



# The Prevalence of Guillain-Barre Syndrome and the Rate of Physiotherapy Referral at the University Teaching Hospital, Lusaka, Zambia

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**Abstract:** Guillain-Barre Syndrome (GBS) which is a post-infective acute polyneuropathy has been known to rarely occur among Africans. It is considered the most disabling neurological condition after poliomyelitis. However, little has been reported on the extent of the problem of GBS in Zambia. Hence the main aim of the study was to determine the prevalence of GBS and rate of physiotherapy referral among the patients that were seen at the University Teaching Hospital (UTH) between the years 2011-2013. Data was collected retrospectively from clinical files of patients that were treated in the department of internal medicine during the review period using a checklist. The statistical package for social sciences (SPSS) version 20 was used for descriptive analysis. Out of 26, 776 new medical cases that were treated in the period under review only 31 cases had GBS giving a period prevalence of 0.116%. The mean age for cases was 33.6 years (SD: 12.9) with the majority 50% (n=16) age range being 18 to 28 years. The most common type of GBS 61% (n=19) was Acute Inflammatory Demyelinating Polyneuropathy (AIDP) and the commonest predisposing factor 42% (n=13) was HIV/AIDS. There were more males than females at a ratio of 1.8:1. Most of the patients 68% (n=21) had not been referred to physiotherapy. GBS is becoming a common problem because of a rising prevalence since the advent of HIV/AIDS. Rate of physiotherapy referral among the cases is very low. It is highly recommended that another study on prevalence of GBS be done over a longer period to include other hospitals in Zambia. Physiotherapists in Zambia are also challenged to provide evidence on the impact of the interventions given in GBS management.

**Keywords:** Guillain-Barre Syndrome, HIV/AIDS, Prevalence, Physiotherapy, Zambia

## 1. Introduction

Although previously Guillain-Barré syndrome (GBS) was uncommon in some African countries, the picture could be different now with the advent of HIV/AIDS. It is a post-infective acute polyneuropathy, which has been associated with HIV infection and less commonly with diabetes mellitus [1]. While, considerable advancements could be made in preventing GBS through insulin therapy in diabetes mellitus, HIV/AIDS has been associated to contribute to the upward swing of the incident of the pathology. However, GBS globally still affects nearly 1-2 in 100, 000 population [2]. The rate has been estimated to be 0.83 per 100 000

population in sub-Saharan Africa. The estimates for the region are expected to be on the increase due to the strong association that exists between GBS and HIV/AIDS [3]. More men than women are affected (1.3:1), and the syndrome may occur in patients of any age but typically affects patients aged 40 to 50 years, with incidence increasing by 20% for every 10-year increase in age [4].

Guillain-Barré syndrome is most common among conditions that present with acute flaccid paralysis (AFP) like poliomyelitis, transverse myelitis, trauma-related anterior horn cell disease, infections caused by non-polio enteroviruses and toxins [1, 5]. It also encompasses a rapid onset of clinical syndromes with a common

pathophysiological basis of an acute inflammatory polyneuropathy with an autoimmune cause characterized by a progressive flaccid paralysis with areflexia, while in many people, it is preceded 3-6 weeks prior to onset. Other symptoms are a wide range of motor, sensory and autonomic symptoms in the absence of identifiable causes of genetic, metabolic, or toxic origin [6, 7]. The most prominent symptom experienced by patients with GBS is bilateral, ascending, symmetrical weakness of the limbs. In 90% of patients, weakness starts in the legs and advances proximally [1, 5].

Management of GBS especially in sub-Saharan Africa can be critical and quite costly as it affects negatively overall family quality of life due to financial constraints. The main purpose of treatment of GBS is to accelerate recovery, reduce complications in the acute phase of illness and reduce the occurrence of long term neurological residual disability. Different treatment modalities exist for the modifications of disease symptoms, but plasma exchange, intravenous immunoglobulins (IVIg) and corticosteroids are the main modalities [1]. Plasma exchange is considered as the first and cost effective modality for the treatment of GBS especially when used within the seven days of the onset of the symptoms. The effects of plasma exchange have proved useful in reducing the time of ventilator support and fastening recovery and early ambulation in GBS patients. Intravenous immunoglobulins have shown equal benefits in improving the disease symptoms as plasma exchange. The use of corticosteroid as treatment has been found ineffective in various randomized control trials hence they are not recommended for treatment [8]. About 85% of patients with GBS achieve a full recovery within several months to a year. Fatigue is the most common and persistent symptom after treatment. Other less common residual difficulties include weakness of the lower leg muscles, numbness of the feet and toes, and mild bifacial weakness usually managed by physiotherapists [9].

Although some studies have reported that physiotherapy is very important in the management of patients with GBS [10, 11, 12], other studies exploring the effect of rehabilitation interventions have shown no evidence of the impact of physiotherapy [13, 14, 15]. In order to understand the challenge in context, electronic databases up to January 2015 were searched for the studies reporting outcomes of GBS patients following physiotherapy as rehabilitation interventions. The research gap was identified and at present, there is a paucity of information on the effectiveness of the physiotherapy intervention as an important modality of care in GBS [9]. Even though physiotherapy management in GBS is said not to be evidence based and appears to be applied with experience from other neurological diseases and different modalities employed, such applications appear logical and appropriate. Given such limited studies on the prevalence of GBS and unknown levels of utilization of physiotherapy in Zambia, we set out to establish the prevalence of GBS and evaluate the rate of physiotherapy referral at UTH between 2011 and 2013.

## 2. Methodology

We collected data in a cross-sectional design retrospectively from registers and clinical files of patients that were treated in the department of internal medicine from 2011 to 2013 at the UTH using a checklist. The UTH is the largest referral hospital in the country that provides several services to the public by providing specialized diagnostic and surgical procedures, and conducts research on commonly occurring diseases in the country. Study clearance and approval was sought from the Biomedical Research Ethics Committee of the, University of Zambia (UNZABREC). We used the statistical package for social sciences (SPSS) version 20 for descriptive analysis of the data.

## 3. Results

### 3.1. Demographic Characteristics of Cases Identified with GBS

Out of 26,776 new medical cases that were treated in the period under review in the department of internal medicine at the UTH, only 31 cases recorded having GBS giving a period prevalence of 0.116%. The age range for cases was 18-70 years with a mean age of 33.6 years (SD: 12.9) and majority of the cases 50% (n=16) were aged between 18 and 28 years. Most of the cases 65% (n=20) were male giving a male to female ratio of 1.8:1. The most common type of GBS 61% (n=19) was Acute Inflammatory Demyelinating Polyneuropathy (AIDP) and the commonest predisposing factor 42% (n=13) was HIV/AIDS. There were more males than females at a ratio of 1.8:1. Most of the patients 68% (n=21) had not been referred to physiotherapy. Figure 1 shows the age ranges of patients with GBS.

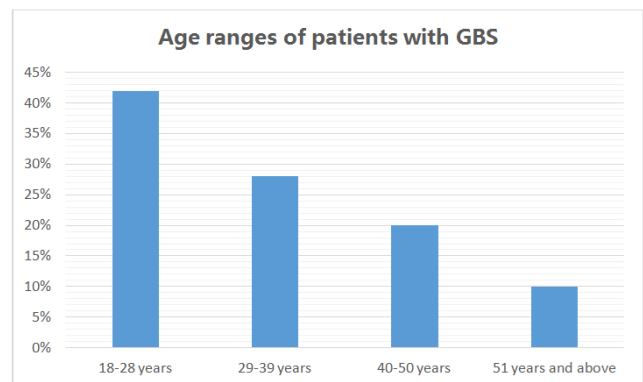


Figure 1. Age ranges of patients with GBS.

### 3.2. Indicated Types of GBS Among the Cases

Figure 2 shows the indicated types of GBS among the patients. Acute Inflammatory Demyelinating Polyneuropathy (AIDP) was the commonest 61% (n=19) followed by Acute Motor Axonal Neuropathy (AMAN) 29% (n=9) and the least being Acute Motor Sensory Axonal Neuropathy (AMSAN) 4% (n=1).

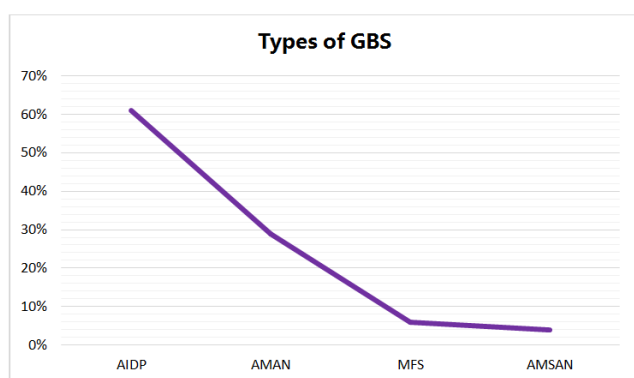


Figure 2. Types of GBS.

### 3.3. Predisposing Factors of GBS

Among the known predisposing factors, HIV/AIDS 82% (n=25) was the most common followed by trauma 11% (n=3) and tetanus with 7% (n=2). Figure 3 shows the predisposing factors of GBS. Most of these patients 68% (n=21) were not referred for physiotherapy.

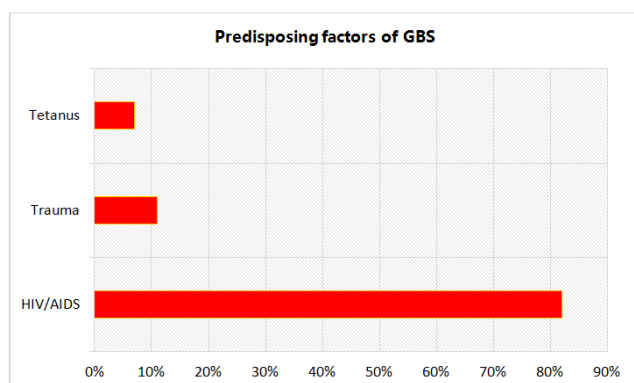


Figure 3. Predisposing factors of GBS.

## 4. Discussion

Period prevalence an epidemiological mathematical determinant for disease surveillance was used to determine the 0.116% (0.116 per 100,000) prevalence of GBS in this study. This prevalence is slightly higher than the reported global picture of GBS showing the frequency of about 1 to 2 cases (0.001 0.0002%) in 100 000 adults [2, 4, 9, 16]. However, the rate of GBS in Zambia is slightly lower than the annual rate (0.83 per 100,000) reported in the Kilimanjaro region in Tanzania. With such results, one can easily assume that the prevalence rate of GBS in sub-Saharan Africa is steadily getting higher than the global rate.

This study also showed that there were more males than females affected with GBS which is in line with other studies [3, 4, 17] that reported male to female ratios of 1.3: 1 and 1.5: 1 respectively. In addition, the syndrome occurred in patients of ages 40 to 50 years and incidence increased by 20% for every 10-year increase in age. In this study, the reported age range was between 18 to 70 years and the 18 to 28 age group was the most commonly affected. This is a productive age

group that is frequently affected with HIV/AIDS [18]. This outcome is similar to the outcome of a study done in Tanzania [19] which reported that the young adults were more affected than the older patients were. This has been attributed to the fact that young adults are very active sexually and evidenced by HIV/AIDS being the highest predisposing factor in almost half of the GBS patients that were captured in this study.

Acute Inflammatory Demyelinating Polyneuropathy (AIDP) was the commonest type of GBS recorded in our study. This is a similar outcome to the United States of America report in which AIDP was highlighted as the commonest type of GBS [20]. The current study also revealed that most of the patients with GBS managed in the department of internal medicine at UTH were not referred for physiotherapy. One would probably speculate that medical practitioners might not have seen or overlooked the need for physiotherapy. In some similar studies authors argued that there was no evidence of the impact of physiotherapy in the management of GBS patients [13, 14, 15]. Other authors who have also investigated the effects of physical rehabilitation therapies and interventions on people with polyneuropathies cautioned in their conclusion that lack of evidence should not be interpreted as proof of the ineffectiveness of physical rehabilitation. Physical rehabilitation in people with critical illness polyneuropathy seems to be a complex intervention and not easy to study. In the absence of any high quality evidence, clinicians should base their decisions on clinical experience, individual circumstances and patient preferences as appropriate [21]. It is therefore, inevitable for physiotherapy specialists to explore any negative impact physiotherapy may cause on patients with GBS.

## 5. Conclusion

GBS is becoming a common problem in Zambia and HIV infection can be attributed to the rise in the prevalence rate. From the outcomes of this study, it is evident that in management of GBS, physiotherapy interventions are under-utilized in the country.

## Recommendations

It is highly recommended that another study on prevalence of GBS be done over a longer period and other hospitals in Zambia must be included. Physiotherapists in Zambia are challenged to provide evidence of the impact of the interventions given to patients with GBS.

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