

Managing Neck Pain: Treatment Preferences Amongst Physical Therapist of Khyber Pakhtunkhwa

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Author's Contribution	ABSTRACT
¹⁻³ Conception and design, Collection and assembly of data, ²⁻⁶ Analysis and	Background: Neck pain is one of the most common and prevalent health problems which
interpretation of the data. 3-5Critical	issue even if the consequences aren't severe. It is a tonic of keen interest among health
revision of the article for important	notessionals/practitioners, executives and policy makers in the health sector
Intellectual content, Statistical expertise	Methodology: A was cross sectional survey was conducted over a time period of six
article.	months for determining the commonly used treatment approaches by the physical
Article Info.	therapists of KP for neck pain For data collection census was performed, giving us the total
Received: June 25, 2022	sample of 120 which included all the physical therapists practicing in tertiary care and DHQ
Acceptance: 2023-02-01	hospitals of KP. For data collection, a self-administered questionnaire from a previously
Conflict of Interest: None	published study was utilized. Frequency distribution was demonstrated with the help of
Funding Sources: None	percentages and counts while for comparing categorical variables, Chi-square test was
Address of Correspondence	utilized. To indicate Statistical significance, P value of <0.05 was used.
Zardad Khan	Results: A wide range of interventions including manual and exercises therapies were
Email Id: zardadibrahimi0/@gmail.com	utilized. Electrotherapy, ergonomic and postural education along with work site
Cita this article as: Abidin SZU, Zaidi	modifications were also utilized. Exercises for postural control (87%), neck/upper thoracic
SA Bukhari S Shah A Khan 7	stretching (79%), strengthening of neck/upper thoracic (75%) were also prescribed mostly
Mazher S. Managing Neck Pain:	while on the other hand local muscle endurance exercises (55%) and static or dynamic stabilization (45%). TENS (60%)
Treatment Preferences Amongst	stabilization (45%) were utilized mostly where as not and cold therapy (61%), TENS (69%)
Physical Inerapist of Knyber Pakhtunkhwa JRCRS 2023	Conclusion: Management of neck nain varied across the province with professionals
11(2):105-110.	following different protocols in their setups, which reflects lack of proper guidelines for the
https://dx.doi.org/10.53389/JRCRS.20 23110208	treatment of a specific condition which are proved by extensive research literature available
	Key worde: District bespitals Neek Asha, Convical Dain, Dhysical therapiets, Tertiany

Key words: District hospitals, Neck Ache, Cervical Pain, Physical therapists, Tertiary hospitals.

Introduction

Neck pain is one of the most familiar and prevalent complains, next to lower back pain, with nearly two-thirds of the total population experiencing neck-ache at least once in their lifetime. Developed nations have a higher prevalence rate as compared to under developed countries with a worldwide report ranging from 0.4% to a maximum of 86.6%.¹⁻³ Risk factors associated with neck pain includes hereditary predisposition, bad posture, stress, depression, chain smoking and sedentary

lifestyle.⁴ According to a study conducted in 2015 (Global burden of diseases) neck pain holds fourth position in conditions causing disabilities along with backache, depression and other musculoskeletal problems.

Interventions for neck pain supported by evidence based practice include manual therapy, therapeutic modalities, acupuncture, cervical collars and pain managing advices recommended by healthcare professionals.^{5, 6} For outcomes

like patient satisfaction, pain reduction, improved functional activities, range of motion, and strength in patients with neck pain, beneficial effects have been linked with both manipulation and mobilization techniques when used alone or in conjunction with other modalities like exercise and soft tissue work. ⁷⁻¹¹ Hot and cold therapies, ultrasonic therapies, mechanical traction, neck ache collar, and psychotherapy during treatment sessions have little or no evidence of beneficial results. ^{8, 12-14} Soft tissue mobilization and electrotherapy along with acupuncture and advice have limited research evidence to support them as full therapeutic options.^{8, 11,12 14, 15-18}

In a situation where systematic reviews and metaanalyses have shown a lack of evidence for the efficacy of therapy and multi-disciplinary approach of physical rehabilitation for neck pain, the real challenge for the clinician is to choose most accurate treatments from a bunch of available interventions. Health care educational programs mostly do not include basic research skill training for medical professionals and for that reason most of them lack the basic skills for research appraisal and synthesizing.¹⁹⁻²¹ The age of the professional also holds a great value when it comes to evidence based practice. Practitioners of increased age and experience are less likely experienced in new practices and skills as they had minimal research related skills in their undergraduate degree therefore, correlating weak research handling skills with old age.20, 22, 23 Clinical practice guidelines (CPG) serves as a framework, intended to optimize patient care. ²⁴ Similarly clinical practice depends upon factors like professional background, resources available, patient population and practice location, at the same time different CPGs from different health professions and for physical therapist guiding neck ache treatment protocols are also available for guidance.²⁵⁻²⁸ Several studies have been conducted to assess physical therapy protocols for low back pain management but until now according to author's knowledge, no such study has been done to explore practice patterns and treatment protocols for neck pain working in tertiary care hospitals as well as the district headquarters hospitals of Khyber Pakhtunkhwa, Pakistan. This study was designed to identify commonly used treatment approaches by the physical therapists in KP for neck pain and to know whether they adhered to the treatments protocols suggested by standard clinical guidelines or they are following same treatments pattern across different cases of neck ache.

Methodology

The study was a cross sectional descriptive survey. Data was collected from all the physical therapists working in major tertiary care hospitals of Peshawar and District head quarter Hospitals of KP. We took our sample through census method in which all the physical therapists working in KP tertiary care and District headquarter hospital were included in our study and a total of 120 sample was available As per sample size 120 participants were contacted, out of which seven were excluded because they did not fulfill inclusion criteria and thirteen participants refused to participate in study while ten participants did not return questionnaires, leaving us with 90 active participants.

Specific inclusion and exclusion criteria were used for participants to be eligible for the study i.e qualified physical therapists with Graduate or post Graduate degree in Physical therapy; physical therapists with at least one-year post degree clinical experience treating neck pain patients. Those working in academic and administrative sides, not willing to participate in study or who left the field of physical therapy/rehabilitation sciences were excluded.

Ethical approval was granted by Ethics Committee of Khyber Medical University. (Ref no. DIR/KMU-EB/MN/000658). Participant information sheet was provided to all participants and informed consent was obtained from each participant. The questionnaire used for this study was modified from a questionnaire previously used by Carlesso et al in 2014 in which experts in the field of neck pain from across the world collaborated on the International Collaboration on Neck Pain (ICON). Establishing clear, practical messages in the areas of diagnosis, prognosis, therapies, and outcomes evaluation is the aim of ICON. ICON has conducted a global, interdisciplinary study of clinical practise trends to gather this information, which will be used to provide evidence-based recommendations.⁶

Statistical analysis was conducted by using SPSS version 22. Frequency distribution was demonstrated with the help of percentages and counts and for comparing categorical variables, Chi-square test was utilized. To indicate Statistical significance, P value of <0.05 was used.

Results

Out of total 113 participants, 90 returned the questionnaires. Majority of the participants were males 48 (53.3%) and few were females 42 (46.7%). Most of them (61.1%) were dealing with wards patients (72%) along with OPD patients (28%). Majority of patients (54.4%) visiting physical therapy department were in acute stage of their neck pain, aged between 20-40 years (68.9%) and above 40 years (28.9%). A high number of patients were referred from orthopedic department (32.2%) followed by Neuro physician (11.1%). Average weekly caseload of neck pain presented to physical therapists was 11.09 with standard deviation of \pm

9.056. Detail demographics of participants is presented in Table I.

Most commonly utilized exercises were postural control (96.7%), strengthening of neck/upper thoracic spine (87.7%), stretching neck/upper thoracic spine (83.3%) and endurance exercises for local muscles (61.1%). Exercises that were occasionally utilized by physical therapists included cardiovascular fitness exercises (74.4%), stretching other body parts (72.2%), strengthening other body parts (68.8), exercises related to motor control (proprioceptive, tactical, visual, pattern synchronization (61.1%) and static and dynamic stabilization (45.6%). For exercises such as postural control, strengthening neck/upper thoracic exercises stretching neck/upper thoracic and endurance exercises for local muscles. Similarly manual therapies have been integral component of physical therapy treatment and most commonly used manual therapies include mobilization (88.9%), manual traction (71.1%) and massage/soft tissue work (70.0%) Manipulation technique was used occasionally while McKenzie mobilization (37.7%) was most preferred mobilization technique amongst all physical **T**

Table I: Basic Characteristics/Demographics of Participants				
		N (%)		
Gender of physical	Male	48(53.3)		
therapist	Female	42(46.7)		
Please specify area of	Outpatient	28(31.1)		
practice	Inpatient	07(7.77)		
	Both	55(61.1)		
Neck pain chronicity (in	Acute / Sub acute (less	49(54.4)		
what stage do patients	than 12 weeks)			
mostly come to you?	Chronic (more than 12	41(45.6)		
	weeks)			
Highest degree obtained	Bachelor's	20(22.2)		
	Master's in Physical	70(77.7)		
	Therapy or Above			
Post graduate degree	Musculoskeletal	37(41.1)		
specialty	Physical therapy			
	Neurological Physical	27(30.0)		
	therapy			
	Sport Physical therapy	02(2.22)		
	Cardio pulmonary	06(6.67)		
	Physical therapy			
	Other	18(20.0)		
Please indicate the type	tertiary care hospital	43(47.8)		
of facility in which you	district headquarter	47(52.2)		
practice:	hospital			
Ratio of patient male to	Male	43(47.8)		
female	Female	47(52.2)		
Age groups of patients	Less than 20 years	02(2.22)		
	20-40 years	62(68.9)		
	Above 40 years	26(28.9)		
Source of referrals	General physician	06(6.67)		
	Orthopedic Surgeon	29(32.2)		
	Neurophysician	10(11.1)		
	Other	5(5.55)		
	All of these	40(44.4)		

therapist. Neck pillow (66.7%) and neck collar (55.6%) were most commonly recommended orthosis by physical therapist. P value according to chi square test was greater than 0.05 in all the above discussed usages of exercises ,manual therapies and Ergonomics which suggests that no association exist between commonly used exercises, Manual therapies and ergonomics with gender, education or type of facility whether it is tertiary care hospital or DHQ hospital as shown in Table II.

Table II: Exercises, Manual therapies and Ergonomics					
Theraneutic	llsane	Manual	Ilsane		
Exercises	Percentage	Techniques/Orthoses	Percentage		
LXCICISCS	v %	And Fauinments	v %		
Stretching neck	Commonly	Mobilization (e.g.	Commonly		
or upper	87 7	ioint or	88 Q		
thoracic		joint of	<u>Occasionally</u>		
lioracic		neuroniuscularj	Q Q		
Stratching other	Commonly	Manipulation	Commonly		
body parts	21 1	(thrust)	22.2		
bouy parts		(unusi)	<u> </u>		
			Occasionally		
Ctue w with a wine w	12.2	Manual traction	JZ.Z		
Strengthening	Commonly	Manual traction			
Neck or upper	83.3		71.1		
thoracic	Uccasionally		Occasionally		
0 ((1)	12.2		24.4		
Strengthening	Commonly	Massage/soft tissue	Commonly		
other body parts	27.7%	work	/0.0		
	Occasionally		Occasionally		
	68.8		26.7		
Local muscle	Commonly	Neck Collar	Commonly		
endurance	61.1	•	55.6		
exercises for	Occasionally		Occasionally		
Neck or lower	33.3		38.9		
thoracic	<u> </u>				
Postural Control	Commonly	Pillows	Commonly		
(correct spinal	96.7		66.7		
posture)	Occasionally		Occasionally		
	3.31		28.9		
Exercises	Commonly	Taping	Commonly		
related to motor	31.1	•	37.8		
control	Occasionally		Occasionally		
(proprioceptive,	61.1		41.1		
tactical, visual,					
pattern					
synchronization)		•••			
Static or	Commonly	Adaptive	Commonly		
aynamic	50	Equipment (e.g.,	1.81		
stabilization	Occasionally	rall, wide-angle	Occasionally		
	45.6	mirror	48.9		
Cardiovascular	Commonly	Other	Commonly		
training fitness	11 1	Orthosis/sunnortivo	17 8		
a anning nuless	Occasionally	Devices	Occasionally		
		DUTICES	/18 Q		
	14.4		40.9		

Modalities used such as TENS (86.7%), heat/cold therapy (62.2%), diathermy (43.3%) and US (41.1%) were associated with pain relieving effects while EMG biofeedback (63.0%), Laser therapy (68.5%), Shock wave (76.1%),

Traditional acupuncture (65.2%) and Dry needling (68.5%) were rarely used as described in Table III.

Adaptive Equipment (rail, wide-angle mirror) (48.9%), other orthosis/supportive devices (48.9%) and taping (37.4%) were prescribed occasionally. Work site modification (66.7%), work site restriction (46.07%), work hardening (30.0%) were advised most commonly to neck patients while communication with employer (43%) and other work-related interventions (47%) were options that were used occasionally by physical therapists described in Table IV. supportive/orthotic devices (57%), cervical-traction (55%) and ultrasonic therapy (54%) were rarely prescribed by them. While according to data of Carlesso, more commonly used exercises were exercises for postural control (84%), stretching of neck/upper thorax (79%) and strengthening of neck/upper thorax (77%), whereas motor control (41%) and cardiovascular training (51%) were utilized occasionally. Modalities such as thermal therapies (55%) and acupuncture (traditional 17%, dry needling 18%) were used commonly while short wave diathermy (31%), biofeedback (26%), shock wave sonic therapy (21%) and muscle stimulation (19%) were rarely or never used.

Table III: Physical Agents/Modalities and their perceived usage by physical therapist for Neck Pain				
Physical	Usage	Most Common Usage	P Value	
Agents/Modalities	(%)	(%)	Education	Hospital setting
TENS	Yes	Pain Relief (86)	0.565	0.977
	(76.6)	To enhance tissue Healing (6.7)		
EMG Biofeedback	Yes	Do not use/outside scope of practice (37)	0.653	0.465
	(21.1)	Retrain/strengthening Muscle (44)		
Muscle Stimulation	Yes	Retrain/strengthening Muscle (46)	0.546	0.461
(induced contraction)	(46.7)	Pain Relief (17)		
Short-Wave	Yes	Pain Relief (39)	0.627	0.655
Diathermy(SWD)	(67.8)	To alter tissue extensibility prior to manual therapy (16)		
Heat or cold application	Yes	Pain Relief (56)	0.396	0.173
	(90.0)	To enhance tissue Healing (11)		
Ultrasound	Yes	Pain Relief (37)	0.950	0.131
	(77.8)	To enhance tissue Healing (30)		
Shock wave	Yes	Do not use/outside scope of practice (54)	0.768	0.060
	(3.33)	Pain Relief (22)		
Traditional acupuncture	Yes	Do not use/outside scope of practice (51)	0.285	0.46
	(7.8)	Pain Relief (23)		
Dry needling	(Yes)	Do not use/outside scope of practice (41)	0.578	0.434
	18.9	Pain Relief (36)		

Table IV: Neck Ergonomics and work-related interventions			
Ergonomics and work-related		%	
interventions			
Work hardening	Commonly	30.00	
	Occasionally	47.08	
Work Modification	Commonly	66.07	
	Occasionally	26.07	
Communication with employer	Commonly	35.06	
	Occasionally	47.08	
Worksite restriction (e.g Hours, duties)	Commonly	46.07	
	Occasionally	43.03	
Other work related interventions	Commonly	30.00	
	Occasionally	52.02	

Discussion

In comparison to our present study, data presented by Carlesso et al revealed that 98% of respondents were prescribing exercises to their patients in which manual therapy (99%), ergonomics correction (83%) interventions related to work (73%) and thermal therapies were at the top while other interventions like laser/infrared therapy (65%), Explaining the uses/indications for modalities he further suggested that (71%) of respondents used TENS for pain relief and (90%) thermal therapies for pain relief, (28%) EMG biofeedback (42%) muscle stimulation for muscle strengthening/retraining while same respondents indicated that shortwave diathermy, shockwave, laser light therapy were outside the scope of their clinical practice.⁶

Another study was conducted by J Hutchinso in which J Hutchinson 2015 divided neck pain and respondent treatment preference in 4 four categories (centralization, exercise, mobility and cervicogenic headaches). Mobilizations (93%), traction (33%) and soft tissues techniques (53%) were mainly utilized for centralization while mobilization (88%), soft tissues (75%) and Stretching and strengthening exercises (65%) were mainly utilized for exercise (muscular imbalance/deficits). For mobility problem, mobilizations (100%), stretching and strengthening exercises (92%) along soft tissues techniques (85%) were used. Similarly, for neck pain with cervicogenic headaches, mobilizations (100%) soft tissues techniques (100%) and Stretching and strengthening exercises (50%) were used more frequently.²⁹

A similar research study By BJ. Lombard explained the most frequent interventions utilized by participants in management of mechanical and nonspecific neck pain, whiplash associated disorder, and degenerative cervical radiculopathy were approximately similar that included spinal manipulation, auxiliary therapeutic techniques (ischemic compression, massage, stretching, dry needling, TENS, ultrasound, kinesiotaping etc.) along with the initiation of a rehabilitation program. Whereas postural control and ergonomic advice, home stretching and strengthening exercises were most frequently prescribed for home education and advice in all of these four conditions.³⁰

Conclusion

The way that neck pain was managed varied across the province, with different physical therapists recommending various exercises and modalities without taking into account the evidence regarding their efficacy. This suggests that very few physical therapists had a thorough understanding of the various modalities, exercises, and ergonomics and how to use them in particular neck conditions, as the majority of them were unaware of the clinical practice guidelines regarding neck pain and its uses.

RECOMMENDATIONS

A Study with a relatively large sample size should be conducted to truly determine the practice patterns of physical therapists. Treatment pattern associated with specific cervical pathology/cases should be explored in detail to get deeper insight about treatment protocols. Further research is required to fill the gap that exists in evidence associated with varying practice patterns and knowledge to minimize the use of certain interventions that have been found to be ineffective.

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References

- Hoy D, Protani M, De R, Buchbinder R. The epidemiology of neck pain. Best Practice & Research Clinical Rheumatology. 2010;24(6):783-92.
- Ehsani F, Mosallanezhad Z, Vahedi G. The Prevalence, Risk Factors and Consequences of Neck Pain in Office Employees. Middle East Journal of Rehabilitation and Health. 2017;4(2):e42031.
- Christensen JO, Knardahl S. Work and neck pain: a prospective study of psychological, social, and mechanical risk factors. Pain. 2010;151(1):162-73.
- Genebra CVDS, Maciel NM, Bento TPF, Simeão SFAP, De Vitta A. Prevalence and factors associated with neck pain: a population-based study. Brazilian journal of physical therapy. 2017;21(4):274-80.

- Haldeman S, Underwood M. Commentary on the United Kingdom evidence report about the effectiveness of manual therapies. Chiropractic & osteopathy. 2010;18(1):4.
- Carlesso LC, MacDermid JC, Gross AR, Walton DM, Santaguida PL. Treatment preferences amongst physical therapists and chiropractors for the management of neck pain: results of an international survey. Chiropractic & manual therapies. 2014;22(1):11.
- Vernon H, Humphreys K, Hagino C. Chronic mechanical neck pain in adults treated by manual therapy: a systematic review of change scores in randomized clinical trials. Journal of Manipulative and Physiological Therapeutics. 2007;30(3):215-27.
- Hurwitz EL, Carragee EJ, van der Velde G, Carroll LJ, Nordin M, Guzman J, et al. Treatment of neck pain: noninvasive interventions: results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. Journal of manipulative and physiological therapeutics. 2009;32(2):S141-S75.
- D'Sylva J, Miller J, Gross A, Burnie SJ, Goldsmith CH, Graham N, et al. Manual therapy with or without physical medicine modalities for neck pain: a systematic review. Manual therapy. 2010;15(5):415-33.
- Gross A, Miller J, D'Sylva J, Burnie SJ, Goldsmith CH, Graham N, et al. Manipulation or mobilisation for neck pain: a Cochrane Review. Manual therapy. 2010;15(4):315-33.
- Leaver AM, Refshauge KM, Maher CG, McAuley JH. Conservative interventions provide short-term relief for nonspecific neck pain: a systematic review. Journal of Physiotherapy. 2010;56(2):73-85.
- 12. Gross AR, Goldsmith C, Hoving JL, Haines T, Peloso P, Aker P, et al. Conservative management of mechanical neck disorders: a systematic review. The Journal of rheumatology. 2007;34(5):1083-102.
- Graham N, Gross AR, Carlesso LC, Santaguida PL, MacDermid JC, Walton D, et al. Suppl 4: An ICON Overview on Physical Modalities for Neck Pain and Associated Disorders. The open orthopaedics journal. 2013;7:440.
- Gross AR, Dziengo S, Boers O, Goldsmith CH, Graham N, Lilge L, et al. Suppl 4: Low Level Laser Therapy (LLLT) for Neck Pain: A Systematic Review and Meta-Regression. The open orthopaedics journal. 2013;7:396.
- Bryans R, Decina P, Descarreaux M, Duranleau M, Marcoux H, Potter B, et al. Evidence-based guidelines for the chiropractic treatment of adults with neck pain. Journal of Manipulative and Physiological Therapeutics. 2014;37(1):42-63.
- Chow RT, Johnson MI, Lopes-Martins RA, Bjordal JM. Efficacy of low-level laser therapy in the management of neck pain: a systematic review and meta-analysis of randomised placebo or active-treatment controlled trials. The Lancet. 2009;374(9705):1897-908.
- 17. Driessen MT, Proper KI, van Tulder MW, Anema JR, Bongers PM, van der Beek AJ. The effectiveness of physical and organisational ergonomic interventions on low back pain and neck pain: a systematic review. Occupational and environmental medicine. 2010;67(4):277-85.
- Clar C, Tsertsvadze A, Hundt GL, Clarke A, Sutcliffe P. Clinical effectiveness of manual therapy for the management of musculoskeletal and non-musculoskeletal conditions: systematic review and update of UK evidence report. Chiropractic & manual therapies. 2014;22(1):12.
- Hadley J, Hassan I, Khan KS. Knowledge and beliefs concerning evidence-based practice amongst complementary and alternative medicine health care practitioners and allied

health care professionals: a questionnaire survey. BMC complementary and alternative medicine. 2008;8(1):45.

- Agrawal S, Szatmari P, Hanson M. Teaching evidence-based psychiatry: integrating and aligning the formal and hidden curricula. Academic Psychiatry. 2008;32(6):470-4.
- Aiyer MK, Dorsch JL. The transformation of an EBM curriculum: a 10-year experience. Medical Teacher. 2008;30(4):377-83.
- Coomarasamy A, Taylor R, Khan K. A systematic review of postgraduate teaching in evidence-based medicine and critical appraisal. Medical teacher. 2003;25(1):77-81.
- Khan KS, Coomarasamy A. A hierarchy of effective teaching and learning to acquire competence in evidenced-based medicine. BMC medical education. 2006;6(1):59.
- Brouwers MC, Kho ME, Browman GP, Burgers JS, Cluzeau F, Feder G, et al. AGREE II: advancing guideline development, reporting and evaluation in health care. Cmaj. 2010;182(18):E839-E42.
- Association CC, Boards CFoCR, Initiative CPGD, Committee GD. Chiropractic clinical practice guideline: evidence-based treatment of adult neck pain not due to whiplash. The Journal of the Canadian Chiropractic Association. 2005;49(3):158.

- Bono CM, Ghiselli G, Gilbert TJ, Kreiner DS, Reitman C, Summers JT, et al. An evidence-based clinical guideline for the diagnosis and treatment of cervical radiculopathy from degenerative disorders. The Spine Journal. 2011;11(1):64-72.
- Childs JD, Cleland JA, Elliott JM, Teyhen DS, Wainner RS, Whitman JM, et al. Neck pain: clinical practice guidelines linked to the International Classification of Functioning, Disability, and Health from the Orthopaedic Section of the American Physical Therapy Association. Journal of Orthopaedic & Sports Physical Therapy. 2008;38(9):A1-A34.
- Chou R, Huffman LH. Nonpharmacologic therapies for acute and chronic low back pain: a review of the evidence for an American Pain Society/American College of Physicians clinical practice guideline. Annals of internal medicine. 2007;147(7):492-504.
- Hutchinson J, Reid D, Hing W, Moran R. A survey of the management and classification of patients presenting with neck pain to osteopathic and physiotherapy practices. 2015.
- Lombard BJ. An investigation into the patient management protocols of selected cervical spine conditions by chiropractors in KwaZulu-Natal 2016.

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