Nephroblastoma and posterior urethral valves (PUV) had higher prevalence rates among those aged less than five years 61.1% (11/18) and 55.6% (5/9) respectively. The only case of polycystic kidney disease was in an infant but the type was not known.

Table 1: Socio-demographic Parameters of Children

Parameter		Frequency	Percentage
Sex	Male	93	57.4
	Female	69	42.6
Age(years)	0-5	62	38.3
	6-10	40	24.7
	11-15	42	25.9
	>15	18	11.1
Social class	I	4	2.5
	II	20	12.3
	III	28	17.3
	IV	69	42.6
	V	41	25.3
	Total	**162**	**100**

The pattern of diagnosis is as shown in Table 2. The most frequent diagnosis was nephrotic syndrome (38.3%), 15 (21.7%) being steroid resistant while the remaining 78.3% were steroid sensitive. This was followed by acute glomerulonephritis with 14.2%. Polycystic kidney disease occurred in only one male patient (0.6%). Urinary tract infection was twice as frequent in males. HIV associated nephropathy was diagnosed in 2 children (1.2%).

Table 2: Pattern of Childhood Renal Diseases in Uyo, Nigeria

	Number of Patients			
Diagnosis	**Male**	**Female**	**Total**	**Percentage**
Nephrotic Syndrome	37	25	62	38.3
Acute glomerulonephritis	10	13	23	14.2
Nephroblastoma	9	9	18	11.1
Chronic Renal Failure	7	11	18	11.1
Urinary Tract Infection	10	5	15	9.3
Acute Kidney Injury	9	5	14	8.6
Posterior Urethral Valves	9	0	9	5.6
Polycystic Kidney Disease	1	0	1	0.6
HIVAN	1	1	2	1.2
Total	**93**	**69**	**162**	**100.00**

Key: HIVAN (HIV Associated Nephropathy)

The outcome of the paediatric renal diseases as depicted in Table 3 shows that 100 (61.7%) were discharged. There was also a high rate of discharge against medical advice (DAMA), 38 (23.5%). One child absconded, 4 (2.5%) were referred to Obafemi Awolowo University Teaching Hospital for dialysis prior to establishment of dialysis unit in our centre. There was a high overall mortality of 19 (11.7%).

Table 3: Outcome of Paediatric Renal Diseases

Outcome	Frequency	Percentage	Cumulative %
Discharged	100	61.7	61.7
DAMA	38	23.5	85.2
Mortality	19	11.7	96.9
Referred	4	2.5	99.4
Absconded	1	0.6	**100**
Total	**162**	**100**	

Key: DAMA (Discharged Against Medical Advice)

Table 4 further shows that out of the 38 cases of DAMA, 13 (34.2%) had chronic renal failure, 26.3% were nephroblastoma cases and 21.1% (8/38) were patients with nephrotic syndrome. Both patients with HIVAN were DAMA.

Majority of the mortalities were from chronic renal failure secondary to nephrotic syndrome 10 (52.6%), out of which 4 (40%) were steroid resistant cases. There were 5 (26.3%) mortalities from AKI, of which 2 (40.0%) each were due to haemolytic uraemic syndrome (HUS) and herbal intoxication, while the remaining 1 (20.0%) was from severe sepsis. Other causes of mortality were from nephroblastoma and PUV which contributed 3 (15.8%) and 1 (5.3%) respectively. They presented when moribund and died before any definitive therapeutic intervention could be made.

Mortality was slightly higher in females, 10 (14.5%) compared with 9 (8.1%) in males (P=0.23). Mortality in relation to age, was lower in the under-fives, 8.1% (5/62) compared to 14.0% (14/100) in those >5years (p=0.28). From same table, there were no hospital mortalities from acute glomerulonephritis, urinary tract infection, polycystic kidney disease and HIVAN.

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Some limitations of the ANC sentinel survey system used in Nigeria are (a) no figures for men, children and the elderly (b) most of the surveyed women were married (96.4%), leaving out the unmarried (c) 87.9% had one form of education or the other, placing the presumed much larger uneducated subset of the population outside the zone of testing.[1] In addition, the WHO guidelines acknowledge that antenatal clinic surveillance does not provide information about HIV prevalence in men.[7] These limitations do not occur to the same extent in the trauma patient population, rendering this group of patients suitable for more accurate HIV survey estimates.

The idea of increasing the accuracy of HIV survey estimates was addressed in China, by the inclusion of HIV surveys in national population surveys.[7] This may be difficult in resource constrained settings like Nigeria, hence the need to consider subsets that are more representative of the population, like the trauma patient subset.

As a means of increasing the HIV screening of patients and fostering earlier detection of HIV infection, the Centers for Disease Control and Prevention (CDC) in 2006, published revised recommendations for HIV testing of adults, adolescents and pregnant women in health care settings[8]. These recommendations highlight Opt-out testing, defined as "Performing HIV screening after notifying the patient that 1) the test will be performed and 2) the patient may elect to decline or defer testing. Assent is inferred unless the patient declines testing", as the basic recommendation for HIV screening in healthcare settings in the United States. Haukoos *et al.*[9] in 2010 found that non-targeted HIV screening is associated with a modest increase in the case detection of HIV patients, when incorporated into routine emergency department (ED) processes and these processes remain largely unchanged in the normal care of patients.[9] However, his study found that 21% of patients either opted out or were opted out by ED personnel. Studies by Brown *et al.*[10] and White *et al.*[11] yielded similar Opt-out figures. Thus the Opt-out method may not be satisfactory for the purpose of prevalence studies.

The National Policy on HIV/AIDS of Nigeria, 2009, requires pre-HIV test counseling.[12]

LIMITATIONS

A possible limitation to using trauma patients for a sentinel study is access of patients to trauma centers. Some limitations of this study are the convenience sample and the small sample size. These do not detract from the main message of this work because it was a process study. The aim was to identify the hurdles in the way of carrying out HIV testing in an accident and emergency and by comparing these to the Nigerian HIV sentinel survey, explore the option of using trauma patients as a representative supplementary subset for estimating national HIV seroprevalence.

CONCLUSION

In conclusion, despite the limitations of this study, it underpins the option and advantages of using trauma patients for the Nigeria National seroprevalence survey. During the survey process, anonymous unlinked samples can be tested using the ethical cover of the national sentinel survey. A formal pilot study on the use of patients in the Accident and Emergency for HIV sentinel survey purposes will be useful, to look into critical issues like the resources required, the convenience of the process and the authenticity of the data obtained. Intuitively however, it appears that this subset of patients are not likely to pose a greater difficulty than those in the ANC and will be more representative of the Nigerian population.

Conflict of Interest

The authors declare no conflict of interest.

Dissemination of Results

The results of this study were presented at a Nigerian Association of Surgeons conference in Uyo, Akwa Ibom State in 2012.

Author Contribution

TE Nottidge conceived the original idea, analysed the data, prepared the manuscript. UA Utam collected the data, analysed the data, made significant contributions to the content of the manuscript. Both authors approved the version to be published and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

Table 4: Outcome of Renal Diseases in Relation to Diagnosis

	Outcome					
Diagnosis	**Discharged**	**DAMA**	**Absconded**	**Dead**	**Referred**	**Total**
Nephrotic Syndrome	43	8	0	10	1	62
Acute Glomerulonephritis	21	1	1	0	0	23
Nephroblastoma	5	10	0	3	0	18
Chronic Renal Failure	4	13	0	-	1	18
Urinary Tract Infection	14	1	0	0	0	15
Acute Kidney Injury	6	2	0	5	1	14
Posterior Urethral Valves	6	1	0	1	1	9
Polycystic Kidney Disease	1	0	0	0	0	1
HIVAN	0	2	0	0	0	2
Total	**100**	**38**	**1**	**19**	**4**	**162**

Key: HIVAN : HIV Associated Nephropathy

Table 5 shows the outcome in terms of requirement for dialysis. Seven (26.9%) of the 26 patients who required dialysis could not initiate any sessions. Mortality occurred in 8 (50%) of those who had haemodialysis while the 2 (66.7%) who had peritoneal dialysis recovered normal renal function and were discharged.

Nephrotic syndrome patients formed the majority of those on follow-up. About 15 (34.9%), of them were still in care after 2 years of discharge. Four of them had relapses and one, a frequent-relapser, is still in care.

Table 5: Outcome of Renal Patients in Relation to Dialysis

Outcome	**Not feasible**	**Haemodialysis**	**Peritoneal dialysis**	**Dialysis not needed**	**Total**
Discharged	0	1	2	97	100
DAMA	5	5	1	27	38
Absconded	0	0	0	1	1
Referred	1	2	0	1	4
Died	1	8	0	10	19
Total	**7**	**16**	**3**	**136**	**162**

Key: DAMA (Discharged Against Medical Advice)

DISCUSSION

Renal diseases in children represent a small but very important proportion of hospitalised children. Our overall prevalence rate of 3.1% is slightly higher than 2.9% reported from Jos, north-central Nigeria[2] and 3.0% from another African country, Libya[4]. In contrast, higher values were reported from other Nigerian studies in Lagos 3.9%,[6] Enugu 4.0%,[14] Benin-City 4.5%.[3] The Benin-City prevalence which is the highest in the series may probably be due to the large contribution from urinary tract infections, a very common paediatric illness that contributed 32.8% of the cases compared to 9.3% in our study. Again the other centres are generally larger than ours and may have a greater catchment area being referral centres. Our low contribution from UTI could also be due to missed diagnosis, largely from indiscriminate use of antibiotics prior to presentation and use of antibiotics in treatment of febrile children who could not pay for urine cultures.

The higher prevalence in males was also reported by other authors[1,6] who documented an overall significant male preponderance, as well as a male predominance from nephrotic syndrome, Acute glomerulonephritis (AGN), and expectedly posterior urethral valves (PUV). The larger percentage of the under-five age range could be explained by the contributions of congenital renal diseases like nephroblastoma, PUV and polycystic kidney disease.

Nephrotic syndrome, as our most prevalent diagnosis (38.3%), followed by AGN (14.2%)

were reported from previous studies.[3,6,14-16] A reverse spectrum of higher AGN prevalence has been reported in northern Nigerian centres[2,17]. Factors such as low standard of personal hygiene and environmental sanitation as contributors to these trends have been documented.[18]

We noted a high DAMA rate of 23.5% but reports of DAMA exclusively among paediatric renal patients were not available for comparison. However, much lower reports of 1.5% and 1.8% were seen among children hospitalised for various diagnoses.[19,20] Socio-economic challenges were the most important reasons proffered for not staying on for proper discharge. Almost all our DAMA cases were due to inability to pay for dialysis which agrees with another documentation that 26.6% of DAMA were due to lack of funds.[21]

The overall mortality of 11.7% was a high frequency outcome but we noted a dearth of information for comparison because previous studies reported more of mortality from specific childhood renal diseases.[2,3,14,15,17] A higher overall mortality rate of 17.7% was reported from Lagos University Teaching Hospital (LUTH),[6] a retrospective study that had only 66.7% documentation of outcome. A lower rate of 6.7% was however reported from Sudan[1]. Adeyokunnu *et al,*[22] in a study of 22,255 paediatric admissions at University College Hospital, Ibadan, reported a zero mortality outcome in the under-five children with renal diseases but renal related mortality ranked third in 5-15years age group. Similarly, Lesi *et al.*[23] In a 20-year review of mortality pattern in children's emergency room of LUTH, Lagos, had no specific renal mortality. There may probably have been missed cases of renal deaths being counted among unidentified causes of death, labelled as "others" since those were retrospective studies.

We recorded our greatest mortality from nephrotic syndrome 10 (52.6%). Eight (12.9%) others, already moribund, were DAMA which probably would have increased the mortality if they stayed on. This contrasts the lower contribution of 17.4% from nephrotic syndrome in the LUTH study.[6]

AKI contributed 26.3% of our renal mortalities which is lower than 42.9% and 46.2% from mid-western[3] and south-western[5] Nigeria respectively and 41.5% reported from India. Our lower AKI mortality rate may be due to some of the children being old enough to utilise haemodialysis, centre policy of waivers being granted for emergency dialysis to only AKI patients, and the availability and affordability of dialysate for 2 of those who had peritoneal dialysis. Again, 14.3% (2/14) were DAMA in a clinically critical state. Another factor could be that some of our survivors were those who presented early. A high rate of late presentation was said to have contributed to the high mortality of 41.5% in Indian children despite 100% dialysis uptake[24]. The dual challenge of late presentation and inability to access dialysis were the major risk factors for AKI mortality from the other Nigerian studies.[3,5] In contrast, Libya documented an overall mortality of <1% among post neonatal children with AKI.[4] The good outcome could have been due to considerable number of specialist personnel and access to technological advancement for management of paediatric renal diseases. Also, a good immediate outcome of 95% from American paediatric patients who required intensive unit care for AKI was reported by Hui-Sickle *et al*.[7]

Haemolytic uraemic syndrome as the commonest cause of AKI (35.7%) in the present study compares favourably with reports by Bhimma *et al.* [25] of HUS in epidemic proportions but contrasts with reports from Nigeria[5] and other African countries.[26-28] The Olowu study,[5] conducted about two decades ago showed *Plasmodium falciparum* malaria infection as the commonest cause of AKI. Also, Anochie and Eke[29] reported gastroenteritis and malaria as the causes of AKI in their series a decade ago. It seems that there may be a change in the trend of AKI aetiology in the developing world from pre renal causes to reflect the pattern in the developed world. This may show the gains of the WHO strategies for management of common childhood illnesses like malaria and diarrhoeal diseases.

Dialysis was the only renal replacement therapy we could offer to our patients with End Stage Renal Disease but even this was out of the financial reach of many. Seven (26.9%) of patients who needed dialysis could not access it because of financial constraints. We also recorded 50% mortality in those who accessed haemodialysis mainly because therapy was only initiated when patients were moribund and others who initiated the therapy could not sustain it because of the high cost.

Almost all our patients (88.9%) had haemodialysis due to lack of dialysate for younger children who would have benefitted

RESULTS

The demographic data and HIV positivity: Data are summarised in table 1.

Table 1: Showing Summary Data for the Trauma Patients

	HIV positive	HIV Negative	Total
Number of participants	5	95	100
Age range	23-42 years	5-75 years	5 – 75 years
Mean age	-	-	32.74 (±14.08) years
Median age	-	-	30 years
Sex			
Male	5	82	87
Female	-	13	13

The major injury in 30 of these patients was fracture(s); 27 of them had head injury; 12 had integument injury; 4 had dislocations; 4 had abdominal injuries and 9 had other injuries. In 14 cases, the injury was not noted.

Some of the reasons for inability to have pre-test counseling, were the patients condition-unconscious, language barrier etc. In most cases however, it was due to unavailability of trained counselors. There was no patient in whom obtaining the blood sample interfered with resuscitating the patient.

DISCUSSION

While the Nigeria National HIV prevalence in 2008 of 4.6%[1] is comparable to the 5% prevalence obtained in this study, the information derived from this study is more from the procedures used than from the raw data obtained, due to the small convenience sample size. In a similar study carried out in 1999 on 312 emergency department patients at Lagos University Teaching Hospital, Nigeria, Esan noted an HIV prevalence of 5.77%.[2]

Our study was restricted to trauma patients because this factor cuts across all ages and occurs in both genders. However, there is a higher prevalence of injuries in males and this accounts for the zero prevalence in females in this study - the small sample size has skewed the data in favour of males. In addition, some non-trauma emergency department patients are admitted for complications due to AIDS and this subset could bias the result. However, the HIV sentinel study conducted by Houston et al in the United States was carried out on all Emergency Department (ED) patients, using blood left over from a complete blood count.[3] They found an HIV seroprevalence of 1%.

The major difficulties noted in obtaining blood for HIV-antibody tests, absence of trained counsellors to carry out pre-HIV test counselling and a refusal to give informed consent for the sample to be taken, can be overcome in the approved procedure for a sentinel study, because counseling and individual consent are not required. In addition, standard blood samples obtained as part of routine A & E care can be used for HIV tests, which would facilitate obtaining anonymous samples, as is done in ANC based HIV sentinel surveys.

The Nigeria National study of HIV prevalence in 2010 utilized data from all women attending ANC for the first time for a confirmed pregnancy[1]. Previous surveys sampled those aged from 15-49 years. After a mandatory syphilis test, an anonymous unlinked serum sample was collected from the left over blood and sent for HIV testing.

Our study required pre-test counseling, because the hospital HIV testing laboratory protocol had no allowance for anonymous unlinked blood samples. This made the testing process cumbersome, because of the inadequacy of trained pre-HIV test counselors, their non-availability outside 8am to 4pm etc. Thus many patients were excluded from this study, due to not having received pre-test counseling. This is an experience shared by others.[3] Baraff *et al.* succeeded in using anonymous samples in an Emergency department-based HIV prevalence study[5], finding a 2% prevalence of HIV among 100 trauma patients. Arbelaez *et al.* noted significant barriers to routine HIV testing in the ED, from the perspective of the care providers, to be inadequate time, inadequate resources and concerns regarding provision of follow-up care.[6]

Short Communication

Recommended - the use of Trauma Patients Presenting to an Accident and Emergency, for the Nigeria National Seroprevalence Survey

***Nottidge TE[1], Utam AU[2]**

ABSTRACT

This study was carried out to structure the processes involved in obtaining HIV prevalence data from trauma patients and thus explore the option of using this subset of patients as an additional cohort to the routine use of antenatal patients, for Nigerian National HIV prevalence estimates. Trauma patients presenting to the Accident and Emergency (A&E) unit of the University of Uyo Teaching Hospital who met the inclusion criteria, were enrolled into this cross-sectional study. The type of major injury was noted in most of the patients and the difficulties in obtaining blood samples for HIV antibody tests were enumerated. The process of obtaining the data was contrasted with the National HIV Antenatal care survey. There were 100 patients from whom blood samples were obtained for HIV antibody tests, from October to December 2008 and the HIV prevalence was 5%. The major inury in 30% of the patients was fracture(s), while 27% of them had head injury. The major difficulty with obtaining blood samples for HIV antibody tests were a refusal of the patient to give consent, and the inability to conduct pre-HIV test counseling due to the lack of trained counselors. The major difficulties noted with obtaining blood for HIV tests can be overcome in a sentinel study, in which individual consent and pre-HIV test counseling are not required. Trauma patients are a reasonable subset to be further explored as an additional cohort for the comprehensive determination of the Nigeria National HIV prevalence.

Keywords: ***Accident, Emergency, HIV, Nigeria, Prevalence, Survey, Trauma*.**

INTRODUCTION

The current method for determining the Nigerian National HIV prevalence uses data obtained from women attending Antenatal Care (ANC).[1] This method has several drawbacks, due to the use of a restricted gender based sample as a determinant of a population index. This study was carried out to determine the burden of HIV in trauma patients presenting to the accident and emergency (A&E) of the University of Uyo Teaching Hospital (UUTH) and consider the option of extrapolating prevalence data obtained by this means at national level, to the entire population, by comparing the specifics of this process with that of the National ANC survey. This study therefore devolves more on the process aspect than the trauma patient data obtained.

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METHODS

After obtaining ethical approval from the Institutional Review Board of the Hospital, a convenience sample of consecutive patients presenting to the UUTH A & E from October to December 2008 were given pre-HIV test counseling and those who consented, had blood samples taken for HIV screening with Determine™ kits (Inverness Medical, 2008). A dual test was done on all samples and discordant samples had a third (tie breaker) test, as per the protocol in use by IHVN (Institute of Human Virology Nigeria), representing PEPFAR (The United States President's Emergency Plan for AIDS Relief).

Patients with a positive test were enrolled in the UUTH HIV program, which was run by the IHVN - a subsidiary of PEPFAR - USA.

Patients who did not give consent and those who were unable to have pre-test counseling, were excluded from the study.

from peritoneal dialysis. This contrasts with the experience of Kandoth *et al,*[24] where the overwhelming majority of children were treated with peritoneal dialysis. Only 3 of our patients could have peritoneal dialysis and 2 of them had immediate complete recovery.

We had immediate good outcome, without any mortalities, for specific cases like UTI and AGN. The zero mortality from AGN agrees with previous studies[4,23,24], but contrasts with those who documented mortalities from AGN: 1.0% from Calabar,[30] 1.8% from Enugu,[14] and 6.0% from Benin-City.[3] The good outcome with our AGN patients could probably be due to vigilance for and meticulous management of complications of AGN which are contributors of good outcome. The case that was complicated with AKI was promptly diagnosed and had good response to haemodialysis with full recovery of renal function. Another case with congestive cardiac failure (CCF) responded to conservative management with oxygen, diuretics and digoxin.

Only few of our discharged patients, mainly those with nephrotic syndrome, continued with follow-up. It is therefore difficult to report on long-term outcome as immediate recovery from acute kidney diseases in children may not guarantee normal kidney function in adult life.

CONCLUSION

The outcome of paediatric renal diseases shows a high mortality rate. A large proportion of the patients were discharged against medical advice mainly because of the cost implication of their treatment. We recommend that the cost of renal replacement therapy, especially dialysis, should be augmented by government to reduce the high rate of discharges against medical advice and mortality from paediatric renal diseases.

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