

# BMJ Open Prayer or spiritual healing as adjuncts to conventional care: a cross sectional analysis of prevalence and characteristics of use among women

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## ABSTRACT

**Objectives:** To determine the prevalence and characteristics of users of prayer or spiritual healing among women.

**Design and setting:** This cross sectional study was conducted as a part of the Australian Longitudinal Study on Women's Health (ALSWH), a 20-year study that examines various factors affecting women's health and well-being.

**Participants:** The sample used in the current study were women from the 1946–1951 cohort (n=9965) (59–64 years) who were surveyed in 2010.

**Outcome measures:** Use of prayer or spiritual healing; demographic factors and measures of health status.  $\chi^2$  Tests, analyses of variance (to determine associations) and a stepwise backward logistic regression model (for the most significant predictors) using a likelihood ratio test were used to determine the outcome measures.

**Results:** It is estimated that 26% of Australian women from the 1946–1951 cohort (aged 59–64 years) use prayer or spiritual healing on a regular basis. Women were significantly more likely to use prayer or spiritual healing if they were non-smokers, non-drinkers or low-risk drinkers, had symptoms of severe tiredness (OR 1.25; 95% CI 1.12 to 1.40), depression, (OR 1.30; 95% CI 1.11 to 1.53), anxiety (OR 1.33; 95% CI 1.15 to 1.53), diagnosed cancer (OR 1.84; 95% CI 1.28 to 2.65) or other major illnesses (OR 1.43; 95% CI 1.18 to 1.75) and used other complementary therapies.

**Conclusions:** A significant proportion of adult women are using prayer or spiritual healing. Given that prayer or spiritual healing was significantly associated with health symptoms, chronic illnesses and positive health seeking behaviours, respect for prayer or spiritual healing practices is required within health care settings. Future research is recommended around specific populations using prayer or spiritual healing, reasons for their use and potential benefits on health related outcomes and general well-being.

## INTRODUCTION

Prayer and spiritual healing are a significant part of the medical system of many non-

## Strengths and limitations of this study

- A stepwise backward logistic regression model and a likelihood ratio test allowed demonstration of the most significant predictors of use of prayer or spiritual healing.
- Use of prayer or spiritual healing was higher in women with health symptoms, diagnosed chronic illnesses, positive health-seeking behaviours and users of other complementary therapies.
- A nationally representative sample was utilised, however, response bias is likely given under-representation of some migrant groups and over-representation of tertiary qualified women.
- The dataset did not include men, thereby limiting generalisability of the results to the wider population.

western countries.<sup>1–3</sup> Spiritual healing is used widely in the UK, with nine separate healing organisations registering approximately 13 000 healers, and in the USA using the modality of Therapeutic Touch,<sup>4</sup> while the Australian setting comprises of multiple smaller organisations.<sup>5 6</sup>

Dossey<sup>7</sup> defined prayer as the conscious willing intent of one or more persons for the well-being of self (personal prayer) or others (intercessory prayer) that may be initiated as a conscious activity or from the unconscious mind. Benor<sup>8</sup> in page 4 of 'Spiritual Healing', defined spiritual healing concisely as the "systematic, purposeful intervention by one or more persons aimed to help another person by focused intention (including hand contact or hand passes) to improve their condition."

Use of prayer or spiritual healing in the US setting indicates that 64.1% of community dwelling older adults report using prayer or spiritual healing on a daily basis.<sup>9</sup> Nationally representative samples in the USA are ambiguous regarding use of prayer or spiritual healing. Barnes *et al*<sup>10</sup> indicated that 43% of adults over 18 years of age report

using prayer for health, and 24.4% reported using prayer for the health of others; while an earlier survey found that 7% of the population use either prayer or spiritual healing.<sup>11</sup> In the Australian setting, use of prayer or spiritual healing was reported to be used among 24.4% of a nationally representative sample of women using self-prescribed complementary and alternative therapies (CAM).<sup>12</sup>

Two previous systematic reviews determining the efficacy of prayer or spiritual healing therapies were inconclusive or equivocal given the early stages of research in this area.<sup>13 14</sup> While the Cochrane review concluded that no changes to current intercessory prayer practices were required given the low risk of the intervention, another review recommended that spiritual competence and relevant training were required before allied health staff prayed with clients, however, silent prayer may be beneficial if performed without obtaining the patient's consent.<sup>13–15</sup>

The largest systematic review by Benor,<sup>8</sup> involving cells, plants, animal and human populations, found spiritual healing to be effective as an adjunctive treatment to conventional care. Three further systematic reviews were inconclusive and determined that further methodologically strong studies were needed that include the assessment of potentially confounding factors such as expectation and belief.<sup>16–18</sup>

In the Australian setting, characteristics of users of prayer or spiritual healing have yet to be explored. Previous research has indicated that, in the USA, prayer for health reasons or prayer for self was more likely to be used among adults of low socioeconomic status, women and African-Americans.<sup>10 19 20</sup> Use of prayer has been positively correlated with five or more chronic conditions, poorer self-rated health, age and residence within the south-western areas of the USA.<sup>20</sup> Adults under 65 years of age with public health insurance and living in urban areas, who were hospitalised in the past 12 months, and former smokers, were also more likely to use prayer for health reasons.<sup>10</sup> This differs from the general characteristics of CAM users who are more likely to have above-average incomes, be well educated and employed, and have private health insurance; however, CAM users generally are also more likely to be female.<sup>21</sup> Factors related to use of spiritual healing have yet to be explored worldwide.

The aims of the study are to: estimate the prevalence of use of prayer or spiritual healing in Australian women; and identify the demographic, health status and health service utilisation factors associated with the use of prayer or spiritual healing among Australian women.

## METHODS

### Study participants

The Australian Longitudinal Study on Women Health (ALSWH) is a population-based study conducted over a 20-year period, and is designed to explore the physical

health, emotional well-being, biological, psychosocial, lifestyle and health service utilisation factors affecting the health of women.<sup>22</sup> Eligibility criteria included women who were registered on the Australian Medicare database, assumed to be the most accurate representation of Australian women given registration of close to all women on a government health agency database including citizens and permanent residents, such as migrant and refugee women.<sup>22</sup> Random sampling was used to recruit women into three 'young' (1973–1978), 'mid' (1946–1951) and 'older' (1921–1926) cohorts, which were nationally representative samples for the respective age groups, however, there was some response bias with over-representation of women with a tertiary qualification and under-representation of women from some ethnic minority population groups.<sup>22</sup>

The baseline survey in 1996 included 14 099 respondents in the mid cohort, however, only the most recent survey (conducted in 2010) was used in this analysis.<sup>23</sup>

### Data collected

#### Prevalence (primary outcome measure)

Women were asked about their frequency of use of prayer or spiritual healing within the previous 12 months.

#### Demographic characteristics

Urban, rural or remote comparisons for areas of residence were made by means of current geographical postcode. Other demographic data collected included age (in years), level of education, marital status, ability to manage on available income, smoking status, alcohol use and health insurance for hospital cover or ancillary services.

#### Health status

Women were asked questions about the frequency of experiencing health symptoms in the past 12 months or diagnosed conditions within the past 3 years. Symptoms included difficulty breathing, chest pain, stiff or painful joints, back pain, depression, anxiety, intense anxiety such as panic attacks, constipation, difficulty sleeping, palpitations, dizziness, loss of balance or difficulty concentrating. Diagnosed conditions referred to diabetes, impaired glucose tolerance, rheumatoid arthritis, osteoarthritis, other arthritis, hypertension, heart disease, asthma, bronchitis or emphysema, osteoporosis, breast cancer, skin cancer, other cancer or other major illnesses.

### Statistical analysis

The STATA program was used to complete all analyses. To determine associations between categorical, demographic and health status factors and use of prayer or spiritual healing,  $\chi^2$  tests were used. A one way analysis of variance (ANOVA) was employed to determine differences in mean scores between continuous demographic and health status factors and the use of prayer or spiritual healing. To determine the most parsimonious model, demographic and health status factors that were

significant at the  $p < 0.25$  level were entered into a logistic regression model followed by the use of a stepwise backward elimination process using a likelihood ratio test.<sup>23 24</sup> Statistical significance was set at  $p < 0.005$  due to the large sample size.

A signed consent form attached to the returned questionnaire and invitation to participate was used as informed consent.<sup>25</sup>

## RESULTS

A total of 12 064 participants were eligible for the 2010 survey. There was a total of 1651 ineligible participants due to death ( $n=472$ ), frailty ( $n=67$ ) or withdrawal from the study ( $n=1112$ ).<sup>26</sup> The response rate was 83% ( $n=10 011$ ) from the 1946–1951 cohort in 2010.<sup>26</sup> The majority of non-respondents were contactable, but did not complete the survey ( $n=1148$ ); or were not contactable ( $n=905$ ) and excluded from the analysis ( $n=2053$ ).<sup>26</sup>

Participants from the 1946–1951 cohort were of predominantly rural or remote residence (61.2%), married or in a de facto relationship (76.9%), had a school level of education (58.5%) and were able to manage well on available income (62.9%).

For questions relating to individual health symptoms, missing data varied between 0.8% to 3.4%.<sup>26</sup> Data were missing for 0.9% of participants for questions relating to diagnosed conditions within the past 3 years, while 0.3–1.3% of answers were missing for questions related to the use of complementary therapies.<sup>26</sup>

A total of 9965 (99.5%) women answered the question regarding the use of prayer or spiritual healing. Among these women, prayer or spiritual healing was used *often* by 14% ( $n=1385$ ), used *sometimes* by 12% ( $n=1211$ ), used *rarely* by 6% ( $n=599$ ) and *never* used by 68% ( $n=6770$ ).

Table 1 shows the symptoms of chronic illness associated with the use of prayer or spiritual healing. Compared to women who never or rarely experienced these symptoms, women who used prayer or spiritual healing were

**Table 1** The association between symptoms of chronic illness and use of prayer or spiritual healing by women aged 59–64 years in 2010

Health symptoms	Use of prayer or spiritual healing				p Value
	Never (n=6770), (%)	Rarely (n=599), (%)	Sometimes (n=1211), (%)	Often (n=1385), (%)	
Breathing difficulty					
Never/rarely	85	84	83	83	0.163
Sometimes/often	15	16	17	17	
Chest pain					
Never/rarely	92	90	90	89	0.002
Sometimes/often	8	10	10	11	
Stiff or painful joints					
Never/rarely	36	31	35	35	0.045
Sometimes/often	64	69	65	65	
Back pain					
Never/rarely	46	42	42	43	0.005
Sometimes/often	54	58	58	57	
Depression					
Never/rarely	82	76	75	75	<0.001
Sometimes/often	18	24	25	25	
Anxiety					
Never/rarely	78	70	69	68	<0.001
Sometimes/often	22	30	31	32	
Intense anxiety					
Never/rarely	93	92	92	92	0.300
Sometimes/often	7	8	8	8	
Palpitations					
Never/rarely	83	78	79	79	<0.001
Sometimes/often	17	22	21	21	
Dizziness/loss of balance					
Never/rarely	83	82	81	80	0.035
Sometimes/often	17	18	19	20	
Difficulty concentrating					
Never/rarely	76	73	70	69	<0.001
Sometimes/often	24	27	30	31	
Difficulty sleeping					
No	64	60	63	64	0.206
Yes	36	40	37	36	

significantly more likely to have sometimes or often experienced: chest pain ( $p=0.002$ ); back pain ( $p=0.005$ ); poor memory ( $p<0.001$ ); depression ( $p<0.001$ ); anxiety ( $p<0.001$ ); palpitations ( $p<0.001$ ); and/or difficulty concentrating ( $p<0.001$ ).

The association between diagnosed conditions and the use of prayer or spiritual healing is presented in [table 2](#). In contrast to women who had not been diagnosed with any of these conditions, women who used prayer or spiritual healing were significantly more likely to have been diagnosed with: impaired glucose tolerance ( $p=0.005$ ); asthma ( $p<0.0001$ ); other cancer diagnosis

(other than breast or skin cancer) ( $p<0.001$ ); and/or another major illness ( $p<0.001$ ).

[Table 3](#) demonstrates the association between the use of complementary therapies and use of prayer or spiritual healing in women. Women who used vitamins or minerals sometimes or often were significantly more likely to use prayer or spiritual healing compared to women who never or rarely used vitamins or minerals ( $p<0.001$ ). Compared to women who never or rarely used yoga or meditation, women who used yoga or meditation sometimes or often were significantly more likely to use prayer or spiritual healing ( $p<0.001$ ). Use

**Table 2** The association between diagnosed chronic illnesses and use of prayer or spiritual healing by women aged 59–64 years in 2010

Condition	Use of prayer or spiritual healing				p Value
	Never (n=6770), (%)	Rarely (n=599), (%)	Sometimes (n=1211), (%)	Often (n=1385), (%)	
Diabetes					
No	92	95	92	92	0.074
Yes	8	5	8	8	
Impaired glucose tolerance					
No	97	98	98	96	0.005
Yes	3	2	2	4	
Osteoarthritis					
No	82	80	81	79	0.113
Yes	18	20	19	21	
Rheumatoid arthritis					
No	95	95	96	95	0.710
Yes	5	5	4	5	
Other arthritis					
No	87	88	86	86	0.552
Yes	13	12	14	14	
Heart disease					
No	96	96	95	95	0.219
Yes	4	4	5	5	
Hypertension					
No	70	68	69	69	0.779
Yes	30	32	31	31	
Asthma					
No	90	89	85	88	<0.001
Yes	10	11	15	12	
Bronchitis/emphysema					
No	94	93	93	92	0.051
Yes	6	7	7	8	
Osteoporosis					
No	93	93	93	92	0.217
Yes	7	7	7	8	
Breast cancer					
No	98	98	97	98	0.647
Yes	2	2	3	2	
Skin cancer					
No	86	85	86	86	0.853
Yes	14	15	14	14	
Other cancer					
No	99	99	98	97	<0.001
Yes	1	1	2	3	
Other major illnesses					
No	95	96	92	91	<0.001
Yes	5	4	8	9	

**Table 3** The association between use of complementary therapies and use of prayer or spiritual healing by women aged 59–64 years in 2010

Use of complementary therapies	Use of prayer or spiritual healing				p Value
	Never (n=6770), (%)	Rarely (n=599), (%)	Sometimes (n=1211), (%)	Often (n=1385), (%)	
Vitamins/minerals					
Never/rarely	36	24	22	19	<0.001
Sometimes/often	64	76	78	81	
Yoga/meditation					
Never/rarely	88	75	69	68	<0.001
Sometimes/often	12	25	31	32	
Herbal medicine					
Never/rarely	78	63	65	60	<0.001
Sometimes/often	22	37	35	40	
Aromatherapy					
Never/rarely	90	77	74	75	<0.001
Sometimes/often	10	23	26	25	
Chinese medicine					
Never/rarely	98	92	94	94	<0.001
Sometimes/often	2	8	6	6	
Other alternative therapies					
Never/rarely	96	89	82	80	<0.001
Sometimes/often	4	11	18	20	

of prayer or spiritual healing was significantly more likely in women who sometimes or often used herbal medicines compared to women who never or rarely used herbal medicines ( $p < 0.001$ ). Women who used aromatherapy oils sometimes or often were significantly more likely to use prayer or spiritual healing compared to women who never or rarely used aromatherapy oils ( $p < 0.001$ ). Women who used Chinese medicines sometimes or often were significantly more likely to use prayer or spiritual healing compared to women who never or rarely used Chinese medicines ( $p < 0.001$ ). In comparison with women who never or rarely used other alternative medicines, women who used other alternative medicines sometimes or often were significantly more likely to use prayer or spiritual healing ( $p < 0.001$ ).

The statistically significant predictors of the use of prayer or spiritual healing are shown in table 4. Women with a trade qualification, certificate or diploma were 1.28 (95% CI 1.13 to 1.46) more likely to use prayer or spiritual healing than women with no formal education, or women who completed school only. Compared to women who had never smoked, ex-smokers were 0.78 (95% CI 0.69 to 0.87) times less likely to use prayer or spiritual healing while current smokers were 0.64 (95% CI 0.52 to 0.78) times less likely to use prayer or spiritual healing than women who had never smoked.

Women classified as risky drinkers or high-risk drinkers were 0.63 (95% CI 0.50 to 0.79) times less likely to use prayer or spiritual healing than women classified as non-drinkers or low-risk drinkers. Women who reported suffering from severe tiredness sometimes or often were 1.25 (95% CI 1.12 to 1.40) times more likely to use prayer or spiritual healing than women who reported

never or rarely suffering from severe tiredness. Compared to women who never or rarely suffered from self-reported depression, women who suffered from self-reported depression sometimes or often were 1.30 (95% CI 1.11 to 1.53) times more likely to use prayer or spiritual healing. Compared to women who never or rarely reported anxiety, women who reported anxiety sometimes or often were 1.33 (95% CI 1.15 to 1.53) times more likely to use prayer or spiritual healing.

Women who had a diagnosed cancer other than breast, cervical or skin cancer were 1.84 (95% CI 1.28 to 2.65) times more likely to use prayer or spiritual healing than women who did not have a cancer diagnosis other than breast, cervical or skin cancer. Women who had been diagnosed with another major illness or disability were 1.43 times (95% CI 1.18 to 1.75) more likely to use prayer or spiritual healing than women who did not have a diagnosed major illness or disability.

Use of vitamins or minerals among women sometimes or often was correlated with a 1.61 (95% CI 1.42 to 1.82) times greater likelihood of using prayer or spiritual healing than use of vitamins or minerals never or rarely. Use of yoga or meditation sometimes or often was associated with a 2.00 (95% CI 1.75 to 2.28) times greater likelihood of using prayer or spiritual healing among women than use of yoga or meditation never or rarely. Women who used herbal medicines sometimes or often were 1.19 (95% CI 1.05 to 1.34) times more likely to use prayer or spiritual healing than women who used herbal medicines never or rarely. Compared to women who used aromatherapy oils never or rarely, women who used aromatherapy oils sometimes or often were 1.59 (95% CI 1.39 to 1.83) times more likely to use prayer or

**Table 4** Multiple logistic regression model for predicting use of prayer or spiritual healing compared for women aged 59–64 years in 2010

Factor	OR	95% CI	p Value
Education			
None, year 10, year 12	1.00	–	
Trade/certificate/diploma	1.28	1.13 to 1.46	0.001
University/higher degree	0.99	0.86 to 1.13	0.835
Smoking status			
Non-smoker	1.00	–	
Ex-smoker	0.78	0.69 to 0.87	0.001
Current smoker	0.64	0.52 to 0.78	0.001
Alcohol use			
Non-drinker/low risk	1.00	–	
Risky/high risk	0.63	0.50 to 0.79	0.001
Severe tiredness			
Never/rarely	1.00	–	
Sometimes/often	1.25	1.12 to 1.40	0.001
Depression			
Never/rarely	1.00	–	
Sometimes/often	1.30	1.11 to 1.53	0.001
Anxiety			
Never/rarely	1.00	–	
Sometimes/often	1.33	1.15 to 1.53	0.001
Other cancer			
No	1.00	–	
Yes	1.84	1.28 to 2.65	0.001
Other major illness or disability			
No	1.00	–	
Yes	1.43	1.18 to 1.75	0.001
Vitamins/minerals			
Never/rarely	1.00	–	
Sometimes/often	1.61	1.42 to 1.82	0.001
Yoga/meditation			
Never/rarely	1.00	–	
Sometimes/often	2.00	1.75 to 2.28	0.001
Herbal medicines			
Never/rarely	1.00	–	
Sometimes/often	1.19	1.05 to 1.34	0.006
Aromatherapy oils			
Never/rarely	1.00	–	
Sometimes/often	1.59	1.39 to 1.83	0.000
Other alternative therapy			
Never/rarely	1.00	–	
Sometimes/often	2.47	2.07 to 2.95	0.001
Consultation with a counsellor, psychologist or social worker			
Yes	1.00	–	
No	0.72	0.60 to 0.87	0.001
Life orientation test	1.07	1.06 to 1.09	0.001

spiritual healing. Use of another alternative therapy sometimes or often was associated with a 2.47 (95% CI 2.07 to 2.95) times greater likelihood of using prayer or spiritual healing compared to women who did not use an alternative therapy other than those aforementioned.

Women who did consult a counsellor, psychologist or social worker were 1.39 (95% CI 1.15 to 1.67) times more likely to use prayer or spiritual healing than women who did not consult a counsellor, psychologist or social worker. For every one point increase on the life orientation test (ie, a more positive outlook on life)

there is a corresponding 7% increase in the likelihood that women will use prayer or spiritual healing 1.07 (95% CI 1.06 to 1.09).

## DISCUSSION

This research has highlighted a number of important issues regarding prayer or spiritual healing and, in particular, its use for chronic illness, and is the first ever study examining the use of prayer or spiritual healing using a nationally representative sample of women.

Current findings indicate that prayer or spiritual healing is regularly used by 26% of women aged 59–64 years. This is lower than findings from previous research conducted in the USA, where it was estimated that prayer for one's own health was used among 43% of adults, 24.4% received intercessory prayer for their own health and participation in a prayer group to assist health was utilised by 9.6% of the population.<sup>10 20</sup> Further, prayer for health was estimated to be used among 53% of women overall, and in 48–51% of adults aged between 50 and 69 years, which may reflect higher trends of prayer use among Americans residing in highly religious areas, such as the south-western states.<sup>20</sup> Greater use of prayer or spiritual healing in the Australian setting compared to the UK, where spiritual healing was used in 0.7% of the population, likely due to the exclusion of prayer as a complementary therapy and the use of a smaller sample of CAM users (n=200).<sup>27</sup>

Presence of symptoms of chronic illnesses was a significant predictor of use of prayer or spiritual healing, which is consistent with previous research on prayer use in the USA.<sup>20</sup> That women may be using prayer or spiritual healing as a means of managing health-related symptoms of chronic illnesses such as depression, anxiety, severe tiredness, cancer or other major illnesses, is an important finding, given that up to half of outpatient visits to mainstream healthcare providers are related to physiological symptoms for which there are no known physiological or biological correlates.<sup>28</sup> In these instances potential global effects of prayer or spiritual healing, such as reductions in psychopathology and general distress, may enhance self-management among women managing chronic illnesses.<sup>29</sup> This may be an important contribution in the context of comorbid diagnoses of depression and anxiety among women with chronic illnesses, given the high prevalence of somatic symptom burden and amplified chronic illness symptoms.<sup>28</sup>

Increased use of prayer or spiritual healing among women with severe tiredness is also relevant, given the increased distress due to lack of legitimisation of chronic fatigue syndrome from conventional healthcare providers among some patients and the increased association this has to comorbid diagnoses of anxiety or depression.<sup>30</sup> In this instance, utilisation of complementary therapies such as prayer or spiritual healing may assist with coping and reduce reliance on conventional healthcare practitioners for symptom management. This is consistent with previous literature where use of personal prayer was significantly associated with enhanced health locus of control.<sup>31</sup> Previous research has also indicated that religiosity and spirituality are predictors of enhanced social support, cooperation, cognitive function and reduced depressive symptoms.<sup>32</sup> That use of prayer may facilitate enhanced cooperation is an important finding, given that belief about symptoms among patients with chronic fatigue syndrome may lead to avoidance behaviours and restriction of activity, which in

turn results in physical deconditioning, increased symptom prevalence and disability.<sup>33</sup>

Personal prayer has also been shown to significantly reduce psychological distress and depression 1 year post heart surgery and was used as a means of coping with postoperative symptoms among older adults.<sup>34</sup> Further, personal prayer had a suppressive effect on distress and depression, thereby affecting patients with both high and low levels of health-related distress.<sup>34</sup> This benefit is clinically relevant for women managing depression in the community and may assist healthcare providers to understand why women are more likely to be using prayer or spiritual healing as adjunct therapies. However, further research is required to understand the reasons for use among specific population groups with chronic illnesses.

Prayer or spiritual healing therapies may also affect psychological mediators that facilitate physiological benefits for women managing symptoms of chronic illnesses, including, but not limited to, cancer.<sup>35</sup> For example, Sephton and Koopman<sup>36</sup> found that women with metastatic breast cancer who highly valued spiritual expression had significantly increased immune function (increased white cell counts and lymphocytes). The identification of cancers other than breast or skin cancer as a significant predictor of the use of prayer or spiritual healing is consistent with the previous literature, where the cancer journey was significantly associated with increased spirituality.<sup>37</sup> Intercessory prayer has been shown to improve spirituality among patients with various cancers.<sup>38</sup> This result is of relevance given that 'spiritual pain' has been associated with adverse physical or emotional symptoms and decreased spiritual quality of life among patients with advanced cancer.<sup>39</sup>

Management of the terminal phase of chronic illnesses such as cancer requires an understanding of the likelihood of these patients facing an 'existential crisis', by which prayer or spiritual healing modalities may assist with coping, and how one defines themselves, creates meaning and finds peace.<sup>40–42</sup> Koenig<sup>43</sup> found that use of spiritual coping was associated with situations deemed uncontrollable, which is relevant given that prayer has been found to be an important need in up to 50% of religious terminally ill patients.<sup>40</sup>

Increased use of prayer or spiritual healing was significantly associated with non-smokers and non-drinkers. This may reflect users of prayer or spiritual healing as women who have positive health-seeking behaviours or lifestyle patterns. This is supported by current results indicating that women who use prayer or spiritual healing are also more likely to be users of other complementary therapies. Bell *et al*<sup>20</sup> also found that people who pray for their health were significantly more likely to use any CAM. In addition, increased religiosity has been associated with use of preventative health practices (Benjamins and Brown, 2004; Fox, Pitkin, Paul, Carson and Duan, 1998, in ref 20).

Limitations include ambiguity regarding how prayer or spiritual healing was understood by the participants, duration or types of prayer (intercessory or personal) or spiritual healing, or conditions in which prayer or spiritual healing were used, as these were not provided in the ALSWH data. Use of prayer or spiritual healing was provided as a single option in the ALSWH questionnaire, thereby limiting separate analysis of the use of prayer compared to the use of spiritual healing. This is an area for future research. Further, bias may be introduced by means of the self-report method for data collection, however, limitations are minor compared to valuable information obtained by analysing a large nationally representative sample of women.<sup>23</sup> The study was based on information on women, thus limits generalisability of findings to the population as a whole. A similar study on men would be an area for future research.

## CONCLUSION

Prayer or spiritual healing is used widely within the community. Healthcare providers need to be mindful of use of prayer or spiritual healing as non-pharmacological adjunct therapies, particularly among women with poorer health status, managing chronic health symptoms and/or diagnosed chronic illnesses. Given that prayer or spiritual healing modalities are safe, low-risk strategies, it is in the interest of policymakers and healthcare providers to consider the prayer or spiritual healing practices of women managing chronic illnesses, and to provide a conducive environment for spiritual self-expression within a contemporary healthcare framework.<sup>14 20</sup> Recommendations for future research include assessment of the efficacy and impact of prayer or spiritual healing, and reasons for use.

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## REFERENCES

- Leder D. Spooky actions at a distance: physics, psi, and distant healing. *J Altern Complement Med* 2005;11:923–30.
- Walach H, Boesch H, Lewith G, *et al.* Effectiveness of distant healing for patients with chronic fatigue syndrome: a randomised controlled partially blinded trial (EUHEALS). *Psychother Psychosom* 2008;77:158–66.
- Brown LB, Wierzbicka A. *The human side of prayer: the psychology of praying*. Birmingham. Religious Education Press, 1994:1–125.
- Abbot NC, Harkness EF, Stevinson C, *et al.* Spiritual healing as a therapy for chronic pain: a randomized, clinical trial. *Pain* 2001;91:79–89.
- Reiki Australia. Reiki Australia. In touch 2014 (cited 18 October 2014). <http://www.reiki australia.com.au/>
- Australian Foundation for Healing Touch Incorporated. Welcome 2014 (cited 18 October 2014). <http://www.healingtouch.org.au/>
- Dossey L. *Healing words: the power of prayer and the practice of medicine*. New York: HarperCollins, 1993:1–291.
- Benor DJ. *Spiritual healing: scientific validation of a healing revolution*. Wholistic Healing Pubns, 2001:1–597.
- Cheung C, Wyman J, Halcon L. Use of complementary and alternative therapies in community-dwelling older adults. *J Altern Complement Med* 2007;13:997–1006.
- Barnes PM, Powell-Griner E, McFann K, *et al.* Complementary and alternative medicine use among adults: United States, 2002. *Semin Integr Med* 2004;2:54–71.
- Eisenberg DM, Davis RB, Ettner SL, *et al.* Trends in alternative medicine use in the United States, 1990–1997: results of a follow-up national survey. *JAMA* 1998;280:1569–75.
- 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.
- Roberts L, Ahmed I, Hall S, *et al.* Intercessory prayer for the alleviation of ill health. *Cochrane Database Syst Rev* 2009;(2):CD000368.
- Hodge DR. A systematic review of the empirical literature on intercessory prayer. *Res Soc Work Pract* 2007;17:174–87.
- Hodge DR. Using prayer and other forms of positive mental energy in direct practice: an evidence-based perspective. *Smith Coll Stud Soc Work* 2010;80:121–38.
- Abbot NC. Healing as a therapy for human disease: a systematic review. *J Altern Complement Med* 2000;6:159–69.
- Astin JA, Harkness E, Ernst E. The efficacy of “distant healing”: a systematic review of randomized trials. *Ann Intern Med* 2000;132:903–10.
- Crawford C, Sparber A, Jonas W. A systematic review of the quality of research on hands-on and distance healing: clinical and laboratory studies. *Altern Ther Health Med* 2003;9:96–104.
- Conboy L, Patel S, Kaptchuk T, *et al.* Sociodemographic determinants of the utilization of specific types of complementary and alternative medicine: an analysis based on a nationally representative survey sample. *J Altern Complement Med* 2005;11:977–94.
- Bell R, Suerken C, Quandt S, *et al.* Prayer for health among U.S. adults: the 2002 National Health Interview Survey. *Complement Health Pract Rev* 2005;10:175–88.
- Xue CC, Zhang AL, Lin V, *et al.* Complementary and alternative medicine use in Australia: a national population-based survey. *J Altern Complement Med* 2007;13:643–50.
- Brown WJ, Bryson L, Byles JE, *et al.* Women’s health Australia: recruitment for a National Longitudinal Cohort Study. *Women Health* 1999;28:23–40.
- Sibbritt D, Adams J, van der Riet P. The prevalence and characteristics of young and mid-age women who use yoga and meditation: results of a nationally representative survey of 19,209 Australian women. *Complement Altern Med* 2011;19:71–7.
- Hosmer DW Jr, Lemeshow S. *Applied logistic regression*. John Wiley & Sons, 2004.
- Brown W, Bryson L, Byles J, *et al.* Women’s health Australia: establishment of the Australian longitudinal study on women’s health. *J Womens Health Gend Based Med* 1996;5:467–72.
- Women’s Health Australia. Sample 2014b (cited 16 June 2014). <http://www.alswh.org.au/about/sample>
- Thomas K, Coleman P. Use of complementary or alternative medicine in a general population in Great Britain. Results from the National Omnibus survey. *J Public Health (Oxf)* 2004;26:152–7.
- Katon W, Lin EH, Kroenke K. The association of depression and anxiety with medical symptom burden in patients with chronic medical illness. *Gen Hosp Psychiatry* 2007;29:147–55.
- Greyson B. Distance healing of patients with major depression. *J Sci Exploration* 1996;10:447–65.
- Lehman AM, Lehman DR, Hemphill KJ, *et al.* Illness experience, depression, and anxiety in chronic fatigue syndrome. *J Psychosom Res* 2002;52:461–5.

31. McClain CS, Rosenfeld B, Breitbart W. Effect of spiritual well-being on end-of-life despair in terminally-ill cancer patients. *Lancet* 2003;361:1603–7.
32. Koenig HG, George LK, Titus P. Religion, spirituality, and health in medically ill hospitalized older patients. *J Am Geriatr Soc* 2004;52:554–62.
33. Taillefer SS, Kirmayer LJ, Robbins JM, *et al.* Psychological correlates of functional status in chronic fatigue syndrome. *J Psychosom Res* 2002;53:1097–106.
34. Ai AL, Dunkle RE, Peterson C, *et al.* The role of private prayer in psychological recovery among midlife and aged patients following cardiac surgery. *Gerontologist* 1998;38:591–601.
35. Connerley RC. *Distant intercessory prayer as an adjunct to psychotherapy with depressed outpatients: a small-scale investigation.* Union Institute & University, 2003.
36. Sephton SE, Koopman C, Schaal M, *et al.* Spiritual expression and immune status in women with metastatic breast cancer: an exploratory study. *Breast J* 2001;7:345–53.
37. Risberg T, Wist E, Kaasa S, *et al.* Spiritual healing among Norwegian hospitalised cancer patients and patients' religious needs and preferences of pastoral services. *Eur J Cancer* 1996;32:274–81.
38. Olver I, Dutney A. A randomized, blinded study of the impact of intercessory prayer on spiritual well-being in patients with cancer. *Altern Ther Health Med* 2012;18:18–27.
39. Delgado-Guay MO, Hui D, Parsons HA, *et al.* Spirituality, religiosity, and spiritual pain in advanced cancer patients. *J Pain Symptom Manage* 2011;41:986–94.
40. Hampton D, Hollis D, Lloyd D, *et al.* *Spiritual needs of persons with advanced cancer.* *Am J Hosp Palliat Care* 2007;24:42–8.
41. Frankl VE. *Man's search for meaning.* trans. Ilse Lasch. London: Hodder and Stoughton, 1964.
42. Conti JM. *The effects of intercessory prayer and transpersonal positive visualization on a hemodialysis population.* Amherst: University of Massachusetts, 1999.
43. Koenig HG. Religious attitudes and practices of hospitalized medically ill older adults. *Int J Geriatr Psychiatry* 1998;13:213–24.