

**SPECTRUM OF DISEASE AND DIAGNOSTIC VALUES OF ULTRASOUND IN
INMATES OF A CORRECTIONAL FACILITY IN NIGERIA**Ikpe A. A.*¹, Ani N. E.¹, Odusolu P. E.², Eyang E.³ and Ekpenyong A. E.⁴¹Department of Radiology, University of Calabar Teaching Hospital, Calabar, Nigeria.^{2,3}Obstetrics and Gynaecology, University of Calabar Teaching Hospital, Calabar, Nigeria.⁴Department of Physics, Creighton University, Omaha, USA.***Corresponding Author: Dr. Ikpe A. A.**

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Article Received on 11/07/2017

Article Revised on 31/07/2017

Article Accepted on 21/08/2017

ABSTRACT

Summary: Prisons globally are associated with high medical care needs compared with the general population. In developing Countries such as Nigeria, the prisons have been in deplorable conditions including increase in disease burden among inmates. **Aims/Objectives:** This study is aimed at evaluating the health status of inmates in a prison in South-South Nigeria by examining their blood pressure, body mass index and abdomino-pelvic ultrasound findings. **Materials and Methods:** This was a prospective, descriptive study done in March 2017. The study population was 118 individuals aged 19-70 years encountered during a health outreach to a prison facility. Consent was obtained from the Cross River State Ethical Committee and the inmates themselves before the commencement of this exercise. The abdominal ultrasound scans were carried out by Consultant Radiologists. Frequency tables, histograms and bar charts were used to analyze the data all were analyzed using SPSS 20 INC, Chicago, USA. **Results:** Out of the 118 inmates assessed, males were the majority 74%, females 26%. The highest age group encountered was 30-39 age group with frequency of 46 (40.35%). Systemic Hypertension was recorded in 16 (14.04%), the younger age group was noted to be most affected. Pelvic Inflammatory Disease (9%), fatty liver (4%) and Prostate enlargement (4%) were the commonest findings on ultrasound in the women and men respectively. The commonest clinically diagnosed findings were malaria and Pelvic Inflammatory Disease, 42.3% and 27.1% respectively. **Conclusion:** This is the first report of its kind in this city. Important clinical conditions and abdominal scan findings were malaria, Pelvic Inflammatory Disease, systemic hypertension, fatty liver and prostate enlargement.

KEYWORDS: Prisons, Mobile ultrasound, Abdomino-pelvic study, Calabar, Nigeria.**INTRODUCTION**

Prisons globally are associated with high medical care needs compared with the general population.^[1] In many developing countries including Nigeria, prisons conditions are far from being humane, prisons in Nigeria over the past years have been in deplorable conditions with increase in disease burden among inmates.^[2,3]

According^[4] to world Medical Association (2000)^[4], prisons can be breeding grounds for infection. This could result from common characteristics of Nigeria prison which include overcrowding, lengthy confinement, poorly lit and poorly ventilated. These conditions frequently associated with prisons contribute to the spread of disease and ill-health where these factors are combined with poor hygiene, inadequate nutrition and limited access to adequate health, prison can represent a major public health hazard. This is in line with the assertion of the penal Reform International (2007)^[5] that the prevalence of disease, malnutrition, mental illness and general ill-health among the global prison population

provides overwhelming and incontrovertible evidence that prisons are bad for health. This study therefore aimed at evaluating the health status of inmates in this facility by closely examining their blood pressure. Body mass index, Hemoglobin level and Abdomino-pelvic ultrasound findings. This was done in a bid to determine how these prevalent poor health conditions affect the health of these prison inmates. This was also done to create awareness among inmates of the benefits of maintaining high health standards. Finally, this study served to ascertain the benefits of mobile abdominal ultrasound screening among the inmates especially as no such study has been reported in the past.

MATERIALS AND METHODS

This was a prospective, descriptive study done in March 2017. The study population included 118 individuals aged 19 – 70 years encountered during a health outreach to this facility. Consent was obtained from the authorities of the correctional facility as well as from the ethical committee of the University of Calabar Teaching

Hospital. The individual inmates themselves were educated about the whole exercise before we commenced and we therefore obtained an informed consent from all of them.

The two Mobile ultrasound machines used during this exercise was donated by the Joseph Ukpo Hospital and research Institute with the aim of setting up Mobile Clinics and latter Hospitals with emphasis on the rural/urban settings who do not have adequate access to medicare. Other items donated to set up mobile clinics included two Ambulance vehicles, a medical library, first aids equipments, drugs, clinical thermometers, pulse oximeters, sphygmomanometers, glucometers, urinalysis kits and hemoglobinometers most of which were employed during this outreach.

As at the time of the outreach there were Eight Hundred inmates, and with the time allocated to us One Hundred and Eighteen of them were seen successfully.

With the aid of the detailed proforma, patients' data including personal demographics, clinical history, examination and diagnosis were recorded.

Ultrasound scans were carried out on all participants using DP30, Mindray Mobile Ultrasound scanner and hemoglobin, pulse rates, Blood pressure and BMI estimations were obtained and all data were analyzed using SPSS v. 20 (SPSS Inc. Chicago IL, USA). Frequency tables, histograms and bar charts were used to analyze the data. While the scans were done by Consultant Radiologists, The Laboratory investigations were carried out by resident doctors from the University of Calabar Teaching Hospital. Nurses were employed to obtain pulse rate, blood pressure, and Body mass index as well as document the findings of each of the participants. Pharmacists volunteered to assist in the distribution of drugs and mosquito nets.

RESULTS

One Hundred and Eighteen (118) were assessed. The male to female ratio was 3:1, (Males – 74%) (Females 26%) (Figure 1).

Table I: AGE DISTRIBUTION.

AGE DISTRIBUTION	FREQUENCY	PERCENTAGE (%)
≤19	1	0.88
20-29	44	38.60
30-39	46	40.35
40-49	9	7.89
50-59	8	7.02
60-69	5	4.39
≥70	1	0.88

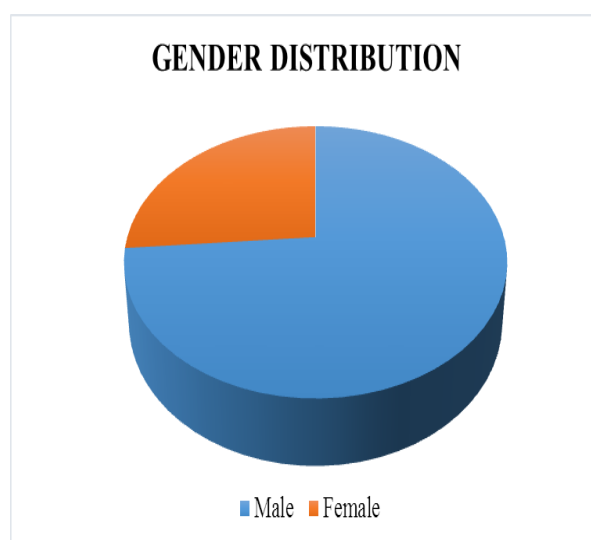
The age ranged between 19 – 70 years (Table1) with 30 – 39 age group being the most prevalent group with a frequency of 46 (40.35%).

Systemic Hypertension was recorded in 16 (14.04%), of them and the younger age group were noted to be most affected (Table II).

None was underweight whereas obesity was recorded in (4) 3.51% of them (Table III).

Pelvic Inflammatory Disease was the commonest ultrasound finding amongst women (8%) and prostate enlargement and fatty liver were commonest among men 4% each (Fig. II).

Malaria and Pelvic Inflammatory Disease were the commonest clinical manifestations with frequency of 42.3% and 22.1% respectively. (Figure III).



Male: Female = 3:1

Figure I.

Table II.

SYSTOLIC BLOOD PRESSURE CATEGORY	AGE RANGE	20-29	30-39	40-49	50-59	60-69	TOTAL	STATISTICS
LOW BLOOD PRESURE (< 80mmHg)		0	0	0	0	0	0	Pearson's R = 0.38, N= 84 P = 0.730
NORMAL (80-120 mmHg)		14	10	3	2	1	30	
PRE HYPERTENSION (120-139mmHg)		15	12	3	3	3	35	
High BP stage 1 (140-159mmHg)		3	3	3	3	1	13	
High BP stage 2 (>160<180mmHg)		3	2	0	0	1	6	
High BP crisis (>180)		0	0	0	0	0	0	

Pearson Moment Correlation – Pearson's R = 0.38, P= 0.730.

Mean Age = 34.43, Standard Deviation = 11.52 (34.43 ± 11.52).

Mean Systolic BP = 129.83 ± 15.46.

Diastolic BP CATEGORY	AGE RANGE	20-29	30-39	40-49	50-59	60-69	TOTAL	STATISTICS
LOW BLOOD PRESURE (< 60mmHg)		0	1	1	0	0	2	Pearson's R = -0.079, N= 84 P = 0.474
NORMAL (60-80 mmHg)		18	23	3	5	1	50	
PRE HYPERTENSION (80-89mmHg)		9	2	1	0	0	12	
High BP stage 1 (90-99mmHg)		4	6	1	1	0	12	
High BP stage 2 (>100<110mmHg)		0	4	2	0	0	7	
High BP crisis (>110)		1	0	0	0	0	1	

Pearson Moment Correlation – Pearson's R = -0.079, P= 0.474

Mean Age = 34.43, Standard Deviation = 11.52 (34.43 ± 11.52)

Mean Diastolic BP = 79.19 ± 11.52

BODY MASS INDEX (BMI)

GROUP		FREQUENCY	PERCENTAGE (%)
Underweight	<18.54	0	0.00
Normal weight	18.5-24.9	26	22.81
Overweight	25-29.9	7	6.14
Obesity	≥30.0	4	3.51
Missing system		77	67.54

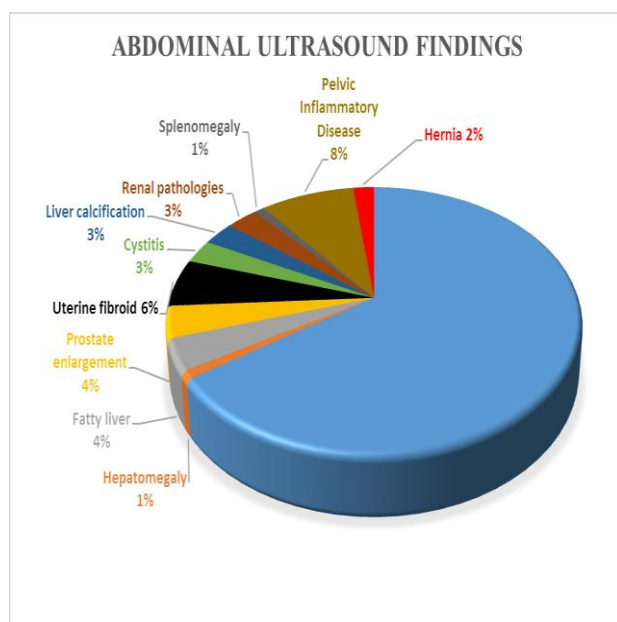


FIGURE II.

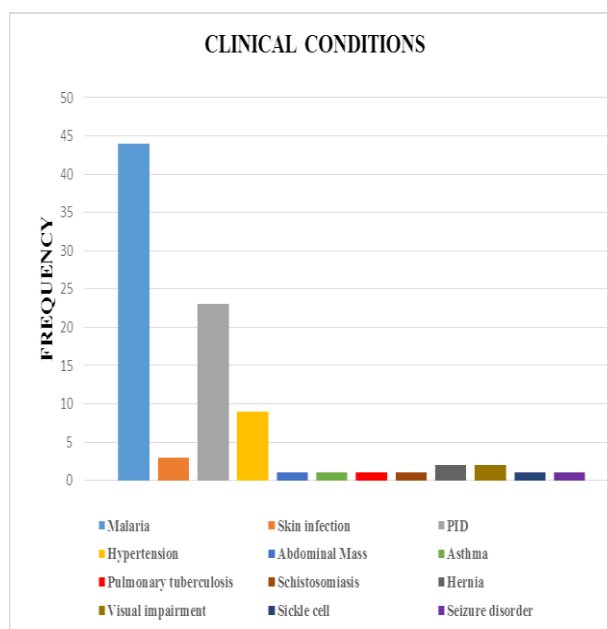


Figure III.

DISCUSSION

The index study revealed that most prevalent age group seen was 30-39 years. This supports findings in other Nigerian prisons. This indicates that majority of inmates are youths and this is also seen globally.^[6,7]

The male/female ratio revealed that the males predominated. This is the trend globally.^[6,7]

The medical facilities in most Nigerian prisons has been described by Ifionu et al (1987)^[8] as deplorable, that there are no standard hospitals, drugs and qualified medical personnel to take care of sick inmates (Ishaka and Akporwa 1987).^[2]

Report by amnesty international (2008)^[9] affirmed that many Nigerian Prisons had small clinics and most of the bigger prisons had ill-equipped hospitals

Tanimu (2010)^[1] revealed a shortage of medical facilities and personnel in Kaduna and Zaria prisons.

These conditions were also noted in the understudied prisons, as a small and under equipped clinic was available, no mosquito nets and infact no patient was admitted there over night because of lack of staff and general poor living conditions such as no windows and no mosquito nets. This explains the very high rate of malaria diagnosed clinically.

The WHO (2007)^[10] also opined that even when clinics and staff were available their health services were not affordable and so that these services be offered free of charge.

In some prisons, inmates are only allowed to visit the clinic after paying a bribe to the warden, those who cannot afford the bribe remained in their cells.^[2,3,9,11]

The findings were not different in the index study and the inmates sought monetary gifts from us to bribe the Clinic staffs for their medications.

We are also aware that they desire money for their personal toiletries, alcohol and illicit drug use for the addicts. All over the world, the number of prisoners have been increasing with majority in the sexually active age group, hence diseases such as HIV, Tuberculosis and viral Hepatitis are more prevalent in prisons than in the communities.^[12,13,14]

This was noted in the index study as pelvic inflammatory disease and genito-urinary tract infections were noted to be of significant number. This is particularly worthy of note because prisons are not closed off worlds, many people including staff, lawyers, social workers, health personnel, the clergy and the family members of inmates enter and leave the prisons daily. The inmates themselves serve short terms and return to their homes and the society. This ensures the possibility of infections

acquired in prisons being transmitted outside very high.^[15,16,17]

In the index study the incidence sexually transmitted infections were likely under reported because of the embarrassment of inmates, disclosing their conditions to medical staff they were just meeting for the first time.

Drugs were dispensed to those that required them and some other drugs left at the clinic to be used when required.

A good number of skin infections and infected gunshot wounds were seen unfortunately sterile dressing were not available at the time but prophylactic and therapeutic anti-biotics was dispensed as deemed appropriate.

Abdomino-pelvic ultrasonography revealed myriads of conditions including liver pathologies such as hepatomegaly, fatty liver and liver calcifications. The causes of these were not apparent but suggestion of fatty liver secondary to alcoholic liver disease and possibly viral hepatitis as these were suggestive based on the clinical information gathered. The liver calcifications were attributed to parasitic infestations.

The kidney pathologies ranged from simple cysts, pyelonephritic changes and hydronephroses from secondary prostate enlargement or urethral stricture.

A good number of scans were noted to be normal and this was quite impressive bearing in mind the lack of physical and mental healthcare obtainable in these penal institutions.

Systemic Hypertension rate was alarming and more so in the younger age group. Previous studies such as^[15,19,20] have reported this trend and a closer look at the possible risk factors is advised in follow up studies.

CONCLUSION

This study sought to assess the health status of inmates in a Nigerian prison. This proved to be a worthy venture as this was first of its kind to be reported in that city. It showed that the well-being of inmates especially health wise is ignored considerably by the health authorities and that individuals or medical groups such as ours can help curb this menace as in the long run lives are being saved whether inside or outside the prisons.

RECOMMENDATIONS

The Health team of University of Calabar, Chapel of Redemption and Joseph Ukpo Health and Research Institute acting as a voice for the many groups that visit the prisons often recommend that the health authorities wake up to their responsibilities. Make laws that should be made and enforce those already in existence.

Non communicable disease prevention such as Hypertension, Diabetes Mellitus and hypertension be

given equal attention just as their communicable disease counterpart such as HIV, Tuberculosis and viral Hepatitis.

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