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Massage therapy utilisation by Australian women: Prevalence and determinants

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ABSTRACT

Objectives: Massage is a popular form of health care used among women, yet little is known about the characteristics of women who use massage therapy and the rationale for its use. This study reports the prevalence and characteristics of young and middle-aged Australian women who consulted a massage therapist.

Design: The study analysed data from the Australian Longitudinal Study on Women's Health; a nationally-representative sample of Australian women. The data from 7,993 young, and 9,102 middle-aged women were included in the analyses and massage use was compared against measures of health status, health care utilisation, and demographics.

Results: Prevalence of consultation with a massage therapist in the previous 12 months was 42.4% in young women and 25.2% in middle-aged women. Women who consulted a massage therapist were more likely to consult other complementary medicine practitioners and/or use self-prescribed complementary medicine. Both young and middle-aged women were more likely to consult a massage therapist if they experienced musculoskeletal problems; however less likely, with chronic disease such as diabetes and hypertension.

Conclusion: Despite large numbers of young and middle-aged Australian women consulting a massage therapist, no Australian studies investigate the prevalence of massage consultations and report correlations with characteristics relevant to demographic, health status and health service data. Our findings highlight the need for further investigation of women's choices relevant to the use of massage therapy. Such research could shape the future of women's health care by providing insight into women's decision making around massage therapy, conventional treatment and healthcare utilisation.

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1. Introduction

Massage therapy is the systematic assessment and treatment of muscles, tendons, ligaments and connective tissue of the body through manual tissue and muscle manipulation by a trained massage practitioner, who also may apply adjunctive therapies, with the intention to promote health and well-being of the client (Association of Massage Therapists, 2012; Registered Massage Therapists' Association of Ontario, 2017; Rich, 2010). It includes systematic application of various manual techniques such as effleurage, kneading, compression, percussion, stretching and passive joint mobilisation as well as external application of heat, cold and topical preparations (Association of Massage Therapists, 2012).

Massage therapy has gained momentum over recent years as an effective remedial, therapeutic and holistic practice (Adams et al., 2012; Murthy et al., 2014; Rich, 2010; Yang et al., 2012); capable of relieving symptoms associated with alterations in blood pressure and prehypertension in women (Givi, 2013); heart related conditions (Prasad et al., 2013); stroke rehabilitation (Sibbritt et al., 2012); and chronic illness (Saydah and Eberhardt, 2006). Massage therapy has also been shown to be calming and alleviate anxiety, tension, poor sleep and fatigue related conditions (Garakyaraghi et al., 2014). For women specifically, massage therapy has also been used to assist those experiencing menopause (Peng et al., 2014), as well as pregnancy (Frawley et al., 2013) and related

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symptoms such as back pain, neck pain and pelvic pain (Sibbritt et al., 2016b).

Massage therapy is increasing in popularity, and women are key drivers of this trend (Adams et al., 2003a, 2011; Bell et al., 2006; Harris et al., 2014; Nahin et al., 2007). Previous studies in Canada the US and Australia show estimated prevalence of massage therapy use being 79%, 56% and 64%, respectively (Adams et al., 2011; Honda and Jacobson, 2005; Sirois, 2008; Sirois and Gick, 2002; Sundberg et al., 2017). Users of massage therapy tend to be female, married, have a tertiary education, be employed, have health insurance, and have greater ability to live on their income (Adams et al., 2003b; Bell et al., 2006; Saydah and Eberhardt, 2006; Sirois and Gick, 2002; Upchurch et al., 2007). Further, women who use massage therapy are also more likely to be more health conscious and pursue healthy lifestyles and engage in positive health related behaviours than those who do not use massage therapy (Nahin et al., 2007; Sibbritt et al., 2005).

A number of studies have examined the efficacy of massage therapy (Bauer et al., 2010; Drackley et al., 2012; Field et al., 2012; Givi, 2013; Nerbass et al., 2010; Noto et al., 2010; Perlman et al., 2012; Somani et al., 2013). In women with chronic lower back pain, massage therapy has been found to improve function and decrease pain more than usual care after 10 weeks, with significant benefits noted over time (Cherkin et al., 2011). Further, in context of their chronic pain conditions, women who use massage therapy are also reported to maintain a greater state of relaxation and resulting positive effects on physical and psychological wellbeing following massage therapy, than women who did not have massage therapy (Karlson et al., 2014). Over the long term, massage therapy has been observed to result in progressive improvement of superficial circulation in patients with a differential diagnosis (Wälchli et al., 2014), and a decrease in blood pressure and regulation of resting heart rate variability in men aged 21–26 years (Walaszek et al., 2009; Wälchli et al., 2014).

Despite positive reports on the high prevalence, use and efficacy of massage therapy, little is known about the profile of Australian women who use massage in terms of demographic characteristics, health status, associated symptoms, and health service utilisation, including how these factors influence, or even affect choices and decision making regarding the use of massage therapy. This study is the first to examine the prevalence and characteristics of massage therapy use by young and middle-aged Australian women from a nationally-representative sample. In this preliminary research, we sought to examine and understand how demographic characteristics, health status, associated symptoms, and health service utilisation, influence and contribute to choices around massage therapy utilisation. It is envisaged that our findings will help provide insight to those providing massage therapy and managing women's health services more generally (Cherkin et al., 2002).

2. Methods

2.1. Sample

Survey data was obtained from the 'young' and 'middle-aged' cohorts of the Australian Longitudinal Study on Women's Health (ALSWH). The ALSWH is a longitudinal study involving over 40,000 women, followed over a 20-year period. The aim of the ALSWH is to investigate the health and well-being and associated practices of women categorised in 3 cohorts, being 'young' women (born 1973–1978 aged 18–23 years), 'middle-aged' women (born 1946–1951, aged 45–50 years), and 'older' women (born 1921–1926, aged 70–75years). All subjects were randomly selected from the Australian National Medicare Database in 1996 and have been surveyed via mailed questionnaires on a regular basis (approximately every 3 years). For the current study, data was obtained from a survey conducted in 2012 from 7993 young women (i.e. Survey 6, when they were aged 34–39 years) and a survey conducted in 2013 from 9102 middle-aged women (i.e. Survey 7, when they were aged 62–67 years).

2.2. Demographic measures

Postcode of residence at the time of the survey (i.e. in 2012 or 2013 for the young and middle-aged cohorts, respectively) was used to classify area of residence as urban, rural or remote. Women were asked about their current marital status, income, highest educational qualification, and whether or not they had private health insurance. The women were also asked about their consumption of alcohol and cigarettes/tobacco.

2.3. Health status measures

Women from both cohorts were asked to indicate how often they experienced a list of common age appropriate symptoms in the previous twelve months. The young women were provided with a list of 11 symptoms while the middle-aged women were provided a list of 14 symptoms. Only symptoms linked to the use of massage therapy are reported here in order to meet the aim of our research.

2.4. Health service utilisation measures

The women were asked about their frequency of use in the previous twelve months of a General Practitioner (GP) and a specialist doctor. In addition, they were asked if they had consulted with a range of conventional providers and CAM practitioners, including a massage therapist (MT), as well as their consumption of self-prescribed CAM in the previous twelve months. Only health service utilisation linked to the use of massage therapy are reported here in order to meet the aim of our research.

2.5. Statistical analysis

For each separate cohort of women, chi-square tests were used to examine the association between massage use and demographic data, health status, symptoms, health service utilisation and CAM utilisation. Separate multiple logistic regression models were produced to determine the statistically significant factors associated with massage use for each cohort of women. All the demographic, healthcare use, symptoms and diagnoses variables, with a bivariate $p < 0.25$ (Hosmer and Lemeshow, 2005), were entered into a logistic regression model and then a stepwise backward elimination process was employed, using a likelihood ratio test, to eventually produce the most parsimonious model. In response to the large sample size, a $p < 0.005$ was adopted for statistical significance (Johnson, 2013). All analyses were conducted using statistical program Stata 13.1.

3. Results

In the young cohort of women 42.4% ($n = 3391$) consulted with a MT in the previous 12 months, while 25.2% ($n = 2290$) of women in the middle-aged cohort consulted with a MT in the previous 12 months. Table 1 shows the association between demographic characteristics and consultations with a MT. It can be seen that for both the young and middle-aged cohorts, those women who have private health insurance ($p < 0.001$), and/or are low risk consumers of alcohol ($p < 0.001$) are more likely to consult a MT, whereas women who smoke ($p < 0.001$) are less likely to consult a MT

Table 1
The association between demographic characteristics and consultation with a massage therapist, by age cohorts of Australian women.

	Young Cohort			Mid Cohort		
	Massage User (n = 3391)	Massage Non-User (n = 4602)	*p*	Massage User (n = 2290)	Massage Non-User (n = 6812)	*p*
	%	%		%	%	
Area of Residence						
Urban	63	58		38	39	
Rural & Remote	37	42	<0.001	62	61	0.350
Marital Status						
Married/Defacto	76	81		73	75	
Separated/Divorced/Widowed	8	7		24	22	
Never Married	16	12	<0.001	3	3	0.530
Education						
Tertiary	58	52		13	14	
Trade Certificate/Diploma	28	28		19	19	
School Only	14	20		51	48	
No Formal Education	0	0	<0.001	17	19	0.068
Manages on Income						
Not Too Bad/Easy	60	53		70	67	
Sometimes Difficult	29	32		21	23	
Impossible/Difficult	11	15	<0.001	9	10	0.030
Private Health Insurance						
Yes	73	61		75	63	
No	27	39	<0.001	25	37	<0.001
Cigarette/Tobacco Use						
Never	62	60		63	62	
ex-Smoker	28	27		31	29	
Smoking	10	13	<0.001	5	9	<0.001
Alcohol						
Non-Drinker	9	14		12	18	
Rarely Drinks	22	28		20	24	
Low Risk	64	54		61	52	
High Risk	5	4	<0.001	6	6	<0.001

p-value obtained from a chi-square test.
School only: women who did not progress their education beyond primary or high school.

($p < 0.001$). In the young cohort only, those women who reside in an urban area ($p < 0.001$), were never married ($p < 0.001$), have a tertiary education ($p < 0.001$), find it 'easy' or 'not too bad' to manage on their income ($p < 0.001$), and/or are of a healthy BMI ($p < 0.001$), are more likely to consult a MT.

The association between health status measures and consultation with a MT are presented in Table 2. Women from both cohorts are more likely to consult with a MT if they have been diagnosed with an anxiety disorder ($p < 0.001$). In the middle-aged cohort only, those women who those have been diagnosed with 'other' arthritis ($p = 0.002$) are more likely to consult with a MT, whereas those women who have been diagnosed with diabetes ($p < 0.001$), heart disease ($p = 0.002$), and/or hypertension ($p < 0.001$) are less likely to consult with a MT.

Table 3 shows the association between symptoms and consultations with a MT. Women in both cohorts are more likely to consult with a MT if they sometimes/often experience back pain ($p < 0.001$) and/or stiff or painful joints ($p < 0.001$). In the young cohort only, women who experience bowel problems sometimes/often are more likely to consult a MT ($p = 0.004$). Women in the middle-aged cohort only, are more likely to consult a MT if they experience, on a sometimes or often basis: headaches or migraines ($p < 0.001$); shoulder problems ($p < 0.001$); hip problems ($p < 0.001$); feet problems ($p < 0.001$); and/or severe tiredness ($p = 0.002$).

The association between conventional health care utilisation and consultation with a MT are presented in Table 4. For both the young and middle-aged cohorts, women who consulted a MT were more likely to visit a specialist (on 5 or more occasions) ($p < 0.001$), counsellor/psychologist ($p < 0.001$), and/or a physiotherapist ($p < 0.001$). Women in the young cohort only, were more likely to consult a MT if they also consulted a GP on 5 or more occasions ($p < 0.001$). For women in the middle-aged cohort only, those who consulted a podiatrist ($p < 0.001$) were more likely to also consult with a MT ($p < 0.001$).

The associations between consultation with a MT and consultation with CAM practitioners and use of CAM and other therapies can also be seen in Table 4. For both cohorts, women were more likely to consult a MT if they also consulted with any of the listed CAM practitioners or used any of the CAM or other therapies listed (all $p < 0.001$).

Table 5 shows the results of the multiple logistic regression modelling, identifying the characteristics significantly associated with consultation with a MT for women from the young cohort. Women who were 'never married' were 1.4 times (95% CI: 1.25, 1.66) more likely to consult a MT than those who were 'married/defacto'. Those who managed on their income 'not too bad/easy' were 1.7 times (95% CI: 1.43, 1.98) more likely to consult a MT than those who found it 'impossible/difficult' to manage. Women with private health insurance were 1.3 times (95% CI: 1.18, 1.46) more likely to consult a MT compared to those who do not have private health insurance. Compared to non-drinkers of alcohol, women who were 'high risk' consumers (OR = 1.8; 95% CI: 1.39, 2.40) and 'low risk' consumers (OR = 1.7; 95% CI: 1.44, 2.00) were more likely to consult a MT. Young women were more likely to consult a MT if they also consulted: an osteopath (OR = 2.3; 95% CI: 1.92, 2.78), and acupuncturist (OR = 2.0; 95% CI: 1.91, 2.79), physiotherapist (OR = 1.8; 95% CI: 1.63, 2.06), chiropractor (OR = 1.8; 95% CI: 1.61, 2.07), naturopath/herbalist (OR = 1.5; 95% CI: 1.22, 1.71), and/or counsellor (OR = 1.2; 95% CI: 1.11, 1.43). In addition, young women were also more likely to consult a MT if they used yoga/meditation (OR = 1.5; 95% CI: 1.35, 1.72), aromatherapy oils (OR = 1.5; 95% CI:

Table 2
The association between health status and consultations with a massage therapist, by age cohorts of Australian women.

	Young Cohort			Mid Cohort		
	Massage User (n = 3391)	Massage Non-User (n = 4602)	*p*	Massage User (n = 2290)	Massage Non-User (n = 6812)	*p*
	%	%		%	%	
Depression						
Yes	18	16		14	12	
No	82	84	0.006	86	88	0.014
Anxiety						
Yes	13	10		12	10	
No	87	90	<0.001	88	90	0.001
Asthma						
Yes	10	10		13	12	
No	90	90	0.289	87	88	0.398
Bronchitis (& Emphysema in mid cohort)						
Yes	6	5		8	8	
No	94	95	0.403	92	92	0.794
Diabetes [a]						
Yes				7	10	
No				93	90	<0.001
Osteoarthritis [a]						
Yes				29	26	
No				71	74	0.015
Rheumatoid Arthritis [a]						
Yes				5	5	
No				95	95	0.457
Other Arthritis [a]						
Yes				13	11	
No				87	89	0.002
Osteoporosis [a]						
Yes				10	9	
No				90	91	0.028
Heart Disease [a]						
Yes				4	6	
No				95	94	0.002
Hypertension [a]						
Yes				31	36	
No				69	64	<0.001
Cancer [a]						
Yes				6	5	
No				94	95	0.186
Currently Pregnant [b]						
Trimester 1	1	1				
Trimester 2	2	3				
Trimester 3	3	3				
No	94	94	0.495			

p-value obtained from a chi-square test.
[a] This disease was not asked of the young cohort.
[b] Pregnancy status was not asked of the mid-age cohort.

1.30, 1.72) and/or vitamins and minerals (OR = 1.3; 95% CI: 1.17, 1.47) on a 'sometimes/often' basis. Young women who sometimes/often experienced back pain were 1.3 times (95% CI: 1.18, 1.45) more likely to consult a MT than those who never/rarely had back pain.

The multiple logistic regression modelling identifying the characteristics significantly associated with consultation with a massage therapist for women from the middle-aged cohort is presented in Table 6. Compared to women who were 'non-drinkers', women who were at 'high risk' (OR = 1.6; 95% CI: 1.19, 2.04) and 'low risk (OR = 1.5; 95% CI: 1.29, 1.82) of alcohol consumption were more likely to consult a MT. Women who experienced shoulder problems 'sometimes/often', were 1.6 times (95% CI: 1.46, 1.83) more likely to consult a MT than those who experienced shoulder problems 'never/rarely'. However, women with hypertension (OR = 0.8; 95% CI: 0.73, 0.93) and diabetes (OR = 0.6; 95% CI: 0.50, 0.80) were less likely to consult a MT. Women were more likely to consult with a MT if they also consulted with: an acupuncturist (OR = 2.2; 95% CI: 1.82, 2.76), naturopath/herbalist (OR = 2.0; 95% CI: 1.66, 2.51), chiropractor (OR = 2.0; 95% CI: 1.74, 2.32), osteopath (OR = 1.8; 95% CI: 1.41, 2.31), other CAM practitioner (OR = 1.5; 95% CI: 1.27, 1.84), physiotherapist (OR = 1.8; 95% CI: 1.57, 2.00), and/or podiatrist (OR = 1.4; 95% CI: 1.25, 1.63). In addition, women who used aromatherapy oils (OR = 1.9; 95% CI: 1.65, 2.24) and/or vitamins and supplements (OR = 1.5; 95% CI: 1.27, 1.68) on a 'sometimes/often' basis were more likely to consult a MT.

4. Discussion

This paper reports findings from the first nationally representative study examining the prevalence and characteristics of young and middle-aged women in Australia who consult a MT. Our analyses revealed that 42% of women aged 34–39 years and 25% of women aged 62–67 years consulted a MT in the previous 12 months. These percentages are much higher than reported to be the prevalence in the US at 7% (Sundberg et al., 2017) or Australia at 14% (Xue et al., 2007), although these lower prevalence rates are not

Table 3
The association between symptoms and consultation with a massage therapist, by age cohorts of Australian women.

	Young Cohort			Mid Cohort		
	Massage User (n = 3391)	Massage Non-User (n = 4602)	*p*	Massage User (n = 2290)	Massage Non-User (n = 6812)	*p*
	%	%		%	%	
Headache/Migraine						
Sometimes/Often	58	57		44	38	
Never/Rarely	42	43	0.197	56	62	<0.001
Back Pain						
Sometimes/Often	56	46		66	57	
Never/Rarely	44	54	<0.001	34	43	<0.001
Stiff or Painful Joints						
Sometimes/Often	36	30		76	69	
Never/Rarely	64	70	<0.001	24	31	<0.001
Shoulder Problems [a]						
Sometimes/Often				52	39	
Never/Rarely				48	61	<0.001
Hip Problems [a]						
Sometimes/Often				42	33	
Never/Rarely				59	67	<0.001
Knee Problems [a]						
Sometimes/Often				48	45	
Never/Rarely				52	55	0.036
Feet Problems						
Sometimes/Often	19	17		45	40	
Never/Rarely	81	83	0.015	56	60	<0.001
Breathing Difficulties						
Sometimes/Often	10	9		19	20	
Never/Rarely	90	91	0.222	81	80	0.222
Constipation [b]						
Sometimes/Often	24	22				
Never/Rarely	76	78	0.032			
Difficulty Sleeping [b]						
Sometimes/Often	44	43				
Never/Rarely	56	57	0.122			
Palpitations						
Sometimes/Often	14	15		19	19	
Never/Rarely	86	85	0.353	81	81	0.740
Severe Tiredness						
Sometimes/Often	59	57		44	40	
Never/Rarely	41	43	0.048	56	60	0.002
Haemorrhoids						
Sometimes/Often	15	14		18	17	
Never/Rarely	85	86	0.362	82	83	0.117
Bowel Problems						
Sometimes/Often	13	11		24	21	
Never/Rarely	87	89	0.004	76	79	0.028
Hot Flushes [a]						
Sometimes/Often				26	26	
Never/Rarely				74	74	0.780
Night Sweats [a]						
Sometimes/Often				21	21	
Never/Rarely				79	79	0.701

p-value obtained from a chi-square test.
[a] This symptom was not asked of the young cohort.
[b] This symptom was not asked of the mid-age cohort.

surprising as both of these studies included participants from a much wider age range as well as both genders.

Aside from the high prevalence and use of massage therapy amongst the women identified in our study, three main findings emerged as significant from our analysis. Women who were more likely to use massage therapy were also more likely to use conventional treatment such as physiotherapy as well as various other forms of CAM. Women who use massage therapy are less likely to engage in risk taking behaviour and demonstrate positive choices in relation to managing their health. Finally, women with chronic illness who use massage therapy typically use it to complement other treatment. That is, massage therapy is not used as the solitary form of treatment for chronic illness.

4.1. Massage among conventional treatment and CAM

Our results reveal that women who consult a MT are also more likely to utilise other forms of CAM. These results are consistent with previous research that indicates women are more likely to use a variety of CAM concurrently (Adams et al., 2011), particularly if they have back pain (Murthy et al., 2014; Sibbritt and Adams, 2010). As shown in other studies (Sibbritt and Adams, 2010; Steinsbekk et al., 2007), women with back pain were more likely to consult their GP or specialist healthcare provider initially; possibly for the security of medical diagnosis and/or clearance, and then use massage therapy or chiropractic care and physiotherapy at a later date or possibly for definitive management and/or ongoing maintenance.

For the women in our study, massage therapy does not appear in

Table 4
The association between health service utilisation and CAM consultations with a massage therapist, by age cohorts of Australian women.

	Young Cohort			Mid Cohort		
	Massage User (n = 3391)	Massage Non-User (n = 4602)	*p*	Massage User (n = 2290)	Massage Non-User (n = 6812)	*p*
	%	%		%	%	
GP						
0 Visits	4	6		3	4	
1-2 Visits	34	36		29	30	
3-4 Visits	31	29		32	32	
5 or more visits	31	28	<0.001	36	33	0.067
Specialist						
0 Visits	46	54		42	47	
1-2 Visits	29	24		37	35	
3-4 Visits	10	8		14	11	
5 or more visits	15	13	<0.001	7	7	<0.001
Nurse (Community, Practice or Practitioner)						
Yes	14	13		18	16	
No	86	87	0.473	82	84	0.115
Counsellor/Psychologist						
Yes	23	16		9	6	
No	77	84	<0.001	91	94	<0.001
Physiotherapist						
Yes	32	18		37	21	
No	68	82	<0.001	63	79	<0.001
Podiatrist [a]						
Yes				28	20	
No				72	80	<0.001
Specialist Access						
Excellent/Good	85	82		91	90	
Fair/Poor	15	18	0.007	8	10	0.051
Ease of Seeing the GP						
Excellent/Good	59	58		78	79	
Fair/Poor	41	42	0.372	22	21	0.114
Chiropractor						
Yes	27	15		24	11	
No	73	85	<0.001	76	89	<0.001
Osteopath						
Yes	13	5		8	3	
No	87	95	<0.001	92	97	<0.001
Acupuncture						
Yes	16	5		14	4	
No	84	95	<0.001	86	96	<0.001
Naturopath/Herbalist						
Yes	18	7		16	4	
No	82	93	<0.001	84	96	<0.001
Another/Other Practitioner						
Yes	12	4		12	3	
No	88	96	<0.001	88	97	<0.001
Vitamins/Minerals						
Sometimes/Often	77	64		83	69	
Never/Rarely	23	36	<0.001	17	31	<0.001
Yoga/Meditation						
Sometimes/Often	32	18		37	21	
Never/Rarely	68	83	<0.001	63	79	<0.001
Herbal Medicine						
Sometimes/Often	27	15		37	21	
Never/Rarely	73	85	<0.001	63	79	<0.001
Chinese Medicine						
Sometimes/Often	9	3		8	3	
Never/Rarely	91	97	<0.001	92	97	<0.001
Aromatherapy						
Sometimes/Often	22	12		24	10	
Never/Rarely	78	88	<0.001	76	90	<0.001
Hormone Replacement Therapy [a]						
Using				11	8	
Not Using				89	91	0.001
Other Alternative Therapies						
Sometimes/Often	16	6		20	6	
Never/Rarely	84	94	<0.001	80	94	<0.001

p-value obtained from a chi-square test.
[a] This therapy was not asked of the young cohort.

Table 5
Multiple logistic regression model identifying the characteristics significantly associated with consultation with a massage therapist for women from the young cohort.

Characteristics		Odds Ratio	95% C.I		*p*
Marital Status	Married/Defacto	1.00	_		
	Separated/Divorced/Widowed	1.22	1.00,	1.48	0.046
	Never Married	1.44	1.25,	1.66	<0.001
Manages on Income	Impossible/Difficult	1.00	_		
	Difficult Some of the Time	1.29	1.09,	1.53	0.003
	Not too Bad/Easy	1.68	1.43,	1.98	<0.001
Private Health Insurance	No	1.00	_		
	Yes	1.31	1.18,	1.46	<0.001
Alcohol	Non-Drinker	1.00			
	Rarely Drinks	1.15	0.96,	1.38	0.118
	Low Risk	1.70	1.44,	2.00	<0.001
	High Risk	1.82	1.39,	2.40	<0.001
Back Pain	Never/Rarely	1.00	_		
	Sometimes/Often	1.31	1.18,	1.45	<0.001
Counsellor	No	1.00	_		
or Other Mental Health Worker	Yes	1.26	1.11,	1.43	<0.001
Physiotherapist	No	1.00	_		
	Yes	1.83	1.63,	2.06	<0.001
Chiropractor	No	1.00	_		
	Yes	1.82	1.61,	2.07	<0.001
Osteopath	No	1.00	_		
	Yes	2.31	1.92,	2.78	<0.001
Acupuncturist	No	1.00	_		
	Yes	2.01	1.91,	2.79	<0.001
Naturopath/Herbalist	No	1.00	_		
	Yes	1.45	1.22,	1.71	<0.001
Other Alternative Practitioner	No	1.00	_		
	Yes	1.85	1.52,	2.27	<0.001
Vitamins & Supplements	Never/Rarely	1.00	_		
	Sometimes/Often	1.31	1.17,	1.47	<0.001
Yoga & Meditation	Never/Rarely	1.00	_		
	Sometimes/Often	1.52	1.35,	1.72	<0.001
Aromatherapy	Never/Rarely	1.00	_		
	Sometimes/Often	1.50	1.30,	1.72	<0.001

p-value for odds ratios obtained from a logistic regression model.
*adjusted odds ratios.

most cases to be a frontline stand-alone therapy of choice; they were more likely to use massage in conjunction with conventional medicine, allied health and other forms of CAM. This may potentially indicate that women who perceive themselves as physiologically ill, may see conventional or allied healthcare as more specific and effective treatment modalities for treating illness (Erp et al., 2017; Honda and Jacobson, 2005; Langston et al., 2016). They may perceive massage therapy and CAM to be used to complement conventional treatments and assist coping with illness symptoms and improving quality of life (Erp et al., 2017; Honda and Jacobson, 2005; Langston et al., 2016). Recent studies on illness perception and outcomes support this by suggesting that when individuals become ill, they develop coping behaviours to maintain a level of personal control over their illness and aim to improve quality of life with the intention of attaining favourable physiological and psychological outcomes (Erp et al., 2017; Langston et al., 2016).

Our results could also indicate a possible shift in societal values around healthcare, and a deepening awareness of the benefits of MT and CAM in completing conventional treatments to make them more holistic in the care of health, illness and wellbeing. Healthy women who value holistic mind body health and well-being, could potentially be seeking information about, and are encouraged by mainstream media to embrace the use of MT in their healthcare regimen as a means of support and control over their health (Sirois and Gick, 2002).

4.2. Health related behaviour

Our study found that women who use massage therapy are less likely to smoke, are low risk drinkers of alcohol and were unlikely to suffer obesity and as such, are perhaps more health conscious as they are less likely to engage in health related risk taking behaviour than women who do not use massage therapy. These findings are consistent with other research that has shown Australian middle-aged women are high users of CAM and likely to be health conscious and adopt health seeking behaviours (Adams et al., 2003b, 2011; Steinsbekk et al., 2007). A study in the US also found those adults who tend to engage in positive health behaviours, pursue a healthy lifestyle in general, and engage in fewer health risk taking behaviours, are more likely to be CAM users than those who do not engage in positive health related behaviours or exhibit more health risk factors (Nahin et al., 2007). A mixed gender study also reported that a significantly higher number of subjects who participated in regular exercise reported higher CAM use than those who did not participate in regular exercise (Al-Windi, 2004).

4.3. Massage and chronic illness

Our findings indicate that massage therapy is more commonly utilised for musculoskeletal treatment in women rather than chronic illness. These findings are in line with other studies that report women with diabetes and hypertension as less likely to consult MT's as they may potentially consider conventional methods more suitable for such systemic conditions (Sibbritt et al., 2015, 2016a; Steinsbekk et al., 2007). In patients with stroke however, Sibbritt et al. (2012), have reported that women experienced a reduction in pain, were better able to sleep, and experienced mood improvement and effective treatment of depression

Table 6
Multiple logistic regression model identifying the characteristics significantly associated with consultation with a massage therapist for women from the mid cohort.

Characteristics		Odds Ratio	95% C.I		*p*
Alcohol	Non-Drinker	1.00	_		
	Rarely Drinks	1.07	0.88,	1.30	0.509
	Low Risk	1.53	1.29,	1.82	<0.001
	High Risk	1.55	1.19,	2.04	<0.001
Diabetes	No	1.00	_		
	Yes	0.63	0.50,	0.80	<0.001
Hypertension	No	1.00	_		
	Yes	0.83	0.73,	0.93	0.002
Shoulder Problems	Never/Rarely	1.00	_		
	Sometimes/Often	1.63	1.46,	1.83	<0.001
Physiotherapist	No	1.00	_		
	Yes	1.78	1.57,	2.00	<0.001
Podiatrist	No	1.00	_		
	Yes	1.43	1.25,	1.63	<0.001
Naturopath/Herbalist	No	1.00	_		
	Yes	2.04	1.66,	2.51	<0.001
Chiropractor	No	1.00	_		
	Yes	2.01	1.74,	2.32	<0.001
Osteopath	No	1.00	_		
	Yes	1.80	1.41,	2.31	<0.001
Acupuncturist	No	1.00	_		
	Yes	2.24	1.82,	2.76	<0.001
Other Alternative Practitioner	No	1.00	_		
	Yes	2.44	1.92,	3.13	<0.001
Vitamins & Supplements	Never/Rarely	1.00	_		
	Sometimes/Often	1.46	1.27,	1.68	<0.001
Aromatherapy	Never/Rarely	1.00	_		
	Sometimes/Often	1.92	1.65,	2.24	<0.001
Other Alternative Therapies	Never/Rarely	1.00	_		
	Sometimes/Often	1.53	1.27,	1.84	<0.001

p-value for odds ratios obtained from a logistic regression model.
*adjusted odds ratios.

following a rehabilitation program incorporating traditional Thai massage in care alongside, herbal treatments and physical therapies.

5. Limitations

There are some limitations to our study that require consideration when interpreting the findings. The data upon which our findings are based was self-reported by the women, thus introducing the possibility of recall bias. Furthermore, although our data was collected from a representative sample of Australian women from particular age groups, the findings may therefore not be generalisable to all Australian women. Unfortunately, we are not able to ascertain if the use of massage therapy was for specific symptoms/conditions, only that there was a statistically significant association between massage use and having a symptoms/conditions. Therefore, caution is required when interpreting these findings. Nevertheless, despite these limitations, our study is the first to investigate the prevalence and characteristics of female users of massage therapy specifically from such a large sample of Australian women.

6. Conclusion

A considerable proportion of young and middle-aged Australian women consult with a MT. Discovering how and if demographic or socioeconomic factors contribute to choices related to massage therapy utilisation will provide potential insights of benefit to those providing and managing women's health services more generally. Our study findings highlight the need for further empirical investigation into women's decision making, information sources and communication regarding their use of massage therapy, as well as the effectiveness and efficacy of such massage therapy use for a range of relevant women's health conditions. Such research would better inform future decision making around health policy and improve confidence in possible massage therapy utilisation alongside conventional treatment in the health care system.

7. Clinical relevance

- Findings highlight how women utilise massage therapy, and may contribute to a better understanding of health related behavior and changing trends in health care decision making among Australian women in the context of CAM and conventional treatment
- Findings may assist CAM practitioners and health care professionals to understand how Australian women value health care, and cope with discomfort and illness respectively, allowing them to tailor treatment to the unique individual health care needs
- Socio demographic data may inform government agencies and health care organisations in creating healthy public health care policy and target funding more specifically to areas of need.

Declaration of competing interest

The authors have no conflicts of interest to disclose.

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