Original Article

Health Status of Persons with Hemophilia: A Pilot Survey from a Resource-Constrained Country

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Abstract

Background: Most resource-poor countries are yet to develop standard hemophilia treatment center (HTC) despite improved outcome of health status of persons with hemophilia (PWH). **Aim:** This study aimed to evaluate the health status of PWH in Nigeria. **Methodology:** In this descriptive, cross-sectional study, modified prevalidated and pretested questionnaire (National health and Nutrition examination survey (NHANES) 2013 Health Status questionnaire (HSQ)) was consecutively administered to consenting PWH (pediatric and adult) attending the 2018 Annual General Meeting of the Haemophilia Foundation of Nigeria. The study's measurable outcome variables were calculated health status and its determinants. Association between the outcome variables and clinical characteristics of PWH was done using SPSS software version 22, and $P < 0.05$ was considered statistically significant. **Results:** Of the 36 PWH who participated in the survey, 50% had good health status, 38.9% had poor health status, while only 11.1% had excellent health status. A majority (88.9%) had access to HTC with <6 consultations in the past year. Nearly 47.2% were hospitalized for disease-related problem in the past year. There was nonsignificant difference between health status and disease type ($P = 0.751$) and severity ($P = 0.086$), treatment plan (0.496), type of treatment facility ($P = 0.152$), and access to a doctor ($P = 0.67$). **Conclusion:** Several PWH in resource-poor settings still suffer serious morbidity that impacts negatively on their health status. More robust (multicenter) research is needed to ascertain the true picture of health status of PWH in resource-poor countries.

Keywords: Hemophilia, health status, resource-poor countries

Introduction

Hemophilia is a life-long bleeding disorder which is potentially disabling, depending on the bleeding phenotype of the person. It is classified as mild, moderate, or severe depending on the specific plasma factor levels. Persons with severe hemophilia are prone to repeated and spontaneous bleeds which may occur at an early age, whereas those with mild forms hardly bleed without significant trauma.[1,2] Symptoms manifest as bleeding into the muscles, joints, body cavity, as well as postsurgical bleeds.[3] Mucocutaneous and intracranial bleeds are not uncommon, in severe diseases.[4] These bleeding symptoms invariably determine the health status of persons with hemophilia (PWH). Other factors that may influence their health status include the availability and accessibility of factor replacement therapy, presence of complications of the disease and its treatment, access to care including specific and adjunct care, as well as how the PWH handles his/her condition.[5-7]

The management of hemophilia involves the prophylactic or on-demand replacement of the deficient factors, factor (F) VIII in the case of hemophilia A and FIX in the case of hemophilia B, effective in reducing disease-related complications.[8] The hematologist, nurse, physiotherapist, laboratory scientist, and the mental health specialist form the core team of a hemophilia treatment center (HTC). With the inclusion of the dentist, gynecologist, geneticist, orthopedic surgeon, and chronic pain specialist, a comprehensive team is formed.[9,10] Managing a PWH is of high economic impact and not without its challenges.[11,12] It involves a degree of harmony between the team members of a HTC, PWH, as well as his/her family. A quality care when offered, for instance,

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through a comprehensive HTC has been shown to improve the health status of PWH. Such quality care is yet to be achieved in resource-poor countries. The World Federation of Haemophilia (WFH) through some of its programs, such as Global for Alliance Programme,[13] Cornerstone project,[14] and, more recently, the World Humanitarian Programme[15] have tried to "bridge the gap" between resource-poor countries and developed countries in hemophilia management through capacity building, increasing awareness, and improving access to clotting factor concentrate (CFC). These projects have impacted on the health status of PWH in resource-poor countries. Assessing the health status of PWH could be an indicator of the impact of these programs. This article aims to evaluate the health status of PWH in a resource-constrained setting.

Methodology

In this pilot survey, modified prevalidated pretested questionnaire (NHANES Health Status questionnaire (HSQ)) was consecutively administered to PWH (pediatric and adult) attending the 2018 Annual General Meeting of Haemophilia Foundation of Nigeria (HFN). The HFN is a nongovernmental organization founded 13 years ago whose aim is to represent every Nigerian citizen with bleeding disorder. The organization has supported, currently, a total of 14 treatment centers nationwide by providing treatment to PWH and training health-care professionals through her affiliation with the WFH.

The questionnaire is in two sections. The first section sought information on sociodemographics of participants including the age, age at diagnosis, type of disease, baseline factor level, severity, treatment plan, and presence of target joints and arthropathy. Data on treatment facility used, access and frequency to HTC, doctor, and mental health professional, as well as frequency of admissions for disease-related cause were retrieved using the second section. Health status scoring was done for each participant as follows: presence of joint disease was scored 1 and absence of joint disease was scored 0; target joint involvement was scored 0 if absent and 1 when present; hospital visits/medical consultations in the last 1 year were scored 0 for <3, 1 for 3–6, 2 for 7–12, and 3 for >12; and hospital admissions in the last 1 year were scored 0 for <3, 1 for 3–5, 2 for 6–10, and 3 for >10 admissions. Information gathered was used to calculate the individual health status. Gross score ≤1 was considered excellent, 2–3 as good; 4–6 as poor; and >6 as very poor.

Measurable outcome variables were calculated for health status and its determinants. Association between the outcome variables and clinical characteristics of PWH was done using SPSS software version 22 (SPSS Inc., Chicago, Illinois, USA), and $P < 0.05$ was considered statistically significant.

Ethical approval was obtained from the Institutional Ethics Committee of University of Nigeria Teaching hospital and ethics unit of HFN. Informed consent was obtained from the attendees and their caregivers.

Statistical analysis

Statistical analysis was carried out using the IBM SPSS program version 22. Descriptive data were shown as mean ± standard deviation and percentages. Chi-square analysis was used to establish any association between the clinicopathological characteristics of the participants and health status.

Results

Sociodemographic and disease-related characteristics

A total of 36 males participated in the study with a median age of 10.0 years (range 1–42 years) and median age at diagnosis of 3.0 years (range 1–30 years). Thirty-three (91.7%) participants had hemophilia A, whereas only three (8.3%) had hemophilia B. A total of 16 (44.4%) had the severe form, 14 (38.9%) had moderate, 2 (5.6%) had mild disease, and 4 (11.1%) were yet to be classified. The mean factor level was 7.2% ± 2.4%.

Seventy-two percent of the participants had target joint involvement, whereas 69.4% of the PWH had already developed arthropathy. Seventeen (47.2%) were on low-dose prophylaxis and 19 (52.8%) were receiving on-demand factor replacement therapy.

Health status of persons with hemophilia

Majority (88.9%, $n = 32$) of the participants had access to and received care at the hemophilia center, whereas none of them received care either from the private laboratories or herbal centers [Figure 1]. Most of the participants (77.7%, $n = 28$) have had a doctor's visit in the 6 months preceding the study, whereas all had fewer than six consultations in the past 12 months [Table 1]. Seventeen (47.2%, $n = 36$) PWH had been admitted for a disease-related problem in the past year, whereas majority 12, (70.5% $n = 17$) of them had <3 occasions of hospital admissions [Table 1].

Four (11.1%) PWH enjoyed an excellent health status, 18 participants (50.0%) had good, and more than a third (14 [38.9%]) had poor health status. Hemophilia type and severity, treatment plan, facility where care was received, and access to doctor and mental health professional did not significantly impact on their health status as $P > 0.05$ [Table 2].

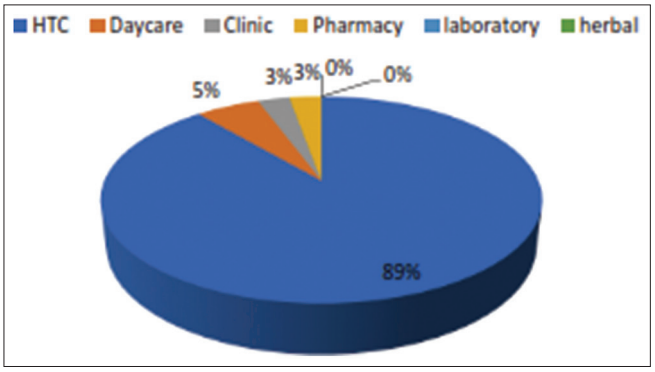

Figure 1: Centers where persons with hemophilia receive care

Table 1: Frequency of hospital admissions and doctor's visits

	n (%)
Hospital admissions in the last 1 year	
Yes	17 (47.2)
No	19 (52.8)
Admissions in the last 1 year	
<3	12 (70.5)
3-5	1 (5.9)
6-10	1 (5.9)
>10	1 (5.9)
NR	2 (11.8)
Number of doctor's consultations in the last 1 year	
<3	19 (52.8)
3-6	17 (47.2)
6-12	0 (0.0)
>12	0 (0.0)
Last doctor visit	
Never	2 (5.6)
<3 months	21 (58.3)
3-6 months	7 (19.4)
7-12 months	3 (8.3)
1-2 years	2 (5.6)
>5 years	1 (2.8)

Table 2: Analysis of health status and clinicopathologic characteristics of pediatric and adult patients

	Excellent	Good	Poor	*P*
Type				
A	4 (100.0)	16 (88.9)	13 (92.9)	0.751
B	0 (0.0)	2 (11.1)	1 (7.1)	
Disease severity				
Mild	0 (0.0)	1 (5.6)	1 (7.1)	0.086
Moderate	2 (50.0)	8 (44.4)	4 (28.6)	
Severe	0 (0.0)	7 (38.9)	9 (64.3)	
Unknown	2 (50.0)	2 (11.1)	0 (0.0)	
Treatment plan				
On demand	1 (25.0)	10 (55.6)	8 (57.1)	0.496
Prophylaxis	3 (75.0)	8 (44.4)	6 (42.9)	
Treatment facility				
HTC	3 (75.0)	16 (88.9)	13 (92.9)	0.152
Day care	0 (0.0)	1 (5.6)	1 (7.1)	
Clinic	1 (25.0)	0 (0.0)	0 (0.0)	
Pharmacy	0 (0.0)	1 (5.6)	0 (0.0)	
Access to psychologist				
Yes	0 (0.0)	6 (33.3)	5 (35.7)	0.368
No	4 (100.0)	12 (66.7)	9 (64.3)	

HTC-Hemophilia treatment center

Discussion

Our data showed that there is a delay in the diagnosis of hemophilia in Nigeria, similar to the work done by Ahmed *et al*.,[13,16] in the northern part of the country, but contrary to reports from the Western world where diagnosis is often made within the first 3 years of life (mild – 36 months, moderate – 8 months, and severe – 1 month). The relative inexperience of diagnosis and treatment of the disease by health-care workers and lack of understanding of the inheritance patterns and clinical features of the disease by family member as well as inadequate counseling are factors recognized to contribute to delay in diagnosis.[4] These might have played a role in the index study. Ignorance and lack of awareness are major contributors to morbidity and mortality in Nigeria.[17,18] As an organization focused on persons with bleeding disorders, the HFN targets creating awareness to help identify and treat PWH in Nigeria. Since the establishment of HFN, there has been an increase in the number of identified PWH and reduction in their age at diagnosis. Early diagnosis and subsequent treatment significantly curb severe morbidity.

Worldwide, hemophilia A is more prevalent than hemophilia B which is four times less common.[19] Our observed hemophilia B is in keeping with the report on the prevalence of hemophilia B by Stonebraker *et al*.[20] There seem to be some variations in the distribution of hemophilia B mutations, which cut across different regions and ethnic groups.[14,21] These variations may account for diverse clinical characteristics, with some groups having mild disease and the others having moderate or severe. As the clinical features depend greatly on severity, it is imperative that those with severe disease present more often to the hospital, while those with mild disease may not have enough reason to visit the hospital, especially in an environment like ours, which may bring about underestimation of hemophilia B. The health-seeking behavior of people who only seek health care when their health condition is serious may explain why a greater number of PWH were reportedly to have severe hemophilia.

Factor replacement therapy is expensive,[22] and most WFH National Member Countries (NMO) in resource-poor countries' category depend solely on donated factor concentrates from WFH's Humanitarian Aid Programme.[15] These donations and establishment of NMO-supported HTCs in resource-poor nations have improved access of PWH to factor concentrates and thus improved management of haemophilia.[23] This is in concordance with findings from the index study as most participants received care from HTCs and had consulted a doctor within 6 months of the study. Again, the improved access to CFCs could explain the finding that majority of the participants had fewer than six consultations/year despite a large proportion having severe disease. This is a marked improvement from previous unreported experience from the study area and similar undocumented reports from other resource-poor countries where there were almost zero records of consultation/year, blamed on nonavailability and nonaccessibility of CFCs in major hospitals.

Improved access to CFC has reduced disease burden in identified PWH in this study as evidenced by a majority reporting a total of <3 hospital admissions/year. Because poor health insurance scheme,[24,25] low health insurance penetrance,[27] and high out-of-pocket payments[26-28] still impact the

health-seeking behavior of most people living in resource-poor countries, this may affect PWH in these areas. While some governments in resource-poor countries are yet to commence the procurement of CFC for PWH, the benefits of improved access through WFH's Humanitarian Aid Programme may be overstretched as more persons are being identified, stressing the need for our governments' involvement in the procurement of CFC for factor-deficient citizens as obtainable in most developed countries.

Comprehensive care and low-dose prophylaxis have changed the course of hemophilia, markedly reducing the burden of the disease and the impact on the quality of life of PWH in developed countries.[29-31] Most resource-poor countries are yet to achieve this. The index study had shown that improved access to factors and establishment of HTC have improved health status of participants as up to half were reported to have enjoyed good and only 11% reported excellent health.

Although our study reported that hemophilia type and severity, treatment plan, facility where care was received, and access to doctor and mental health professional did not significantly impact on their health status, the small sample size could be contributory as earlier studies reported health benefits from comprehensive care,[32] treatment plan,[33] and access to mental health professionals by PWH. There is a need for a multicenter HTC-based survey to confirm our observations.

The main strength of the study was in the methodology which performed the process of back evaluation and analysis of the Hannes HUQ. A main drawback was that data were collected were not from haemophilia treatment center. The study was prone to recall bias as data collection was dependent on patients' ability to recall events related to their care. No significant effect was noticed in most replies from the patients.

Conclusion

This study showed that a good proportion of PWH have access to CFC and comprehensive care through HTC, yet several of them still suffer serious morbidity that impacts negatively on their health status. More robust (multicenter) HTC-based research is needed to ascertain the true picture of health status of PWH in Nigeria with a view to generate evidence for policy formulation leading to government interventions in procuring CFC for PWH.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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