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Complementary and Integrative Healthcare for Patients with Mechanical Low Back Pain in a U.S. Hospital Setting

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Abstract

Objectives—Complementary and integrative healthcare (CIH) is commonly used to treat low back pain (LBP). While the use of CIH within hospitals is increasing, little is known regarding the delivery of these services within inpatient settings. We examine the patterns of CIH services among inpatients with mechanical LBP in a hospital setting.

Methods—This is a retrospective, practice-based study conducted at Abbot Northwestern hospital in Minnesota. Using electronic health record data from July 2009 to December 2012, 8,095 inpatients with mechanical LBP were identified using ICD-9 codes. We classified patients by reason for hospitalization. We examined demographic and clinical characteristics by receipt of CIH services. Then, we estimated the prevalence of types of CIH delivered and clinical foci for CIH visits among inpatients with mechanical LBP.

Results—Most inpatients with mechanical LBP (>90%) were hospitalized for surgical procedures. Overall, 14.2% received inpatient CIH services. All demographic and clinical characteristics differed by receipt of CIH (P<0.001), except race/ethnicity. CIH recipients were in poorer health than those who did not. Most commonly delivered CIH services were massage

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(62.1%), relaxation techniques (42.0%) and acupuncture (25.7%). Pain (45.1%), relaxation (17.5%), and comfort (8.2%) were the top three reasons for CIH visits.

Conclusion—There are important differences between CIH recipients and non-CIH recipients among patients with mechanical LBP within a hospital setting. The reasons documented for CIH visits included addressing physical, emotional and/or mental conditions of patients. Future studies are needed to determine the effectiveness of CIH services health and wellbeing outcomes in this population.

Keywords

mechanical low back problems; inpatient; complementary and integrative healthcare

INTRODUCTION

Low back pain (LBP) places an enormous burden on society and health care systems in the U.S.[1–4] Back pain is the second most common reason for physician visits, the third most common reason for surgery, and the fifth most common reason for hospital admissions.[5,6] In 2005, total healthcare expenditures related to chronic LBP were estimated at $86 billion, a 65 percent increase from 1997.[7] Costs for inpatient services accounted for the largest proportion of total expenditures (31%), followed by office-based visits (26%).[8,9]

Treatment effects for many conventional medical treatments are small which leads many patients to explore complementary and integrative healthcare (CIH) for pain relief.[10–16] CIH is a group of diverse medical and healthcare systems, practices, and products that are not considered as part of conventional medicine.[17] A growing body of evidence supports the use of CIH for improving LBP symptoms,[16] which is the most common condition for which patients use CIH.[18]

CIH is become increasingly mainstream,[9] and the availability and use of CIH within hospitals has increased in recent years.[19] While an increasing number of hospitals offer CIH services, many of the services are only available for outpatients.[20] Although CIH is commonly used to treat LBP and the use of CIH is increasing within U.S. hospitals, little is known regarding the delivery of these services within inpatient settings. The purpose of this paper is to examine the pattern of CIH services delivery for inpatients with mechanical LBP. We will (1) describe and compare the characteristics of hospital inpatients with LBP who receive and do not receive CIH services; (2) determine the prevalence of CIH services delivered within this setting; and (3) examine the clinical foci for CIH services.

METHODS

STUDY SETTING AND DATA SOURCE

This retrospective, practice-based research study of inpatients with mechanical LBP was conducted at Abbot Northwestern (ANW) hospital, the largest hospital in the Minneapolis-St. Paul metropolitan area in Minnesota. In 2003, the Penny George Institute for Health and Healing (PGIHH) was founded at ANW to provide a wide range of CIH-related services to hospitalized patients at no charge through physician and nurse referrals.[21] During the study

period, the PGIHH employed 21 integrative health practitioners (14.8 full time equivalents (FTE)), including 6.3 FTE massage therapists with an emphasis on acute care massage, 4.0 FTE licensed acupuncturists, 3.6 FTE registered nurses, board certified in their specialty area (e.g., oncology, cardiovascular) and also board certified in holistic nursing as well as a part-time certified music therapist. All CIH practitioners at PGIHH have necessary licensure and/or certification in their specialty. Referrals to CIH services are made when (a) inpatients are able to participate in CIH interventions, and (b) inpatients have concerns related to pain, anxiety, stress, nausea/vomiting, insomnia, coping with change in health/well-being, or maintaining/prolonging a pregnancy.[21,22]

We obtained electronic health record (EHR) data for patients admitted between July 1, 2009 and December 31, 2012 to identify the eligible study population. The final analytic dataset included diagnostic and demographic files and the CIH flowsheet for each inpatient stay. All patients who met study population criteria and provided written permission at admission to ANW for their medical records to be used for research purposes were included. The study was approved by the Allina Health Institutional Review Board (IRB) (#3977-1E) and the University of Minnesota IRB (#1409E53861).

STUDY POPULATION

All hospital admissions for inpatients ages 18 or older with mechanical LBP, who had a 24 hour length of stay or longer, were included in the study population. We identified patients with mechanical LBP using the *International Classification of Diseases, 9th Revision, Clinical Modification* (ICD-9-CM) diagnostic codes. Specifically, we used inclusion and exclusion criteria for mechanical LBP proposed by Cherkin et al. (see appendix 1).[23] After identifying patients with mechanical LBP using the ICD-9-CM diagnostic codes (n=11,756), the study population was narrowed using the All Patient Refined Diagnosis Related Groups (APR-DRGs) to identify patients who were admitted for spinal conditions (n=8,095). Using the APR-DRG codes, we categorized reasons for admission as: (1) dorsal and lumbar fusion (303, 304); (2) disc excision and decompression (310); (3) fractures and injuries (347); (4) cervical fusion (321); and (5) others (e.g., connective tissue disorders, other spinal procedures) (23, 320, 346, 351).

MEASURES

Complementary and Integrative Healthcare (CIH)—The PGIHH offered 14 types of CIH services classified by the practitioners into three categories that are generally consistent with the 2007 taxonomy used by the National Center for Complementary and Integrative Health (NCCIH).[18] Specifically, bodywork represents the NCCIH manipulative and body-based therapies, mind-body represents the combination of NCCIH mind-body and energy medicine categories, and TCM is one of the whole system approaches classified by NCCIH as Whole Medical Systems. CIH services offered included: Bodywork (massage, craniosacral, reflexology, or Tui Na therapies); mind-body (guided imagery, relaxation, music, Qi Gong, healing touch, Reiki, or energy therapies); and traditional Chinese medicine (TCM) (acupuncture, acupressure, or Korean hand therapy). Patients received one or more types of CIH based on clinical needs. For analysis, we examined seven mutually exclusive groups of CIH: (1) bodywork alone; (2) mind-body alone; (3) TCM alone; (4) any

combination of bodywork and mind-body; (5) any combination of bodywork and TCM; (6) any combination of mind-body and TCM; and (7) combination of bodywork, mind-body and TCM.

Clinical focus of CIH Visits—CIH practitioners documented the clinical focus for each CIH visit in the CIH flowsheet of the EHR. Reasons available for selection included: anxiety, comfort, insomnia, nausea, pain, relaxation, stress, as well as education, end-of-life care, constipation, and spiritual and well-being issues. Multiple selections for the focus of the CIH visit were allowed. Indicator variables were created for any documentation of anxiety, comfort, insomnia, nausea, pain, relaxation, and stress. We excluded those who only had documentation of other foci (e.g., education or end-of-life care) and those who did not have a documented focus.

Demographic and Clinical Characteristics—Demographic characteristics included age at time of admission (18–39, 30–64, 65 years and older), sex (male or female), race/ethnicity (non-Hispanic whites or others), marital status (single, married/partnered, separated/divorced/widowed), and nativity status (U.S.-born or foreign born). Clinical characteristics included severity of illness at discharge as defined by the APR-DRGs (minor, moderate, major, extreme),[24] and length of stay (< 3 days, 3–7 days, > 7 days).

ANALYSIS

First, we examined demographic and clinical characteristics among inpatients with mechanical LBP by whether or not they received CIH services. We used Pearson's chi-squared tests to determine if those who received CIH differed on background characteristics from those who did not. Second, we estimated (1) the prevalence of specific CIH services delivered and (2) the documented clinical focus for CIH visits. We used cross-tabulations and Pearson's chi-squared tests to assess differences in prevalence of CIH intervention by reason for hospital admission. We used Stata 13.1 for all statistical analyses.[25]

RESULTS

Table 1 presents demographic and clinical characteristics of inpatients with mechanical LBP (n=8,095) by receipt of CIH. Overall, 1,152 of these patients received CIH while hospitalized (14.2%). All demographic characteristics were significantly different by receipt of CIH ($P<0.001$), except race/ethnicity. Those who received CIH, were more likely to be 50–64 years of age, female, non-Hispanic White, and born in the U.S. compared to those who did not receive CIH. Additionally, a larger proportion of patients who received CIH had moderate, major or extreme illness at discharge (72.1%) compared to those who did not (56.0%). Those who received CIH also had longer length of stay (LOS) than those who did not. Specifically, 88.7% of patients receiving CIH were hospitalized at least 3 days, whereas only 55.0% of those not receiving CIH were hospitalized that long ($P<0.001$). Among inpatients with mechanical LBP, more than 90% of admissions were due to surgical procedures. The most common reasons for hospitalization were dorso/lumbar fusion (44.3%) and disc excision and decompression (42.2%). However, the distribution differed by CIH receipt, with dorso/lumbar fusion being more common in those who received CIH

than not (75.3% vs. 39.1%. respectively, $P<0.001$). Patients hospitalized for dorso lumbar fusion used CIH services most frequently (867/3,583=24.2%), followed by fractures and injuries (15.7%), cervical spine fusions (10.8%), other miscellaneous musculoskeletal conditions (10.0%) and disc excisions and decompression (4.3%).

Table 2 displays the specific types of CIH services delivered to inpatients with mechanical LBP by reason for hospital admission. Overall, the most commonly delivered categories of CIH were the combination of bodywork and mind-body therapies (24.8%), bodywork alone (20.5%), and the combination of bodywork, mind-body, and TCM (16.7%). Such patterns, however, varied by the reason for hospital admission. While the combination of bodywork and mind-body therapies were most commonly delivered to patients with dorso/lumbar fusion (25.5%), cervical fusion (31.3%), and others (31.8%), bodywork alone was most common for patients with fractures and injuries (43.3%) and TCM alone was most common for patients with disc excision and decompression (22.3%).

The mostly commonly delivered CIH services, alone or in combination, were massage (62.1%), relaxation techniques (42.0%) and acupuncture (25.7%). Massage was the single most frequently delivered CIH service across reasons for hospital admission. Relaxation techniques and acupuncture were the two other most frequently delivered CIH services across all reasons for hospital admission, with the exception of other miscellaneous musculoskeletal conditions. Craniosacral therapy was the least commonly delivered CIH service.

Table 3 shows the clinical focus documented for CIH visits among inpatients with mechanical LBP by reason for hospital admission. Overall, the most commonly documented reasons for CIH practitioner visits were pain (45.1%), relaxation (17.5%), and comfort (8.2%). These top three clinical foci were consistent across the different reasons for hospitalization.

DISCUSSION

This is one of the first practice-based research studies to examine the patterns of use for CIH visits among hospital inpatients with mechanical LBP. Our study found that 14.2% of 8,095 inpatients with mechanical LBP in one Midwestern hospital received some form of CIH. As expected, the utilization of CIH for mechanical LBP within a hospital setting (14.2%) is lower than in the general LBP population (42.2%[26] or 47.6%[27]). While the general LBP population estimates provide context, they are not comparable to the inpatient estimates for several reasons. First, the prevalence period used for the general LBP population was much longer (one year) than the typical hospital stay for inpatients (7 days or less for 97% of inpatients). Second, the majority of adults with LBP are never hospitalized, thus the current LBP population is a selected group with more severe health problems and different medical care needs. Additionally, hospital inpatients are in poorer health, which increases the potential for contraindications against CIH use. Lastly, while our study focused on hospitalized patients who were referred to and received a limited selection of inpatient CIH services, general population studies have included a broader range of CIH services in addition to self-prescribed CIH (e.g., herbal supplements or yoga).[27]

The majority of inpatients with mechanical LBP (>90%) were hospitalized for surgical procedures, a finding which is expected in the U.S. Interestingly, the average length of stay for individuals hospitalized for LBP was longer than U.S. national estimates for intervertebral disc disorders;[28] however, the diagnostic codes used to identify cases for this study[23] were more comprehensive than those used to derive national estimates which likely resulted in a different surgical case mix. Additionally, national estimates of hospitalization due to intervertebral disc disorders have excluded individuals over the age of 65, a population that is typically in poorer health and more likely to suffer from comorbid conditions and complications. Inpatient care for low back disorders in other countries (e.g., Asian countries) is often non-surgical and includes a wide variety of CIH services; however, few studies describing the use of inpatient CIH for LBP in other countries have been published. For instance, a recent meta-analysis found preliminary evidence supporting the use of tuina-focused integrative Chinese medical therapies for low back pain based on results from randomized clinical studies performed within Chinese hospital settings.[29] Orlin and Didriksen described the use of chiropractic treatment within a Norwegian hospital using a consecutive case series.[30] Furthermore, a study by Kim et al. reported on the use of acupuncture and other Traditional Korean Medicine practices (e.g., herbal medicine, cupping, moxibustion) over a two year period within an academic hospital in Korea.[31] The use of CIH services within our study was similar to the utilization rates noted in the Korean hospital. The authors noted 16% of inpatients used CIH services and low back pain was the most common indication.

Inpatients with mechanical LBP who received CIH services were significantly different from those who did not receive CIH services. CIH recipients were younger and more likely to be female, which is consistent with findings in outpatient settings,[26,32] and in other inpatient populations such as cardiology.[33] It appears that CIH might be appealing to inpatients with certain demographic factors (e.g., middle-aged and female), or it is possible that those patients are more likely to receive CIH referrals from clinical providers. As evidence supporting the effectiveness of some CIH for mechanical LBP emerges, strategies for expanding delivery to broader and more diverse populations may be warranted.

Additionally, inpatients with mechanical LBP who received CIH services were in poorer health than those who did not receive CIH, as evidenced by the increased proportion with moderate to extreme illness at discharge and the longer length of stay. A previous study of CIH use in outpatient settings found that patients with low back or spine problems, who used CIH, were healthier than non-users.[32] There are a number of possible reasons for such clinical differences between inpatient and outpatient settings. First, the referral patterns for CIH services differ. Within the hospital, patients required a referral from their physician (for acupuncture) or an order for CIH services typically facilitated by a nurse. However, in outpatient settings, patients typically seek out CIH services on their own with fewer than 25% reporting a primary healthcare provider referral.[34] It is possible that within the hospital setting, physicians and nurses refer more complicated cases for CIH services. Patients who are hospitalized longer are more likely to have higher diagnostic severity and a higher need for pain and symptom management as well as a greater opportunity to receive CIH services. Referral of more complicated cases to CIH services could be due to a myriad of reasons, including perceived effectiveness of CIH services (attributed to specific or non-specific

effects), pressure to diminish hospital stay duration, and a desire to use fewer, more aggressive, and potentially costly medical options. The use of CIH has been shown to result in fewer medications and decreased costs in other inpatient populations.[35] It is also possible that patients may simply become aware of CIH service availability and request a referral or the likelihood of receiving a CIH referral could increase as the duration of the hospital stay lengthens. Future research is needed to examine why those who receive CIH services in the hospital setting were less healthy than those who did not.

The most commonly received individual types of CIH services were massage, relaxation techniques, and acupuncture, which is not surprising given patients' expectations for improvement,[10,34,36] and the emerging evidence of clinical effectiveness for these treatments.[9,37] Future research is needed to better understand why these CIH services were more frequently documented than other CIH services among inpatients with mechanical LBP.

The most common clinical foci for CIH services were (1) pain management, (2) relaxation, and (3) comfort. These findings were consistent across reasons for hospitalization, suggesting that inpatients with mechanical LBP receive CIH services for management of not only physical symptoms, but also mental or emotional benefits as well. Future research is needed to determine if CIH services improve clinical outcomes highlighted as important within this population. A better understanding of the link between the clinical foci for CIH services and important health and wellbeing outcomes, such as pain management and anxiety reduction, may promote further provision of CIH services among inpatients with mechanical LBP.

Our study has several limitations. First, the findings may not be generalizable to other settings as our data were from one hospital in the Midwestern U.S. Certain CIH services, such as massage therapy, are more popular in the Midwest (e.g., Minnesota and Wisconsin) than other regions of the country (e.g., the South, such as Alabama and Georgia),[38] which could result in different patterns of CIH services delivery. Further, the CIH services offered are often hospital and/or health-system specific (e.g., the hospital setting for this study employs more massage therapists than other types of CIH practitioners). It is possible that if other commonly used types of CIH were offered (e.g. spinal manipulation, herbal supplements, or yoga),[39] patterns of use might have differed. Second, some potentially important variables (e.g., educational attainment) are not available in the EHR data. For example, higher educational attainment is associated with higher odds of using CIH in outpatient settings.[26] Understanding the relationship of such factors and use of CIH services for inpatients could possibly inform better strategies for expanding the provision of CIH in hospital settings and should be considered for future research.

While other studies that examined patterns of CIH use in hospital settings relied strictly on survey data,[19,20] one of strengths of this study is that we combined EHR and administrative data to capture all admissions to one hospital for mechanical LBP conditions within our study timeframe. Our study is one of the first descriptive studies to characterize demographic and clinical factors of inpatients with mechanical LBP and their patterns of and clinical foci for CIH services. We provide unique evidence that when diverse CIH services

are provided for inpatients in a hospital setting, certain CIH services (e.g., acupuncture, massage and relaxation techniques) are used more frequently. Moreover, the reasons for providing CIH encompass better managing the physical, emotional, and mental conditions of patients.

Growing emphasis on improving patients' healthcare experiences and reducing healthcare costs[40] provides an opportunity for CIH to play an important and impactful role in healthcare delivery. Typically associated with high patient satisfaction, few side effects, and low costs, CIH can contribute positively in hospital settings and deserves further examination. This study is an important first step in better understanding the patterns of CIH use for inpatients with mechanical LBP and suggests room for optimizing availability and access so greater numbers of patients can benefit. Further, expansion of CIH services to include other evidence-based and commonly used CIH services (e.g., spinal manipulation or yoga) should be considered.

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Appendix 1. Inclusion and exclusion criteria for mechanical low back problems24

Inclusion criteria by clinical category	**ICD-9-CM* codes**
Herniated disc	722.10, 722.11, 722.2, 722.70, 722.73
Probable degenerative changes	721.3, 721.5–721.8, 721.90, 722.52, 722.6, 722.90, 722.93
Spinal stenosis	721.42, 721.91, 724.00, 724.02, 724.09
Possible instability	724.6, 738.4, 756.11, 756.12
Fractures	805.4, 805.6, 805.8
Non-specific backache	307.89, 724.2, 724.5, 846.0–846.3, 846.8, 846.9, 847.2, 847.3, 847.9
Sequelae of previous back surgery	722.80, 722.83, 996.4
Miscellaneous	722.30, 722.32, 724.3, 724.4, 724.8, 724.9, 737.10, 737.11, 737.12, 737.19, 737.20, 737.21, 737.22, 737.29, 737.30, 738.5, 739.3, 739.4, 756.10, 756.13, 756.14, 756.15, 756.16, 756.17, 756.19
Reasons for exclusion	**ICD-9-CM* codes**
Neoplasms	140.0–239.9
Intraspinal abscess	324.1
Pregnancy	630–676
Inflammatory spondyloarthropathies	720.0–720.9
Osteomyelitis	730–730.99
Vertebral fractures with spinal cord injury	806.0 – 806.9

Open vertebral fractures without spinal cord injury	805
Vertebral dislocations	839–839.59
Vehicular accidents	E800-E849.9

Note:

* indicates the international classification of diseases, ninth revision, clinical modification.

Highlights

- Complementary and integrative healthcare (CIH) recipients were in poorer health than those who did not among inpatients with mechanical low back pain within a hospital setting.
- Most commonly delivered CIH services were massage (62.1%), relaxation techniques (42.0%) and acupuncture (25.7%).
- Pain (45.1%), relaxation (17.5%), and comfort (8.2%) were the top three reasons for CIH visits.

Table 1

Demographic and clinical characteristics of inpatients with mechanical low back pain by complementary and integrative healthcare (CIH) services received (n=8,095)

	CIH Received (n=1,152)		No CIH Received (n=6,943)		Total (n=8,095)		*P*-value
	Obs	%	Obs	%	Obs	%	
Age							
18–34 years	110	9.6	550	7.9	660	8.2	<0.0001
35–49 years	260	22.6	1,589	22.9	1,849	22.8	
50–64 years	457	39.7	2,387	34.4	2,844	35.1	
65+ years	325	28.2	2,417	34.8	2,742	33.9	
Sex							
Female	814	70.7	3,484	50.2	4,296	53.1	<0.0001
Male	338	29.3	3,461	49.9	3,799	46.9	
Race/ethnicity							
Non-Hispanic Whites	1,097	95.9	6,509	94.7	7,606	94.9	0.085
Others[a)]	47	4.1	366	5.3	413	5.1	
Marital status							
Married/partnered	696	60.4	4,708	67.9	5,404	66.9	<0.0001
Single	215	18.7	1,052	15.2	1,267	15.7	
Separated/divorced/widowed	241	21.0	1,172	16.9	1,412	17.5	
Nativity status							
US born	1,036	90.0	5,981	86.1	7,017	86.7	<0.0001
Non-US born	116	10.1	962	13.9	1,078	13.3	
Severity of illness							
Minor	321	27.8	3,240	46.7	3,561	44.0	<0.0001
Moderate	539	46.8	2,860	41.2	3,399	42.0	
Major	268	23.2	792	11.4	1,060	13.1	
Extreme	24	2.1	51	0.7	75	0.9	
Length of stay (LOS)							
< 3 days	130	11.3	3,514	50.6	3,644	45.0	<0.0001
3 – 7 days	914	79.3	3,264	47.0	4,178	51.6	

	CIH Received (n=1,152)		No CIH Received (n=6,943)		Total (n=8,095)		*P*-value
	Obs	**%**	**Obs**	**%**	**Obs**	**%**	
> 7 days	108	9.4	165	2.4	273	3.4	
APR-DRGs[b)]							
Dorsal and lumbar fusion	867	75.3	2,716	39.1	3,583	44.3	
Disc excision and decompression	148	12.8	3,272	47.1	3,420	42.2	
Fractures and injuries	67	5.8	360	5.2	427	5.3	<0.0001
Cervical fusion	48	4.2	396	5.7	444	5.5	
Others[c)]	22	1.9	199	2.9	221	2.7	

Note:

a) includes non-Hispanic Blacks, Hispanics, American Indians and Alaska Natives, and Asians, Native Hawaiians and other Pacific Islanders;

b) APR-DRG = All Patient Refined Diagnosis Related Groups; and

c) includes connective tissue disorders and other spinal procedures.

Table 2

Complementary and integrative healthcare (CIH) services delivered per hospital stay among inpatients with mechanical low back pain by reason for hospitalization (n=1,152)

	Dorsal & lumbar fusion (n=867)		Disc excision and decompression (n=148)		Fractures and injuries (n=67)		Cervical fusion (n=48)		Others (n=22)		Total (n=1,152)		*P*-value
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	
Groups of CIH													
Bodywork[a)]	169	19.5	25	16.9	29	43.3	8	16.7	5	22.7	236	20.5	<0.001
Mind-body[b)]	86	9.9	13	8.8	3	4.5	7	14.6	4	18.2	113	9.9	0.172
TCM[c)]	66	7.6	33	22.3	5	7.5	9	18.8	1	4.6	114	9.9	<0.001
Bodywork/Mind-body	221	25.5	30	20.3	12	17.9	15	31.3	7	31.8	285	24.8	0.387
Bodywork/TCM	68	7.8	14	9.5	4	6.0	4	8.3	1	4.6	91	7.9	0.945
Mind-body/TCM	96	11.1	19	12.8	4	6.0	1	2.1	0	0.0	120	10.4	0.112
Bodywork/Mind-body/TCM	161	18.6	14	9.5	10	14.9	4	8.3	4	18.2	193	16.7	0.062
Individual types of CIH													
Acupressure	200	23.1	31	21.0	11	16.4	8	16.7	4	18.2	254	22.0	0.581
Acupuncture	206	23.8	55	37.2	18	26.9	14	29.2	3	13.6	296	25.7	0.008
Craniosacral	4	0.5	0	0.0	0	0.0	0	0.0	0	0.0	4	0.4	0.858
Energy	118	13.6	14	9.5	9	13.4	7	14.6	3	13.6	152	13.2	0.731
Guided imagery	51	5.9	9	6.1	1	1.5	2	4.2	3	13.6	67	5.8	0.281
Healing touch	82	9.5	10	6.8	7	10.5	5	10.4	2	9.1	107	9.3	0.855
Korean hand therapy	57	6.6	7	4.7	4	6.0	4	8.3	1	4.6	73	6.3	0.881
Massage	569	65.6	62	41.9	45	67.2	27	56.3	12	54.6	716	62.1	<0.001
Music	9	1.0	6	4.1	2	3.0	0	0.0	0	0.0	17	1.5	0.040
Qi Gong	89	10.3	10	6.8	7	10.5	4	8.3	2	9.1	112	9.7	0.749
Reflexology	83	9.6	20	13.5	9	13.4	6	12.5	4	18.2	122	10.6	0.357
Reiki	21	2.4	4	2.7	2	3.0	2	4.2	1	4.6	30	2.6	0.918
Relaxation techniques	389	44.9	49	33.1	16	23.9	20	41.7	10	45.5	485	42.0	0.002
Tui Na	11	1.3	7	4.7	5	7.5	2	4.2	2	9.1	27	2.3	<0.001

Note:

[a)] includes craniosacral, massage, reflexology, and Tui Na therapies;

[b] includes healing touch, Reiki, guided imagery, music, relaxation, Qi Gong, and energy therapies; and

[c] denotes "traditional Chinese medicine," and includes acupressure, acupuncture, and Korean hand therapies.

Table 3

Reasons for complementary and integrative healthcare (CIH) visits per hospital stay among inpatients with mechanical low back pain by reason for hospitalization (n=1,152)

	Dorsal & lumbar fusion (n=867)		Disc excision and decompression (n=148)		Fractures and injuries (n=67)		Cervical fusion (n=48)		Others (n=22)		Total (n=1,152)		*P*-value
	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	Obs	%	
Reason													
Pain	391	45.1	49	33.1	41	61.2	26	54.2	13	59.1	520	45.1	0.001
Relaxation	151	17.4	28	18.9	11	16.4	9	18.8	3	13.6	202	17.5	0.969
Comfort	60	6.9	17	11.5	8	11.9	7	14.6	2	9.1	94	8.2	0.095
Stress	44	5.1	2	1.4	4	6.0	0	0.0	1	4.6	51	4.4	0.149
Anxiety	32	3.7	10	6.8	1	1.5	2	4.2	0	0.0	45	3.9	0.262
Insomnia	40	4.6	2	1.4	0	0.0	3	6.3	1	4.6	46	4.0	0.136
Nausea	31	3.6	3	2.0	1	1.5	1	2.1	1	4.6	37	3.2	0.736
Others[a)]	62	11.5	16	13.8	4	7.8	2	5.9	4	30.8	88	11.7	0.140
Not reported	219	25.3	37	25.0	10	14.9	5	10.4	1	4.6	272	23.6	0.010

Note:

*a)*includes assessment, constipation, education, end of life care, parasympathetic nervous system, spiritual issues and wellbeing.