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Barriers and Facilitators to Clinical Utilization of Contemporary Research Findings in Ankle Instability Rehabilitation among Healthcare Professionals in Anambra State, Nigeria

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Abstract

Objective: The objective of this study was to explore the barriers and facilitators to clinical utilization of contemporary research findings in chronic ankle instability rehabilitation among healthcare professionals and how such barriers and facilitators are influenced by some socio-demographic variables among the healthcare professionals in Anambra state, Nigeria.

Setting: Anambra State, Nigeria.

Background: Ankle sprains have been reported as one of the most traumatizing injuries in sports. Ankle sprains which are mostly managed conservatively are also common in the general population. Despite the availability of researches on ankle sprain rehabilitation, many people still develop chronic ankle instabilities (CAI) and this is a problem to CAI researchers in Anambra State, Nigeria.

Design: A cross-sectional survey of 120 purposively recruited healthcare professionals was adopted for this study. Modified Research Utilization Questionnaire was used to collect data. Respondents' demographics and hypotheses were described and tested with descriptive statistics and Kruskal-Wallis test respectively. Alpha level of significance was set at 0.05.

Results: The respondents' mean age, height, weight and BMI were 34.60 ± 10.65 years, 1.70 ± 8.748 m, 72.61 ± 11.04 kg and 25.20 ± 4.01 kg/m^2 respectively. Research findings being too complex to use in clinical practice (20.4%; $p < 0.001$), the quality of research not being adequate for application in CAI rehabilitation (14.3%; $p < 0.001$) were the most reported barriers. Research is good for practice (52.0%; $p < 0.001$), CAI rehabilitation ought to be based on research findings (50.0%; $p < 0.001$), research helps in meeting ones goal as a clinician (50%; $p < 0.001$) were the most reported facilitators.

Conclusion: Findings from this study indicate the need to find ways to reduce the complexities of research interpretations in order to encourage clinical utilization of research findings by healthcare professionals.

Keywords

Ankle sprains, Chronic ankle instability, Rehabilitation, Barriers, Facilitators, Research utilizations, Healthcare professionals

Introduction

The ankle has been reported to be the most traumatized body part in sport injury literatures, accounting for 10-30% of all sport injuries [1]. Besides sporting world, ankle sprains are very much common in the general population [2]. Some studies have reported that 2-7 individuals are affected per 1000 in the general population each year [1,3]. Anatomically, the anterior talofibular ligament (ATFL), which is the weakest ligament in the ankle with the lowest ultimate load along with its anatomical positions and insertions, is the most commonly injured in a lateral ankle sprain [4]. Whereas the calcaneofibular ligament (CFL) and the posterior talofibular are stronger and larger in sizes, they are rarely injured [4].

Acute ankle sprains are treated mostly by conserva-

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tive measures [2], but many people end up developing chronic ankle instability and pain [5]. Chronic ankle instability (CAI) refers to the development of repetitive ankle sprains, instabilities of the ankle-joint complex [6], and persistent residual symptoms post-injury [7]. CAI is thought to be the result of deficits in neural proprioception, reflexes, muscular reaction time, muscular strength, power, endurance, and mechanical mechanisms (ligamentous laxity) [8]. Chronic ankle instability can be functional or mechanical in nature [9,10]. Functional instability depends on the patient-generated reports or complaints that could be accompanied by clinical laxity while mechanical instability can be identified by physical examination [9]. When patients with chronic ankle instability fail to improve through a conservative management course and physical therapy, surgery is, in most cases, the only option left [11].

The effectiveness of chronic ankle instability rehabilitation regimen(s) post-injury or surgery often determines the success of future ankle functions and athletic performances [2,6]. The goal of rehabilitation is usually to return the injured ankle to the same or higher level of performance and function as pre-injury. Rehabilitation must take into consideration normal tissue size, ligaments flexibility, muscular strength, power, and endurance. If deficits in proprioception, dynamic postural control, strength, flexibility, and range of movement and ankle functionalities are not addressed properly during ankle sprain rehabilitation, we may continue to see ankle sprains become chronic, and injured ankles become chronically unstable.

A recent trend in ankle injury rehabilitation is the move towards a more functionally based approach, including, more emphasis on functional ankle movement than quiet standing and more closed than open-kinetic-chain positioning [12-14]. Rehabilitation of ankle injuries especially among athletes requires the prescription of sports-specific exercises, treatments/management and regimens that challenge the recovering tendons, ligaments, bones, and muscle fibers without necessarily overstressing the injured structures [2].

Despite the availabilities of ankle consortium consensus statements [15,16], ankle injury rehabilitation guidelines [17,18] and protocols for chronic ankle instability rehabilitations, preventing the progression of ankle sprains to CAI have continued to be an ongoing challenge to the sports medicine professionals, the athletes and researchers alike in Anambra State, Nigeria. Perhaps, this could be attributed to inadequate clinical utilization of available contemporary research findings in CAI rehabilitation. In addition, clinicians aiming to prioritize ankle care by implementing only the most effective components of rehabilitation programs may only have access to fewer research findings or very little evidences on comparative efficacies of interventions [19]. There may also be some attributable unexplored barriers and facilitators that hinder or enable adequate implementation and utilization of available contemporary research findings in CAI rehabilitation especially in Nigeria. With a functionally based approach to rehabilitating ankle sprains and ankle instabilities becoming popular [20], it is important to understand the barriers and facilitators to clinical utilization of contemporary research findings in chronic ankle instability rehabilitation. Therefore, the objective of this study was to explore the barriers and facilitators to clinical utilization of contemporary research findings in chronic ankle instability rehabilitation among healthcare professionals and how such barriers and facilitators are influenced by some socio-demographic variables among the healthcare professionals in Anambra state, Nigeria.

Methods

This study was a cross-sectional survey. The population for this study comprised Physiotherapists, Orthopedic surgeons, Nurses and General Practitioners in tertiary, secondary and primary healthcare facilities who were involved in the management of orthopedic/musculoskeletal conditions in Anambra State, Nigeria. A purposive sampling technique was used to recruit the participants. A sample of 120 participants were recruited for the study, the sample size was calculated using the software; G*power 3.1.9.4 [21]. Ethical approval for the study was obtained from the Ethics Committee of Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State before the commencement of the study. The inclusion criteria were: 1) Healthcare professionals (Physiotherapists, Orthopedic surgeons, Nurses and General Practitioners) who were as at the time of this study currently licensed to practice their professions in Anambra State, Nigeria, 2) Healthcare professional (Physiotherapists, Orthopedic surgeons, Nurses and General Practitioners) who were working in any of the tertiary, secondary and primary healthcare facilities in Anambra State, Nigeria, 3) Healthcare professionals (Physiotherapists, Orthopedic surgeons, Nurses and General Practitioners) that have managed at least one chronic ankle instability case in the past 6 months prior to the commencement of this study. The exclusion criteria were: 1) Healthcare professionals that were not clinically involved in patients' management; and, 2) Healthcare professionals that were in private practice. A modified Research Utilization Questionnaire (m-RUQ) was used as an instrument for data collection in this study. The m-RUQ was originally developed by Champion and Leach [22]. It has four subscales, including support (8 items), attitude (21 items), research availability (7 items), and research utilization (10 items). These subscales include both positive and negative statements. Items are rated using a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). The m-RUQ total score is computed by adding the scores for each domain and dividing the result by the number of items

within the respective domain [22]. Any missing data is substituted with the mean value [23]. In addition, the m-RUQ collects demographic data on the respondents. These demographic data include the respondent's gender, age, education, length of service, and working setting. This demographic information is used to describe the sample population. The instrument was previously reported to have a test-retest reliability ICC = 0.79-0.89 [23].

Procedures for data collection

The various respondents were approached with an introduction letter from the Department of Medical Rehabilitation, Faculty of Health Sciences, Nnamdi Azikiwe University Nnewi Campus, introducing the primary investigator and the purpose of the study. After the purpose of the research was dully explained to the participants, and the assurances of the confidentiality of their data and participation were given by the primary investigator, the participants gave their informed consents by signing the consent form approved by the Ethics Committee of Nnamdi Azikiwe University Teaching Hospital Nnewi, Anambra State prior to the commencement of data collection. 120 self-administered m-RUQ were given out to the respondents by hand by the primary investigator. The questionnaires were filled and returned to the investigators by hand. Obtained data was entered into Excel spreadsheet; SPSS version 21.0, (IBM Corporation, Chicago, USA) for MS Windows was used for the data analyses. Descriptive statistics of percentages, mean and standard deviation were used in the analysis. Kruskal-Wallis Test was used in testing the hypotheses. Percentages and ranks (highest percentage to lowest percentage) of respondents' agreement to an item on the questionnaire was taken as the barrier or facilitator to that item. For all statistical analysis, 0.05 alpha level of significance was set a priori.

Results

Socio-demographic characteristics of the participant

120 participants were recruited for this study, out of which 98 completely filled questionnaires were returned. The questionnaire return rate was 81.6%. Male and female participants constituted 49.5% and 50.5% respectively. The mean age, height and BMI of the participant in this study were 34.60 ± 10.65 years, 1.70 ± 8.748 m and 25.20 ± 4.01 kg/m^2 respectively while their mean weight was 72.61 ± 11.04 kg. 48.0% of the participants had First Degrees and 53.1% were married (Table 1).

Barriers to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

Most of the participants reported their barriers to clinical utilization of contemporary research findings in CAI rehabilitation as, "research findings being too complex to use in the clinical practice of CAI rehabilitation" (20.4%; $p < 0.001$), the quality of research is not adequate for application to practice in CAI rehabilitation (14.3%; $p < 0.001$), it is hard to apply research to practice (12.2%; $p < 0.001$), and research is a dull and boring subject (11.2%; $p < 0.001$). Some of the participants were also neutral about these barriers (Table 2).

Facilitators to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

Most of the participant reported their facilitators to

Table 1: Distribution of healthcare professionals in Anambra State, Nigeria across categories of socio-demographic variables.

Variables	Class	n (%)	Mean ± SD
Gender:	Male	49 (50)	
	Female	49 (50)	
Age (yrs)			34.60 ± 10.65
BMI (kg/m^2)			25.20 ± 4.01
Age Grade: Less than 35 years		58 (59.2)	34.60 ± 10.65
35 years and above		40 (40.8)	
Educational level: Diploma		14 (14.3)	
B.Sc		47 (48.0)	
MBBS		15 (15.3)	
M.Sc		8 (8.2)	
PGD		1 (1.0)	
PhD		13 (13.3)	
Marital status: Single		40 (40.8)	
Married		52 (53.1)	
Divorced		6 (6.1)	

Note: BMI: Body Mass Index; B.Sc: Bachelor of Science; MBBS: Bachelor of Medicine and Surgery; M.Sc: Master of Science; PGD: Postgraduate Diploma.

Table 2: Barriers to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria.

Barriers to Research Utilization:	Disagree n (%)	Neutral n (%)	Agree n (%)	χ^2	P-value
Research is a dull and boring subject	30 (30.6)	19 (19.4)	11 (11.2)	38.837	p < 0.001
The thought of research turns me off	46 (46.9)	18 (18.4)	9 (9.2)	30.408	p < 0.001
Research is not applicable to my practice	39 (39.8)	9 (9.2)	4 (4.1)	86.247	p < 0.001
It is hard to apply research to my practice	42 (42.9)	11 (11.2)	12 (12.2)	44.551	p < 0.001
Research findings are not relevant to use in my practice	46 (46.9)	10 (10.2)	5 (5.1)	79.041	p < 0.001
The quality of research is not adequate for application to my practice in CAI rehab	47 (48.0)	16 (16.3)	14 (14.3)	58.224	p < 0.001
Research findings are too complex to use in my practice in CAI rehab	35 (35.7)	18 (18.4)	20 (20.4)	26.592	p < 0.001

Table 3: Facilitators to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra state, Nigeria.

Facilitators to Research Utilization:	Disagree n (%)	Neutral n (%)	Agree n (%)	χ^2	P-value
I would change my practice based on research findings	20 (20.4)	25 (25.5)	27 (27.6)	9.653	0.047
I want to base my CAI rehab on research	19 (19.4)	29 (29.6)	31 (31.6)	22.816	p < 0.001
Using research help me meet my goal as a clinician	6 (6.1)	18 (18.4)	49 (50.0)	64.551	p < 0.001
CAI rehab should be based on Research	5 (5.1)	21 (21.4)	49 (50.0)	96.816	p < 0.001
More clinicians should use research in their practice	9 (9.2)	13 (13.3)	51 (52.0)	72.612	p < 0.001
Research help me build a scientific knowledge base for my practice	5 (5.1)	8 (8.2)	48 (49.0)	6.388	p < 0.001

Table 4: Clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria.

Research Utilization:	Disagree n (%)	Neutral n (%)	Agree n (%)	χ^2	P-value
Basing my practice on research findings saves time and money	24 (24.5)	32 (32.7)	18 (18.4)	16.490	0.002
I base my practice on research	16 (16.3)	28 (28.6)	34 (34.7)	25.878	p < 0.001
My clinical decisions are based on research	18 (18.4)	19 (19.4)	43 (43.9)	43.224	p < 0.001
I apply research findings to my own practice	9 (9.2)	25 (25.5)	45 (45.9)	53.633	p < 0.001
I use research findings in planning patients care	8 (8.2)	20 (20.4)	48 (48.0)	56.184	p < 0.001
Research helps me to validate my actions as a clinician	11 (11.2)	16 (16.3)	45 (45.9)	52.000	p < 0.001
I help others to use research in practice	13 (13.3)	26 (26.5)	41 (41.8)	41.694	p < 0.001
I use research to guide my practice	10 (10.2)	25 (25.5)	43 (43.9)	51.796	p < 0.001
I seek out research related to clinical practice	16 (16.3)	9 (9.2)	52 (53.1)	74.143	p < 0.001

clinical utilization of contemporary research findings in CAI rehabilitation as, research is good for practice (52.0%; p < 0.001), chronic ankle instability rehabilitation ought to be based on research (50.0%; p < 0.001), using research helps me meet my goal as a clinician (50%; p < 0.001), research helps me build a scientific knowledge base for practice (49.0%; p < 0.001) (Table 3).

Clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

The respondents reported their utilization of contemporary research findings as, "I seek out research related to clinical practice (53.1%; p < 0.001), I use research finding in planning patients care (48.0%; p < 0.001), research help me to validate my action as a clinician (45.9%; p < 0.001), I apply research findings to my own practice (45.9%; p < 0.001) and I use research to guide my practice (43.9%; p < 0.001) (Table 4).

Influence of level of education, area of specialization and years of experience on barriers, facilitators and utilization of research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

The socio-demographic factors considered in this

Table 5: Influence of level of education, area of specialization and years of experience on barriers, facilitators and clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria.

Variables	n	Barriers	Facilitators	Application
Level of education	98	0.030*	0.121	0.002*
Area of specialization	98	0.204	0.123	0.043*
Years of experience	98	0.370	0.111	0.089

Note: *< 0.05.

study include years of experience, level of education and area of specialization. In determining the influence between these variables, barriers, facilitators and utilization of research finding, years of experience was found to be statistically non-significant with barriers ($p = 0.370$), facilitators and utilization of research findings ($p = 0.111$ and $p = 0.089$), level of education was found to be statistically significant with barriers and utilization of research findings ($p = 0.030$ and $p = 0.002$) but not on facilitators ($p = 0.121$). Areas of specialization was found to be statistically significant with utilization of research findings ($p = 0.043$) but not on barriers and facilitators ($p = 0.204$ and $p = 0.123$) (Table 5).

Discussion

Barriers to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

The aim of this study was to explore the barriers and facilitators to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals and how such barriers and facilitators are influenced by some socio-demographic variables among the healthcare professionals in Anambra state, Nigeria. The commonly reported barriers from this study were research findings being too complex to use in practice of CAI rehabilitation, the quality of research is not adequate for practice in CAI rehabilitation, and it is hard to apply research to practice. These findings are similar to those of Parahoo [24], who reported that the statistical analysis of researches are not easily understandable, thus bringing about the complexity of research findings and its application to practice. In addition, these results are similar to findings of Oh [25], who stated that lack of clarity about the outcome of research findings was among their participants most reported barriers to utilization of research findings from the perspective of critical care nurses in Korea. Furthermore, the findings of this study also support the results reported by Royles [26], who found that barriers to research utilization can be presentation-related. The respondents indicating that research findings are complex to use in clinical practice may perhaps be explained by the fact that almost half of the respondents (48%) had only First Degrees (B.Sc). In most Nigerian medical schools, clinical research as a course is only taught superficially in the last semester of students' final year and little attention if any is given to research interpretation and utilization. Contrarily, the barriers found in this study are different to the barriers reported by Wang, et al. [27], who reported that barriers to research utilization were facility and setting-related, possibly due to inadequate managerial support and "attributional models". However, the differences between the barriers found in this study and those reported by Wang, et al. [27] may be explained by the fact that while Wang, et al. [27], were more interested in organizational/institutional barriers, this study considered more the nature of contemporary CAI research and the influence(s) of socio-demographic variables on research utilizations, not necessarily facility or setting-related. However, Nigeria is a developing country with very poor healthcare infrastructures and most of the healthcare professionals work in facilities where employees training and development receive little or no priority coupled with very poor remunerations. It is not surprising therefore, the healthcare professionals find research findings complex to use in practice as they are poorly trained and are hardly exposed or equipped with contemporary clinical practices.

In the present study, the least important barriers to research utilization found were research not being applicable to practice and findings from researches not being relevant to use in practice, these also agree to similar findings by Oh [25], were one of the least important barriers was nurses not seeing the value of research to practice. In addition, these supports the findings of Chien, et al. [28], where lack of usefulness of research finding was one of the least reported barriers. This finding could mean that the healthcare professionals are research and evidence-based enthusiasts who are willing to clinically apply evidence-based practices in their patients' management. Unfortunately the hospital facilities where they work may be limiting them as most healthcare facilities in the country are not only underfunded and under-equipped but the professionals are also under trained.

Facilitators to clinical utilization of contemporary research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

The major facilitators as stated by healthcare professionals in Anambra State, Nigeria were that research helps them build scientific knowledge base for their practice and using research also helps them meet their treatment goals as clinicians. These results are similar

to result by Wang, et al. [27], who reported that gaining increasing scientific knowledge was a major motivator/facilitators to utilization of research findings among their participants. In addition these results agree with the findings of Hutchinson and Johnston [29], who reported that creation of an environment in which clinicians are comfortable questioning and evaluating current practice, seeking out research based solution to care for problem and testing them in trials appropriately would facilitate research utilization. More than 50% of the healthcare professionals that participated in this study were young clinicians (less than 35 years of age) who may have recently graduated or may still be undergoing residency trainings or specialization trainings in their various fields so it is not unexpected that their major facilitator is that research helps them build scientific knowledge base for their practice. In addition, research helping them to meet their treatment goals as clinicians could be attributed to the professionals following research trends in order for them to excel in their various training examinations in their fields.

Influence of level of education, area of specialization, and years of experience on barriers, facilitators and utilization of research findings in CAI rehabilitation among healthcare professionals in Anambra State, Nigeria

The result of the current study showed that there was significant influence of the socio-demographics of the clinicians on the barriers, facilitators and clinical utilization of contemporary research findings. Participants' level of education had significant influence on the barriers to research utilization and application of research findings; this is in agreement with the findings of Oh [25], where level of education and position has a significant relationship with barriers to research utilization. Additionally, these findings agree with those of Veeramah [30], Chau, et al. [31] and Eizenberg [32] who in their respective studies reported significant positive relationships between educational level and barriers to research finding utilization. It seems that the more educated and specialized healthcare professionals become, the more they utilize research outcomes and the more it becomes easier for them to overcome the barriers to their clinical utilization of research findings. However, this is in contrast to the findings of Yava, et al. [33] and Olade [34], who separately reported that barriers to research utilization do not have any significant relationship to participants' socio-demographic characteristic such as educational level. Contrarily also, findings from Nkrumah, et al. [35], shows that socio-demographic factors are not associated with barriers to research utilization although educational level was associated with participation in research. The reasons for these contrasting results may not be unconnected to differences in research designs and the category of population studied. There are also the possibilities that environmental and cultural factors may be responsible for the contrasting results in these studies when compared to those of Yava, et al. [33], Olade [34] and Nkrumah, et al. [35]. Social demographic factors such as age, educational attainments, area of specializations or professions and years of experience could be strong influencing factors on how individuals behave, perceive or handle professional challenges. Chronic ankle instabilities, their associated complications and rehabilitations are complex in nature. Although there are many contemporary research findings on the management of CAI, the treatment outcomes of CAI rehabilitation among sufferers are still not very encouraging in Anambra State Nigeria.

Conclusion

Findings from this study suggest that there is need to reduce the complexities of CAI research finding and interpretations. Also research findings and their implications for CAI rehabilitation especially in clinical practice should be made and clearly explained by researchers in order to encourage clinical utilization of such research findings by healthcare professionals. This, could change the clinicians' attitudes towards research, and contribute to improving CAI rehabilitation and treatment outcome and evidence based clinical practice.

The results of this study have shown that barriers and facilitators to clinical utilization of research findings are not related. Also, while educational level and occupational status have influences on barriers, it has no influence on facilitators. Area of specialization has a significant influence on research utilization.

Recommendation

Based on the findings from this study, the following recommendation are proposed:

1. Ways to reduce the complexities of research outcomes and interpretations should be explored.
2. Further studies should be carried out on the attitude and perception of healthcare professional towards using CAI outcome measures and consensus statements in treatment of ankle injuries and CAI.
3. Further studies should be carried out on the efficacy of selected CAI treatment guidelines and consensus statements in the management of CAI.

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Conflict of Interest

None.

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