



Original Article

Clinical Audit on Examination Tools Used by Physical Therapists in Metro Manila in Examining Conditions with Neck Pain

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Abstract

Background: Neck pain is considered the fourth leading cause of disability, with an annual prevalence rate of 15 to 30%. Using evidence-based practice in neck pain examination is a vital part of the rehabilitation process as it serves as a basis for determining the best treatment. The objective of the study is to determine the usage of recommended examination tool for neck pain among the physical therapists in selected hospitals and clinics in Metro Manila. **Methods:** The study has three distinct phases wherein phase 1 was the development and validation of a data extraction sheet, phase 2 was the assessment of interrater reliability among the investigators who will perform the chart review, and phase 3 was the chart review process. Descriptive statistics were used for data analysis. **Results:** In phase 1, the contents of the data extraction sheet were found to be valid. In phase 2, the inter-rater reliability was 96.7% percent. In phase 3, the visual analogue scale was the most commonly used examination tool, yielding a 54% usage. This was followed by cervical range of motion & cervical manual muscle testing (22%), palpation (15%), sensory testing (7%), postural assessment (6%), special test (4%), ocular inspection (2%), functional assessment (1%), Functional Index Measure (1%) and functional muscle testing (1%). Neck Disability Index, which was one of the literature-recommended examination tools, was not used. **Conclusion:** Visual analogue scale was the most commonly used examination tool in conditions with neck pain in selected hospitals and clinics in Metro Manila. Further investigation can be done in order to know the reasons for the use or nonuse of examination tools.

Keywords: Clinical Audit, Neck Pain, Evidence-based Physical Therapy

INTRODUCTION

According to the Global Burden of Disease 2010 Study, neck pain is the fourth leading cause of disability, with an annual prevalence rate ranging from 15 to 30%.¹ Proper examination of neck pain should be done to have a clinical and theoretical basis to determine the most suitable treatment. The examination of conditions with neck pain includes, but is not limited to, proper history taking, measuring the range of motion, muscle strength, functional analysis, and the use of outcome measure tools and self-administered questionnaires.² The use of these standardized tools will provide objective data of the patient's health status.³ Incorporating evidence-based practice (EBP) in the examination will also aid in

the management and prescription of interventions or medications for the patient.⁴

EBP is the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of the individual patient. It entails integrating individual clinical expertise with the best available external clinical evidence from systematic research.^{5,6} Use of recommended examination tools from research is a form of application of one of the aspects of EBP.

The actual utilization of the recommended examination tools is translated into documentation of the results in a patient's chart. To check for the documentation of the usage of recommended examination tools, a clinical audit

is recommended.³ Clinical audit is the process of systematically reviewing, evaluating, and assessing current practice methods against research-based standards to improve clinical care for service users.³ It aims to recommend or support examination and treatment processes being carried out in practice.

The objective of the study is to determine the usage of recommended examination tools for neck pain among physical therapists of selected hospitals and clinics in Metro Manila.

METHODS

Ethical Consideration. The study was reviewed and approved by the Ethics Research Committee of the University of Santo Tomas- College of Rehabilitation Sciences. The study was in agreement with ethical principles set by the Declaration of Helsinki. Number codes were assigned to the reviewed physical therapy chart to maintain anonymity of the patient, the physical therapist, the doctor and the institution.

Study Design. The design of the study was descriptive and observational. The study is composed of three phases.

Phase I: Development and Validation of a Data Extraction Sheet for Chart Review. A literature search in five databases, Science Direct, PubMed, Medline, CINAHL, and Google Scholar, was done in May 2016 to develop the data extraction sheet. The search formula “examination tools AND neck pain AND physical therapy” was used. Published articles between the years 2006 and 2016 were included in the study.

A panel of experts composed of three physical therapists with at least five years of experience in handling patients with neck pain⁷ was invited to validate the developed data extraction sheet. They were asked to rate the items in the formulated data extraction sheet using a validation form that contains a 4-point rating scale: 1=not relevant, 2=somewhat relevant, 3=quite relevant, and 4=highly relevant. An open-ended question of “what other examination tools should be in the data extraction sheet” was also asked from the experts. An item in the data extraction sheet must be unanimously rated as 4 in order for it to be included in the final draft.

Phase II: Interrater Reliability. Inter-rater reliability was done before the actual chart review process to remove potential information bias and maintain uniformity. Using the validated data extraction sheet, the first ten physical therapy charts were reviewed by all of the researchers for interrater reliability. Using interclass correlation, the results were analyzed, and the kappa score should not be lower than 0.8 to show a strong agreement among the assessors.⁸

Phase III: Chart Review Process. All physical therapy charts of patients with neck pain in the selected hospitals and centers of Metro Manila who agreed to be part of the study were reviewed. Neck pain was defined as any to be a disorder that is reported above the shoulder blades.⁹ Charts that contained a diagnosis of headaches, temporomandibular joint disorder, sprain/strain, tumors, fractures, various infectious diseases, inflammatory arthropathies, and fibromyalgia.¹⁰

The inclusion criteria for the clinical audit were the charts that contained the following information: (1) all physical therapy charts from June 1, 2015 to June 30, 2016, (2) physical therapy charts of patients who had complaints of any kind of neck pain; and (3) all physical therapy charts of patients with neck pain who were referred by the physician for examination or who were admitted in the hospital. Charts without documentation of complaints of neck pain were excluded. Charts with incomplete data in the documentation were also excluded.

The charts were then labeled with number codes to ensure confidentiality. The validated data extraction sheet was used to determine the examination tools used.

Statistical Methods. All data were entered in Microsoft Excel. Descriptive statistics, using frequency tables, was used to analyze the data in Microsoft Excel.

RESULTS

Phase I: Development and Validation of a Data Extraction Tool for Chart Review. Out of the total of 82,304 hits in databases searched, only 100 articles were found to be relevant. Out of the 100 articles, title and abstract filter were

done. The articles included were those that were categorized Level I (Systematic Review) or II (Randomized Control Trial) in the National Health and Medical Research Council (NHMRC) Evidence Hierarchy.⁸ After the title and abstract filter, only 16 articles were found to be relevant in the study. (Supplement A).

The panel of experts reviewed the first draft of the data extraction sheet, and only the items visual analogue scale (VAS), cervical range of motion (CROM), and neck disability index (NDI) were unanimously graded as 4. The panel recommended the addition of the items cervical manual muscle testing (CMMT) and special tests. The final draft (Supplement B) included the recommendations, and all the items were then given a grade of 4 by the experts.

Phase II: Interrater Reliability. The first ten charts were collected to check for interrater reliability. The interrater reliability result was 96.7% percent or a kappa score of 0.97, showing strong agreement among the six assessors.²⁵

Phase III: Chart Review Process. Out of the 26 selected hospitals and centers, eight agreed to be part of the study. A total of 20,249 charts was gathered, and out of this number, 706 charts met the inclusion criteria. Table 1 contained the demographics of patients from the charts collected. The diagnoses of the charts included the following: cervical strain (10%), cervical impingement (3%), cervical radiculopathy (8%), cervical spondylosis (29%), cervical stenosis (1%), muscle strain (23%), cervical herniated nucleus pulposus (3%), torticollis (2%) and myofascial pain syndrome (27%).

Table 2 and Figure 1 showed that majority of the charts in the selected hospitals and centers utilized VAS the most, followed by CROM, CMMT, and special tests. NDI was not used in all of the charts reviewed. There are a few charts that showed the use of other examination tools such as postural assessment, palpation, functional muscle test, functional assessment, Functional Index Measure, ocular inspection, and sensory testing.

Table 1. Demographics

| | | n*(total:706) | % |
|--------|--------|---------------|-----|
| Gender | Male | 262 | 37% |
| | Female | 444 | 63% |
| Age | 20-30 | 115 | 16% |
| | 31-40 | 136 | 19% |
| | 41-50 | 159 | 23% |
| | 51-60 | 184 | 26% |
| | 61-70 | 72 | 10% |
| | >70 | 40 | 6% |

Note: n is Number

Table 2. Results Using the Data Extraction Sheet

| | | n (total: 706) | % |
|-------------------|-----|----------------|------|
| VAS | Yes | 382 | 54% |
| | No | 324 | 46% |
| CROM | Yes | 154 | 22% |
| | No | 552 | 78% |
| CMMT | Yes | 152 | 22% |
| | No | 554 | 78% |
| Special Test | Yes | 27 | 4% |
| | No | 679 | 96% |
| NDI | Yes | 0 | 0% |
| | No | 706 | 100% |
| Others | | | |
| PA | | 83 | 6% |
| Palpation | | 131 | 15% |
| FMT | | 2 | 1% |
| FA | | 5 | 1% |
| OI | | 6 | 2% |
| Sensory Testing | | 51 | 7% |
| FIM | | 4 | 1% |
| Movement analysis | | 1 | 0% |

Note. n is Number; VAS is Visual Analogue Scale; CROM is Cervical Range of Motion; CMMT is Cervical Manual Muscle Testing; NDI is Neck Disability Index; PA is Postural Analysis; FMT is Functional Muscle Testing; FA is Functional Analysis; OI is Ocular Inspection; FIM is Functional Index Measure

DISCUSSION

The study findings showed that VAS was the most commonly used neck pain examination tool. Many health care professionals utilize the examination of pain as a basis for their evaluation and treatment approach.²⁶ According to Petala et al., VAS has good reliability and validity, suited to parametric analysis, and is easy to use.²⁷ The use of VAS can be further improved by taking into

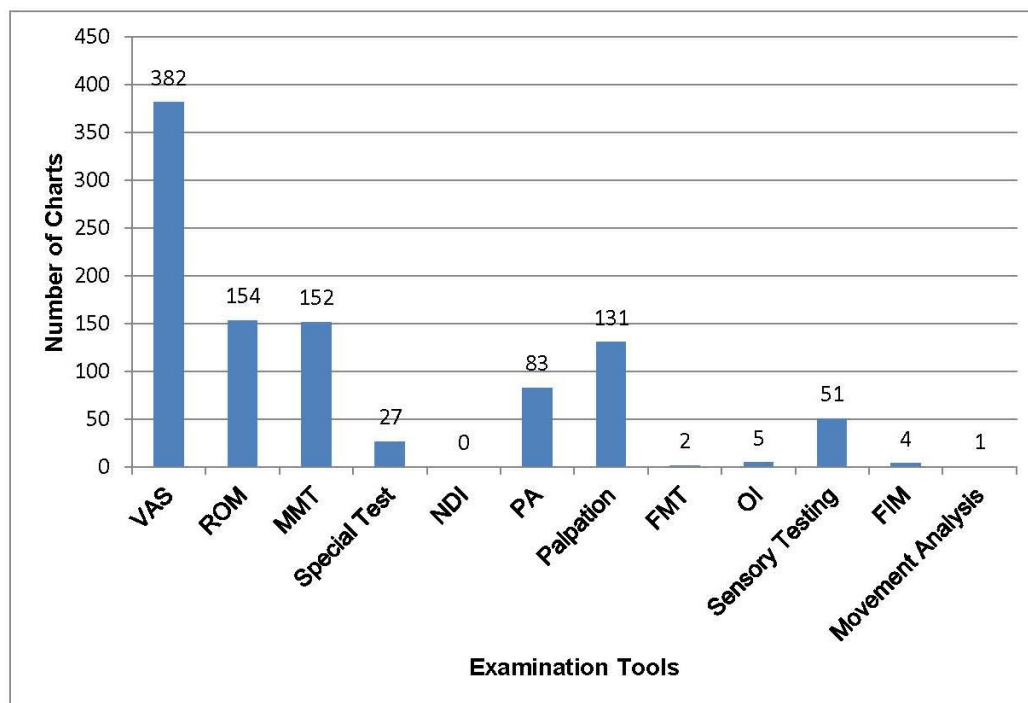


Figure 1. Presence of Examination Tools in the Charts Reviewed (Note: Figure 1 depicts that the Visual Analogue Scale (VAS) was utilized the most in the examination of neck pain followed by Cervical Range of Motion (ROM), Cervical Manual Muscle Test (MMT), and Palpation. Other examination tools used but with lesser frequency were Postural Analysis (PA), Sensory Testing, Special test, Ocular Inspection (OI), Functional Index Measure (FIM), Functional Muscle Testing (FMT), and Movement Analysis. Neck Disability Index (NDI) was not used during neck examination in the audit period.)

context the patient's experience of pain, attitude towards pain, experience of psychologic distress, exhibited illness behaviors, and social environment.² Other measures of pain, such as questionnaires including the psychological and social aspects, can be recommended to make the examination of a patient more holistic.²

Misailidou et al. recommended the use of CROM, CMMT, and palpation because patients with neck pain present with a decrease in range of motion and strength compared to those with individuals without neck pain. Patients with neck pain were found to present with trigger points; this necessitates the inclusion of palpation in the examination.² Our study showed that there was only less than 30% utilization of these literature-recommended examination tools. The reason behind the gap can be further investigated in future researches. One of the factors contributing to non-usage could be the absence of a clinical practice guideline in neck pain in the Philippines. Our results were consistent with the findings from separate studies done by Swinkels et al.,

Jette et al., and Biering-Sørensen et al., wherein they found out that only a limited number of measurement instruments is being used by physical therapists.^{28, 29, 30} The studies investigated on the barriers for the limited use, and these were the lack of knowledge, insufficient integration in practice, and lack of time, and no instruments available in practice.²⁸ To improve and promote the use of examination tools, a training program can be designed. A study by Dizon et al. showed that the use of a contextually designed EBP training program for Filipino physical therapists showed significant gains in knowledge and skills.³¹

Newton-Brown et al. stated that implementation of clinical audit could contribute to the improvement in the process of patient examination. The study showed that there was departmental change in the process of patient examination after an audit. This process produced new medical and nursing documentation in the patients' charts.³² The conduct of this clinical audit should hopefully

improve the examination process of neck pain in the selected hospitals and centers in Metro Manila.

Limitations and Recommendations. To avoid confirmation bias, the authors would like to emphasize that the method of the study was purely observational. It did not investigate the possible reason for the usage or non-usage of certain neck examination tools. It did consider the current knowledge, skills, and attitudes of the physical therapists towards EBP.

For future studies, it is recommended to identify the reasons of the physical therapists as to how and why they choose to use a certain examination tool, the barriers from using these tools, and if they are encouraged or given training in using outcome-measure tools. Training of physical therapists and an audit is also recommended to check if training can change physical therapists' behavior towards EBP.

Since our study only included non-specific neck pain conditions, it is also recommended to determine the recommended examination tools for specific conditions or diagnosis of neck pain.

CONCLUSION

VAS was the most commonly used literature-recommended examination tool in the examination of neck pain in selected hospitals and clinics in Metro Manila. There was only less than 30% utilization of the recommended examination tools in neck pain.

Individual Author's Contributions

Ms. Arlene C. Chiong Maya and Mr. Christopher G. Cruz conceptualized the study design.

All authors performed data collection, analyzed the data, drafted and revised the manuscript, gave final approval of the version to be submitted for publication and agreed to be accountable in all aspects of the manuscript.

Disclosure Statement

The authors have nothing to disclose.

Conflicts of interest

The authors of this paper declare no conflicting interest.

Supplementary Materials

[Supplementary Material A. Results of the Literature Search](#)

[Supplementary Material B. Data Extraction Sheet](#)

References

1. Cohen SP. Epidemiology, diagnosis, and treatment of neck pain. *Mayo Clinic Proceedings*. 2015;90(2):284-299.
2. Misailidou V, Malliou P, Beneka A, Karagiannidis A, Godolias G. Assessment of patients with neck pain: a review of definitions, selection criteria, and measurement tools. *Journal of Chiropractic Medicine*. 2010;9(2):49-59.
3. Capelli O, Riccomi S, Scarpa M et al. Clinical audit in primary care: from evidence to practice. *Primary Care at a Glance - Hot Topics and New Insights*. 2012. Available at: <http://cdn.intechopen.com/pdfs-wm/35858.pdf>. Accessed May 12, 2016.
4. Slaven E, Mathers J. Differential diagnosis of shoulder and cervical pain: a case report. *Journal of Manual & Manipulative Therapy*. 2010;18(4):191-196.
5. Sackett DL, Rosenberg WM, Gray JA, Haynes RB, Richardson WS. Evidence based medicine: what it is and what it isn't. *BMJ*. 1996 Jan 13;312(7023):71-2.
6. Schreiber J, Stern P. A review of the literature on evidence-based practice in physical therapy. *The Internet Journal of Allied Health Sciences and Practice*. 2005 Oct 1;3(4).
7. Dizon JMR, Grimmer-Somers K, Kumar S. The physical therapy profile questionnaire (PTPQ): development, validation and pilot testing. *BMC Research Notes*. 2011;4(1).
8. NHMRC additional levels of evidence and grades for ... [Internet]. [cited 2020 Nov 26]. Available from: https://www.mja.com.au/sites/default/files/NHMRC_levels.of.evidence.2008-09.pdf
9. Sutbeyaz S, Sezer N, Koseoglu B. The effect of pulsed electromagnetic fields in the treatment of cervical osteoarthritis: a randomized, double-blind, sham-controlled trial. *Rheumatology International*. 2005;26(4):320-4.
10. Dundar U, Evcik D, Samli F, Pusak H, Kavuncu V. The effect of gallium arsenide aluminum laser therapy in the management of cervical myofascial pain syndrome: a double blind, placebo-controlled study. *Clinical Rheumatology*. 2006;26(6):930-934.

11. Gur A, Sarac A, Cevik R, Altindag O, Sarac S. Efficacy of 904 nm gallium arsenide low level laser therapy in the management of chronic myofascial pain in the neck: A double-blind and randomized-controlled trial. *Lasers in Surgery and Medicine*. 2004;35(3):229-235.
12. Chow R, Heller G, Barnsley L. The effect of 300 mW, 830 nm laser on chronic neck pain: A double-blind, randomized, placebo-controlled study. *Pain*. 2006;124(1):201-210.
13. Dunning JR, Butts R, Mourad F, Young I, Fernandez-de-Las Peñas C, Hagins M, Stanislawski T, Donley J, Buck D, Hooks TR, Cleland JA. Upper cervical and upper thoracic manipulation versus mobilization and exercise in patients with cervicogenic headache: a multi-center randomized clinical trial. *BMC Musculoskeletal Disorders*. 2016 Feb 6;17:64.
14. Marchand GH, Myhre K, Leivseth G, Sandvik L, Lau B, Bautz-Holter E, et al. Change in pain, disability and influence of fear-avoidance in a work-focused intervention on neck and back pain: a randomized controlled trial. *BMC Musculoskeletal Disorders*. 2015;16(1).
15. Dunleavy K, Kava K, Goldberg A, Malek M, Talley S, Tutag-Lehr V, et al. Comparative effectiveness of Pilates and yoga group exercise interventions for chronic mechanical neck pain: quasi-randomised parallel controlled study. *Physiotherapy*. 2016;102(3):236-42.
16. Langevin P, Roy J-S, Desmeules F, Lamothe M, Robitaille S. Cervical radiculopathy: a randomized clinical trial evaluating the short-term effect of two manual therapy and exercise protocols. *Physiotherapy*. 2015;101.
17. Campa-Moran I, Rey-Gudin E, Fernández-Carnero J, Paris-Aleman A, Gil-Martinez A, Lara SL, et al. Comparison of Dry Needling versus Orthopedic Manual Therapy in Patients with Myofascial Chronic Neck Pain: A Single-Blind, Randomized Pilot Study. *Pain Research and Treatment*. 2015;2015:1-15.
18. Bokarius AV, Bokarius V. Evidence-based review of manual therapy efficacy in treatment of chronic musculoskeletal pain. *Pain Practice*. 2010;10(5):451-458.
19. Meseguer A, Fernández-de-las-Peñas C, Navarro-Poza J, Rodríguez-Blanco C, Gandia J. Immediate effects of the strain/counterstrain technique in local pain evoked by tender points in the upper trapezius muscle. *Clinical Chiropractic*. 2006;9(3):112-118.
20. Alreni A, Harrop D, Gumber A, McLean S. Measures of upper limb function for people with neck pain: a systematic review of measurement and practical properties (protocol). *Systematic Reviews*. 2015;4(1).
21. Gay R, Madson T, Cieslak K. Comparison of the Neck Disability Index and the Neck Bournemouth Questionnaire in a sample of patients with chronic uncomplicated neck pain. *Journal of Manipulative and Physiological Therapeutics*. 2007;30(4):259-262.
22. Macdermid JC, Walton DM, Avery S, Blanchard A, Etruw E, Mcalpine C, et al. Measurement Properties of the Neck Disability Index: A Systematic Review. *Journal of Orthopaedic & Sports Physical Therapy*. 2009;39(5):400-C12.
23. Young B, Walker M, Strunce J, Boyles R, Whitman J, Childs J. Responsiveness of the Neck Disability Index in patients with mechanical neck disorders. *The Spine Journal*. 2009;9(10):802-808.
24. Brosseau L, Wells GA, Tugwell P & et al.. Ottawa Panel evidence-based clinical practice guidelines on therapeutic massage for neck pain. *Journal of Body and Movement Therapy*. 2012 Jul;16(3):300-325.
25. McHugh ML. Interrater reliability: the kappa statistic. *Biochemia Medica*. 2012;22(3):276-82.
26. Bliss SJ, Flanders SA, Saint S. A Pain in the Neck. *New England Journal of Medicine*. 2004;350(10):1037-1042.
27. Petala E, Kapoukranidou D, Christos K. Assessment of Patients with Neck Pain: The Most Valid Measurement Tools. *Research and Reviews Journal of Medical and Health Sciences*. 2015;4.
28. Swinkels RA, Peppen RP, Wittink H, Custers JW, Beurskens AJ. Current use and barriers and facilitators for implementation of standardised measures in physical therapy in the Netherlands. *BMC Musculoskeletal Disorders*. 2011;12(1).
29. Jette DU, Halbert J, Iverson C, Miceli E, Shah P. Use of Standardized Outcome Measures in Physical Therapist Practice: Perceptions and Applications. *Physical Therapy*. 2009;89(2):125-135.
30. Biering-Sørensen F, Haigh R, Holgersson MH, Ravnborg MH. Brugen af effektmål i fysiurgisk/reumatologisk rehabilitering. Resultat af en spørgeskemaundersøgelse [Use of outcome measures in physical medicine/rheumatological rehabilitation. Results of a questionnaire study]. *Ugeskr Laeger*. 2001 Jan 29;163(5):612-6. Danish.
31. Dizon JMR, Grimmer-Somers K, Kumar S. Effectiveness Of The Tailored Evidence Based Practice Training Program For Filipino Physical Therapists: A Randomized Controlled Trial. *BMC Medical Education*. 2014;14(1):147.
32. Newton-Brown E, Fitzgerald L, Mitra B. Audit improves emergency department triage, assessment, multi-modal analgesia and nerve block use in the management of pain in older people with neck of femur fracture. *Australasian Emergency Nursing Journal*. 2014 Nov;17(4):176-83.