



## Advancing health promotion through massage therapy practice: A cross-sectional survey study

Ann Blair Kennedy<sup>a,\*</sup>, Jerrilyn A. Cambron<sup>b</sup>, Jennifer M. Dexheimer<sup>c,1</sup>, Jennifer L. Trilk<sup>d</sup>, Ruth P. Saunders<sup>e</sup>

<sup>a</sup> Department of Biomedical Sciences, Division of Behavioral, Social, and Population Health, University of South Carolina School of Medicine Greenville, USA

<sup>b</sup> College of Allied Health Sciences and Distance Education and Department of Research, National University of Health Sciences, Lombard, IL, USA

<sup>c</sup> Department of Research, National University of Health Sciences, Lombard, IL, USA

<sup>d</sup> Department of Biomedical Sciences, University of South Carolina School of Medicine Greenville, USA

<sup>e</sup> Department of Health Promotion, Education, and Behavior, University of South Carolina, Columbia, USA

### ARTICLE INFO

#### Keywords:

Massage therapy  
Cross-sectional study  
Public health  
Health promotion  
Health behavior  
Surveys and questionnaires

### ABSTRACT

The human resources needed to provide health promotion services to improve health behaviors in populations are currently limited. Health promotion and education is included in the definition of massage therapy, and many within the massage therapy profession understand that health promotion and education are a part of massage therapy practice. However, the amounts and types of health promotion activities in massage therapy practice have not been thoroughly explored. The objective of this study was to investigate the current attitudes, practices, and barriers toward providing health promotion in a national sample of practicing massage therapists. A descriptive cross-sectional survey disseminated May to August 2016 to practicing massage therapists in the United States. The majority (90.2%) of the 182 participants agree or strongly agree that it is important for massage therapists to provide health promotion. Therapists with less favorable attitudes about providing health promotion reported more barriers to providing the messages to their patients. Barriers to providing health promotion included a lack of guidelines, knowledge, and skills. Training and guidelines for massage therapists regarding health promotion would be a reasonable next step for future research development. Utilizing massage therapists as health promoters may provide opportunities to deliver more prevention messages to patients which may impact public health.

### 1. Introduction

According to the World Health Organization, 60% of all deaths are related to chronic diseases (World Health Organization, 2017), many of which could be reduced by health behavior modification. Health promotion interventions which attempt to improve health behaviors that cause chronic disease, poor dietary choices, smoking, and lack of physical activity can have large impacts on disease outcomes, quality of life, and mortality (Glanz et al., 2002; Gorin and Arnold, 2006; Lee et al., 2012; Planning health promotion programs, 2006). Currently, more than half of the United States health costs are associated with chronic conditions (Druss et al., 2001), and exposing more patients to health promotion could significantly contribute in the area of chronic disease management. Yet, the human resources needed to provide health promotion services are currently limited. Yarnall et al.

documented that it was not feasible for primary care physicians to deliver all the recommended chronic disease management messages and prevention/health promotion services to patients in a given day (Yarnall et al., 2003). Additionally, the Associations of American Medical Colleges reports that due to population growth and the aging population, a shortage of > 100,000 physicians will occur by the year 2030 (Mann, 2017). Furthermore, the Public Health workforce is shrinking with concerns about future accelerated reductions in workforce based on planned retirements, budget cuts, and voluntary departures; some of the greatest reductions in workforce include health education and health services (Beck and Boulton, 2015; Liss-Levinson et al., 2015; Pourshaban et al., 2015). Therefore, it is necessary to investigate other potential avenues for health promotion and behavioral modification for patients.

The Institute of Medicine (IOM) conducted a summit to discuss the

\* Corresponding author at: University of South Carolina School of Medicine Greenville, Department of Biomedical Sciences, Division of Behavioral, Social, and Population Health, 701 Grove Road, Greenville, SC 29605, USA.

E-mail address: [Kenneda5@greenvillemed.sc.edu](mailto:Kenneda5@greenvillemed.sc.edu) (A.B. Kennedy).

<sup>1</sup> Is now in private massage therapy practice.

topic of Integrative Medicine in the health of the public; at this summit, the IOM suggested that complementary and integrative therapy providers can help to increase patient adherence with conventional therapies (Summit on Integrative Medicine and the Health of the Public, 2009). A recent article investigating which Americans use, and what predicts use of, massage therapy<sup>2</sup> (MT) found that 12.8% of the US adult population had used MT at some point in their life time, and 56.3% of these adults used MT for wellness or disease prevention purposes (Sundberg et al., 2017). Researchers concluded that gaps in the literature exist specifically around MT and health promotion/disease prevention (Sundberg et al., 2017). The American MT Association estimates that United States has > 350,000 massage therapists (American Massage Therapy Association, 2017) and the US department of Labor estimates the growth potential of this profession to be upwards of 22% by the year 2024 (U.S. Bureau of Labor Statistics, 2015). With a need to increase the health promotion workforce to meet the needed demand for assisting in delivering health promotion messages, the MT profession may be an untapped resource for interdisciplinary care in patient health.

Within the MT profession, it is understood that health promotion and education are a part of MT practice and generally relate to improving patient outcomes (Kennedy et al., 2016a). Additionally, health promotion and education has recently been included in the definition of MT: “Massage therapy consists of the application of massage and non-hands-on components including health promotion and education messages for self-care and health maintenance...” (Kennedy et al., 2016b). Yet, the amounts and types of health promotion activities in MT practice have not been thoroughly explored. Furthermore, no study to date has investigated the barriers to health promotion in MT practice and how expanding health promotion activities may impact MT scope of practice.

Our primary objective was to investigate in a national sample of practicing massage therapists the current attitudes, practices, and barriers toward health promotion. Specifically, we investigated four research questions: 1) What are the attitudes about and practices of health promotion among massage therapists? 2) What health promotion practices/messages do massage therapists provide their patients? 3) What barriers prevent massage therapists from focusing more on health promotion? And 4) What attitudes and/or characteristics of massage therapists relate to the number of barriers they face with health promotion?

## 2. Methods

### 2.1. Design, sample and setting

A descriptive cross-sectional survey design was used to gather evidence about health promotion in MT practices in the United States. The participants were practicing massage therapists recruited through MassageNet (MassageNet Research Network, 2013), the National University of Health Sciences practice-based research network and through social media (Facebook, Twitter, and LinkedIn). To be included in the study, individuals had to be willing to participate in the survey and be a practicing massage therapist in the United States.

### 2.2. Measures

The survey was adapted from previously created surveys (Kennedy and Trilk, 2015; Luquis and Paz, 2015) to gather information about massage therapists and their practices (Kennedy and Trilk, 2015) and their health promotion practices (Luquis and Paz, 2015). Specifically, survey content included participant and practice demographics (categorical variables), importance and priority of health promotion, and behavior around providing or referring patients on specific topics (e.g.

physical activity, mindfulness, stress management etc.). The inclusion of the specific health promotion topics were based upon themes surveyed in medical practice (Luquis and Paz, 2015) and those determined by the authors and content expert reviewers. Not all topics included are evidenced based and some may be considered out of scope of practice for massage therapists. Finally, participants were asked about where they find health promotion information and their barriers to providing health promotion to their patients. The survey was sent to five content experts, in either MT or health promotion, to determine content validity (DeVellis, 2012). Revisions were made based upon experts' feedback.

The survey was disseminated in two waves due to low response rate and during initial wave and some confusion over the survey wording. During the first wave of survey dissemination, one participant emailed the primary investigator with confusion over the wording and terms “health promotion” and “self-care messages” being asked simultaneously. Discussion within the research team indicated these terms were combined into the term “Health Messages” for the second wave of data collection.

### 2.3. Procedures and statistical analysis

To reduce social desirability bias and elicit truthful responses, anonymous online surveys were sent to the massage therapists (Davies, 2016). Invitations to participate were sent through email from MassageNet and the respondents were redirected to take the self-administered questionnaire electronically through SurveyMonkey. MassageNet members were contacted three times and invited to participate in the survey. Those who began but did not complete the survey were contacted via email to encourage survey completion.

Survey distribution and participant recruitment of both waves can be seen in Table 1. Recruitment for wave 1 had a total of 58 responses; one participant did not consent to the survey, eight were not US residents, and one did not complete the survey past question two and were therefore removed from analysis, leaving a total of 49 responders. Feedback indicating confusion around the grouped terms “Health Promotion” and “Self-care Messages” in several questions led to the survey modification and low response rate led to a change in recruitment strategy to include not only MassageNet, but also social media recruitment. Specifically, MassageNet members were again recruited by email up to three times. MassageNet also posted links to the survey on its Facebook page three times and was then shared by the primary investigator (PI) and Co-Investigators (CoIs) to their personal pages and MT professional group pages. The study PI posted links to the study on Twitter and LinkedIn, as MassageNet does not currently have a presence on those social networks. The survey remained open for three months. Only one web link was used to collect the data for wave 2 and this was sent via email and posted on the different social media platforms. We can extrapolate that a majority of the responses to wave 2 came from social media because only 34 of the MailChimp responders clicked on the survey link. Likely this means that the remaining 164 respondents were from social media (Table 1); however, due to sharing of the survey by other individuals as well as posting on differing social media platforms by the PI, we cannot determine specifically where the participants encountered wave 2. The revised recruitment strategy for wave 2 resulted in 198 individuals opening the survey, however 25 recruits did not complete the survey past the second question. Of those 25 participants, one participant did not consent to the survey, ten were not US residents, and the rest did not continue leaving the total number of responses to 173. It should be noted the default SurveyMonkey setting used allows for participants to respond to the survey only one time per device used.

Results from both waves were pooled into one database; a total of 222 individuals responded and 182 individuals completed the survey and those data were used for analysis. Participants from both waves were compared for homogeneity on key variables to determine if pooling the data sets were appropriate. To control for response bias, we

<sup>2</sup> Abbreviation: MT = massage therapy.

**Table 1**  
Health promotion survey distribution and participant recruitment.

Health promotion survey sent via Mailchimp to MassageNet members							
	Date sent	# Sent	# Bounced	# Unsubscribed	# Unique survey opens	# Unique survey link clicks	# Responses received
1st wave	5/19/2016	741	79	9	169	31	21
	6/1/2016	659	30	4	127	23	17
	6/15/2016	646	32	3	116	20	20
Total			141	16	412	74	58
2nd wave	7/19/2016	634	32	5	113	14	153
	8/3/2016	627	33	2	97	11	37
	8/18/2016	623	31	4	91	9	8
Total			96	11	301	34	198

Health promotion survey sent via MassageNet Facebook							
	Date posted	# Reached	# Liked	# Shared	# Commented	# Clicked post	# Clicked link
2nd wave	7/18/2016	1275	50	19	23	152	36
	8/3/2016	1008	17	11	1	56	15
	8/18/2016	298	9	4	0	5	1
Total		2581	76	34	24	213	52

Notes: survey disseminated May to August 2016 Mailchip: # Sent = Number of emails sent; # Bounced = number of emails that could not be delivered most likely due to invalid email address; # Unsubscribed = number of participants indicated they would no longer like to receive emails from MassageNet; # Unique Survey Opens = number of participants who opened the email; # Unique Survey Link Clicks = number of participants who clicked the link in the email to respond to the survey; # Responses received = number of participants who completed the survey.

Facebook: # Reached = Number of people who saw the post; # liked = number of people who “liked” the post; # shared = number of people who shared the post with their social networks; # commented = number of people who commented on the post; # clicked post = number of people who clicked on the post itself; # clicked link = number of people who just clicked on the link to the survey.

attempted to confirm that the demographic information about our survey participants matched those of the MT profession.

The data were analyzed using IBM SPSS Statistics for Windows, version 24 (IBM Corp., Armonk, N.Y., USA) with alpha set at 0.05. Likert scale questions and categorical demographic questions were dichomatized, e.g. Strongly agree/Agree - Neutral/Disagree/Strongly disagree and with Higher Education Bachelor's degree or higher - Some college or less. The cut points categories for the dichomatization of variables were determined by two factors 1) attempt to create groups with as close to 50% of participants in each group as possible (continuing education, higher education, years in practice) and 2) compared to national average (initial education hours – the AMTA reports a mean of 671 h for initial education ([American Massage Therapy Association, 2017](#))).

To determine if any health promotion messages were given or if patients were referred to another healthcare provider, additional variables were created based upon the specific health promotion topics for each participant. To determine if therapists faced multiple barriers, a variable was created to determine the total number of barriers each therapist faced by summing the indicated number of barriers with a possible total of nine. Descriptive statistics along with Pearson's chi-square and independent *t*-tests were used to examine the relationships between massage therapists' attitudes, barriers, practices, and demographics. Assumptions were tested prior to interpreting the results of the *t* testing. When outliers were detected, the independent-samples *t* tests were re-run with the outliers removed and results did not differ significantly. Normality was tested using the Shapiro-Wilk test and in every group the assumption was violated, transforming the data did not change the violation therefore it was determined to run the tests regardless as the independent *t* test is fairly robust to normality deviations ([Glantz, 1980](#); [Laerd Statistics, 2015](#)). Finally, Levene's test for Equality of Variances was performed and the assumption was met in all but the continuing education groups.

#### 2.4. Ethical approval

The National University of Health Sciences Institutional Review Board approved this project (approval #201611). Informed consent was

provided by an “opt in” question on the survey; participants were given a description of the survey and then asked if they were willing to participate.

### 3. Results

#### 3.1. Participants

Testing for homogeneity between the participants in wave 1 and wave 2 resulted in determining that there was only a statistically significant difference between the two groups on 3 variables (Appendix A) and it was determined that the differences would not greatly impact the results. The sample was skewed toward the female gender (82.4%) which mirrors the makeup of the profession, reported as 89% female ([American Massage Therapy Association, 2016](#)). Additionally, this sample is highly educated with 56.1% having a Bachelor's degree or higher, in contrast to reported industry data of 37% ([American Massage Therapy Association, 2017](#)).

A majority of the participants report > 600 h of initial MT education (69.8%) and 63.2% report obtaining > 200 h of continuing massage education. The participants were from all over the United States with Illinois (n = 24) and New York (n = 19) having the most participants and North Dakota, South Dakota, Nebraska, Wyoming, Mississippi, Oklahoma, Delaware, Montana, Ohio, and the District of Columbia having zero participants. [Fig. 1](#) shows the national distribution of participants by state.

Participants were primarily white (83.6%), with 2.2% report being of Hispanic or Latino origin. Racial and ethnicity data are not currently reported for the profession. Our sample also skews slightly older than the median age of the profession (45 years old) ([American Massage Therapy Association, 2016](#)) with nearly 49% of our sample being 51 years old or older. The majority (62.3%) of the massage therapists did not have additional certifications (e.g. Registered Nurse or Physical Therapist). Most of massage therapists were very experienced, with only 32.9% having < 10 years in MT practice. These massage therapists most often practice in a massage office or clinic (43.4%) or in a healthcare setting (24.2%).

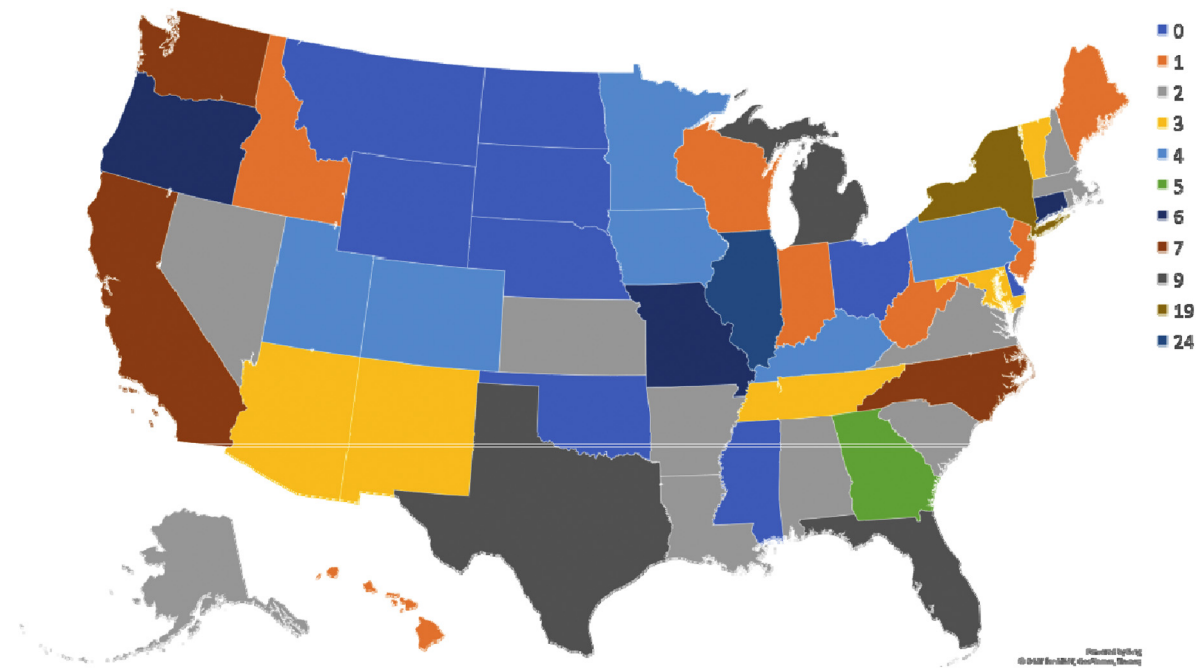


Fig. 1. Number of survey participants by state. Survey disseminated May to August 2016.

### 3.2. Attitudes and practices of health promotion

The majority (90.2%) of the participants agree or strongly agree that it is important for massage therapists to provide health promotion messages to their patients. In addition, 69.22% of the participants agreed or strongly agreed that MTs should make health promotion a priority in their practice, and 50% indicated that MT should spend more time in practice providing these messages. Participants reported the following sources they use to locate health promotion information for patients, professional associations (n = 125 68.7%), seminars (n = 116 63.7%), scientific journals (n = 113 62.1%), health websites (n = 110 60.4%), text books (n = 104 57.1%), trade journals (n = 77 42.3%), national guidelines (n = 64 35.2%), social media (46 25.3%), other sources (40 22.0%), and news outlets (n = 39 21.4%).

### 3.3. Health promotion topics

To discover which topics massage therapists are currently providing health promotion messages, participants were asked to indicate if they would offer messages (Yes or No) on the topic or refer to another health care professional. Table 2 displays the 22 topics and number/percentage of participants who would either provide the messages, not provide the messages, or refer to other providers. The messages that were identified as most often to be delivered by the massage therapists were self-massage (93.4%), stretching (90.1%), and body awareness (89.6%). The participants were most likely to refer on the topics of mental health (85.2%), nutritional supplementation (73.6%), and possible skin cancer identification (73.1%). The topics that would most likely not be discussed were visualization (25.3%), sexual health (22.0%), and weight management (21.4%). The most often specified “other” messages (n = 44) included sleep/sleep issues (3, 7%), pain (3, 7%), and ergonomics (6, 14%). Additionally, it was important to understand if there were massage therapists who reported not providing or referring on any of these topics. Of the 22 topics, participants report providing the health promotion message on an average of 10.71(sd 4.10, median 10.5, range 21), referring on 8.45 (sd 4.32, median 9, range 20), providing or referring 19.15 (sd 3.48, median 20, range 19), and not providing or referring on 2.85 (sd 3.48, median 2, range 19) topics.

Table 2

Provide, refer, or neither provide nor refer health promotion messages to patients based on topic.

Health promotion topic	Provide n (%)	Refer n (%)	Neither provide nor refer n (%)
Self-massage	170 (93.4)	2 (1.1)	10 (5.5)
Stretching	164 (90.1)	11 (6.0)	7 (3.8)
Body awareness	163 (89.6)	13 (7.1)	6 (3.3)
Hot/cold therapy	162 (89)	11 (6.0)	9 (4.9)
Topical therapy (biofreeze, China gel, arnica, etc.)	157 (86.3)	6 (3.3)	19 (10.4)
Breath work or deep breathing	141 (77.5)	25 (13.7)	16 (8.8)
Water intake	130 (71.4)	18 (9.9)	34 (18.7)
Stress management	126 (69.2)	47 (25.8)	9 (4.9)
Mindfulness	118 (64.8)	40 (22.0)	24 (13.2)
Healthy lifestyle	103 (56.6)	64 (35.2)	15 (8.2)
Physical activity and fitness	93 (51.1)	81 (44.5)	8 (4.4)
Aroma therapy	85 (46.5)	59 (32.4)	38 (20.9)
Visualization	84 (46.2)	52 (28.6)	46 (25.3)
Healthy eating habits and nutrition	46 (25.3)	122 (67.2)	14 (7.7)
Possible skin cancer identification	43 (23.6)	133 (73.1)	6 (3.3)
Skin health/skin care	37 (20.3)	131 (72.0)	14 (7.7)
Other <sup>a</sup>	35 (19.2)	52 (28.6)	95 (52.2)
Smoking cessation	24 (13.2)	129 (70.9)	29 (15.9)
Weight management	23 (12.6)	120 (65.9)	39 (21.4)
Nutritional supplementation	20 (11.0)	134 (73.6)	28 (15.4)
Mental health	15 (8.2)	155 (85.2)	12 (6.6)
Sexual health	10 (5.5)	132 (72.5)	40 (22.0)

n = 182 Survey disseminated May to August 2016.

<sup>a</sup> Other health promotion included but not limited to sleep/sleep issues, pain management/education, and ergonomics.

### 3.4. Barriers to health promotion

To determine the barriers to health promotion, participants were asked what factors prevent them from offering health promotion messages to their clients. Fig. 2 demonstrates the percentage of participants who indicated if each factor was a barrier, with lack of guidelines (44.5%) being the most prevalent barrier. The total number of barriers for each participant was also calculated and the mean number of barriers for therapists is 2.3(sd 2.04) with a range of 9.

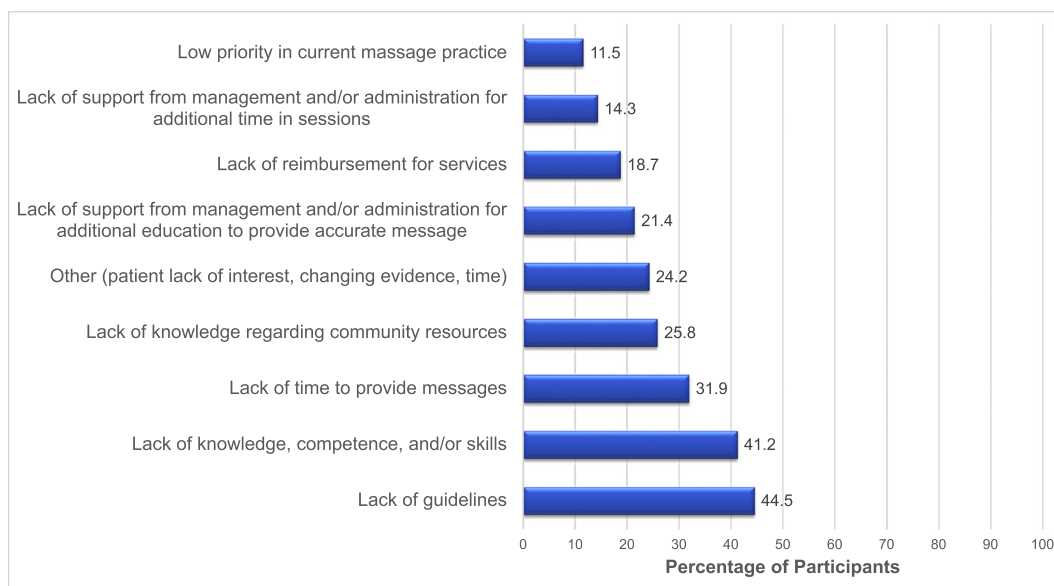


Fig. 2. Percentage of participants who indicate specific barriers to health promotion in MT practice. Totals do not equal 100% because participants were asked to select as many as applied. Survey disseminated May to August 2016.

Independent-samples *t*-tests were run to determine if there were differences in reported total barriers to the attitudes to health promotion and massage therapists' characteristics including level of Higher Education, levels of massage education both initial and continuing, and years in practice (Table 3). Specifically, therapists who believe that health promotion should be a priority in practice (small effect size  $d = 0.400$ ), those who believe that massage therapists should spend more time in health promotion (medium effect size  $d = 0.665$ ), and those who have been in practice for 10 years or more reported significantly fewer barriers to health promotion (small effect size  $d = 0.390$ ). Therapists with a higher level of education reported more total barriers to health promotion (small effect size  $d = 0.379$ ).

#### 4. Discussion

The purpose of this study was to investigate the current attitudes, practices, and barriers to practice in health promotion by massage therapists. In this national sample of massage therapists indicated a strong belief about the importance of and priorities for health promotion in MT practice. The current health promotion areas and the barriers to health promotion within MT practice were identified with possible areas of growth in the profession.

The findings of positive attitudes toward health promotion in MT practice in this national sample are similar to findings from Boulanger and Campo that Iowa massage therapists would provide health promotion for general health to their patients (Boulanger and Campo, 2013). All massage therapists report some messaging, either providing or referring, based upon the specific topics for health promotion. Boulanger and Campo also found that their sample of massage therapists were most likely to encourage water intake, use of heat therapy, and stretching (Boulanger and Campo, 2013); these topics were also high with our national sample indicating that 71.4% would recommend water intake, 89% would recommend heat/cold therapy, and 90.1% would recommend stretching. Trotter et al. report that massage therapists who are educated about identifying skin cancer may also help to identify suspicious lesions, refer patients to health care providers, and provide valuable information about skin cancer to clients (Campbell et al., 2013; Trotter et al., 2014). In our sample, 23.1% would discuss possible skin cancer identification, 73% would refer to a healthcare professional, and only 3.3% would not discuss or refer on the topic of skin cancer. As this population of therapists is highly educated,

with > 60% being in practice for > 10 years, it is possible that our participants have had continuing education on the topic of skin cancer. Fewer massage therapists reported offering health promotion messages in some areas that could have a great impact (nutrition 25.3%, physical activity 51.1%, smoking cessation 13.2%, and weight management 12.6%). The reasons for offering less health promotion in these areas could be due to some of the barriers the massage therapists face.

Massage therapists report finding health promotion information from a variety of sources, yet all the sources listed may not provide accurate messages, e.g. social media. Very little research has been produced examining the research literacy of massage therapists; yet in Canada, it has been noted that utilization of research in practice is limited (Gowan-Moody et al., 2013) and experts in the United States have indicated a belief that there is a lack of research literacy among those in MT practice (Moyer et al., 2009). Additionally, Baskwill and Dore found that massage therapists in Ontario would agree with positive statements about MT regardless of the evidence to support the statement (Baskwill and Dore, 2016). While professional associations and scientific journals will more than likely be providing reliable information, seminars and health websites may be circumspect (Kennedy and Munk, 2017). Therefore, it is vital if massage therapists pursue health promotion in practice, they have research literacy education to assist in the critical analysis of the validity of messages provided to patients.

Massage therapists indicated that some of the greatest barriers to health promotion were a lack of knowledge, skills, and guidelines. This points to needed areas of education for massage therapists in the future, which Brett et al. state the importance of all complementary and integrative professions, including MT, to require competencies in health communication, health promotion, public health and interprofessional communication and cooperation (Brett et al., 2013). Eaves and colleagues did find that with training, practitioners of complementary and alternative medicine, including acupuncturists, massage therapists, and chiropractors, could implement a brief behavioral intervention into their existing practice to help patients with smoking cessation (Eaves et al., 2017). Fisher argued that finding better interventions may not be necessary to impact behavioral medicine; another strategy is to find improved ways to disseminate and promote existing interventions that have been proven effective (Fisher, 2008). With sufficient training, massage therapists may be able to help in this area. Therefore, training and guidelines for health promotion for massage therapists would be a

**Table 3**  
Comparison of the number of barriers to attitudes toward health promotion and therapist characteristics.

	Frequency <i>N</i>	Number of barriers mean ( <i>sd</i> )	<i>t</i> Test	<i>Cohen's d</i>
Important to provide health promotion				
Strongly agree or agree	164	2.3 (2.0)	<i>t</i> = 0.845,	<i>d</i> = 0.195
Neutral, disagree, strongly disagree	18	2.7 (2.1)	<i>df</i> = 180, <i>P</i> = .40	
Health promotion should be a priority				
Strongly agree or agree	126	2.1 (2.0)	<i>t</i> = 2.406,	<i>d</i> = 0.400
Neutral, disagree, strongly disagree	56	2.9 (2.0)	<i>df</i> = 180, <i>P</i> = .02	
MTs should spend more time in Health Promotion				
Strongly agree or agree	91	1.7 (1.8)	<i>t</i> = 4.714,	<i>d</i> = 0.665
Neutral, disagree, strongly disagree	91	3.0 (2.1)	<i>df</i> = 180, <i>P</i> < .001	
Higher education				
Bachelor's degree or higher	102	2.7 (2.1)	<i>t</i> = -2.429,	<i>d</i> = 0.390
Some college or less	80	1.9 (2.0)	<i>df</i> = 180, <i>P</i> = .02	
Continuing education				
More than 250 h	108	2.1 (1.9)	<i>t</i> = 1.496,	<i>d</i> = 0.243
250 h or less	74	2.6 (2.2)	<i>df</i> = 180, <i>P</i> = .136	
Initial education				
More than 600 h	127	2.4 (2.2)	<i>t</i> = 0.202,	<i>d</i> = 0.048
600 h or less	55	2.3 (2.0)	<i>df</i> = 180, <i>P</i> = .84	
Years in practice				
10 years in practice or more	122	2.1 (1.9)	<i>t</i> = 2.576,	<i>d</i> = 0.379
Less than 10 years in practice	60	2.9 (2.3)	<i>df</i> = 180, <i>P</i> = .01	

Gray shaded boxes indicate a *p*-value  $\leq$  .05.  
Survey disseminated May to August 2016.

reasonable next step for future research development.

Fewer barriers to health promotion were found in the groups that had a longer time in practice, felt health promotion should be a priority, and that massage therapists should spend more time in health promotion with patients. Yet, those with more education found a greater number of barriers. It could be that people who notice more challenges also are the same as those who seek more education. Or maybe those with more education have learned to look for barriers, further investigation is warranted. Future research may 1) need to focus on reducing barriers to see if attitudes to health promotion would change for massage therapists and 2) explore if and how to strengthen the beliefs about the importance of health promotion.

#### 4.1. Limitations

As this sample are more highly educated, experienced, and older than the general massage therapist population, these results may not be applicable to the entire profession; further study is warranted to determine specifically if younger, less experienced, less educated massage therapists report the same attitudes and beliefs about health promotion. Additionally, this survey did not inquire about the personal health behaviors of the survey respondents. Other health promotion literature has found that those who have less healthy lifestyles are less likely to provide health promotion and/or have lower attitudes about the importance of health promotion (Blake et al., 2017; Frank and Kunovich-Frieze, 1995; Lobelo et al., 2009); therefore it is possible that the

lifestyle behaviors of these survey participants may predict their attitudes toward health promotion messaging in their practices, but this was not investigated. While the sources of health promotion messages were explored with this group, the accuracy of the messages they provide, nor the quality of the healthcare provider referrals could be determined. Furthermore, not all specific health promotion topics included are evidenced based, it was important to include all relevant topics to determine the best areas for future education interventions. Finally, while there were 182 respondents to the survey this number is relatively small compared to the approximately 350,000 massage therapists working in the United States today.

#### 5. Conclusion

Individuals who seek MT for wellness/disease prevention may be receptive to health promotion messages from their massage therapists. One reason massage therapists may be particularly helpful in health promotion efforts is because those who seek complementary and integrative medicine, including MT, for wellness and prevention typically see those practitioners on multiple occasions, which may allow for more opportunities for health promotion messages and reinforcement of those messages (Hawk et al., 2012). The National Center for Complementary and Integrative Health has noted that those who seek integrative medicine care may have higher health-seeking behaviors and therefore may be more accepting of health promotion messages (National Center for Complementary and Alternative Medicine, 2011).

Massage therapists may not traditionally be seen as providers of health promotion or participants in public health efforts; yet, the literature indicates that utilizing massage therapists as health promoters may provide opportunities for more outreach and prevention messages delivered to patients which may impact public health (Barretto et al., 2011; Boulanger and Campo, 2013; Hawk et al., 2012).

## Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

## Conflict of interest

The authors declare there are no conflict of interest.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.pmedr.2018.05.001>.

## References

- American Massage Therapy Association, 2016. Massage Therapy Industry Fact Sheet. American Massage Therapy Association [WWW Document]. [https://www.amtamassage.org/infocenter/economic\\_industry-fact-sheet.html](https://www.amtamassage.org/infocenter/economic_industry-fact-sheet.html), Accessed date: 30 December 2016.
- American Massage Therapy Association, 2017. Massage Profession Research Report 2017. American Massage Therapy Association, Evanston, IL.
- Barretto, A.I., Bingham, C.R., Goh, K.N., Shope, J.T., 2011. Developing a web-based health promotion intervention: a case study from a brief motivational alcohol program. *Health Promot. Pract.* 12, 193–201. <http://dx.doi.org/10.1177/1524839909353740>.
- Baskwill, A.J., Dore, K., 2016. Exploring the awareness of research among registered massage therapists in Ontario. *J. Complement. Integr. Med.* 13, 41–49. <http://dx.doi.org/10.1515/jcim-2015-0006>.
- Beck, A.J., Boulton, M.L., 2015. Trends and characteristics of the state and local public health workforce, 2010–2013. *Am. J. Public Health* 105 (Suppl. 2), S303–310. <http://dx.doi.org/10.2105/AJPH.2014.302353>.
- Blake, H., Stanulewicz, N., Griffiths, K., 2017. Healthy lifestyle behaviors and health promotion attitudes in preregistered nurses: a questionnaire study. *J. Nurs. Educ.* 56, 94–103. <http://dx.doi.org/10.3928/01484834-20170123-06>.
- Boulanger, K., Campo, S., 2013. Are personal characteristics of massage therapists associated with their clinical, educational, and interpersonal behaviors? *Int. J. Ther. Massage Bodyw.* 6, 25–34.
- Brett, J., Brimhall, J., Healey, D., Pfeifer, J., Prenguber, M., 2013. Competencies for public health and interprofessional education in accreditation standards of complementary and alternative medicine disciplines. *Explore N. Y. N* 9, 314–320. <http://dx.doi.org/10.1016/j.explore.2013.06.001>.
- Campbell, S.M., Louie-Gao, Q., Hession, M.L., Bailey, E., Geller, A.C., Cummins, D., 2013. Skin cancer education among massage therapists: a survey at the 2010 meeting of the American Massage Therapy Association. *J. Cancer Educ. Off. J. Am. Assoc. Cancer Educ.* 28, 158–164. <http://dx.doi.org/10.1007/s13187-012-0403-7>.
- Davies, W., 2016. Insights into rare diseases from social media surveys. *Orphanet J. Rare Dis.* 11. <http://dx.doi.org/10.1186/s13023-016-0532-x>.
- DeVellis, R.F., 2012. *Scale Development: Theory and Applications*. SAGE, Thousand Oaks, Calif.
- Druss, B.G., Marcus, S.C., Olsson, M., Tanielian, T., Elinson, L., Pincus, H.A., 2001. Comparing the national economic burden of five chronic conditions. *Health Aff. Proj. Hope* 20, 233–241.
- Eaves, E.R., Howerter, A., Nichter, M., et al., 2017. Implementation of tobacco cessation brief intervention in complementary and alternative medicine practice: qualitative evaluation. *BMC Complement. Altern. Med.* 17. <http://dx.doi.org/10.1186/s12906-017-1836-7>.
- Fisher, E.B., 2008. The importance of context in understanding behavior and promoting health. *Ann. Behav. Med.* 35, 3–18. <http://dx.doi.org/10.1007/s12160-007-9001-z>.
- Frank, E., Kunovich-Frieze, T., 1995. Physicians' prevention counseling behaviors: current status and future directions. *Prev. Med.* 24, 543–545.
- Glantz, S.A., 1980. Biostatistics: how to detect, correct and prevent errors in the medical literature. *Circulation* 61, 1–7.
- Glanz, K., Rimer, B.K., Lewis, F.M., 2002. *Health Behavior and Health Education: Theory, Research, and Practice*. Jossey-Bass, San Francisco.
- Gorin, S.S., Arnold, J.H. (Eds.), 2006. *Health Promotion in Practice*, 1st ed. Jossey-Bass, San Francisco.
- Gowan-Moody, D.M., Leis, A.M., Abonyi, S., Epstein, M., Premkumar, K., 2013. Research utilization and evidence-based practice among Saskatchewan massage therapists. *J. Complement. Integr. Med.* 10. <http://dx.doi.org/10.1515/jcim-2012-0044>.
- Hawk, C., Ndetan, H., Evans Jr., M.W., 2012. Potential role of complementary and alternative health care providers in chronic disease prevention and health promotion: an analysis of National Health Interview Survey data. *Prev. Med.* 54, 18–22. <http://dx.doi.org/10.1016/j.pmed.2011.07.002>.
- Kennedy, A.B., Munk, N., 2017. Experienced practitioners' beliefs utilized to create a successful massage therapist conceptual model: a qualitative investigation. *Int. J. Ther. Massage Bodyw.* 10, 9–19.
- Kennedy, A.B., Trilk, J.L., 2015. A standardized, evidence-based massage therapy program for decentralized elite paracyclists: creating the model. *Int. J. Ther. Massage Bodyw.* 8, 3–9.
- Kennedy, A.B., Cambron, J.A., Sharpe, P.A., Travillian, R.S., Saunders, R.P., 2016a. Process for massage therapy practice and essential assessment. *J. Bodyw. Mov. Ther.* 20, 484–496. <http://dx.doi.org/10.1016/j.jbmt.2016.01.007>.
- Kennedy, A.B., Cambron, J.A., Sharpe, P.A., Travillian, R.S., Saunders, R.P., 2016b. Clarifying definitions for the massage therapy profession: the results of the best practices symposium†. *Int. J. Ther. Massage Bodyw. Res. Educ. Pract.* 9. <http://dx.doi.org/10.3822/ijtm.v9i3.312>.
- Laerd Statistics, 2015. Independent-samples t-test using SPSS statistics. *Stat. Tutor. Softw. Guid.* <https://statistics.laerd.com/spss-tutorials/independent-t-test-using-spss-statistics.php>.
- Lee, I.-M., Shiroma, E.J., Lobelo, F., et al., 2012. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *Lancet* 380, 219–229. [http://dx.doi.org/10.1016/S0140-6736\(12\)61031-9](http://dx.doi.org/10.1016/S0140-6736(12)61031-9).
- Liss-Levinson, R., Bharthapudi, K., Leider, J.P., Sellers, K., 2015. Loving and leaving public health: predictors of intentions to quit among state health agency workers. *J. Public Health Manag. Pract. JPHMP* 21 (Suppl. 6), S91–101. <http://dx.doi.org/10.1097/PHH.0000000000000317>.
- Lobelo, F., Duperly, J., Frank, E., 2009. Physical activity habits of doctors and medical students influence their counselling practices. *Br. J. Sports Med.* 43, 89–92. <http://dx.doi.org/10.1136/bjism.2008.055426>.
- Luquis, R.R., Paz, H.L., 2015. Attitudes about and practices of health promotion and prevention among primary care providers. *Health Promot. Pract.* 16, 745–755. <http://dx.doi.org/10.1177/1524839914561516>.
- Mann, S., 2017. New Research Shows Shortage of More Than 100,000 Doctors by 2030 [WWW Document]. AAMCNEWS URL. <https://news.aamc.org/medical-education/article/new-aamc-research-reaffirms-looming-physician-short/>, Accessed date: 6 September 2017.
- MessageNet Research Network, 2013. MessageNet Research Network [WWW Document]. URL. <http://www.massagenet.org/about/>, Accessed date: 6 February 2017.
- Moyer, C.A., Dryden, T., Shipwright, S., 2009. Directions and dilemmas in massage therapy research: a workshop report from the 2009 North American research conference on complementary and integrative medicine. *Int. J. Ther. Massage Bodyw.* 2, 15–27.
- National Center for Complementary and Alternative Medicine, 2011. Exploring the Science of Complementary and Alternative Medicine: Third Strategic Plan: 2011–2015. National Institutes of Health.
- Planning health promotion programs: an intervention mapping approach, 1st ed., 2006. (Jossey-Bass, San Francisco).
- Pourshaban, D., Basurto-Dávila, R., Shih, M., 2015. Building and sustaining strong public health agencies: determinants of workforce turnover. *J. Public Health Manag. Pract. JPHMP* 21 (Suppl. 6), S80–90. <http://dx.doi.org/10.1097/PHH.0000000000000311>.
- Summit on Integrative Medicine and the Health of the Public, 2009. *Integrative Medicine and the Health of the Public: A Summary of the February 2009 Summit*. National Academies Press, Washington, D.C.
- Sundberg, T., Cramer, H., Sibbritt, D., Adams, J., Lauche, R., 2017. Prevalence, patterns, and predictors of massage practitioner utilization: results of a US nationally representative survey. *Musculoskelet. Sci. Pract.* 32, 31–37. <http://dx.doi.org/10.1016/j.msksp.2017.07.003>.
- Trotter, S.C., Louie-Gao, Q., Hession, M.T., Cummins, D., 2014. Skin cancer education for massage therapists: a novel approach to the early detection of suspicious lesions. *J. Cancer Educ. Off. J. Am. Assoc. Cancer Educ.* 29, 266–269. <http://dx.doi.org/10.1007/s13187-013-0589-3>.
- U.S. Bureau of Labor Statistics, 2015. *Massage Therapists: Occupational Outlook Handbook* [WWW Document]. URL. <https://www.bls.gov/ooh/healthcare/massage-therapists.htm>, Accessed date: 5 September 2017.
- World Health Organization, 2017. *Chronic Diseases and Health Promotion* [WWW Document]. WHO URL. <http://www.who.int/chp/en/>, Accessed date: 5 September 2017.
- Yarnall, K.S.H., Pollak, K.I., Østbye, T., Krause, K.M., Michener, J.L., 2003. Primary care: is there enough time for prevention? *Am. J. Public Health* 93, 635–641.