IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 18, Issue 9 Ser.11 (September. 2019), PP 78-84
www.iosrjournals.org

Pattern and Impact of Childhood Seizure Disorders in Port Harcourt, Nigeria

West B.A,[1]Onubogu U.C[2]
Rivers State University Teaching Hospital, Port Harcourt Rivers State, Nigeria
Corresponding Author: West B.A

Abstract
Background: *Seizure disorder is the commonest neurological condition encountered in most paediatric neurology clinics. A knowledge of the clinical pattern of seizure disorders determines the type of treatment thereby improving the outcome and the quality of life of affected persons.*
Objective*: To determine the prevalence, clinical patterns and impact of childhood epilepsy in Port Harcourt, Nigeria*
Methods*:This was a prospective study carried out over a two-year period in the Paediatric neurology unit of the Rivers State University Teaching Hospital from march 2015 to February, 2017.*
Results*: A total of 298 patients were seen in the neurology clinic among whom 152 (51.0 %) had seizure disorders.Their median age was 24months with a M:F ratio of 1.5:1.The commonest types of seizure disorders seen were generalized seizures 107 (70.4%) andpartial seizures30 (19.7%).*
Most of the patients had their first seizure within the first 3years of life 91 (59.9%) and majority 143 (94.1%) had no family history of seizure disorder. They were mostly daily seizures 60 (39.5%) occurring <5mins, 81(53.3%). Ischemic and atrophic brain damage was seen in 7 (70.0%) out of the 10 that did Brain MRI.There were no interventions prior to presentation in 54(36.0%) followed by the use of herbs 35(20.3%) and prayers 34(22.4%).
Thirty-three (21.7%) of eligible children were not attending school at presentation while accidental injuries from seizures was recorded in 31 (20.4%) patients.
Conclusion: *There is need for more awareness campaigns on seizure disorders being a medical condition as early diagnosis and intervention may be critical to treatment success and the child's ability to meet his or her learning potential thereby improving their quality of life.*

Date of Submission:09-09-2019 Date of Acceptance: 25-09-2019

I. Introduction

A seizure disorder which is also known as Epilepsy is defined as having two or more unprovoked seizures occurring in a time frame longer than 24hours.[1] These seizures are transient occurrence of signs and/or symptoms which result from abnormal excessive or synchronous neuronal activity in the brain.[2]Epilepsy/seizure disorder is a common chronic non-communicable disease associated with significant socio-cultural, economic and health implications that affect all ages.[3]This disorder has been observed to be the commonest neurological condition encountered in most paediatric neurology clinics.[4-10] It affects about 50 million persons in the world with more than half of all cases occurring in childhood.[11,12] About 80% of people with epilepsy live in low and middle income countries.[1,13]This could be attributed to greater exposure to higher risks of permanent brain damage such as central nervous system infections, head traumas, perinatal complications etc.as seen commonly in developing countries.

Diagnosis of seizure disorder is mainly clinical, based on detailed medical history obtained from the care-givers or patients and a corroborating eyewitness supported by an electroencephalographic (EEG) report and other imaging studies. It is important to note that these ancillary investigations are however not readily available and when available are expensive.

A knowledge of the clinical pattern of seizure disorders would give an insight into the possible treatment options thereby improving the outcome and the quality of life of affected children. In our centre no study has been done to evaluate the pattern of seizure disorders. We therefore set out to determine the prevalence, clinical patterns and impact of childhood epilepsy in Port Harcourt, Nigeria.

II. Materials/Methods

This was a prospective study carried out over a two-year period in the paediatric neurology outpatient clinic of the Rivers State University Teaching Hospital from March 2015 to February, 2017. The Paediatric neurology clinic is being run by a consultant with special interest in paediatric neurology and a resident doctor. The clinic runs weekly on Wednesdays and attends to an average of 4-6 newneurology patients per week. Referrals are usually gotten from the paediatric outpatient department, discharge cases from the paediatric inpatient wards as well as from primary health care centres, general hospitals and private health facilities in the state and neighbouring states.

Rivers State University Teaching Hospital is a tertiary health facility owned by the Rivers State government in the south-south geo-political zone in Nigeria. It is a 375 bedded hospital and serves as a referral centre for all the government owned primary health care facilities, general hospitals, cottage hospitals and private health facilities in the state as well as neighbouring states.

Children aged 0-17 yearswith history suggestive of epilepsy were consecutively recruited into the study. For this study, epilepsy/seizure disorder was defined asa history of 2 or more unprovoked seizures. The international classification of epileptic seizures and epileptic syndromes against epilepsy (ILAE) was used to determine the types of seizures. Single unprovoked seizures, febrile seizures as well as children of parents who did not give consent were excluded. History was obtained from parents,patients old enough to give accurate history (adolescents), eye witnesses with or without the support of video images. Information obtained included biodata, presenting complaints, family and social history. Social class was determined using the classification by Olusanya et al.[14]The total Social class score ranged from 1 to 5 in order of descending privileges and divided into 3 equal parts to get upper, middle and low socioeconomic classes. Diagnosis was made clinically and supported by Electroencephalographic reports. Other ancillary investigations done were brainmagnetic resonance imaging(MRI) and serum electrolytes such as serum calcium and serum magnesium levels.

Data was entered into excel spread sheet and analysed using IBM SPSS Statistics version 23. Results were presented in frequency tables, percentages and bar chats. P values ≤ 0.05 were considered significant at 95% confidence interval.

III. Results

Characteristics of children with seizure disorders

A total of 298 patients were seen in the neurology clinic in the period under review among whom 152 (51.0%) had seizure disorders. The median age was 24months with a M:F ratio of 1.5:1. Most children were the 1st to 2nd born of their parents, 94 (63.8%) resided in urban areas and were of middle social class 82 (53.9%). The highest level of education attained by most of the mothers was primary education 95(62.5%),(Table 1).

Table 1: Characteristics of children with epilepsy

Variable	Study Population N= 152 (%)
Age (years)	
0 to 3	91 (59.9)
>3 to 6	21 (13.8)
>6 to 9	19 (12.5)
>9 to 12	14 (9.2)
> 12	7 (4.6)
Gender	
Female	60 (39.5)
Male	92 (60.5)
Residence	
Urban	95 (62.5)
Rural	57 (37.5)
Birth order	
1st to 2nd	94 (61.8)
3rd to 4th	44 (29.0)
5th to 6th	8 (5.3)
>6th	6(3.9)
Social class of parents	
Upper class	13 (8.6)
Middle class	82 (53.9)
Lower class	57 (37.5)
Mother's level of education	
No formal education	2(1.3)
Primary	95(62.5)
Secondary	4(2.6)

Tertiary	51(33.6)

Pattern of seizure disorders

The most common type of seizure disordersseen among the patients was generalized seizure disorder107 (70.4%) followed by partial seizure 30 (19.7%) while mixed seizures were the least common 2 (1.2%). Most of the patients had their first seizure within the first 3years of life 91 (59.9%) and the least 6 (3.9%) between 9-12 years of age. Only 9 (5.9%) had a family history of seizure disorders. At presentation, most seizures occurred daily 60 (39.5%) with most seizure duration being<5mins, 81(53.3%). Post ictal sleep and urinary or faecal incontinence were experienced by 56 (36.8%) and 29 (19.1%) respectively (Table 2).

Table 2: Pattern of Epilepsy

Variable	All patients, n= 152 (%)
Epilepsy types	
Generalizedepilepsy	107 (70.4)
Partial epilepsy	30 (19.7)
Atonic epilepsy	5 (3.3)
Syndromic epilepsy	5 (3.3)
Absence epilepsy	3 (2.0)
Mixed	2 (1.3)
Age at onset of seizures (years)	
0 to 3	91 (59.9)
>3 to 6	24 (15.8)
>6 to 9	24 (15.8)
>9 to 12	6 (3.9)
>12	7 (4.6)
Family history of epilepsy	
Yes	9 (5.9)
No	143 (94.1)
Frequency of seizures	
Daily	60 (39.5)
Weekly	23 (15.1)
Monthly	33 (21.7)
Six monthly	33 (21.7)
Yearly	3 (2.0)
Duration of seizure episodes(minutes)	
< 5	81 (53.2)
>5 – 15	41 (27.0)
>15 – 30	13 (8.6)
>30	17 (11.2)
Post ictal sleep	
Yes	56 (36.8)
No	96 (63.2)
Urinary/faecal incontinence	
Yes	29 (19.1)
No	123 (80.9)

Investigations performed for Patients with seizure disorders

Electroencephalography(EEG) was done in 69 (45.4%) and most of the EEG reported a generalized seizure pattern 33(47.8%). Brain MRI was done in only 10 (6.6%) patients of which ischemic/atrophic brain changes constituted the highest brain changes 7 (70.0%) while the least observed was brain tumour2(20.0%). For other ancillary investigations done, of 57 (37.5%) who performed serum Magnesium (Mg)levels 55 (96.5%) had normal values,whereas of 59 (38.8%) patients who performed serum calcium levels, 23 (39.0%) had hypocalcaemia (Table 3).

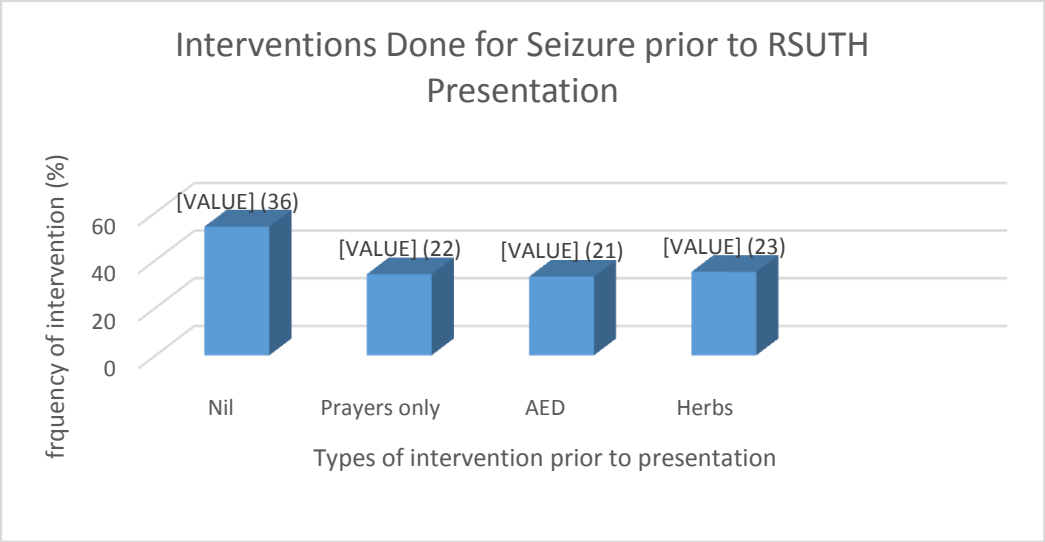
Table 3: Investigations done for patients with epilepsy

Variable	All patients, n= 152 (%)
EEG done	
Yes	69 (45.4)
No	70 (46.0)
Unknown	13 (8.6)
Result of EEG (n = 69)	
Generalizedseizure	33(47.8)
Partial seizure	5 (7.2)
Absence seizure	4 (5.8)
Rolandicseizure	2 (3.0)
Normal	25(36.2)
Brain MRI	
Yes	10 (6.6)
No	142 (93.4)

Brain MRI result (n=10)	
Ischemia/Atrophy	7 (70.0)
Leukomalacia	1 (10.0)
Tumor	2 (20.0)
Serum Mg level (n =57)	
Low	1 (1.8)
Normal	56 (98.2)
Serum calcium level (n=59)	
High	2 (3.4)
Low	23 (39.0)
Normal	34(57.6)

Interventions done for seizures prior to presentation

No intervention was done prior topresentation in 54(35.5%) patientswhile prayers and herbs were used as an only intervention strategy in 34(22.4%) and 35(20.3%) respectively (Fig 1).



Impact of seizure disorderson patients

Thirty-three(21.7%) of eligible children were not attending school at presentation and the most common reason for not attending school was the severity of the illness 26(78.8%). Among those who attended school, most of their performance were above average 36(48.6%). Accidental injuries from seizures was recorded in 31 (20.4%)patients, (Table 4).

Table 4: Impact of seizure disorderson patients

Variable	All patients, n= 152 (%)
School attendance	
Yes	74 (48.7)
No	33 (21.7)
Below school age	45(29.6)
Reason for non-attendance in school (n = 33)	
Severity of illness	26(78.8)
Stigmatization	4(12.1)
No Money	3(9.1)
School performance (n = 74)	
Average	22 (29.7)
Poor	16(21.6)
Above average	36(48.7)
Accidents from Seizures	
Yes	31 (20.4)
No	121 (79.6)

Children aged ≤ 3yrs old and those who reside in rural areas where significantly more likely to have frequent seizures occurring daily when compared to older children.Those that were more likely to be out of school were children that were <2nd born in their families, those from low socioeconomic class, those with generalised seizures and those with daily seizures. Those who had daily seizures were significantly more likely to have accidents from their seizure disorder as well as those who have associated faecal or urinary incontinence (Table 5).

Table 5: Significant factors associated with increased impact of seizure disorders

Variable		Prevalence (%)	P value	OD	95% CI
Seizures frequency ≥ daily					
Age < 3yrs	Yes	45(49.5)	0.002	1.4	1.16, 1.9
	No	15(24.6)			
Rural dweller	Yes	29(50.9)	0.026	1.5	1.06, 2.29
	No	31(32.6)			
Not attending School					
Age < 3yrs	Yes	22(44)	0.006	3.2	1.3, 7.7
	No	11(19.3)			
Birth order ≤ 2	Yes	25(40.9)	0.01	3.2	1.28, 8.05
	No	8(17.7)			
Low socioeconomic class	Yes	18(43.9)	0.02	2.6	1.12, 6.07
	No	15(23.1)			
Generalised seizures	Yes	29(39.7)	0.007	4.9	1.5, 15.5
	No	4(11.2)			
Daily seizures	Yes	17(58.8)	0.0005	4.5	1.8, 11.16
	No	16(21.1)			
Accidents from seizures					
Daily seizures	Yes	14(42.4)	0.017	2.8	1.17, 6.7
	No	17(20.7)			
Faecal/urinary incontinence	Yes	11(44)	0.03	2.6	1.03, 6.7
	No	20(22.9)			

IV. Discussion

The prevalence of seizure disordersamong 298 children who attended the neurology clinic during the period of review was 51.0% suggesting that seizure disorder is a common occurrence in our neurology clinic. This finding was comparable to the 59.4% in Uyo, Nigeria[15] but lower than the 68% and 75.4% reported in Uganda[16] and Sagamu,[17] Nigeriarespectively. It was however much higher than the 11.8% observed in the eastern part of Nigeria.[18] These varying prevalence could be attributed to the varying geographic locations. The very low prevalence in the latter study could be attributed to the fact that the study was carried out over fourdecades ago.

Seizure disorderswas observed more in males with a M:F ratio of 1.5:1. This pattern was also observed in Uyo,[15]Sagumu,[17] Ibadan[19] in Nigeria, Uganda,[16] Ghana,[20] South Africa[21]and India.[22]This could be attributed to the general belief that male children are more readily brought to the health facilities for medical attention than females especially in developing countries as a result of social habits, cultural beliefs and practices. Contrary to the present study, there was slight female preponderance in a study in Brazil.[23] The reason for this difference could not be ascertained.

More than half of the children with seizure disorders were in their first three years of life. This was similarly reported in Sagamu.[17]Seizure disorders was reported more in the first 5 years of life also in Uyo[15]and South Africa.[21] This high incidence of seizure disordersin childhood could be attributed to the perinatal andpostnatal morbidities, central nervous system infections which are commoner in childhood than in the adolescent age.

In the present study, majority of the mothers whose children had seizure disorders had primary education. This was also reported in Kaduna,[24] Nigeriaand Sudan.[25]A study in Egypt reported an illiteracy rate among mothers of epileptic children as high as 62.2%.[26]This is not surprising as maternaleducation has been associated with improved children's health and reduced mortality.[27]

Most of the patients with seizure disordersin the present study live in urban areas as also observed in Pakistan.[28] This could be due to the fact thatspecialised services such as neurological services are mainly provided in tertiary hospitals which are mainly situated in urban areas which may not be readily assessed by people living in the rural areas. In contrast to the present study, 78% ofepileptics in a study in Egypt[26] were rural residents. This was also reported in a study in India[22] and China.[29]

Generalized seizure disorders was observed to be the commonest seizure type observed in the present study. This was also observed in other studies in Nigeria,[15,17,19] Uganda,[16] South Africa,[21]Sudan,[25]Egypt[26]andPakistan.[28]In contrast to the present study, partial seizures was observed to be the commonest type followed by generalized seizure in a study in India.[22]

Family history of seizure was reported in 5.9% of children with epilepsy in the present study. This was however much lower than the 7.5% in Kaduna,[24]22.2% in Uyo,[15] 8.6% in Uganda[16]and 17.3% in Egypt.[26]

Only about 45% of children with epilepsy had EEG done. This was mainly due to financial constraints and early default. This was also observed in Sagamu[17] where about 61% had EEG done. It is pertinent to note that 36.2% of children with seizure disorders had a normal EEG report in the present study. Normal EEG reports were reported in 6.5% in a study in Sagamu[17]and 31.5% in Egypt.[26] This is not surprising as it is generally

known that seizure disorderis a clinical diagnosis and thus EEG is not necessary for diagnosis and treatment. It is also pertinent to note that approximately one-half of allEEGs done for patients with seizure disorders are interpreted as normal.[30]This is because the EEG only shows brain activity during the time of the test thus if an individual isn't having a seizure at the time of the test, there may not be any unusual brain waves for the test to record.[30]

Of the epileptic children of school age, close to a quarter were not enrolled in school. The commonest reason given for non-enrolment of their children in school was as a result of the severity of the illness followed by stigmatization. This therefore calls for more public enlightenment on seizure disorders being a medical condition and the availability of treatment and possible cure.

About half of the children with epilepsy were not on any medications at presentation while two-thirds of the children took native herbs and depended on prayers for healing of their child's condition. This is not surprising as over three quarters of mothers of affected children in the present study were poorly educated. A study in Kaduna,[24] Nigeria, reported close to 50% of mothers of affected children ascribed the aetiology of epilepsy to spiritual cause. Also, more than half of affected children were either given traditional medications or prayers were offered to them.

V. Conclusion

Generalised seizure disorder is the commonest type of seizure disorder observed in Port Harcourt, Nigeria followed by partial seizures. Native herbs and prayers constituted more than two-thirds of interventions carried out by mothers on their babies with seizure disorders at presentation. Close to a quarter of eligible children were not attending school, the reason in majority of cases being the severity of the disorder. In addition, about a fifth of cases were involved in accidental injuries. This therefore calls for more awareness campaigns stressing the fact that seizure disorder is a medical condition that can be treated thereby improving the outcome and overall quality of life of affected children.

References

[1]. Epilepsy http://www.who.int/news-room/fact-sheets/details/epilepsy
[2]. Nelson Textbook of Paediatrics Mohamad A, Mikati ,Abeer J.H Seizures in Childhood 593: 2823-2857
[3]. Izuora GI, Ileoje SO. A review of neurological disorders at the paediatric neurology clinic of the University of Nigeria Teaching Hospital, Enugu. Ann Trop Peadiatr 1989; 9: 185-190
[4]. Frank-Briggs AI, Alikor EAD. Pattern of paediatric neurological disorders in Port Harcourt, Nigeria. Int J Biomed Sci 2011; 7: 145-149
[5]. Lagunju IA, Okafor OO. An analysis of disorders seen at the paediatric neurology clinic, University College Hospital, Ibadan, Nigeria. Ann Trop Paediatr 1989; 9: 185-190
[6]. Mohammed IN, Elseed MA, Hamed AA. Clinical profile of paediatric neurological disorders: Outpatient department, Khartoum, Sudan. Child Neurol Open 2015; 3: 1-5
[7]. Ogbe Z, Nyarang'o P, Mufunda J. Pattern of neurological diseases as seen in outpatient children: the experiences from Orotta referral Hospital, Asmara, Eritrea. J Eritrean Med Assoc 2006; 1: 1-5
[8]. Darwish SY, Ammar MA, Gad HK, El-Gharieb HA, El-Din TM, Ahmed M. Pattern of pediatric neurological disorders inpediatric neurology unit of Al-Azhar University hospitals in Egypt. Nat Sci 2015; 13: 139-144
[9]. Raina SK, Razdan S, Nanda R. Prevalence of neurological disorders in children less than 10 years of age in RS Pura town of Jammu and Kashmir. J Pediatr Neuro Sci 2011; 6: 103-105
[10]. Burton KJ, Allen S. A review of neurological disorders presenting at a paediatric neurology clinic and response to anticonvulsant therapy in Gambian children. Ann Trop Paediatr 2003; 23: 139-143
[11]. Ogunseli T, Ogundeyi M, Ogunfowora O, Oluwo A. Socio-clinical issues in cerebral palsy in Sagamu, Nigeria. South Afr J Child Health 2008; 2: 120-124
[12]. Al Salloum AA, El Mouzan MI, Al Herbish AS, Qurashi MM. The prevalence of neurological disorders in SAUDI Children: A community- based study. J Child Neurol 2011; 26: 21-24
[13]. Singhal BS. Neurology in developing countries. Arch Neurol 1998; 55: 1019-1021
[14]. Olusanya O, Okpere E, Ezimokhai M. The importance of socio-economic class in voluntary fertility control in a developing country. W Afr J Med 1985; 4: 205-212
[15]. Eyong KI, Ekanem EE, Asindi AA, Chimaeze T. Clinical profile of childhood epilepsy in Nigerian children seen in a tertiary hospital. Int J ComtempPediatr 2017; 4: 1138-1141
[16]. Duggan MB. Epilepsy in rural Ugandan children: Seizure pattern, age of onset and associated findings. Afr Health Sci 2010; 10: 218-225
[17]. Ogunlesi T, Ogundeyi M, Olowu A. Pattern of childhood epilepsies in Sagamu, Nigeria. Indian J Pediatr 2009; 76: 385-389
[18]. Izuora GI, Azubuike JC. Prevalence of seizure disorders in Nigerian children around Enugu. East Afr Med J 1977; 54: 276-280
[19]. Lagunju IA, Fatunde OJ, TakonI. Profile of childhood epilepsy in Nigeria. J PediatrNeurol 2009; 7: 135-140
[20]. Ae-Ngibise KA, Akpalu B, Ngugi A, Akpalu A, Agbokey F, Adjei P, Panguyire D, Bottomley C, Newton C, Owuse-Agyei S. Prevalence and risk factors for active convulsive epilepsy in Kintampo, Ghana. The Pan Afr Med J 2015; 21: 29
[21]. Christianson AL, Zivane ME, Manga P, Rosen E, Venter A, Kromberg JGR. Epilepsy in rural South African children- Prevalence associated disability and management. S Afr Med J 2000; 90: 262-266
[22]. Nadkarni J, Jain A, Dwivedi R. Quality of life in children with epilepsy. Ann Indian AcadNeurol 2011; 14: 279-282
[23]. Abib CR, Mendaza-Sassi A, Bech-Nappi J, Stan AT. Prevalence of seizures and associated factors in children under five living in a deprived municipality of Southern Brazil. Arq Neuro Psiquiatr 2007; 65
[24]. Eseigbe EE, Enogela J, Adama SJ, Nuhu FT, Sheikh TL, Eseigbe P. Perspective of mothers on childhood epilepsy in Kaduna, Northern Nigeria. Sub-Saharan Afr J Me 2015; 2: 39-46

[25]. Abbas Z, Elseed MA, Mohammed IN. The quality of life among Sudanese children with epilepsy and their care givers. Sudan J Paediatr 2014; 14: 51-58
[26]. Kandil MR, Ahmed WM, Sayed AM, Hamed SA. Pattern of epilepsy in childhood and adolescence: A hospital based study. Afr J NeurolSci 2007; 26:
[27]. Sonalde D, Soumya A. Maternal education and child health: Is there a strong causal relationship? Demography 1998; 35: 71-81
[28]. Shakirullah, Niaz A, Aslam K, Muhammad N. The prevalence, incidence and etiology of epilepsy. Int J ClinExpNeurol 2014; 2: 29-39
[29]. Huang M et al. The prevalence of epilepsy in rural Jinshan in Shanghai. ZhonghuaIIXingbingXuaZaZhi= ZhonghuaLiuxingbingxueZazhi. 2002; 23: 345-346
[30]. What if it's normal? https://www.epilepsy.com

West B.A. "Pattern and Impact of Childhood Seizure Disorders in Port Harcourt, Nigeria." IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 18, no. 9, 2019, pp 78-84.