



# Reliability of 'ACAPN' Clinical Assessment Tool for Differential Diagnoses of Pathologies in Clinical Physiotherapy

Onigbinde Ayodele Teslim, Awotidebe Taofik Oluwole, Wahaab Oluwaseyi David

Institute of Consortium for Advanced Leadership and Academic Training, Association of Clinical and Academic Physiotherapists of Nigeria, Ile - Ife, Nigeria

## Email address:

ayotesonigbinde@gmail.com (O. A. Teslim)

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**Abstract:** The standardization of assessment procedures is to ensure high quality clinical care. Considering variations in clinical training backgrounds of physiotherapists, there may be inconsistency in methods of documentation. The aims of this study were to develop a standard assessment tool and also determine its internal consistency (reliability). The tool was developed using the guidelines of University College London Guide. The tool was divided into 7 sections: sociodemographic data, history, vital signs, physical diagnostic tests, problem lists, differential diagnoses and therapeutic interventions. Ninety-five physiotherapists from purposively selected government hospitals participated in the cross-sectional survey study. They chose the level of agreement for each section of the developed tool on a 5 points likert scale (scored as 1 – 5). The same questionnaire was re-administered to same respondents with test-retest interval of 2 weeks. Cumulative agreement score was computed to have global scores for days 1 and 2. Descriptive Statistics of mean, frequency and percentages were used to summarize the data. Cronbach alpha was used to determine the internal consistency of the assessment tool. Spearman Rho was used to determine the relationship between the agreement scores of the two days. Alpha level was set at  $P < 0.05$ . The mean age of the respondent was  $33.62 \pm 10.26$  years while years of experience was  $10.36 \pm 6.22$  years. The Cronbach Alpha obtained for the tool was 0.9 while that of individual sections ranged from 0.53 to 0.86. The mean global agreement score for day 1 was  $169.44 \pm 13.78$  and after test-retest, it was  $169.20 \pm 13.61$  (day 2). The result of the Spearman's rho showed that there was significant correlation between global agreement score for days 1 and 2 ( $r = 0.99$ ,  $p = 0.001$ ). There was also significant correlation between the age and experience of the respondent ( $r = 0.77$ ,  $p = 0.01$ ). In conclusion, the developed assessment tool has internal consistency and it was found to be reliable as a means of documentation for evaluating patients.

**Keywords:** Clinical Assessment Tool, Differential Diagnoses, Pathologies, Physiotherapy

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## 1. Introduction

Documentation is an important legal and professional requirement that serves as means of communication between health professionals and the clients and it may be in written or electronic format [1, 2]. This reflects the assessment and management procedures [3, 4]. Holistic patient care is guaranteed with appropriate documentation that is available to all members of the health care team [5]. The World Confederation for Physical Therapy (WCPT) recommends that accurate physiotherapy documentation should include

personal data, consent, examination, evaluation, diagnosis, prognosis, plan of care, interventions/treatment, reexamination, and the results [6].

Clerking is a component of documentation and it is a comprehensive history and full examination of a patient which includes result of initial investigations; differential diagnoses and management plan [7]. It is the first and most important contact that any medical team has with the patient. It provides information that may not be later available if recorded improperly [8, 9]. This results in formulation of management plans and subsequent treatment. Eliciting a full

patient history through open-ended questioning and active listening will ultimately save time and offer critical clues to the diagnosis. While the patient's history may provide clues to an underlying diagnosis, a thorough physical examination can offer key evidence for pruning the cause list, which narrows the diagnostic workup and can ultimately lead to an accurate diagnosis within a shorter time span [10]. An accurate history suggests the correct diagnosis, while physical examination and other investigations confirm the impression [11, 12]. Evidence have shown that a skilled physical examination provided a pivotal finding that changed the diagnosis and treatment in about 26% of patients, thus showing that physical examination is pivotal to achieving an effective treatment plan [13]. Paley et al. [14] reported that physical examination has been reported to double the diagnostic power of the history from 19.5% to 39%, while the addition of basic diagnostic studies increased diagnostic accuracy by another 33% [14]. In 90% of cases, accurate diagnoses were determined through the history, physical examination and selective studies either alone or in combination. The utilization of diagnostic workup will guide the opportunity to support or refute a potential diagnosis, and thereby determine the real problem in an efficient and cost-effective manner [10, 13, 14]

Assessment procedures should be feasible and practical to demonstrate sufficient reliability and validity for the purpose for the purpose of usage [15 -18]. Reliability is the extent to which assessment yields relatively consistent results across occasions, contexts and assessors [16]. Globally, there appears to be no uniform assessment tool for taking history, making assessment and arriving at conclusive diagnoses at different clinical settings. Furthermore, considering variations in academic and clinical backgrounds of physiotherapists, there may be inconsistencies in methods of patient's assessment and documentation. Hence, it is paramount to develop a standard and reliable clinical assessment tool for physiotherapy clinicians, hence, the need for this study. The primary objectives of this study were to develop a standard clinical assessment tool for physiotherapists and determine the internal consistency (reliability) of the tool.

## 2. Methods

### 2.1. Participants

Ninety-five physiotherapists who were purposively selected from government hospitals participated in the study and the sample size was determined by estimating a proportion at a precision level as  $\pm 10\%$ , confidence level of 95% and  $\alpha$ -value of 0.5). The study was a cross-sectional survey.

### 2.2. Inclusion and Exclusion Criteria

Eligibility for inclusion for this study were that the clinical physiotherapists must be licensed to practice by the Medical Rehabilitation Therapists Board of Nigeria and must have at

least six months clinical experience. Excluded were retired physiotherapists and those in private practice.

### 2.3. Instruments

A structured questionnaire was used (Appendix 1). A pilot study was conducted prior to actual data collection. A draft of the questionnaire was tested for content validity and changes were made based on the result of the pilot test. Five physiotherapists from the department of Medical Rehabilitation Obafemi Awolowo University (O. A. U) Ile-Ife were asked to review the developed questionnaire in order to determine the clarity and correctness of the questions. Changes were then made to the questions' design, content and intent based on their responses.

The questionnaire rated the level of agreement on a 5 point likert scale.

### 2.4. Development of the Assessment Tool

The assessment tool was developed by the Institute of Consortium for Advanced Clinical and Leadership Training of the Association of Clinical and Academic Physiotherapists of Nigeria (ACAPN), (Appendix 11). The tool was developed using the guideline of UCL guide to history taking and examination [7]. The guideline emphasized that clerking procedure should contain the presenting complaint, history of the presenting complaint, past medical and surgical, Psychiatric history, drug history (including allergies), family and social history. Columns of problem list, differential diagnoses and management plan were also developed as recommended by Louisa et al. [7]. Each item in the guideline were tabulated and divided into 7 sections as follows:

Section A consists of the sociodemographic data and history of the patient

Section B assesses the patient's vital signs and general appearance

Section C includes different examinations and tests for the cervical vertebrae and the upper limb

Section D assesses the patient's chest and abdomen

Section E consists of examinations of the patient's spine

Section F assesses the patient's lower limb

Section G summates the findings from other sections to create a list of differential diagnoses and the necessary therapeutic interventions

### 2.5. Procedures

Ethical approval was obtained from Health Research and Ethics Committee (HREC) of the Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Osun State, Nigeria. A letter of Introduction was obtained from the Department of Medical Rehabilitation, Obafemi Awolowo University (OAU) to the Heads of physiotherapy departments of the selected hospitals. The questionnaire had 7 sections (A, B, C, D, E, F, and G). Respondents' name and address were not required in the questionnaire in order to maintain anonymity. The purpose of the study was explained to each of the participants and consents was obtained before taking part in

the research. The questionnaire was completed during the participating physiotherapists' convenient time. The same questionnaire was re-administered to the same respondent with a test-retest interval of 2 weeks. Each respondents choose the level of agreement for each section on a 5 points likert scale where SA is strongly agree; A is agree; UD is undecided; D is disagree; and SD is strongly disagree. The level of agreement with the essentiality, importance and relevance of items in each section were scored thus:

- Strongly Agreed – 5
- Agreed – 4
- Undecided – 3
- Disagreed – 2
- Strongly Disagreed – 1

A cumulative score was computed from all levels of agreement to have global scores for day 1 and day 2 and were used for data analysis.

## 2.6. Data Analysis

Descriptive Statistics of mean, frequency and percentages was used to summarize the obtained data. Cronbach alpha was used to determine the reliability (internal consistency) of the assessment tool. Spearman Rho was used to find the relationship between the results gotten for the two days.

## 3. Results

### 3.1. Gender and Qualifications of Respondents

The results showed that 64 out of the 107 respondents are male while the remaining 43 are female. Fifty-nine (55.1%) physiotherapists have first degree in, 37 (34.6%) have MSc (PT), while 4 (3.7%) didn't specify the educational qualifications. The other qualifications of the respondents are shown in table 1. The mean age of the respondent was  $33.62 \pm 10.26$  while the mean of the years of experience was  $10.36 \pm 6.22$  years. The minimum and maximum value for age and years of experience are presented in table 2. The result showed that 30 (28%) specialized in orthopedics while 38 (35.5%) had special interest in Neurology. Other areas of specialization are shown in table 1.

**Table 1.** Qualifications and Specialization of the respondents.

		Frequency	Percent
Qualifications:	BSC /BMR	59	55.1
	MSC (PT)	37	34.6
	PhD	7	6.5
	DPT	0	0
	No indication	4	3.7
Specialization:	Orthopedics	30	28.0
	Neurology	38	35.5
	Pediatrics	25	23.4
	Cardiopulmonary	9	4.7
	Community	0	0
	General Practice	9	8.4

**Table 2.** Age and years of experience of the respondents.

	Minimum	Maximum	Mean	Std. Deviation
Experience	1.00	28.00	10.36	6.22
Age	15.00	58.00	33.63	10.26

Correlations between Age, Years of experience, and Global Agreement Scores of day 1 and 2

The mean values for global agreement score for day 1 was  $169.44 \pm 13.78$ , and after test-retest interval of 2 weeks, it was  $169.20 \pm 13.61$  (day 2). The result of the Spearman's rho showed that there was a significant correlation between global agreement score for day 1 and day 2 ( $r = 0.99$ ,  $p = 0.01$ ). There was also significant correlation between the age and experience of the respondent ( $r = 0.77$ ,  $p = 0.01$ ). Other correlations are shown in table 3.

### 3.2. Socio-Demographic Section of the Assessment Tool

On first day of evaluation (day 1), the mean agreement score obtained for documenting patients name, taking the past medical (family and social history) and past drug information about the patient are  $4.63 \pm 0.59$ ,  $4.71 \pm 0.46$ , and  $4.62 \pm 0.58$  respectively out of a maximum agreement score of 5 for each item. The mean agreement score for documenting occupation, vital signs (Pulse rate, Respiratory rate and Blood pressure) and patients general appearance (cyanosed, Jaundiced, Anemic, etc.) are presented in table 4. The Cronbach Alpha was found to be 0.78.

The inter-item Correlation between documenting name of the patient and past medical history (includes family and social history), past drug information, patients occupation, recording vital signs and checking the appearance of the patient were 0.37, 0.32, 0.38, 0.19, and 0.26 while between documenting past medical history of the patient and drug history, patients occupation, recording vital signs, and checking the appearance of the patient were 0.41, 0.53, 0.32, 0.33. Other inter-item correlations for the sociodemographic section are presented in table 5.

The mean agreement scores and inter-item correlation for the sociodemographic section, re-assessed on day 2 after a test-retest interval of 2 weeks are presented in table 5. The Cronbach Alpha gotten for day 2 was 0.79 (Table 4).

### 3.3. Cervical Spine and Upper Limb Examination

On first day of evaluation (day 1), the mean agreement score obtained for examining range of motion of the patients upper limb joints, tone of the upper limb muscles, special test for the cervical spine (digital pressure, compression test etc.) and sensation test for the upper limb are  $4.47 \pm 0.61$ ,  $4.56 \pm 0.52$ ,  $4.60 \pm 0.51$  and  $4.56 \pm 0.54$  respectively out of a maximum agreement score of 5 for each item (Table 6). The mean agreement score for examining movement of the head, observation of the cervical spine, cervical spine movement, palpation of the cervical spine, movement of the neck, goniometry measurement of the joints of the upper limb, muscle girth around the arm, stress test for the upper limb and other examinations of the upper extremity are presented in table 6. The Cronbach Alpha was found to be 0.54 for the

Cervical Spine and Upper limb examination section (Table 6).

The inter-item Correlation between examining the range of motion of the patients upper limb joint range of motion and Muscle tone of the upper extremity, Special test for the cervical spine, Sensation of the upper limb, Head movement, Observation of the cervical spine, Cervical spine range of motion, Palpation of the cervical spine, Movement of the neck, Goniometry of the Upper limb, Girth measurement around the arm, Stress test of the upper limb, Other

assessment of the upper limb are 0.48, 0.33, 0.49, 0.27, 0.51, 0.25, 0.35, 0.47, 0.16, 0.51, 0.55, 0.52 respectively. Other inter-item correlations for cervical spine and upper limb examination are presented in table 8 and 9.

The mean agreement scores and inter-item correlation for the cervical spine and upper limb examination section, re-assessed on day 2 after test-retest interval of 2 weeks are presented in table 7 and 9 respectively. The cronbach Alpha gotten for day 2 was 0.53 (Table 7).

**Table 3.** Correlations between age, Years of experience, and global agreement scores of day 1 and 2.

		Experience	Age	Global score Day1	Global scoreDay2
Spearman's rho	Experience	Correlation Coefficient			
		Sig. (2-tailed)			
	Age	Correlation Coefficient	0.77**		
		Sig. (2-tailed)	0.01		
	Global scoreday1	Correlation Coefficient	0.14	0.12	
		Sig. (2-tailed)	0.16	0.25	
	Global scoreday2	Correlation Coefficient	0.15	0.13	0.99**
		Sig. (2-tailed)	0.12	0.19	0.01

\*\*. Correlation is significant at the 0.01 level (2-tailed).

**Table 4.** Mean Agreement score for sociodemographic section for day 1 and 2.

	Sociodemographic	Mean	Std. Deviation	Cronbach Alpha
Day1:	Name	4.63	0.59	0.78
	History	4.71	0.46	
	Drug history	4.62	0.58	
	Occupation	4.62	0.52	
	Vital signs	4.63	0.56	
	Appearance	4.61	0.56	
Day 2:	Name	4.65	0.57	0.79
	History	4.71	0.50	
	Drug history	4.62	0.59	
	Occupation	4.60	0.52	
	Vital signs	4.61	0.53	
	Appearance	4.64	0.55	

**Table 5.** The inter-item correlation between Sociodemographic section for day 1 and 2.

	Name	History	Drug history	Occupation	Vitalsigns	Appearance
Day1:	Name					
	History	0.37				
	Drug history	0.32	0.41			
	Occupation	0.38	0.53	0.42		
	Vitalsigns	0.19	0.32	0.42	0.24	
	Appearance	0.26	0.33	0.46	0.49	0.67
Day 2:	Name					
	History	0.36				
	Drug history	0.31	0.41			
	Occupation	0.39	0.53	0.41		
	Vital signs	0.19	0.31	0.43	0.24	
	Appearance	0.27	0.34	0.46	0.51	0.67

**Table 6.** Mean Agreement score for Cervical Spine and Upper limb examination section on day 1.

Examination	Mean	Std. Deviation	Cronbach Alpha
ROM	4.47	0.61	0.54
Muscle tone	4.56	0.52	
Special tests	4.60	0.51	
Sensation test	4.56	0.54	
Head	4.35	0.92	
Observation	4.45	0.69	
Cervical	4.44	0.66	
Palpation	4.60	0.53	
Movement	4.55	0.54	

Examination	Mean	Std. Deviation	Cronbach Alpha
Goniometry	4.99	4.96	
Girth	4.56	0.63	
Stress	4.53	0.61	
Other assessment	4.51	0.72	

**Table 7.** Mean Agreement score for Cervical Spine and Upper limb examination section on day 2.

Examination	Mean	Std. Deviation	Cronbach Alpha
ROM	4.42	0.61	0.53
Muscle tone	4.56	0.52	
Special tests	4.61	0.51	
Sensation test	4.60	0.53	
Head	4.36	0.81	
Observation	4.41	0.74	
Cervical	4.31	0.66	
Palpation	4.70	0.54	
Movement	4.57	0.50	
Goniometry	4.99	4.71	
Girth	4.57	0.63	
Stress	4.40	0.61	
Other assessment	4.44	0.72	

**Table 8.** The inter-item correlation between Cervical Spine and Upper limb examination section for day 1.

	Rom	Tone	Special Test	Sensation	Head	Observation
Rom						
Tone	0.48					
Special Test	0.48	0.49				
Sensation	0.58	0.58	0.34			
Head	0.22	0.23	0.18	0.22		
Observation	0.34	0.34	0.35	0.48	0.40	
Cervical	0.30	0.31	0.55	0.41	0.12	0.24
Palpation	0.39	0.41	0.68	0.46	0.15	0.44
Movement	0.60	0.60	0.50	0.48	0.25	0.36
Goniometry	0.14	0.15	0.12	0.15	0.09	0.12
Girth	0.58	0.58	0.40	0.68	0.25	0.41
Stress	0.39	0.39	0.45	0.49	0.26	0.39
Others	0.41	0.45	0.39	0.46	0.33	0.41

Table 8. Continued.

Cervical	Palpation	Movement	Goniometry	Girth	Stress	OtherRS
0.42						
0.37	0.58					
0.14	0.13	0.14				
0.32	0.45	0.52	0.14			
0.32	0.49	0.48	0.14	0.46		
0.25	0.35	0.42	0.13	0.52	0.61	

**Table 9.** The inter-rater correlation between cervical spine and upper limb examination for day 2.

	Rom	Tone	Special Test	Sensation	Head	Observation
Rom						
Tone	0.48					
Special Test	0.31	0.48				
Sensation	0.49	0.58	0.32			
Head	0.27	0.23	0.17	0.28		
Observation	0.51	0.34	0.3	0.48	040	
Cervical	0.29	0.30	0.52	0.43	0.13	0.27
Palpation	0.30	0.39	0.65	0.45	0.13	0.42

	Rom	Tone	Special Test	Sensation	Head	Observation
Movement	0.47	0.60	0.48	0.48	0.25	0.36
Goniometry	0.16	0.14	0.13	0.14	0.09	0.12
Girth	0.51	0.58	0.40	0.68	0.25	0.41
Stress	0.55	0.39	0.43	0.49	0.26	0.39
Others	0.40	0.41	0.30	0.44	0.28	0.36

Table 9. Continued.

	Cervical	Palpation	Movement	Goniometry	Girth	Stress	OtherRS
Rom							
Tone							
Special Test							
Sensation							
Head							
Observation							
Cervical							
Palpation	0.38						
Movement	0.36	0.57					
Goniometry	0.13	0.13	0.14				
Girth	0.31	0.43	0.52	0.13			
Stress	0.36	0.48	0.48	0.14	0.46		
Others	0.28	0.28	0.38	0.12	0.44	0.53	

### 3.4. Chest and Abdominal Examination

On first day of evaluation (day 1), the mean agreement score obtained for auscultation of the chest, other examinations of the chest and abdomen are  $4.47 \pm 0.81$ , and  $4.31 \pm 0.70$  respectively. The mean agreement score for examining the breath sound and abdominal examination are presented in table 10. The Cronbach Alpha was found to be 0.83. The inter-item Correlation between auscultation of the

patient's chest and examination of the breath sound, abdominal examination and other examination of the chest and abdomen are 0.83, 0.49, and 0.50 respectively. Other inter-item correlations are presented in table 11. The mean agreement scores and inter-item correlation for the Chest and Abdominal Examination section, re-assessed on day 2 after a test-retest interval of 2 weeks are presented in table 10 and 11 respectively. Cronbach Alpha gotten for day 2 was 0.81

Table 10. Mean Agreement score for of the Chest and Abdomen Examination section for day 1 and 2.

	Chest and Abdomen Examination	Mean	Std. Deviation	Cronbach Alpha
Day 1:	Chest Auscultation	4.47	0.81	0.83
	Breath	4.44	0.79	
	Abdominal	4.35	0.78	
	Other Examinations	4.31	0.70	
Day 2:	Chest Auscultation	4.46	0.80	0.81
	Breath	4.64	0.78	
	Abdominal	4.34	0.78	
	Other Examinations	4.23	0.69	

Table 11. Inter-item correlation between Chest and Abdomen Examination section for day 1 and 2.

		Chest Auscultation	Breath	Abdominal	Other Examinations
Day 1:	Chest Auscultation				
	Breath	0.83			
	Abdominal	0.49	0.44		
	Other Examinations	0.50	0.46	0.55	
Day 2:	Chest Auscultation				
	Breath	0.79			
	Abdominal	0.49	0.33		
	Other Examinations	0.50	0.40	0.55	

### 3.5. Spine Examination Section

On first day of evaluation (day 1), the mean agreement score obtained for inspection of the spine, goniometry measurement of the spine and spinal reflexes are  $4.62 \pm 0.53$ ,

$4.35 \pm 0.68$ , and  $4.46 \pm 0.63$  respectively. The mean agreement score obtained for movement and function of the spine, spinal tests and other examinations of the spine is shown in table 16. The Cronbach Alpha was found to be 0.82. The inter-item Correlation between inspection of the

patient's spine and goniometry of the spine, spinal reflexes, movements and function of the patients spine, special test for the spine and other spinal examinations are 0.31, 0.24, 0.46, 0.39, and 0.54 respectively. Other inter-item correlations are presented in table 12.

The mean agreement scores and inter-item correlation for the spinal examination section, re-assessed on day 2 after a test-retest interval of 2 weeks are presented in table 12 and 123 respectively. Cronbach Alpha gotten for day 2 was 0.81.

**Table 12.** Mean Agreement score for Spinal examination section for day 1 and 2.

	Spinal examination section	Mean	Std. Deviation	Cronbach Alpha
Day 1:	Inspection and palpation	4.62	0.53	0.82
	Spinal movements	4.62	0.49	
	Spinal Goniometry	4.35	0.68	
	Spinal Reflexes	4.46	0.63	
	Spinal tests	4.55	0.55	
	Other examinations	4.48	0.54	
Day 2:	Inspection and palpation	4.61	0.53	0.81
	Spinal movements	4.61	0.49	
	Spinal Goniometry	4.35	0.67	
	Spinal Reflexes	4.45	0.63	
	Spinal tests	4.55	0.55	
	Other examinations	4.40	0.66	

**Table 13.** The inter-item correlation between Spinal examination section for day 1 and 2.

		Inspection and palpation	Spinal movements	Spinal goniometry	Spinal reflexes	Spinal tests	Other examinations
Day 1:	Inspection and palpation						
	Spinal movements	0.46					
	Spinal goniometry	0.31	0.45				
	Spinal reflexes	0.24	0.32	0.42			
	Spinal tests	0.39	0.53	0.56	0.43		
	Other examinations	0.54	0.50	0.47	0.52	0.42	
Day 2:	Inspection of the spine						
	Spinal functions	0.51					
	Spinal goniometry	0.35	0.44				
	Spinal reflexes	0.30	0.32	0.40			
	Spinal tests	0.40	0.51	0.55	0.41		
	Other examinations	0.56	0.48	0.41	0.45	0.38	

### 3.6. Lower Limb Examination Section

On first day of evaluation (day 1), the mean agreement score obtained for goniometry measurement for the lower limb and other investigations for the lower limb (outcome measures, radiological investigations, etc.) are  $4.54 \pm 0.59$ , and  $4.64 \pm 0.50$ . The mean agreement for general observation of the lower limb, lower limb tone and power, and special test for the lower limb are presented in table 14. The Cronbach Alpha was found to be 0.86.

The inter-item correlation between goniometry measurement for the lower limb, and other investigations for the lower limb (outcome measures, radiological investigations, etc.), general observation of the lower limb, lower limb tone and power, and special test for the lower limb are 0.47, 0.42, 0.52, and 0.52 respectively. Other inter-item correlations are presented in table 15.

The mean agreement scores and inter-item correlation for lower limb examination section, re-assessed on day 2 after a test-retest interval of 2 weeks are presented in table 18 and 15 respectively. Cronbach Alpha gotten for day 2 was 0.79

**Table 14.** Mean Agreement score for lower limb examination section for day 1 and 2.

	Lower limb examination	Mean	Std. Deviation	Cronbach Alpha
Day 1:	Observation	4.62	0.53	0.86
	Muscle tone and power	4.65	0.50	
	Goniometry	4.54	0.59	
	Special tests	4.55	0.57	
	Other investigations	4.64	0.50	
Day 2:	Observation	4.61	0.53	0.79
	Muscle tone and power	4.64	0.50	
	Goniometry	4.53	0.57	
	Special tests	4.34	0.55	
	Other investigations	4.64	0.50	

### 3.7. Diagnoses and Intervention Section

On first day of evaluation (day 1), the mean agreement score obtained for list of patient's impairments is  $4.53 \pm 0.62$ . The mean agreement score for diagnosis and of interventions for the patient is presented in table 16. The Cronbach Alpha was found to be 0.78. The inter-item correlation between list of patients impairment and therapeutic diagnosis, list of

interventions for the patient are 0.55, 0.47 respectively. Other inter-item correlations are presented in table 17. The mean agreement scores and inter-item correlation for diagnoses and intervention section, re-assessed on day 2 after a test-retest interval of 2 weeks are presented in table 16 and 17 respectively. Cronbach Alpha gotten for day 2 was 0.76.

**Table 15.** The inter-item correlation between lower limb examination section on day 1 and 2.

		Observation	Muscle tone and Power	Goniometry	Special tests	Other investigations
Day 1:	Observation					
	Muscle tone and Power	0.61				
	Goniometry	0.41	0.52			
	Special tests	0.44	0.51	0.52		
	Other investigations	0.41	0.43	0.47	0.46	
Day 2:	Observation					
	Muscle tone and Power	0.59				
	Goniometry	0.44	0.55			
	Special tests	0.33	0.34	0.41		
	Other investigations	0.41	0.43	0.48	0.27	

**Table 16.** Mean Agreement score for diagnosis and intervention section for day 1 and 2.

	Diagnoses and intervention	Mean	Std. Deviation	Cronbach Alpha
Day 1:	Impairments	4.53	0.62	0.78
	Diagnoses	4.58	0.51	
	Interventions	4.61	0.58	
Day 2:	Impairments	4.58	0.62	0.76
	Diagnoses	4.58	0.52	
	Interventions	4.60	0.57	

**Table 17.** The inter-item correlation between Diagnosis and intervention section of the for day 1 and 2.

		Impairments	Diagnosis	Intervention
Day 1:	Impairments			
	Diagnoses	0.55		
	Interventions	0.47	0.64	-
Day 2:	Impairments			
	Diagnoses	0.52		
	Interventions	0.43	0.63	-

## 4. Discussion

The process of evaluating patient encompasses visual observation, palpation, listening and communication. It also includes the characteristics, interactions, non-verbal communication, and reaction to physical surroundings [19]. Globally, healthcare bodies are aiming at improving the quality of services offered to patients [20]. This study aimed at developing an assessment and documentation chart for patients; and also determines the internal consistency and reliability of the tool. Most physiotherapists in this study have special interest in orthopaedics, neurology and paediatrics specialties; and the mean years of clinical experience in practice was 10 years. These relevant specialties are the commonest areas where physiotherapists practice. The implications of these were that the physiotherapists who participated in this study were the most suitable respondents.

The Cronbach Alpha (0.99) obtained for the developed

chart was very high and this implied a high internal consistency for all the sections in the assessment tool. Also, the reliability co-efficiency (0.99) obtained when the level of agreement scores obtained on two different test days were related was very high. The result showed a significant level of correlations between the global agreement scores gotten for the 2 days. This implied that developed assessment tool had a high intra-rater reliability. Furthermore, the Cronbach Alpha obtained for history, neck, upper and lower limbs examination ranged between 0.54 and 0.86. This implied high level of internal consistencies for individual sections of the tool. Also, there was significant correlation between global agreement score for day 1 and day 2; and this implied that the clinical assessment tool was highly reliable. Previous reports have emphasized the importance of elaborate history in arriving at relevant and conclusive diagnoses [10, 21]. Taking history has been well documented to be one of the most important aspects of patient assessment and perhaps the most versatile diagnostic and therapeutic tool in patient's documentation [22]. There should be opportunity for patients



to explore and give additional recap of events leading to the ailment [23, 24]. This developed tool will provide, guide and prevent derailing from important questions or even omission; therefore it is helpful to use a history-taking framework which gathers information in an orderly way as reported by Gerri [24]. Relevant hypotheses are generated during history narration (patient's ideas, concerns, expectations, illnesses, injuries and treatments, symptoms and past medical history; and this promotes a cost-effective utilization of the clinical laboratory and other diagnostic modalities [25, 26]. Accurate drug history from patients has several implications as they can mask clinical signs and alter the results of investigations. Since, the influences of exercise and physiotherapy modalities had been well documented, it is important to have full documentation of drugs being used by patients [27].

The ACAPN Assessment tool has column for the three essential Vital signs (Pulse rate, Respiration rate, Blood pressure) and appearance. Vital signs are specific measurement of the basic body function, and the interpretations are important components of assessment that can yield information about underlying health status of the Patient [28 - 31]. The monitoring and measurement of vital signs and clinical assessment are core essential skills for all health care practitioners working with infants, children and young people [32, 33]. General appearance is the first impression of the patient that provides vital information about the patient's behavior and health status; and it may provide diagnostic clues to the illness, severity of disease, and the patient's values, social status, and personality [34 - 36]. Patient's appearance guides therapeutic intervention plans and/or discharge recommendations [37 - 41].

A section of the ACAPN comprises elements of pulmonary examination that consist of inspection, palpation, percussion, and auscultation. These had been documented to be important in the examination of the heart and abdomen [42]. It is, however, noteworthy that patient's history initially reveals the scope and intensity of chest examination that will be required in patients. On first day of evaluation (day 1), the mean agreement score obtained for inspection of the spine, goniometry measurement of the spine and spinal reflexes for both testing days were very and the Cronbach Alphas were

0.82 and 0.81. These confirmed that this section has very high internal consistency. The inter-item Correlation between inspection of the patient's spine and goniometry of the spine, spinal reflexes, movements and function of the patient's spine, special test for the spine and other spinal examinations were moderate.

Similarly, the mean agreement scores and Cronbach alphas obtained for examining range of motions, tone of muscles, special diagnostic and skin sensation tests; and reflexes for both upper and lower limbs were high. The lower limb examination section had the highest agreement scores. Reports had shown that goniometry measurements, accessing muscle tone and power, sensation test and other assessments in the upper limb and Lower limb examination section are relevant and important to diagnoses. [43 - 45]. The inter-item correlations between list of patient's impairment and therapeutic diagnosis, list of interventions for the patient were also moderate with a high Cronbach alpha.

Generally, the ACAPN clinical assessment tool provides both subjective and objective assessment of patients with essential and common outcome measures. Measuring outcomes is an essential component of physical therapists practice that permits management of individual patient care, and opportunity for comparing care and determining effectiveness of therapies [46]. Outcome measures, along with other standardized tests and measures used throughout the episode of care, as part of periodic reexamination, provide information about whether predicted outcomes are being realized. In the clinical setting, it may be used in clinical audit to inform patients, therapists, managers, and health care funding agencies whether relevant goals are being met (or not) in an efficient and timely manner.

## 5. Conclusion

It was concluded that the clinical implication of the findings of this study high, as the tool has high internal consistency and intra-rater reliability to serve as patients' evaluation tool for documentation.

## Appendix

### Appendix A

Questionnaire for testing the Reliability of ACAPN Clinical Assessment Tool for Diagnoses and Management Plan in Physiotherapy.

For each of the questions in the sections below, tick the response that best characterizes how you feel about the statement, where SA=Strongly Agree, A= Agree, UD= Undecided, D=Disagree, SD= Strongly Disagree.

#### Section A (History).

S/N	IMPORTANCE	SA	A	UD	D	SD
1	The provision for the name as provided					
2	The provision for history which includes the family and social history					
3	Drug history including allergies and surgical history					
4	Patient's occupation					

*Section B (Vital Signs And General Apperance).*

S/N	ADEQUACY	SA	A	UD	D	SD
1	The Provision for the vital signs					
2	General appearance which includes Jaundice, Anaemia, Clubbing, Cyanosis, Oedema, Lymphadenopathy					
3	Appearance of the head, neck, and gait is sufficient					
4	The provision for other observations					

*Section C (Cervical And Upper Limbs Examination).*

S/N	RELEVANCE OF EXAMINATION	SA	A	UD	D	SD
1	Cervical goniometry					
2	Special test for the cervical region					
3	Inspection and palpation of the upper limbs					
4	Movement and functions of the upper limbs					
5	The provision for upper limbs tone and power					
6	Upper limbs goniometry					
7	Muscle girth e.g Biceps and forearm girth					
8	Other ROM in the upper limbs					
9	Skin sensation and reflexes					
10	Special tests of the upper limbs which includes the stress test					
11	Other assessments in both the cervical spine and upper limbs					

*Section D (Chest And Abdomen).*

S/N	RELEVANCE OF EXAMINATION	SA	A	UD	D	SD
1	Chest auscultation					
2	Assessment of breath sound					
3	Abdominal assessment					
4	Other examinations					

*Section E (Spine Examination).*

S/N	RELEVANCE OF EXAMINATION	SA	A	UD	D	SD
1	Inspection and palpation					
2	Spinal movement and function					
3	Spinal goniometry					
4	Reflexes which includes plantar and Achilles reflex					
5	Spinal tests					
6	Other examinations of the spine					

*Section F (Lower Limb Examination).*

S/N	RELEVANCE OF EXAMINATION	SA	A	UD	D	SD
1	Observation					
2	Muscle tone and power					
3	Lower limb goniometry					
4	Special tests					
5	Outcome measures, radiological and laboratory investigations					

*Section G (Diagnosis And Intervension).*

S/N	IMPORTANCE	SA	A	UD	D	SD
1	The provision for impairment/problem list					
2	The provision for diagnosis					
3	The provision for therapeutical intervention					

**Appendix B**

ACAPN Clinical Assessment Tool for Diagnoses and Management Plan in Clinical Physiotherapy.

*Section A (History).*

<b>Name:</b>	<b>Registration No:</b>
<b>Address:</b>	<b>Occupation:</b>
<b>Age:</b>	
History:	Family & Social History: Past Medical History: Drug History (including allergies):

*Section B (Vital Signs & Appearance).*

BP:	PR:	General appearance
		Head: (TICK) Jaundice Anaemia Clubbing Cyanosis Oedema Lymphadenopathy OTHERS:
RR:		Neck: Gait:

*Section C (Cervical & Upper Limb Examination).*

MOVEMENTS									
LOOK (findings on inspection)		Normal ✓	Abnormal ✓	CERVICAL REGION					
FEEL (tenderness to palpation, crepitus)				Goniometry					
MOVE (loss of movements)				Neck		Ranges (° or cm)	Resisted tests +ve/-ve		
FUNCTIONS				Flexion (Rt/Lt)					
GONIOMETRY				Extension (Rt/Lt)					
				Rot to right					
				STRESS TEST					
				Rot to left					
Shoulder		Flexion (degrees)	Extension (degrees)	Abduction (degrees)	Valgus	Valgus			
Elbow					NA	NA			
Wrist									
IP									
Pronation (_to_)									
Supination (_to_)									
Other ROMs									
Reflexes		Normal ✓		Hypo ✓		Hyper ✓			
Bicep tendon									
Tricep tendon									
Skin sensation test									
Girth measurement									
Bicep girth									
Forearm girth									
OTHERS:									

*Section D (Chest & Abdomen Examination).*

Auscultation	Breath Sound ✓	Abdomen
Pansystolic murmur	Rhonci (clear)	Normal
Ejection systolic murmur	Wheezing	Tenderness
Early systolic murmur	Crackle	Hepatomegaly
Mid- systolic murmur	Burble	Midline laparotomy scar and colostomy
	Reduced air entry	Rooftop incision scar:
Pain intensity/10		Moderate splenomegaly and urinary catheter
		OTHERS

*Section E (Spine Examination).*

LOOK (findings on inspection)	Normal √	Abnormal √	SPINAL ROM	Ranges (° or cm)	SPECIAL TESTS (+ve or -ve)
FEEL (tenderness to palpation, crepitus)			Flexion		Digital pressure Waddel’s sign
MOVE (loss of movements)			Extension		Transverse pressure Lumbar rotation pressure
FUNCTIONS			Rot to right		SI compression test Resisted isometrics tests
Pain on movements			Rot to left		SI distraction test Femoral stretch test
Patellar reflex (L3, L4)			Side flexion to right		Slump test Lasegue’s sign (SLR)
			Side flexion to left		Gaenslen Postero-anterior central vertebral pressure (PACVP)
Achilles (L5, S1) reflexes			Schober's test		
Others: Thomas test					
Skin sensation test					
Trendelenburg					
Romberg’s					
Ober’s etc					
Pain intensity/10					

*Section F (Lower Extremity Examination).*

LOWER EXTRIMITIES											
OBSERVATION			LOOK (findings on inspection)		Normal √		Abnormal √		Other examinations: MUSCLE TONE: POWER: Pain intensity/10		
			FEEL (tenderness to palpation, crepitus)								
			MOVE (loss of movements)								
			FUNCTIONS								
GONIOMETRY			STRESS TEST			COMPRESSION TESTS+VE/-VE		OUTCOME MEASURES SCORES		REPORTS: X-ray/MRI/CT/LAB/EMG/ECG	
	Flexion (degrees)	Extension (degrees)	Abduction (degrees)	Valgus	Valgus	Provocative hip compression		VAS/ PRS/10			
Hip				NA	NA	Fabere’s/patrick		Barthel Index			
Knee			NA			Appleys		IKOH			
Plantarflexion			NA			McMurray’s		AIMS			
Dorsiflexion			NA			Larchman’s		WOMAC			
Foot inversion			NA			Others		Others			
Foot eversion			NA								

*Section G (Impairments/ Problem List, Diagnoses & Interventions).*

	Diagnosis	Interventions
Impairments/ problem list	Differential diagnoses	
	Further investigations with details	Yes: No:

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