THE BURDEN OF HEPATITIS C VIRUS INFECTION AND ACCESS TO TREATMENT AMONG RURAL DWELLERS IN A NORTH CENTRAL NIGERIA

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Abstract
Hepatitis C virus infection is a public health disease but the efforts to control it have not fully integrated indigent rural dwellers. This study explores the burden of the disease in Jengre, a rural population in Nigeria. It is a mixed retrospective and qualitative study. Data on 1,339 persons who received HCV testing in Jengre SDA Hospital (over a one year period) was collated and analyzed. All 7 healthcare providers in the hospital were recruited into a focused group discussion on hepatitis C treatment and their experiences in the hospital.
A prevalence of 18.4% was obtained and 11.7% among apparently healthy individuals. The prevalence of hepatitis C in this study is among the highest in the world and there is a total absence of treatment available to those who are infected. This leaves the patients helpless and portends a grave danger to the realization of international hepatitis C elimination goals.

Keywords
Hepatitis, Nigeria, epidemiology, prevalence, HCV

Conflict of Interest
The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Introduction
Hepatitis C is one of the most important hepatotrophic viruses that infect humans. It is known to cause chronic liver disease including cirrhosis and hepatocellular carcinoma. The risk of chronic liver disease from hepatitis C virus infection is between 5 and 25%. The ability of this disease to produce such devastating complications, and the fact that it can be transmitted from human to human, makes it imperative for the world to pay more attention wherever it occurs, for the sake of global health.

The prevalence of hepatitis C infection is highest in the low and middle income countries of the world. In Africa, the prevalence is highest in Egypt at 17% while in Nigeria, it is 8%. Most other countries of Africa have prevalence rates of 5% or lower but in the developed world, prevalence rates hardly exceed 3%. The factors that are responsible for the high rates of hepatitis C infection in the developing world include unsafe injection usage, intravenous drug abuse, unprotected sexual intercourse, transfusion of unscreened blood and blood products, tattooing, unsterilized barber practices and poor infection controls.

The problem is compounded in the developing

countries by the high cost of obtaining treatment, lack of access to the medications especially in the sub-urban and rural settings, poor health financing systems and pervasive poverty among the people. It leaves this set of individuals almost at the mercy of the natural course of the illness.

In the past, the major problem with the treatment of hepatitis C had been the absence of reliable medications and the extended period of time needed to take the drugs. These days, with the advent of the direct acting antiviral agents, the treatment has a success rate of over 90% and only about 12 weeks is needed to achieve cure. This has improved health outcomes in the developed world but financing and availability has remained the bane in Africa and the developing world. The situation is likely to be worse in the villages and rural settings of tropical Africa where the access to healthcare generally is poor and national health financing schemes invisible. This gives an idea on the magnitude of the task before the World Health Organization in eliminating hepatitis C infection by 2030 and the direction she needs to go towards achieving this laudable goal.

This research therefore seeks to explore the peculiar situation of the HCV victim in the rural settings of Nigeria. It aims to determine the burden of the disease among these rural dwellers and their access to disease-specific treatment. This will bring to the fore the actual situation among the hardest to reach populations and hopefully direct efforts more purposefully towards eliminating hepatitis C infection.

Materials and Methods

The study was a mixed quantitative/qualitative study where a retrospective study was carried out and then followed by a Focused Group Discussion (FGD) with the healthcare providers of the hospital. It was carried out in Seventh-day Adventist Hospital, Jengre. It is a secondary level facility and is the major hospital serving the village of Jengre and surrounding settlements. Jengre is a village in Plateau State, central Nigeria, which is about 60 km northeast of Jos, the state capital. It is a rural setting located at 10.30^0N and 8.78^0E with a population of about 6,000. The inhabitants of Jengre are predominantly small scale farmers with little or no education.

Data from a total of 1,339 subjects were included in the study. It involved all patients who had HCV testing in the hospital over a one-year period from April, 2017 to April, 2018. The FGD had 7 participants involving all the clinicians (3 doctors and 4 nurses) who see the patients in the hospital.

At the initial stage of the study, data was accessed from the hospital laboratories on all individuals who had HCV testing. Their medical records were then traced and information on outcome of the testing and primary healthcare providers in the subsequent treatment received relating to HCV were obtained. All these were filled into a pretested proforma.

All doctors and nurses working full time in the hospital at the time, after providing written informed consent, were then engaged in a FGD about their patients with HCV, treatment offered, treatment received and eventual outcomes. The findings were summarized together.

HCV testing in the hospital laboratory utilized Agary® immunochromatographic rapid test kit with reported sensitivity and specificity of 99.4% and 100% respectively. Data obtained were analysed using spread sheets and Epi info 7.1. Approval for the research was obtained from the ethical review board of the hospital. Data pertaining to patient's names, address and hospital numbers were excluded to maintain anonymity.

Results

Data from 1339 subjects were analysed and the socio-demographic distributions are as illustrated in Table 1;
Table 1: Socio-demographic distribution of tested subjects.

Subject Characteristics	
Age	
Less than 18 years	11(0.8%)
Greater than 18 years	1328(99.2%)
Sex	
Male	468(35.0%)
Female	871(65.0%)
Reason for testing	
Ill health	616(54.0%)
Blood donors	723(46.0%)

The prevalence of HCV in the study was 18.4% while among the blood donors (healthy individuals) only, it was 11.7%. None of the subjects was found to have received HCV treatment.
Table 2: Prevalence of HCV

	HCV Prevalence	
	AntiHCV Positive	**AntiHCV Negative**
Cumulative	247 (18.4%)	1092 (81.6%)
Subjects who were ;		
Ill	175 (24.2%)	548 (75.8%)
Healthy (Blood donors)	72 (11.7%)	544 (88.3%)
Age		
Less than 18 years	2 (18.2%)	9 (81.8%)
Greater than 18 years	245 (18.4%)	1083 (81.6%)
Sex		
Male	135(15.5%)	736(84.5%)
Female	112(23.9%)	356(76.1%)

Qualitative Assessment

1. Prevalence of HCV in the locality

One of the respondents noted that he encounters more HCV positive patients in Jengre than elsewhere in the course of his practice. It was however a subjective submission as he had not objectively investigated the phenomenon. All others did not observe any significant difference in prevalence of HCV in Jengre compared to other parts of the country where they worked in the past.

2. Knowledge of existence of treatment

All the participants agreed that there was treatment for HCV and identified Jos University Teaching Hospital (JUTH) as the nearest location where patients could have access to both the hepatologist and HCV treatment.

3. Access to Treatment for HCV patients

The respondents were unanimous about a complete absence of treatment in the locality and the inability of the patients to get to JUTH when referred. They cited poverty, out-of-pocket expenditure, poor knowledge and the apparent healthy appearance of

the patients as factors that militated against access to treatment.

4.Experience with treated patients

None of the respondents had ever provided therapy or seen a patient in Jengre who had accessed HCV treatment in the past.

Discussion

The prevalence of HCV in the population studied was 18.4%. This is more than twice the reported prevalence of 8% in Nigeria indicating a more dire situation in Jengre than the rest of the country. This figure is among the highest reported worldwide. This could be linked to the existing risk factors in the population including use of unsterilized sharps, transfusion of unscreened blood, poor healthcare infrastructure and unprotected sexual intercourse which are all likely to be pervasive in this population. One possible factor for the excessively high infection rate in the study participants might be that it is a hospital-based study but analysis of the apparently healthy blood donors from the same community indicate a prevalence of 11.7%. This figure is still much higher than the general Nigerian prevalence indicating a larger burden of the disease in this rural population compared to the rest of the country and continent.

It is unfortunate that the prevalence of HCV infection in Jengre is so high but the more disturbing fact is the near total absence of access to treatment in that locality. Besides the fact that the people will continue to suffer unmitigated HCV-related morbidity and mortality, the disease itself will likely remain a major public health problem as these untreated individuals will remain reservoirs for perpetual worldwide propagation. This threatens global efforts at HCV control.

It is therefore recommended that international efforts to eliminate viral hepatitis as a public health concern should include the often forgotten rural populations of Nigeria and the developing world. Our study have shown that they have a very high burden and yet do not have access to needed therapy. Access to HCV therapy should therefore, be improved as this will go a long way towards actualizing the 2030 sustainable development goal of hepatitis control.

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