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<http://dx.doi.org/10.1016/j.yebeh.2019.106891>

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Type	Article
URL	This version is available at: http://usir.salford.ac.uk/id/eprint/56595/
Published Date	2020

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KNOWLEDGE AND CURRENT PRACTICES OF PHYSIOTHERAPISTS ON THE PHYSICAL ACTIVITY AND EXERCISE IN THE REHABILITATION OF CHILDREN WITH EPILEPTIC SEIZURES

Abdulsalam Mohammed Yakasai^{ab*}, Musa Sani Danazumi^{cd}, Usman Usman Zakari^e, Isa Lawal Usman^c, Auwal Abdullahi^c, Usman Tijjani Shehu^f.

^aDepartment of Physiotherapy, College of Health Sciences, University of KwaZulu-Natal Durban, South Africa.

^bMedical Rehabilitation Therapists (Reg.) Board of Nigeria.

^cDepartment of Physiotherapy, College of Allied Health Sciences, Bayero University Kano, Nigeria.

^dDepartment of Physiotherapy, Federal Medical Center Nguru Yobe, Nigeria.

^eDepartment of Physiotherapy, Federal Medical Center Birnin-kudu, Nigeria.

^fDepartment of Public health, School of Health Sciences, University of Salford Manchester, United Kingdom.

Corresponding Author: Dr. Abdulsalam Mohammed Yakasai DPT, Ph.D., Department of Physiotherapy, College of Health Sciences, University of KwaZulu-Natal Durban, South Africa.

Email; abdulpeace1@gmail.com

Phone; +2348060840806

Abstract

Background: Physiotherapists play a key role in the rehabilitation of children with epileptic seizures. Regular physical exercise generates psychological and physiological benefits for people with epilepsy.

Design: This study was a cross-sectional design.

Purpose: The purpose of this study was to evaluate the knowledge and current practices of Physiotherapists on the physical activity and exercise in the rehabilitation of children with epileptic seizures in Nigeria.

Methods: Physiotherapists with minimum Bachelor's degrees were invited to participate in the study using an electronic questionnaire. The subjects (N=117) answered a questionnaire comprising 33 simple closed-ended questions with three domain personal information, knowledge, and current practices.

Results; Out of the 117 physiotherapists, 77.7% (n=91) had postgraduate degrees, 16.2% (n=19) had bachelor's degree in physiotherapy, and only 5.9% (n=7) had doctor's degree in physiotherapy (DPT). The results also indicated that 79.5% (n=93) of physiotherapists had sufficient knowledge about epilepsy, and 86.3% (n=101) of physiotherapists were using current skills/physical activity to rehabilitate children with epileptic seizures.

Conclusions; It was concluded that physiotherapists had sufficient knowledge about epilepsy and were using current skills/physical activity in the rehabilitation of children with epileptic seizures.

Keywords; Physiotherapists knowledge; Exercises; Physical activity; Epileptic seizure; Children

1. Introduction;

Epilepsy is one of the most prevalent noncommunicable neurological conditions affecting more than seventy million persons around the globe, most of whom live in developing countries [1]. Epilepsy affects 10,000,000 persons directly from childhood to the aging population in the African continent [1]. It is an important cause of disability worldwide [2] and one of the most common noninfectious neurological diseases in African countries, including Nigeria [3]. Seizures and epilepsy affect infants and children more than any other age group [4]. A study by Burton and Allen [5] indicated that epilepsies are the most common conditions encountered in most pediatric neurology clinics in many parts of the developing world. Children diagnosed as having epilepsy face considerable challenges. The seizures themselves, especially when poorly controlled, maybe disabling and interfere with the child's ability to learn, whereas secondary influences, such as stigma and lack of knowledge about the condition, can negatively affect their social and psychological functions [6–8].

Although the favorable effects of physical fitness and exercise on general health are unquestionable, patients with epilepsy are often excluded from participation in physical activity. This is surprising because, for many high-risk patients, such as those with coronary heart disease and diabetes mellitus, physical exercise has been proven very beneficial [9]. This reluctance of both patients and physicians is due in part to fear of injuries and in part to fear that exercise will cause seizures [9]. Notwithstanding, the limited piece of literature on the positive or negative effects of physical activity on seizure frequency, patients with epilepsy should have the same benefits as others from the positive impacts of maximal aerobic and work capacity, body weight and self-esteem [10].

In addition, it has also been observed that people with epilepsy experience a considerable lack of physical fitness that might have an impact on their general health and quality of life. Patients with epilepsy present significant deficits in aerobic endurance, muscle strength endurance and physical flexibility [11]. Previous literature has extensively reported the use of nonpharmacological therapies, including complementary and alternative medicine for the treatment of epileptic seizures [12]. Arida and co-workers [13] reported that regular physical exercise generates psychological and physiological benefits for people with epilepsy. Moreover, individuals with epilepsy involved in exercise programs exhibit an improved mental state, become more sociable, and improve their psychosocial functioning and quality of life [14,15].

Physiotherapists are very well informed about physical activity and are integral in the overall welfare of the physical body. They are professionals that help improve the quality of movement, physical performance, sensory awareness, response, balance, coordination, strength, and mobility and increase range of motion, and sphere of movement using physical methods [16]. For this reason, children with epilepsy need physiotherapy services. Thus, fundamental knowledge on the influence of physical activity and exercise in the rehabilitation

of children with epileptic seizures is very essential for physiotherapists especially those treating children. However, data concerning knowledge and current practice of physiotherapists on the Physical activity and exercise program in the rehabilitation of children with epileptic seizures have been rarely examined especially in the Sub-Saharan Africa where the burden of epilepsy is high. The purpose of the present study therefore, was to examine the knowledge and current practices of physiotherapists about physical activity and exercise in the rehabilitation of children with epileptic seizures in Nigeria.

2. Material and methods

2.1. Settings

A survey was conducted to explore the knowledge and current practices of physiotherapists about physical activity and exercise in the rehabilitation of children with epileptic seizures. The study invited physiotherapists in Nigeria to report their responses about the studied subject matter.

2.2. Formation and validation of the questionnaire

The survey was based on an electronic closed-ended questionnaire using Google drive form, developed by an expert panel consisting of Neuro-pediatric physiotherapists, Neuro-pediatricians, and exercise physiologists. The questionnaire parts were developed into three domains: personal information (7 questions), knowledge about epilepsy (14 questions) and current practice and role of physical activity in epileptic seizures (12 questions) (see Tables 2 and 3). The content validity of the questionnaire was carried out to suit the local context of the study by pre-testing it among 10 Neuro-physiotherapists to obtain their responses about the questionnaire after which a peer debriefing with few recommendations was made. The

final questionnaire was then reproduced by the research team to ensure that the original meaning was very well suited to the purpose of the study. The divergent validity of the questionnaire was assessed by asking 20 physiotherapists to complete the developed questionnaire and another questionnaire (which measures knowledge, attitude and practice of physiotherapists towards health promotion)[17] at the same time and the scores were analyzed [0.014(n=20, p=.751)]. This decision was made because the two questionnaires measure entirely different constructs and the scores cannot influence each other whatsoever. The test-retest reliability (ICC=0.876) of the questionnaire was also assessed among 20 physiotherapists by taking measurements at two weeks interval. The decision to complete the questionnaire at two weeks interval was necessary so that the scores do not influence each other. The final version of the questionnaire was then sent via emails and WhatsApp accounts of the physiotherapists.

2.3 Data Analysis

The questionnaire texts were analyzed using content analysis [18]. Questions were read several times by the lead researcher (AMY) and two other colleagues (MSD & UUZ) to understand the text and meaning of the content according to the local context. In the second step, the questionnaires were combined into meaningful and understandable groups (agree, disagree, undecided) called units which were labeled as codes (groups of words with similar meanings and/or connotations). The coding process was performed by two researchers separately, and then compared and discussed, and a consensus was reached within the research team. In the third step, the codes were synthesized in detail and were grouped into meaningful sub-categories and were labeled with appropriate titles (knowledge, practice). Through proper collaboration with the research team (the fourth step), codes were finalized, subcategories were merged into broader categories which were later pooled into major themes (clusters of categories that share some commonality such as reference to a single

issue: Sufficient knowledge, insufficient knowledge, lack of knowledge, standard practice, substandard practice, and lack of practice).

2.4. Ethical consideration

The purpose of this study was explained to the chairmen of the Health Research Ethics Committees of each hospital seeking their consent to implement the survey on physiotherapy staff. The questionnaire attached to informed consent was then mailed to each physiotherapy departments; detailing that the survey participation was voluntary, individuals' information would not be disclosed, and the results would be published at academic conferences or in peer reviewed journals. It was also explained that, if confirmation of intention to participate in the study was returned with the questionnaire, consent could not be withdrawn after submission as the responses would be anonymous. This study was conducted with the approval of Kano State Hospitals Management Board Health Research Ethics Committee (File number: MMB/GEN/502/VOL1). The study was approved by the Health Research Ethics Committee of Medical Rehabilitation Therapists Board of Nigeria. The survey was carried out between January 2019 and August 2019.

3. Results

3.1. The demographic variables of the respondents

Participants were divided into predefined age groups that broadly covered 27 young adults (19 to 35years), 88 middle-aged (36 to 55 years), and 2 older adults (56 years and older) (Table1). In total, 117 physiotherapists participated in the study: 19.6% (n=23) worked with general hospitals, 16.2% (n=19) worked with federal medical centers, 36.7% (n=43) worked with teaching hospitals, 14.5% (n=17) worked with private clinics, 2.6% (n=3) worked with nongovernmental organizations, 5.2% (n=6) worked with sport centers, and 5.2% (n=6) worked with military hospitals. Out of the physiotherapists, 77.7% (n=91) had postgraduate

degrees, 16.2% (n=19) had bachelor's degree in physiotherapy, and only 5.9% (n=7) had doctor's degree in of physiotherapy degrees (DPT).

The number of codes for the physiotherapists' knowledge and the themes that emerged were illustrated in Table 3. The codes were labeled and classified into 3 themes (*sufficient knowledge, insufficient knowledge, lack of knowledge*). High numbers of codes were found in the theme "*sufficient knowledge*". When the codes for each theme were summed up for judgment there were 79.5% (n=93) physiotherapists in the "*sufficient knowledge*" group, 6.0% (n=7) physiotherapists in the "*insufficient knowledge*" group and 14.5% (n=17) physiotherapists in the "*lack of knowledge*" group. Physiotherapists in the sufficient knowledge category had adequate awareness about the physical activity and exercise rehabilitation of children with epileptic seizures. Those in the insufficient knowledge category had some level but inadequate awareness about the physical activity and exercise rehabilitation of children with epileptic seizures. Those in the lack of knowledge category had no awareness about the need for physical activity and exercise rehabilitation of children with epileptic seizures.

The number of codes for the physiotherapists' practice and the themes that emerged were illustrated in Table 5. Just like in the knowledge section, the codes were labeled and classified into 3 themes (*standard practice, substandard practice, lack of practice*), with the standard group having the highest numbers of codes. When the codes for each theme were summed up for judgment there were 86.3% (n=101) physiotherapists in the "*standard practice*" group, 9.4% (n=11) in the "*substandard practice*" group and 4.3% (n=5) in the "*lack of practice*" group. Physiotherapists in the standard practice group had adequate management skills and about the physical activity and exercise rehabilitation of children with epileptic seizures. Those in the substandard practice group had some level but inadequate management skills about the physical activity and exercise rehabilitation of children with

epileptic seizures. Those in the lack of practice group had no management skills about the need for physical activity and exercise rehabilitation of children with epileptic seizures.

4. Discussion

An online survey was conducted among physiotherapists about their knowledge and current practices on physical activity and exercise in the rehabilitation of children with epileptic seizures. The majority of the physiotherapists that took part in the survey have treated patients with epilepsy. Nevertheless, the study revealed large gaps among the physiotherapists about their knowledge of epilepsy and the role of physical activity in the management of epileptic seizure.

4.1. General knowledge about epilepsy

The results of the present study indicated that 79.5% of the physiotherapists had sufficient knowledge about epileptic seizures and had treated children with epilepsy. This could have been due to the majority of the physiotherapists having postgraduate degrees. In addition, 14.5% of the physiotherapists also indicated a lack of knowledge about epilepsy and stated that epilepsy had not been a subject of their vocational training. This is similar to the study of Vancini et.al [19] about the Knowledge of epilepsy among health-care professionals which indicated that the majority of the physiotherapists had enough access to information about management of epilepsy, while the minority do not receive sufficient information or any formal instruction about management of epilepsy during their undergraduate study training. The number of physiotherapists (79.5%) who had sufficient knowledge about epilepsy in the present study is in agreement with that of the previous studies reported elsewhere (India (91.66%) [20], Italy (96%) [21], Canada (91%) [22], and Brazil (91.3%) [23]) among physiotherapists and physiotherapy students.

The result of the present study is not in agreement with that of Hackel and colleagues [24] which indicated that there was insufficient knowledge about epilepsy among rehabilitation professionals. In addition, Harimanana and Co-workers assessed knowledge of epilepsy on 284 medical health staff (Registered Nurses and physicians) of Lao People's Democratic Republic (PDR). The result indicated that the majority of the respondents had insufficient knowledge about epilepsy, with nurses having the lowest knowledge and wrong practices towards epilepsy (15.9%) compared with physicians (28.1%).

4.2. Current practice about exercise and physical activity in the Rehabilitation of children with epilepsy

Of the physiotherapists, 86.3% had sufficient skills about exercise and physical activity in the management of children with epileptic seizures. Only 4.3% of the physiotherapists reported lack of current skills in the management of children with an epileptic seizure. The outcome of this study could have been due to the fact that the majority of physiotherapists are within the expert professional period (third decade of practice). In addition, those having insufficient skills are within the experienced professional period (second decade of practice) and those lacking skills are within the novice professional years (within 5 years of practice).

The results of the present study also indicated that the majority of the physiotherapists administer exercises to children with epilepsy during rehabilitation and encourage them to continue participating in physical activity (aerobic, strengthening, balancing, and coordination exercises,). However, quite a few of the physiotherapists do not subject children with epileptic seizures to any exercises or physical activity. The outcome of these few physiotherapists could have been due to lack insufficient skills and information about the

benefits of exercises in the management of epilepsy. This poor outcome can also lead to a setback in sports and leisure activity participation of persons with epilepsy [25].

The findings of the present study corroborates with that of Hackel et al. [24] about the knowledge and attitude of rehabilitation professionals in children with epilepsy which indicated that majority of the therapists who treated patients with epilepsy also witnessed epileptic seizures in one occasion or another. Similar to our findings is the study of Sureka and colleagues [20] which studied knowledge, attitude and practices of health-care professionals in the management of epilepsy in a tertiary care center in Rajasthan, India. The authors concluded that a large proportion of their respondents were aware of optimal treatment practices concerning epilepsy. In another study, Nishina and Yoshioka [26] studied the knowledge, attitude, and practices of health-care nurses in the San-in region of Japan. The findings of the study indicated that 43.9% of the respondents had experience in the taking care of persons with epilepsy.

5. Conclusions: Physiotherapists are considered to be among those highly educated medical professionals in the society, especially with regard to clinical rehabilitation. Thus, it is important they also have accurate and sufficient knowledge about exercise rehabilitation for children with epilepsy. The findings of this study concluded that physiotherapists had sufficient knowledge about epilepsy and were using current skills/physical activity in the rehabilitation of children with epileptic seizures.

Funding: This study did not receive any funding

Declaration of competing interest: The authors do not have any conflict of interest

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Table 1: Demographic Characteristics of the Physiotherapists (n=117)

	Variables	Number of Physiotherapists
Age	Young Adults	27
	Middle aged Adults	88
	Older Adults	2
Gender	Males	89
	Females	28
Work Setting	General hospital	23
	Federal Medical Center	19
	Teaching Hospitals	43
	Private	17
	Sports center	6
	Military Hospital	6
	Non-governmental Organization	3
Education	PhD	7
	MSc	84
	DPT	7
	BPT	19
Rank	Director of Physiotherapy Services	1
	Assistant Director of Physiotherapy Services	5
	Chief physiotherapists	10

Principal physiotherapists	77
Senior physiotherapists	22
Physiotherapists	2

Table 2 Physiotherapists' answers related to knowledge of epilepsy.

Q8. An epileptic seizure is the transient occurrence of signs or symptoms due to abnormal electrical activity in the brain.

Agree 99.1%(N=116)

Disagree 0.9%(N=1)

Undecided

Q9. An epileptic seizure is commonly associated with a disturbance of consciousness, behavior, emotion, motor function or sensation.

Agree 99.1%(N=116)

Disagree 0.9%(N=1)

Undecided

Q10. Epilepsy is a common neurological disorder in childhood. Seizures and epilepsy affect infants and children more than any other age group.

Agree 60%(N=69)

Disagree 23%(N=27)

Undecided 16.5%(N=19)

Q11. In children, Epileptic seizures frequently occur in the temporal and frontal lobes.

Agree 56.6%(N=64)

Disagree 39.8%(N=45)

Undecided 3.5%(N=4)

Q12. Epileptic seizure has profound effects on the developing child's brain.

Agree 88.7%(N=102)

Disagree 7.8%(N=7)

Undecided 3.5%(N=4)

Q13. The location and type of seizures dramatically affect the role those seizures will play in development. In general, partial seizures, which affect relatively isolated regions of the brain, may cause learning disabilities and language problems, but seldom cause severe mental retardation.

Agree 80.9%(N=93)

Disagree 6.1%(N=7)

Undecided 13%(N=15)

Q14. In contrast, generalized seizures, which affect large regions of the brain, may lead to a deterioration of inherent intelligence potential.

Agree 78.1(N=89)

Disagree 11.4%(N=13)

Undecided 10.5%(N=12)

Q15. Abnormal brain development and/or brain injuries, infection, inflammation, or specific gene mutations can all lead to seizures.

Agree 81.7%(N=94)

Disagree 5.2%(N=6)

Undecided 13%(N=15)

Q16. The most important and commonly used diagnostic tools for seizures are the electroencephalogram (EEG), computed tomography (CT) scans, and magnetic resonance imaging (MRI).

Agree 95.6%(N=109)

Disagree 4.4%(N=5)

Undecided

Q17. There are twice as many people with epilepsy in developing nations than industrialized countries.

Agree 41.7%(N=48)

Disagree 14.8%(N=17)

Undecided 43.5%(N=50)

Q18. Epilepsy and life expectancy indicated premature death is 11 times more common among people with epilepsy compared to the rest of the population.

Agree 44.3%(N=51)

Disagree 15.7%(N=18)

Undecided 40%(N=46)

Q19. The epileptic seizure can be treated using pharmacological and non-pharmacological agents.

Agree 93%(N=107)

Disagree 3.5%(N=4)

Undecided 3.5%(N=4)

Q20. The first and most effective line of treatment for nearly all cases of epileptic seizures, is that of anticonvulsant medications.

Agree 95.7%(N=110)

Disagree 0.9%(N=1)

Undecided 3.5%(N=4)

Q21. The right medication and dosage for every patient is the one that controls that particular individual's seizures without causing significant side effects.

Agree 92.2%(N=106)

Disagree 3.5%(N=4)

Undecided 4.3%(N=5)

Table 3: Themes and Number of Codes for Physiotherapists' Knowledge

Themes	Number of codes	Number of Physiotherapists
Sufficient knowledge	2325	93
Insufficient knowledge	141	6
Lack of knowledge	430	17

Table 4 Physiotherapists' answers regarding current practice and role of physical activity in the rehabilitation of children with epileptic seizures.

Q22. Did neurologists in your facility refer children with epileptic seizures for rehabilitation?

YES 43.8%(N=49)

NO 56.3%(N=63)

Q23. On the average, how many cases of children with epileptic seizure do you identify/manage every year?

1-5. 97.3%(N=114)

6-10. 2.7%(N=3)

More than 10

Q24. Do you refer or invite other health care professional if the need arises in the course of the rehabilitation of children with epileptic seizure?

YES 92.6%(N=100)

NO 7.4%(N=8)

Q25. If you refer to other health professional, to whom did you refer?

Neurologist 72.8%(N=75)

Occupational therapist 11.7%(N=12)

Speech therapist 1%(N=1)

Psychiatrist 10.7%(N=11)

Others

Q26. Dietary therapies such as Ketogenic Diet and Modified Atkins Diet are an important alternative for some children with intractable seizures. Importantly, they can be effective in the treatment of both generalized and partial seizures.

Agree 57%(N=65)

Disagree 5.3%(N=6)

Undecided 37.7%(N=43)

Q27. Vagus nerve stimulation in conjunction with medication can help to treat patients whose seizures have been unresponsive to drug therapy.

Agree 55.7%(N=64)

Disagree 40.9(N=47)
Undecided 3.5%(N=4)

Q28. People with epilepsy are at an increased risk of developing some conditions like cardiovascular disease, type 2 diabetes, hypertension, osteoporosis and certain cancers due to lack of exercise.

Agree 64.3%(N=74)
Disagree 13.9%(N=16)
Undecided 21.7%(N=25)

Q29. There is a great risk of weight gain with some anti-epileptic medications.

Agree 74.8%(N=86)
Disagree 21.7(N=25)
Undecided 3.5%(N=4)

Q.30 Person with epilepsy may not feel like doing exercise due to seizures or because of the side effects of their medication.

Agree 80.9%(N=93)
Disagree 13%(N=15)
Undecided 6.1%(N=7)

Q31. Although seizures can happen during exercise, but the positive effects of exercise may help to reduce seizures for people with epilepsy.

Agree 87.8%(N=101)
Disagree 9.65(N=11)
Undecided 2.6%(N=3)

Q32. Individuals with epilepsy involved in exercise programs exhibit an improved mental state, and become more sociable.

Agree 89.6%(N=103)
Disagree
Undecided 10.4%(N=12)

Q33. Please state the approach you use in the rehabilitation of children with epileptic seizure.

Aerobic exercise 27.6%(N=27)
Strength exercise 5.5%(N=5)
Chiropractic care
Coordination exercise 28.6%(N=28)
Stretching 6.1%(N=6)
Skills development 6.1%(N=6)
Yoga
Acupuncture 1%(N=1)
Balance exercise 3.1%(N=3)
Biofeedback technique 11.2%(N=11)
Magnetic therapy 1%(N=1)

Table 5: Themes and Number of Codes for Physiotherapists' Practice

Themes	Number of codes	Number of Physiotherapists
Standard practice	1104	101
Substandard practice	114	11
Lack of practice	47	4