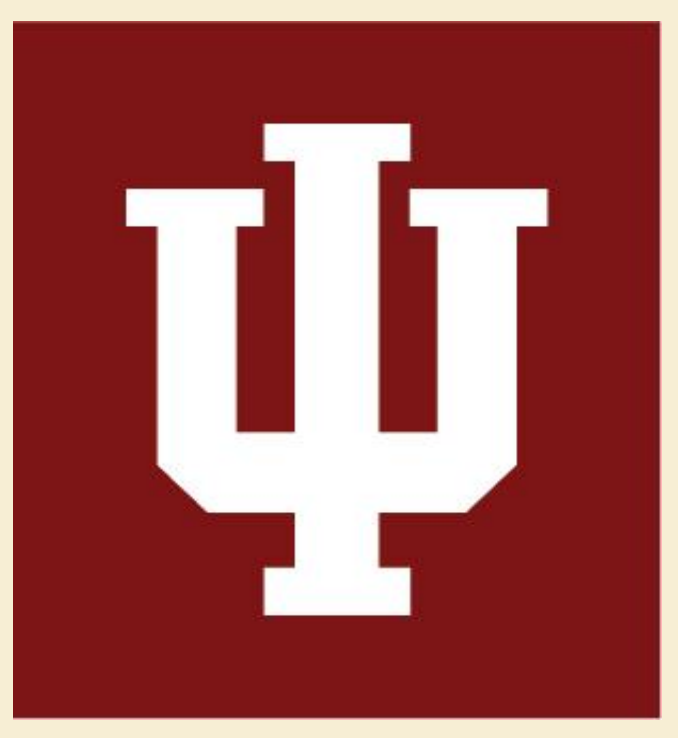


Deficits in Massage Related Adverse Events Case Reporting and Implications for the Therapeutic Massage and Bodywork Field: A Systematic Audit through Mid-2016



Niki Munk, PhD, LMT¹; Arash Zakeresfahani²; R. Trevor Foote, BS, CMT²; Rick Ralston, MSLS³; and Karen Boulanger, PhD, CMT⁴

Indiana University School of Health and Rehabilitation Sciences, Indianapolis, Indiana¹; Indiana University School of Physical Education and Tourism Management, Indianapolis Indiana²; Ruth Lilly Medical Library, Indianapolis, Indiana³; Stanford University School of Medicine, Stanford, California⁴

INTRODUCTION and PURPOSE

Deficits in adverse event case reports can limit their impact as fundamental sources of clinical evidence and reflections of practice. Adverse events reporting is lacking in massage therapy research but many case studies exist in the literature describing medical intervention for purported massage related adverse events. Using the CAse Report (CARE) guidelines and adverse event reporting recommendations, the current study sought to provide a rich description regarding reporting thoroughness and implications of case reports in the literature documenting treatment for and/or outcomes of massage attributed adverse events.

METHODS

Systematic Identification: Following PRISMA recommendations and using PubMed and CINAHL databases. First the MeSH term "Therapy, Soft Tissue" as the subject heading and publication type "case reports" were used and then a keyword search in PubMed (acupressure, shiatsu, zhi ya, chih ya, reflexology, rolfing, bodywork, massage, case report, case reports, case study, case studies NOT carotid sinus massage, heart massage, cardiac massage, animals) and CINAHL (subject headings: massage therapists, massage, reflexology, case study). Additional articles were identified by hand from references.

Inclusion/Exclusion Criteria: Peer-reviewed case report on the occurrence of and/or treatment for an adverse event related to massage application. Non-English, animal cases, and events from medical procedures were excluded.

Figure 1 displays the systematic identification flow which resulted in N=71 case reports for audit.

Adverse Event (AE) Audit Scoring: Through a REDCap data collection form, components and subcomponents of the CARE guidelines and Kelly et al. (2007) adverse event reporting recommendations included in each article were identified by two independent reviewers. Variable coding and descriptive statistics were completed using SAS 9.4. Table 1 contains the AE audit schema used for the study.

Figure 1: Audit Exclusion Flow

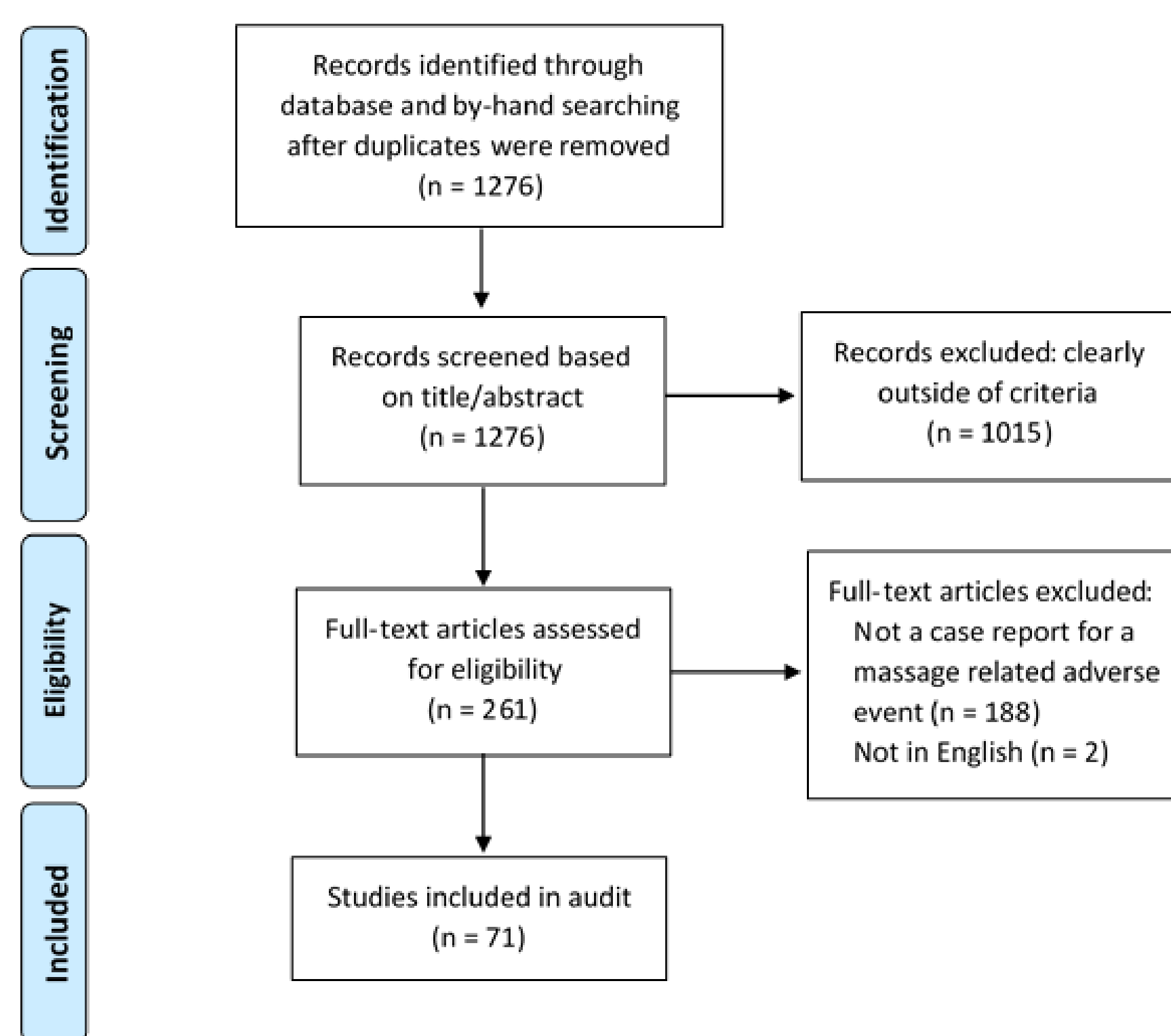


Table 1: Adverse Event (AE) Audit Scoring Schema

Manuscript Components	Manuscript Subcomponents	Total Possible Component Points	Possible Subcomponent Points	Description of Adverse Event (AE) Audit Point Assignment
Pre-Manuscript*		6		
	Title		1.5	Included: phrase "case report, case study, or case series", the AE condition, and the AE causing massage identification/description
	Keywords		0.5	2-5 words identifying key elements of the case
	Abstract		4	Included: introduction, AE descriptors, intervention details, and conclusion
Introduction		3		Summarize case referencing relevant literature and contribution to the literature
Case Presentation**		26		
	Patient Information		6	Included: demographics, occupation/related activities, complaints, history
	AE Causal Treatment Descriptors		6	Massage treatment specified: massage depth, number, length, frequency, and duration
	AE Causal Provider Descriptors		6	Massage provider specified: scope of practice, setting, experience level, training, credentialing
	Clinical Findings		1	Relevant physical examination findings
	Timeline		1	Case's important dates and times depicted via text, table, or figure
	Diagnostic Assessment		2	Methods used to assess diagnosis and treatment & assessment reasoning and interpretation
	Intervention Description		4	Recommended/prescribed treatment & dosage, frequency, and duration of treatment
Results**		4		Reports outcomes, follow-up diagnostic evaluations, adherence/tolerability, adverse events
Discussion**		4		Reports strengths and limitations, compare and integrate literature, suggest rationale, provide "take-away", and discuss implications
	Patient Perspective**		1	Patient shared comments regarding experience with AE acquisition and treatment
	Informed Consent**		1	Any mention of patient consent to publish the case report
		Total Possible Audit Score: 45		

* Points awarded to pre-manuscript components are worth half for the number of audit items.
** Points awarded regardless of manuscript reporting location.

RESULTS

Table 2: Mean Scores. Total and per AE Audit Component and Subcomponent

Manuscript Components	Manuscript Subcomponents	Total Points Component (Range)	Mean (SD)	Possible Points Subcomponent (Range)	Mean (SD)
Pre-Manuscript*		6 (0.5-5.5)	2.5 (±1.5)		
	Title			3 (1-3)	1.9 (±0.6)
	Keywords			1 (0-1)	0.5 (±0.5)
	Abstract			8 (0-7)	2.5 (±2.4)
Introduction		3 (0-3)	1.3 (±1.1)		
Case Presentation		26 (5-16)	10.6 (±2.0)		
	Patient Information			6 (0-6)	3.9 (±0.8)
	AE Causal Treatment Descriptors			6 (0-4)	1.4 (±1.0)
	AE Causal Provider Descriptors			6 (0-2)	0.3 (±0.5)
	Clinical Findings			1 (0-1)	0.8 (±0.4)
	Timeline			1 (0-1)	0.7 (±0.5)
	Diagnostic Assessment			2 (1-2)	1.97 (±0.2)
	Intervention Description			4 (0-4)	1.4 (±1.1)
Results		4 (0-4)	1.99 (±0.6)		
Discussion		4 (1-4)	2.9 (±0.6)		
Patient Perspective		1 (0-1)	0.07 (±0.3)		
Informed Consent		1 (0-1)	0.07 (±0.3)		
Total Score*		45 (10.5-28)	19.3 (±3.9)		

* Points awarded to pre-manuscript components are worth half for the number of audit items; 12 items become 6 points.

Overall Audit Scoring Results (Table 2)

- Fifty-one items were identified for audit
- Articles included 43% of reporting items on average
- Over 50% of the articles reported less than half the audited items.
- On average, articles reported:
 - 65% Discussion items
 - 50% Results items
 - 41% Case Presentation items
- **14% AE Causing items** (combined causal points/12 items: mean = 1.7)

Key Frequency Results (Figures 2a,b)

- Abstract reporting items were inconsistent across all articles
- Few reports (N=71) included:
 - Patient race (11%)
 - Patient perspective (7%)
 - Patient occupation/activities (21%)
 - Patient consent to publish case (7%)
 - More than 1 AE causal provider descriptors (3%)
- On average, articles reported 1.7 (SD1.2) of the 12 possible AE causing descriptors
- Only 1 or fewer articles including massage provider descriptor items: setting, training, scope, experience level, or credentialing
- Most articles included massage identification (83%) but few included massage descriptor items: depth (6%), number (32%), length (11%), frequency (6%), or duration (4%)

Figure 2a: Pre-Manuscript Reporting Items Frequency.

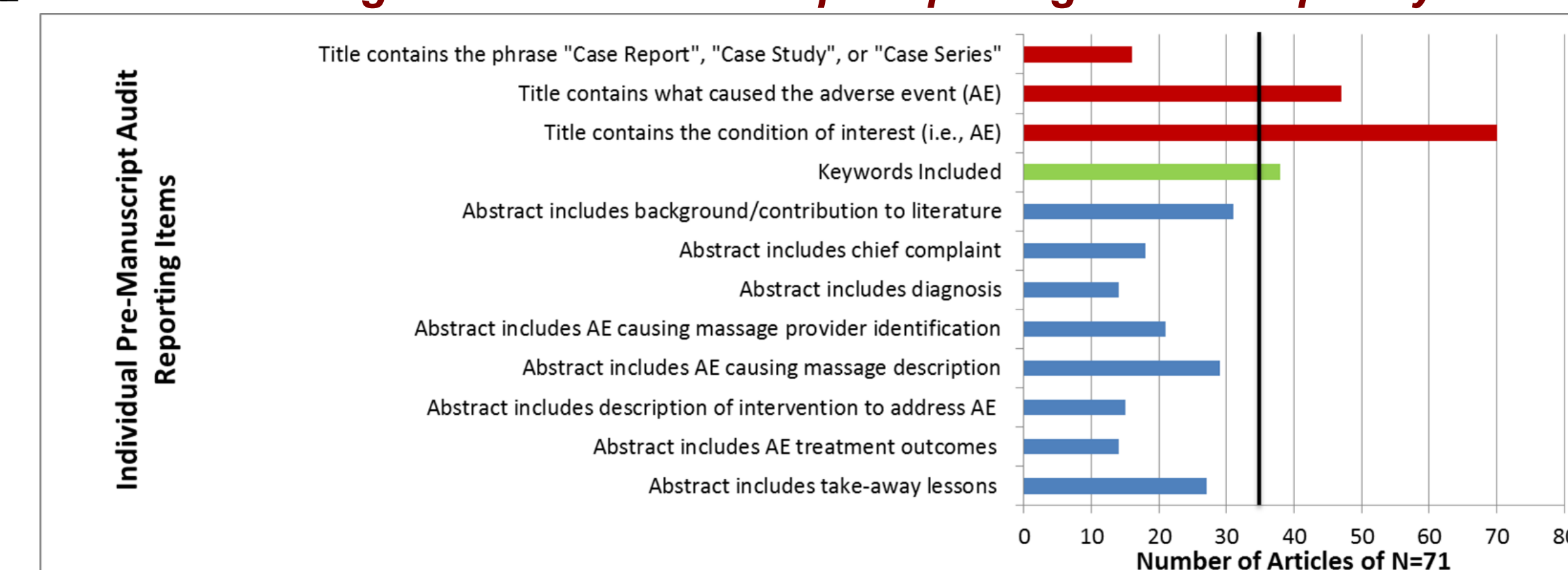
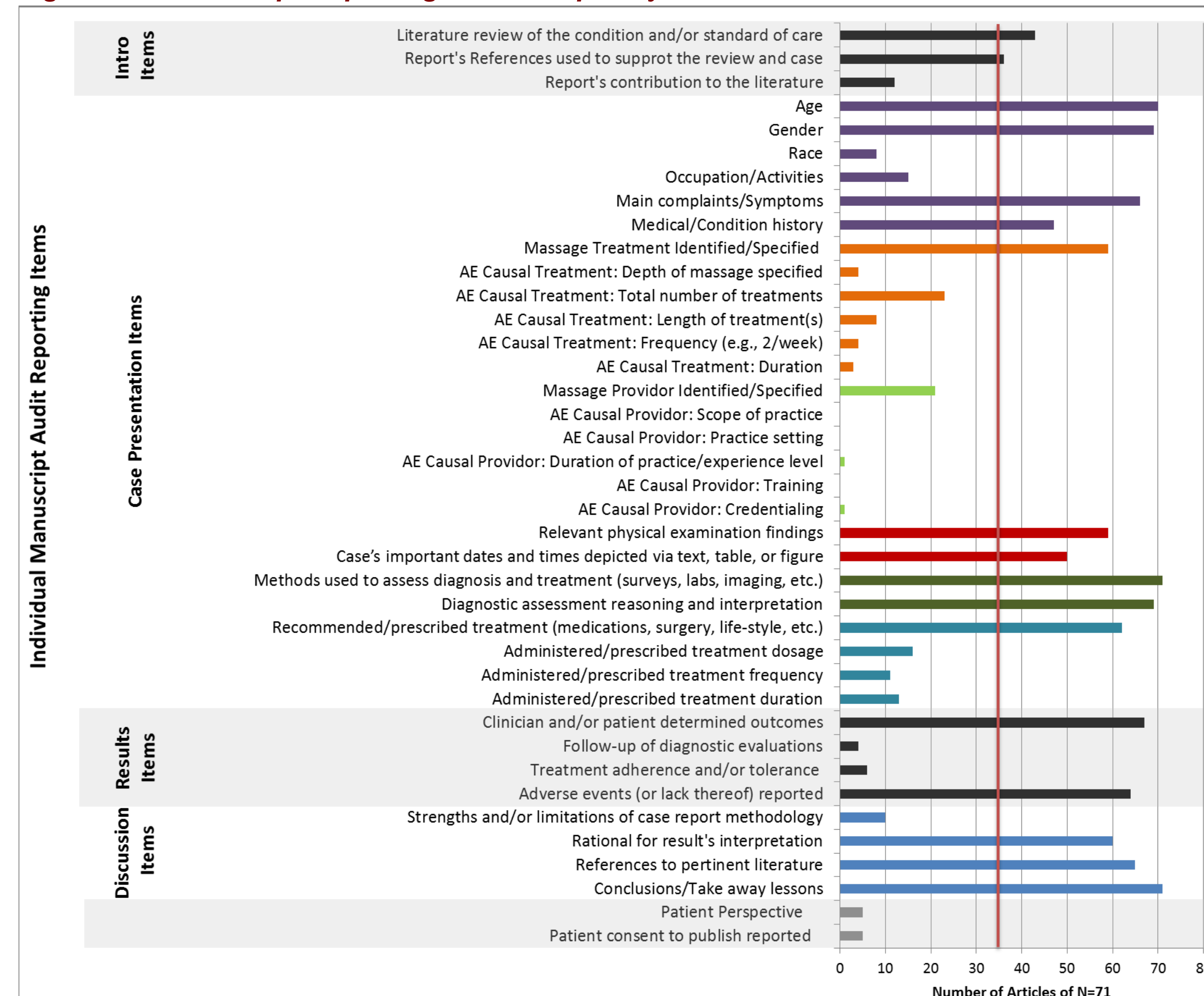


Figure 2b: Manuscript Reporting Items Frequency.



Implications of Concern

- Seventy percent of articles failed to identify who provided the AE causing massage.
- No articles reported soliciting massage application details from non-self massage providers.
- Massage was likely or absolutely the AE cause in 79% of cases but 59% of those had non-massage contributing factors.
- Thirty percent of cases included situations of unforeseen, underlying, and/or coincidental conditions.

CONCLUSIONS

The current audit and descriptive analysis highlight several reporting inconsistencies and deficits in massage related adverse event case reports. Most case reports implicated massage therapy for the adverse event yet few details are provided to inform practice or clarify the massage therapy field's role in these medically treated situations.