Referral to Massage Therapy in Primary Health Care: A Survey of Medical General Practitioners in Rural and Regional New South Wales, Australia

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Abstract

Objectives: Massage therapists are an important part of the health care setting in rural and regional Australia and are the largest complementary and alternative medicine (CAM) profession based on both practitioner numbers and use. The purpose of this study was to survey medical general practitioners (GPs) in rural and regional New South Wales, Australia, to identify their knowledge, attitudes, relationships, and patterns of referral to massage therapy in primary health care.

Methods: A 27-item questionnaire was sent to all 1486 GPs currently practicing in rural and regional Divisions of General Practice in New South Wales, Australia. The survey had 5 general areas: the GP's personal use and knowledge of massage, the GP's professional relationships with massage practice and massage practitioners, the GP's specific opinions on massage, the GP's information-seeking behavior in relation to massage, and the GP's assumptions on massage use by patients in their local areas.

Results: A total of 585 questionnaires were returned completed, with 49 survey questionnaires returned as "no longer at this address" (response rate of 40.7%). More than three-quarters of GPs (76.6%) referred to massage therapy at least a few times per year, with 12.5% of GPs referring at least once per week. The GP being in a nonremote location (odds ratio [OR], 14.28; 95% confidence interval [CI], 3.7-50.0), graduating from an Australian medical school (OR, 2.03; 95% CI, 1.09-3.70), perceiving a lack of other treatment options (OR, 2.64; 95% CI, 1.15-6.01), perceiving good patient access to a wide variety of medical specialists (OR, 11.1; 95% CI, 1.7-50.0), believing in the efficacy of massage therapy (OR, 2.75; 95% CI, 1.58-4.78), experiencing positive results from patients using massage therapy previously (OR, 13.95; 95% CI, 5.96-32.64), or having prescribed any CAM previously (OR, 1.83; 95% CI, 1.03-3.27) were all independently predictive of increased referral to massage therapy among the GPs in this study.

Conclusions: There appears to be substantial interface between massage therapy and GPs in rural and regional Australia. There are high levels of support for massage therapies among Australian GPs, relative to other CAM professions, with low levels of opposition to the incorporation of these therapies in patient care. (J Manipulative Physiol Ther 2013;36:595-603)

Key Indexing Terms: *Massage; General Practice; Primary Health Care; Referral and Consultation*

Complementary and alternative medicine (CAM) forms a substantial part of the health care sector in Australia, with CAM practitioners accounting for up to half of all health consultations.[1] Massage therapies are among the most commonly used forms of CAM in Australia,[1,2] and massage therapists are among the largest group of CAM providers. The Australian Bureau of Statistics estimates that there are 8199 persons who report

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massage therapy as their primary source of income in Australia.[3] However, professional associations representing massage therapists represent more than 15 000 practitioners, although there is likely to be some overlap relating to dual memberships.[4,5] Such numbers would place massage therapists above chiropractors and naturopaths as the largest professional group providing CAM therapies in Australia.[6]

Physical therapies, both manipulative and nonmanipulative, provided by massage, remedial, or tactile therapists are also popular forms of CAM in terms of referral by medical practitioners. Although previous investigation suggests Australian medical general practitioners (GPs) have a preference for referring to other medical providers who perform CAM therapies such as acupuncture, naturopathy, or herbal medicine, there appears to be no such preference in relation to providers of physical CAM therapies such as massage, chiropractic, and osteopathy.[7] In addition, national surveys indicate that Australian GPs tend to view nonmanipulative manual therapies (ie, massage and remedial therapies such as Bowen therapy) as both therapeutically valuable and safe, whereas they may view manipulative manual therapies (such as chiropractic and osteopathic manipulation) as therapeutically useful but also potentially harmful.[7,8]

There are levels of support among Australian GPs for further incorporation of massage therapy into primary health care. A national survey in 2005 found that 17% of Australian GPs had received some formal training in massage and remedial therapies and 11% used these therapies in their clinical practice.[8] This study also found that 35% expressed an interest in further training in this area, and 29% of GPs who had not practiced these therapies would consider doing so if appropriate. In addition, half of GPs in this study thought it would be appropriate for GPs to practice massage, remedial, and tactile therapies and for Medicare (the Australian government public health insurer) to pay for massage therapy.[8]

In addition to conventional medical provider delivery of massage therapy, there also exists a great deal of crossover of massage, remedial, and tactile therapies in other CAM professions. A naturopathic workforce study found that Australian naturopaths devoted approximately one-third of their practice time to physical therapies (both manipulative and nonmanipulative).[9] A workforce study of Chinese medicine in Australia found that 27.5% of Chinese medicine practitioners identified physical therapies as a substantial part of their practice.[10] There is also not always a clear distinction between the nonmanipulative and soft tissue work done by osteopaths and chiropractors and that performed by massage, remedial, and tactile therapists, with a focus on manipulative therapies often delineating occupational boundaries.[11] As in many jurisdictions with universal health care, GPs (also analogous to family physicians in other jurisdictions) form an integral gatekeeper role in the publicly subsidized universal health system in Australia, with public subsidies for specialist medical and allied health practitioners usually dependent on GP referral. The availability of limited public subsidies for allied health practitioners such as chiropractors, osteopaths, and physiotherapists may therefore affect how Australians use massage, remedial, and tactile therapies because massage therapists do not attract public subsidies for their services. However, unlike Chinese medicine practitioners, chiropractors, osteopaths, and naturopaths, massage therapists are not generally considered to be primary health care providers in most jurisdictions,[12] and tend to focus treatment on a limited range of musculoskeletal conditions,[13] leading to an adjunctive rather than competitive role with conventional health care providers. Although classified and categorized as CAM, there may also be little difference between the users of conventional medicine and those of massage therapy. Robinson[14] found that holistic health care beliefs among users of massage therapy in Australia were not different from nonusers of CAM or from users of other CAM therapies and were more likely to use massage therapy for specific health issues as opposed to treatment of chronic problems. This more focused and conventional role, compared with other CAM providers, may be one reason why the interface between massage therapy practitioners and conventional medical providers has largely escaped detailed examination, despite the substantial therapeutic footprint of these practitioners in Australia.

Table 1. *Referral rates of rural GPs to massage, remedial, and tactile therapists (nonmanipulative) in the past 12 months*

Referral rate	Frequency (%)
At least weekly	73 (12.5)
At least monthly	119 (20.3)
A few times per year	256 (43.8)
I have not referred but would consider	75 (12.8)
I would never refer	53 (9.1)
I do not know of any practitioners	9 (1.5)

A growing body of Australian and international research is uncovering differing patterns of CAM consumption and use across geographical areas, with increased use in rural communities when compared with urban populations,[15] a pattern that seems particularly pronounced in manipulative and body-based CAM therapies.[16,17] There is high use of massage therapy in rural and regional Australia, with studies indicating use rates of 17% to 50% in these communities.[14,18,19] There appears to be no substantial difference in use between rural and urban areas for most remedial therapies, although Bowen therapy use has been reported as higher among rural residents.[14,20] High use of massage therapy in rural and regional communities may be related to high accessibility of massage therapists in these areas, with at least part-time massage services available in most rural communities.[20]

Table 2. *Demographic and practice characteristics associated with referral to massage, remedial, and tactile therapists (nonmanipulative) by rural and regional GPs in New South Wales, Australia*

	Referral to massage, remedial, and tactile therapists		
Demographic characteristics	Weekly or monthly (%)	Seldom or never (%)	*P*
Sex			
Male	50.9	32.1	<.001
Female	49.1	67.9	
Age (y)			
25-34	9.8	5.8	.003
35-44	23.9	13.9	
45-54	33.7	51.1	
55-64	25.7	21.9	
>65	6.9	7.3	
RRMA			
3	29.9	23.4	<.001
4	45.1	30.7	
5	22.5	33.6	
6	2.0	5.1	
7	0.5	7.3	
Australian graduate?			
Yes	80.8	68.6	.003
No	19.2	31.4	
Initially from a rural area?			
Yes	33.0	29.9	.496
No	67.0	70.1	
Patient load (per week)			
<50	15.4	18.3	.298
51-100	35.0	39.4	
101-150	28.6	33.6	
151-200	13.8	8.8	
>200	7.1	0.0	

RRMA, Rural, Remote, and Metropolitan Area.

High levels of integration and use of massage therapy, relative to other CAM, may have implications for primary health care delivery and practice in rural and regional communities. However, despite the extensive presence of massage, remedial, and tactile therapists in rural and regional Australia, and the professional interactions between these therapists and conventional medical practitioners, there has been little research to date exploring the level of integration and referral at a grassroots level between these 2 groups. This study aims to address this gap in the literature by investigating referral patterns of rural and regional GPs in relation to massage therapy. Therefore, the purpose of this study was to survey medical GPs in rural and regional New South Wales, Australia, to identify their knowledge, attitudes, relationships, and patterns of referral to massage therapy in primary health care.

Methods

A 27-item questionnaire was mailed to all 1486 medical GPs practicing in rural and regional General Practice Divisions of New South Wales during the second half of 2010, with a reminder card sent after 2 months. General practitioners were asked about their knowledge, attitudes, and practice and referral patterns to a variety of CAM practices and therapies. The instrument was adapted for rural and regional use from previous Australian surveys of GP attitudes, use, and practices of CAM[8,21] and piloted at the Department of General Practice, School of Medicine and Public Health, University of Newcastle. Minor modifications were made based on pilot feedback to ensure that the instrument was clinically relevant.

The final survey questionnaire contained 27 items, which included multiple-choice and multiple-response close-ended questions. This article reports analyses specific to massage, with analyses of referral to other CAM provider types having been reported previously.[22-25] The survey had 5 general areas: the GP's personal use and knowledge of massage, the GP's professional relationships with massage practice and massage practitioners, the GP's specific opinions on massage, the GP's information-seeking behavior in relation to massage, and the GP's assumptions on massage use by patients in their local areas. General practitioners were also asked for demographic and practice information such as sex, age, number of years in practice, location of practice, number of patients seen per week, and country of graduation. Ethical approval for the study was obtained from the School of Population Health Research

Ethics Committee of the University of Queensland (JW130508) and the Human Research Ethics Committee of the University of Newcastle (H-2008-0344).

Rural and regional areas were defined by their classification in the Rural, Remote, and Metropolitan Area (RRMA) classifications. The RRMA classification categorises areas based on population and remoteness as large or small metropolitan (1-2); large, small, and other rural centers (3-5); and remote or other remote (6-7).[26] To minimize the effects of local variation, every rural and regional GP in Australia's largest state (New South Wales) was surveyed.

Survey questionnaire data were analyzed using descriptive statistics via frequency distributions and cross-tabulations. Characteristics (demographic and practice) of GPs who referred to massage therapy often (at least monthly) and seldom or never were compared using χ^2 tests. A parsimonious model including practice and practice characteristic variables was determined using a stepwise backward elimination method based on the likelihood ratio test using a significance level of .05. In this model, univariate logistic regression analyses were performed first between prognostic variables and the outcome variable (referral to massage therapists) for use in the predictive models. The cutoff point for the *P* value was set at .25, and these variables were subsequently included in the multiple logistic regression model. Variables were excluded from the multivariate analysis stepwise in backward elimination, until the remaining variables were still significant at the $P <$ .05 level. As such, this model therefore represents the best combination of predictor variables for referral to massage therapists and not an a priori selection of certain prognostic variables that were hypothesized to be best associated with referral to massage therapists. Regression and casewise diagnostics were conducted to investigate for outliers, collinearity, and infringements to the regression assumptions. Data were analyzed using the software program STATA 11 (STATA, College Station, TX).

Results

A total of 585 questionnaires were returned completed, with 49 survey questionnaires returned uncompleted as "no longer at this address," giving a response rate of 40.7%. Respondents had an average age between 45 and 54 years, and 53.5% were male. More than three-quarters of respondents (77.8%; n = 456) had completed their medical training at an Australian university. Aside from a slight overrepresentation of women (46.5% in this study vs 39% nationally), the respondent profile was broadly representative of the GP community in the study area.[27]

The rates of rural GP referral to massage therapy are shown in the Table 1. One in 8 GPs (12.5%; n = 73) referred to massage therapy at least once per week, and one-third did so at least once per month (32.8%; n = 192). Most GPs (76.6%; n = 448) reported referring to massage therapy at least a few time per year. Most GPs either were actively referring to massage therapy or would consider referring under the right circumstances, with 9.1% of GPs (n = 53) stating that they would not refer to massage therapy under any circumstances. Most GPs were aware of local practitioners in their area, with only 1.5% of respondents unable to identify massage therapists to refer to. Formal professional relationships with specific massage therapists were reported by 15.5% (n = 91) of GPs. One-fifth of GPs (20.7%; n = 121) reported practicing some form of tactile or massage therapy themselves in the past 12 months (data not shown).

Table 2 shows a comparison between GPs who referred to massage therapy often (at least weekly or at least monthly) and seldom (less than a few times per year or never) by demographic characteristics. Referral to massage therapy was significantly associated with the GP being male ($P <$ .001), being younger (P = .003), or graduating from an Australian medical school (P = .003). There were significant differences ($P <$ .001), but no clear trend, between different categories of RRMA and referral to massage therapy. There was no significant difference between rates of referral to massage therapy based on the GP originally coming from a rural area or the GP's patient load.

Table 3 shows further comparison between those GPs who often refer to massage therapy and those GPs who do not. Referral to massage therapy was significantly associated with the GP having increased knowledge about massage therapy ($P <$ .001), the GP having higher numbers of patients asking about CAM ($P <$ .001), increased personal CAM use by the GP ($P <$ .001), the GP experiencing positive results with massage therapy previously ($P <$ .001), the GP using CAM practitioners as a major information source on CAM (P = .010), increased belief in the efficacy of massage therapy by the GP ($P <$ .001), the GP having prescribed CAM previously to patients ($P <$ .001), and increased comfort levels associated with referral to a massage therapy by the GP ($P <$ .001).

The result of multiple logistic regression modeling to determine predictive factors for referring to massage therapy is shown in Table 4. General practitioners who had graduated from an Australian medical school were 2.03 (95% confidence interval [CI], 1.09-3.70) times more likely to refer to massage therapy often than GPs who were overseas trained. General practitioners in rural areas (RRMA categories 3-5) were 14.3 (95% CI, 3.7-50.0) times more likely to refer at least monthly to massage therapy than those in remote areas (RRMA categories 6-7). General practitioners who believed in the efficacy of massage therapy were 2.75 (95% CI, 1.58-4.78) times more likely to refer to massage therapy at least once per month than those who thought massage was ineffective. General practitioners who had previously prescribed other forms of CAM to their patients were 1.83 (95% CI, 1.03-3.27) times more likely to refer to massage therapy at least once per

Table 3. *Other factors associated with referral to massage, remedial, and tactile therapists (nonmanipulative) by rural and regional GPs in New South Wales, Australia*

	Referral to massage, remedial, and tactile therapists		
Factors	Weekly or monthly (%)	Seldom or never (%)	*P*
Level of knowledge			
Excellent	6.3	7.3	<.001
Very good	19.6	7.3	
Satisfactory	58.3	38.7	
Poor	14.5	39.4	
Very poor	1.3	7.3	
Patients asked about CAM			
<10%	29.9	53.3	<.001
11%-25%	43.3	39.4	
26%-50%	9.8	2.9	
<50%	17.0	4.4	
Personal use			
Regularly	15.9	2.9	<.001
Often	20.3	9.4	
Once/Rarely	32.1	26.3	
Never, but would consider	14.3	9.5	
Never, and would not consider	16.5	50.4	
Access to medical specialists is a problem			
Yes	2.2	4.4	.186
No	97.8	95.6	
Patient request for referral			
Yes	45.5	37.2	.087
No	54.5	62.8	
Lack of other options			
Yes	12.5	9.5	.227
No	87.5	90.5	
Positive results previously			
Yes	61.2	7.3	<.001
No	38.8	92.7	
Information from CAM practitioner?			
Yes	21.9	11.7	.010
No	78.1	88.3	
Information from patients?			
Yes	47.1	47.5	.943
No	52.9	52.6	
Belief in efficacy			
Yes	84.4	49.6	<.001
No	15.6	50.4	
Interested in increasing CAM knowledge?			
Yes	56.9	49.6	.109
No	42.9	50.4	
Have prescribed CAM to patients			
Yes	80.8	43.1	<.001
No	19.2	56.9	
Comfort level			
Comfortable in general	57.5	19.7	<.001
Only in specific circumstances	29.7	27.0	
Only if I knew them in person	9.9	20.4	
I would not refer	2.9	32.9	

CAM, complementary and alternative medicine.

month than those who had not. General practitioners who had seen positive results from massage therapy previously were 13.95 (95% CI, 5.96-32.64) times more likely to refer to a massage therapy practitioner at least once per month than those who had not. General practitioners were 2.64 (95% CI, 1.15-6.01) times more likely to refer to massage therapy if they thought that they had no other options for treatment. General practitioners who perceived access to medical specialists as not being a driver for CAM use were 11.1 (95% CI, 1.7-50.0) times more likely to refer to massage therapy more than once per month than those GPs who did not perceive this to be a driver.

Table 4. *Predictive factors for referral by GPs to massage, remedial, and tactile therapists (nonmanipulative) at least once per month by rural and regional GPs in New South Wales, Australia*

Factor	Odds ratio	95% CI
RRMA category		
Remote	1.00	–
Rural	14.28	3.70-50.00
Australian graduate?		
No	1.00	–
Yes	2.03	1.09-3.79
Access to medical specialists is a problem		
No	1.00	–
Yes	0.09	0.02-0.60
Lack of other options		
No	1.00	–
Yes	2.64	1.15-6.01
Positive results previously		
No	1.00	–
Yes	13.95	5.96-32.64
Belief in efficacy		
No	1.00	–
Yes	2.75	1.58-4.78
Have prescribed CAM previously		
No	1.00	–
Yes	1.83	1.03-3.27

CAM, complementary and alternative medicine; *CI*, confidence index; *RRMA*, Rural, Remote, and Metropolitan Area.

Discussion

This is the first focused examination of GP referral to massage therapy in rural and regional Australia and complements analyses performed in other CAM professions such as chiropractic, acupuncture, and homeopathy.[22-25] The high personal practice of massage, remedial, or tactile therapies by GPs (21%) is higher than previous studies of Australian GPs, which indicated practice of these massage therapy by GPs to be 11%.[8] Although higher than previous Australian studies, use rates of massage and tactile therapies of 35% have previously been reported among US family physicians.[28] Such variance study results of in GP practice of massage therapy is perhaps not too surprising given that the GP practice of massage therapy has rarely been explored, and results in individual studies may be highly reflective of survey respondent characteristics or study area. However, the increase in massage practice by GPs compared to previous Australian studies may also be, in part, related to the high interest expressed by GPs for further incorporation of massage therapy over the past decade. For example, an earlier survey in Australia found that 17% of GPs had already received some form of formal training in massage, remedial, and tactile therapies; a further 35% expressed an interest in further study in this area.[8]

Although our study indicates high referral by rural and regional GPs to massage therapy, these therapies may also be provided by a wider range of therapists than those referred to specifically for physical therapies. Not only has our analysis uncovered significant practice of massage therapies by rural and regional GPs themselves, but massage therapies in Australia also appear to be practiced by a variety of other CAM professions such as Chinese medicine, chiropractic, osteopathy, and naturopathy,[9-11] as well as conventional nonmedical providers such as nurses and physiotherapists.[29,30] Although our study offers the first detailed examination of GP referral specifically to massage therapy in rural and regional Australia, it does not account for how the provision of massage therapy by other types of providers may affect such referral. Nor does the study differentiate between the many heterogeneous forms of massage, remedial, and tactile therapies offered by practitioners in Australia. This heterogeneity could influence referral patterns given that previous exploration indicates that although Australian GPs classified massage, remedial, and tactile therapies as therapeutically valuable and safe in their context as physical therapies, they tended to view their use for nonmusculoskeletal conditions as ineffective, particularly in relation to more "esoteric" versions of massage, remedial, or tactile therapies (such as aromatherapy massage or reflexology).[8] As such, further research needs to be undertaken to take account for these wider features and explore the role of various providers in the delivery of massage, tactile, and remedial therapies in rural and regional Australia. In addition, although this study provides valuable insights into the role of massage therapy in primary health care from the GP perspective, further exploration of providers of massage therapy themselves can help to ascertain the impact that these practitioners have on primary health care in rural and regional Australia.

Very few (1.5%) GPs in our study were unaware of local practitioners to whom they could make referrals, a finding that supports previous research identifying substantial presence of massage, remedial, and tactile therapists in rural Australian communities.[20] Nevertheless, in our study, GPs in divisions classified as remote were much less likely to refer to a massage practitioner than GPs in rural Divisions. This may be related to differences in attitudes toward massage therapy between rural and remote GPs, but it could also be indicative of the lower availability of massage therapists in remote regions as compared with rural regions. However, precise distribution of these therapists in rural and regional communities—or the Australian community more broadly—remains largely unknown. Although comparisons between conventional primary care provision and CAM practitioners in rural and regional New South Wales have been explored,[31] this has been limited to "primary care" CAM practitioners only and has not explored the impact of massage, remedial, and tactile therapists in these communities. In addition, although collaborative and integrative models in CAM more generally have been explored in some depth,[32-34] there appears to be little work on integrative and collaborative

models of massage specifically. The substantial number of practitioners providing massage therapy, in combination with evidence that demonstrates the important interaction between massage, remedial, and tactile therapists and GPs in rural and regional communities, suggests that more research needs to be directed at adjunct CAM practitioners such as massage, remedial, and tactile therapists, as well as the present focus on larger primary care CAM practitioners and CAM provision by conventional medical providers. Increased research focus on providers of body-based CAM may also be particularly important when viewed in the context of the rising prevalence and cost of chronic musculoskeletal conditions being observed in developed countries.[35]

The findings from our study indicate that GPs graduating from an Australian institute are more than twice as likely to refer to massage therapy as those trained overseas. This may be indicative of cultural differences in perceptions of CAM. For example, a study of GPs from the United Kingdom (the largest source of overseas-trained practitioners in the study area, representing 8.4% of all GPs) showed that GPs were less interested in being involved with massage therapy than they were with homoeopathy.[36] This contrasts with the results of Australian GP surveys, which indicate that massage therapy receives the highest levels of support, whereas homoeopathy receives among the lowest level of support for inclusion among GPs in Australia.[8,21] Further investigation of the specific impact that differences in medical training or cultural background of GPs may have on attitudes, perceptions, and practices of CAM can offer valuable insights into the impact physician training and cultural background may have in primary care in differing or cross-cultural settings.

The rural and regional nature of respondents may also have affected the outcomes in this study because some commentators have suggested that higher CAM use in rural and regional areas may be related to lower levels of conventional health care providers (eg, specialists, allied health) in these areas.[37] Although a lack of other treatment options for patients was predictive of increased referral rates to massage, remedial, and tactile therapies by rural and regional Australian GPs in our study, limited access to medical specialists was in contrast predictive of lower levels of referral. As such, despite the musculoskeletal focus of massage therapy, increased referral to massage therapy by rural and regional GPs may be related more to GPs referring to CAM after exhausting their own treatment options for patients, rather than serving as alternative referral recipients when specialist treatment is sought. This may be partly related to previous study findings that have suggested that rather than CAM therapists replacing conventional practitioners in areas of high need, CAM practitioner density often follows that of conventional practitioners, with areas of high service need experiencing shortages in both conventional and CAM practitioners.[31] Large-scale studies have also indicated that just as rural populations generally express dissatisfaction with levels of conventional health service provision, they may also be dissatisfied with the level of CAM service provision in rural areas.[2,38] The higher use of CAM in rural areas may therefore be more dependent on "pull" factors such as historical and cultural drivers (eg, positive community connections, increased independence and stoicness among rural patients, underlying community affinity for holistic principles, and increased value of rural patients on experiential over empirical forms of evidence) rather than "push" factors related to lower conventional health service provision or dissatisfaction with conventional services.[15] Further examination of community push and pull factors for CAM use in rural and regional areas may assist with understanding the reasons that underlie biomedical practitioner referral to these professions in rural and regional health care.

High referral rates across the study population may, however, also be indicative of the rural nature of respondents. The high-prevalence professional relationships between GPs in this study and individual massage therapists could be partly influenced by the rural and regional nature of the sample in this study because smaller communities may facilitate increased interaction between CAM and conventional providers.[14,15,20] This, in turn, may facilitate an increased level of referrals by rural and regional GPs as compared with their urban counterparts. Further investigation of referral patterns to massage therapy in the broader GP population, or comparative work with urban GPs, will assist in further ascertaining what role geographic factors may have on the interface between CAM and general practice.

Limitations and Future Studies

Although the sample in this study was limited to one state (New South Wales), the large and varied study area was chosen to be broadly representative of Australian rural and regional general practice demographics.[27] Nevertheless, the demographics of the GPs in this study compared with national statistics (ie, being drawn from rural and regional areas and exhibiting a higher proportion of females) should be considered in generalizing the study's results to the broader Australian general practice population.

Other limitations of the study, in common with other studies that use questionnaires, include the use of self-reported data and possible recall bias inherent in retrospective collection of data during a 12-month period. Self-selection of respondents may also have resulted in some level of response bias. The response rate also compares well to general surveys of Australian GPs, which routinely have difficulty receiving response rates of more than 30%[39]; however, that more than half of the baseline sample did not respond to this survey should be considered when

interpreting results. Various methods including multiple reminder cards and advertising in professional literature were used in an attempt to increase response rate.

The primary care impact of massage, remedial, and tactile therapies observed in this study should serve as an impetus for increased research into practice, policy, and regulation in these therapies. The presence, high use, and large apparent levels of integration of massage therapy in rural primary health care, relative to other CAM professions, highlight a need for increased research into massage, remedial, and tactile therapy practice, policy, and regulation in rural and regional areas.

Conclusions

This study reveals substantial interface between providers of massage therapy and the GP community in rural and regional Australia. Although much CAM research is focused on broader primary care CAM modalities or conventional provider use of CAM therapies, this study suggests that adjunct or specialized practitioners such as massage, remedial, and tactile therapists may be playing a substantial role in rural primary health care and require further detailed examination of their specific role in health care delivery.

Practical Applications

- There is substantial interface between massage therapy and medical GPs in rural and regional Australia.
- There are high levels of support for massage therapies among Australian GPs, relative to other CAM professions, with low levels of opposition to the incorporation of these therapies in patient care.

Funding Sources and Potential Conflicts of Interest

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Contributorship Information

Concept development (provided idea for the research): JLW, DWS, JA.

Design (planned the methods to generate the results): JLW, DWS, JA.

Supervision (provided oversight, responsible for organization and implementation, writing of the manuscript): JLW, DWS, JA.

Data collection/processing (responsible for experiments, patient management, organization, or reporting data): JLW, DWS, JA.

Analysis/interpretation (responsible for statistical analysis, evaluation, and presentation of the results): JLW, DWS, JA.

Literature search (performed the literature search): JLW, DWS, JA.

Writing (responsible for writing a substantive part of the manuscript): JLW, DWS, JA.

Critical review (revised the manuscript for intellectual content, this does not relate to spelling and grammar checking): JLW, DWS, JA.

References

1. Xue C, Zhang A, Lin V, Da Costa C, Story D. Complementary and alternative medicine use in Australia: a national population-based survey. J Altern Complement Med 2007;13:643-50.
2. Adams J, Sibbritt D, Broom A, et al. A comparison of complementary and alternative medicine users and use across geographical areas: a national survey of 1,427 women. BMC Complement Altern Med 2011;11:85.
3. Australian Bureau of Statistics. Census of Population and Housing 2006: employed persons in health related occupations. Canberra: Australian Bureau of Statistics; 2008.
4. Association of Massage Therapists. Submission to the Australian Health Ministers Advisory Council on options for regulation of unregistered health practitioners. Newtown: Association of Massage Therapists; 2011.
5. Australian Association of Massage Therapists. Submission by the Australian Association of Massage Therapists Ltd (AAMT) to the National Quality Council in response to the Consultation Paper "Options for Regulation of Unregistered Health Practitioners, Australian Health Ministers' Advisory Council". Melbourne: Australian Association of Massage Therapists; 2011.
6. Australian Bureau of Statistics. Complementary therapies. In: Australian Bureau of Statistics, editor. Australian Social Trends 2008. Canberra: Australian Bureau of Statistics; 2008. p. 1-5.
7. Easthope G, Tranter B, Gill G. Normal medical practice of referring patients for complementary therapies among Australian general practitioners. Complement Ther Med 2000;8: 226-33.
8. Cohen M, Penman S, Pirotta M, Da Costa C. The integration of complementary therapies in Australian general practice: results of a national survey. J Altern Complement Med 2005; 11:995-1004.
9. Bensoussan A, Myers S, Wu S, O'Connor K. Naturopathic and Western herbal medicine practice in Australia—a workforce survey. Complement Ther Med 2004;12:17-27.
10. Bensoussan A, Myers S. Towards a safer choice: the practice of traditional Chinese medicine in Australia. Sydney: University of Western Sydney; 1996.
11. Norris P. How "we" are different from "them": occupational boundary maintenance in the treatment of musculo-skeletal problems. Sociol Health Illn 2001;23:24-43.

12. Bodeker G, Burford G. Traditional, complementary and alternative medicine: policy and public health perspectives. London: Imperial College Press; 2007.
13. Cherkin D, Deyo R, Sherman K, et al. Characteristics of visits to licensed acupuncturists, chiropractors, massage therapists, and naturopathic physicians. J Am Board Fam Pract 2002;15: 463-72.
14. Robinson A. People's choice: complementary and alternative medicine modalities. Complement Health Pract Rev 2007;12: 99-119.
15. Wardle J, Lui C-W, Adams J. Complementary and alternative medicine in rural communities: current research and future directions. J Rural Health 2012;28:101-12.
16. Sibbritt D, Adams J, Young A. A profile of middle-aged women who consult a chiropractor or osteopath: findings from a survey of 11,143 Australian women. J Manipulative Physiol Ther 2006;29:349-53.
17. Adams J, Sibbritt D, Broom A, et al. Complementary and alternative medicine consultations in urban and non-urban areas: a national survey 1427 Australian women. J Manipulative Physiol Ther 2013;36:12-9.
18. Wilkinson JM, Jelinek H. Complementary medicine use among attendees at a rural health screening clinic. Complement Ther Clin Pract 2009;15:80-4.
19. Wilkinson JM, Simpson MD. High use of complementary therapies in a New South Wales rural community. Aust J Rural Health 2001;9:166-71.
20. Robinson A, Chesters J. Rural diversity in CAM usage: the relationship between rural diversity and the use of complementary and alternative medicine modalities. Rural Soc 2008; 18:64-75.
21. Pirotta M, Farish S, Kotsirilos V, Cohen M. Characteristics of Victorian general practitioners who practice complementary therapies. Aust Fam Physician 2002;31:133-8.
22. Wardle J, Adams J, Sibbritt D. Homeopathy in rural Australian primary health care: a survey of general practitioner referral and practice in rural and regional New South Wales, Australia. Homeopathy 2013;102:199-206.
23. Wardle J, Sibbritt D, Adams J. Acupuncture referrals in rural primary health care: a survey of general practitioners in rural and regional New South Wales, Australia. Acupunct Med 2013, http://dx.doi.org/10.1136/acupmed-2013-010393.
24. Wardle J, Sibbritt D, Adams J. Referral to Chinese medicine practitioners in Australian primary care: a survey of New South Wales rural and regional general practitioners. Chin Med 2013;8:8.
25. Wardle J, Sibbritt D, Adams J. Referrals to chiropractors and osteopaths: a survey of general practitioners in rural and regional New South Wales, Australia. Chiropr Man Ther 2013;21:5.
26. Australian Institute of Health and Welfare. Rural health: The RRMA Classification Canberra: Australian Institute of Health and Welfare; 2010.
27. Australian Medical Workforce Advisory Committee. The General Practice Workforce in Australia: Supply and Requirements to 2013, AMWAC Report 2005.2. Sydney; 2005.
28. Berman B, Singh B, Lao L, Singh B, Ferentz K, Hartnoll S. Physicians' attitudes toward complementary or alternative medicine: a regional survey. J Am Board Fam Pract 1995: 361-6.
29. Chipchase L, Galley P, Jull G, et al. Looking back at 100 years of physiotherapy education in Australia. Aust J Physiother 2006;52:1-7.
30. Cooke M, Mitchell M, Tiralongo E, Murfield J. Complementary and alternative medicine and critical care nurses: a survey of knowledge and practices in Australia. Aust Crit Care 2012; 25:213-23.
31. Wardle J, Adams J, Soares-Magalhaes R, Sibbritt D. The distribution of complementary and alternative medicine (CAM) providers in rural New South Wales, Australia: a step towards explaining high CAM use in rural health? Aust J Rural Health 2011;19:197-204.
32. Boon H, Mior S, Barnsley J, Ashbury F, Haig R. The difference between integration and collaboration in patient care: results from key informant interviews working in multiprofessional health care teams. J Manipulative Physiol Ther 2009;32:715-22.
33. Adams J, Hollenberg D, Lui C, Broom A. Contextualising integration: a critical social science approach to integrative health care. J Manipulative Physiol Ther 2009;32:792-8.
34. Johnson C. Health care transitions: a review of integrated, integrative, and integration concepts. J Manipulative Physiol Ther 2009;32:703-13.
35. Smith M, Davis M, Stano M, Whedon J. Aging baby boomers and the rising cost of chronic back pain: a secular trend analysis of longitudinal Medical Expenditures Panel Survey data for years 2000 to 2007. J Manipulative Physiol Ther 2013;36:2-11.
36. van Haselen R, Reiber U, Nickel I, Jakob A, Fisher P. Providing complementary and alternative medicine in primary care: the primary care workers' perspective. Complement Ther Med 2004;12:6-16.
37. Andrews GJ, Adams J, Segrott J. Complementary and alternative medicine (CAM): production, consumption, research. In: Brown T, McLafferty S, Moon G, editors. A companion to health and medical geography. Oxford: Wiley-Blackwell; 2010. p. 587-603.
38. Adams J, Sibbritt D, Lui C. The urban-rural divide in complementary and alternative medicine use: a longitudinal study of 10,638 women. BMC Complement Altern Med 2011;11.
39. Bonevski B, Magin P, Horton G, Foster M, Girgis A. Response rates in GP surveys: trialling two recruitment strategies. Aust Fam Physician 2011;40:427-30.