or hepatitis C virus infection: a systematic review. *Clinical Gastroenterology and Hepatology*, 11(8), 922-933.

Shankargonda, P. & Roopas, A. A. (2013). Awareness and risk perception of hepatitis B infection among auxiliary healthcare workers. *Journal of international Society of Preventive Dentistry*, 3(2), 67-71

Shumaker, S. A., Ockene, J. K., & Rieker, K. A. (2009). *The handbook of health behaviour change* (3rd ed.). New York: Springer.

Silverman, D. (2006). *Interpreting Qualitative Data: Methods for Analyzing Talk, Text, and Interaction*. (Third edition). London: Sage.

Smith, E., Atkinson, R. L. & Hilgard, E. R. (2003). *Introduction to Psychology: Australia Belmont, C A: Wad worth/Thomson Learning*, p658-66

Smith JA, Francis TI, Uriri NO. Australian Antigen in Blood donors in Ibadan, Nigeria: Prevalence and Genetic Studies. *Ghana Med J*. 1972; 11: 43 – 49.

Takyi, B.K. (2000). *AIDS-related knowledge and risks and contraceptive practices in Ghana- The early 1990s. African Journal of Reproductive Health*, 4(1), 13-27.

Taylor, V.M., et al., (2000). Hepatitis B knowledge among Vietnamese immigrants: Implications for prevention of hepatocellular carcinoma. *Journal of Cancer Education*, 15(1), 51-55.

- Taylor, V.M., et al., (2005a). Hepatitis B awareness, testing, and knowledge among Vietnamese American men and women. *Journal of Community Health*, **30**(6), 477-490.
- Taylor, V.M., et al., (2006). *Hepatitis B knowledge and practices among Chinese immigrants to the United States*. *Asian Pacific Journal of Cancer Prevention*, **7**(2), 313-317.
- Thio, C. L., Seaberg, E. C., Skolasky, R., Phair, J., Visscher, B., Munoz, A., et al. (2002). HIV-1, hepatitis B virus, and risk of liver-related mortality in the Multicenter Cohort Study (MACS). *Lancet*, **360**(9349), 1921–1926.
- UNFS. (2013). United Nation Fact Sheet on Youth Definition. Online available at: <http://www.un.org/esa/socdev/documents/youth/fact-sheets/youth-definition.pdf>
- UNICEF, (2008). At a Glance: Health indicators of Ghana for the year 2008: Ghana-Statistics. [Cited 15th June 2010]. Available at: http://www.unicef.org/infobycountry/ghana_statistics.html.
- Viral Hepatitis Global Policy (2007) Online Available at www.viralhepatitisglobalpolicyafricanregion.org.
- Wandeler, G., Gsponer, T., Bihl, F., Bernasconi, E., Cavassini, M., Kovari, H.). et al. (2013). Hepatitis B virus infection is associated with impaired immunological recovery during antiretroviral therapy in the Swiss HIV cohort study. *Journal of Infectious Disease*, **208**(9), 1454–1458.
- Weber, R., Sabin, C. A., Friis-Moller, N., Reiss, P., El-Sadr, W. M., Kirk, O, et al. (2006). Liver-related deaths in persons infected with the human immunodeficiency virus: the D:A:D study. *Arch Intern Med*, **166**(15), 1632–1641.
- Weinbaum, C. M., Williams, I., Mast, E. E., Wang, S. A., Finelli, L., Wasley, A., Neitzel, I. S. M. & Ward, J. W. (2008). Recommendations for Identification and Public Health Management of Persons with Chronic Hepatitis B Virus Infection. *MMWR* **57**, 1-20. Available at: <http://www.cdc.gov/Mmwr/preview/mmwrhtml/rr5708a1.htm>
- WHO, (2013). World Health Organization 2013 Report on Hepatitis B Virus Infection.
- WHO. (2009). Global immunization coverage in 2008. Editor: World Health Organization. Available from: URL: http://www.who.int/immunization/newsroom/GID_english.pdf
- WHO. (2009). Hepatitis B vaccines. *Wkly Epidemiol Rec*;84: pp. 405–20.
- Wilson, H. R. (2003). Hepatitis B and you: a patient education resource for pregnant women and new mothers. *Journal of Women's Health*; **12**:437–441.

- World Health Organization (2001). Hepatitis B Surface Antigen Assays: Operational Characteristics Phase 1 Report 1 on Blood Safety and Clinical Technology. Online Available at http://www.who.int/diagnostics_laboratory/evaluations/en/hep_B_rep1.pdf?ua=1
- World Health Organization (2002). Global Report on Hepatitis Infection 2000-2002 Report'.
- World Health Organization (2003). Global Report on Viral Hepatitis Infection.
- World Health Organization (2004). Hepatitis B Surface Antigen Assays: Operational Characteristics Phase 1 Report 2 on Blood Safety and Clinical Technology. Online Available at http://www.who.int/diagnostics_laboratory/evaluations/en/hep_B_rep2.pdf?ua=1
- World Health Organization Report on Hepatitis B Virus (2004) Available at <http://www.who.int/inf-fs/en/fact204.html>
- The World Hepatitis Day (2013). World Hepatitis Day Summary report Online Available at: http://td2.communityresponse.ie/attachments/Summary_report_2013.pdf
- Yant, S. R., Bam, R. A. & Cihlar, T. (2014). Tenofovir alafenamide is not a substrate for renal organic anion transporters (OATs) and does not exhibit OAT-dependent cytotoxicity. *Antiviral Therapy*, 19(7), 687–692.
- Young, P.T. (2008). *Motivation and Emotion*, New York; John Wiley and Sons
- Zhou, Y. H., Wu, C. & Zhuang, H. (2009). Vaccination against hepatitis B: the Chinese experience. *Clinical Medical Journal of England*, 122, 98-102

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- IV. Hussaini Y. A. & Tukur, L. (2013):** Extraction of Neem Oil from Neem tree seed and Testing its effectiveness for the treatment of skin diseases” *Bakalori journal,vol 6 no1 .September, 2013. pp 237 – 27*

Graduation requirements publications:

1. Yakubu, H. A, Lekhraj, R., Normala, B. I., Sherina, M. S., & Zubairu, I. The effectiveness of education intervention program for improving knowledge, attitude and practice related to hepatitis-B infection among non-medical and non-veterinary undergraduate university student in northern Nigeria, a randomized control community trial. Accepted for publication in the IOSR Journal of Dental and Medical Sciences (IOSR-JDMS).
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