



Associations between complementary medicine utilization and influenza/pneumococcal vaccination: Results of a national cross-sectional survey of 9151 Australian women

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ARTICLE INFO

Keywords:
Vaccination
Complementary medicine
Immunization

ABSTRACT

Influenza and pneumococcal vaccination is recommended for all adults, with older adults considered a high-risk group for targeted intervention. As such it is important for factors affecting vaccine uptake in this group to be examined. Complementary medicine (CM) use has been suggested as a possible factor associated with lower vaccination uptake. To determine if associations exist between influenza and pneumococcal vaccine uptake in older Australian women and the use of CM, data from women aged 62–67 years surveyed as part of the Australian Longitudinal Study on Women's Health (ALSWH) were analyzed in 2013 regarding their health and health care utilization. Associations between the uptake of influenza and pneumococcal vaccinations and the use of CM were analyzed in 2016 using chi-squared tests and multiple logistic regression modelling. Of the 9151 women, 65.6% and 17.7% reported that they had influenza and pneumococcal vaccination within the past 3 years respectively. Regression analyses show that women who consulted naturopaths/herbalists (OR = 0.64) and other CM practitioners (OR = 0.64) were less likely to have vaccination (influenza only), as were women who used yoga (OR = 0.77–0.80) and herbal medicines (OR = 0.78–0.83) (influenza and pneumococcal). Conversely, women using vitamin supplements were more likely to receive either vaccination (OR = 1.17–1.24) than those not using vitamin supplements. The interface between CM use and influenza and pneumococcal vaccination uptake in older women appears complex, multi-factorial and often highly individualized and there is a need for further research to provide a rich examination of the decision-making and motivations of stakeholders around this important public health topic.

1. Introduction

Whilst influenza and pneumococcal vaccination is recommended for all adults in Australia, adults aged over 65 in the general Australian population are considered to be at higher risk of contracting these conditions (or at higher risk from complications from potential infection) and as such are entitled to free influenza and pneumococcal vaccinations under the National Immunization Program. Immunization in this group is undoubtedly effective – the preventative vaccination rate for Australian adults aged 65 and over is 74.6% for influenza and 54.4% for pneumococcal vaccination (18) – yet little is known about associations between certain health seeking practices and vaccine uptake. The use of complementary medicine (CM) – a diverse group of health care practices (such as naturopathy, chiropractic or massage) and products (such as herbal medicines, dietary supplements and

homeopathy) not generally considered part of the conventional medical curriculum (Adams et al., 2012) – has undergone significant expansion in recent decades. The increasing popularity of CM has led to concern around possible direct and indirect risks (Wardle and Adams, 2014), with some commentators suggesting that CM practitioners may discourage or actively oppose vaccination (Ernst, 2009; Ernst, 2001; Gilmour et al., 2011; Friedlander, 2001), or that users of alternative models of health care may not support conventional preventive medical measures such as vaccination (Dubé et al., 2013).

In Australia, the role CM plays in the contemporary health sector is of particular and increasing significance, with the estimated numbers of consultations with CM providers being similar to those of conventional medical providers (69.2 million v. 69.3 million), reported out-of-pocket expenditure on CM products representing over \$4.1 billion annually (US\$3.8 billion; £2.3 billion) (Xue et al., 2007) and CM practitioners

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<http://dx.doi.org/10.1016/j.ypmed.2017.09.009>

Received 13 February 2017; Received in revised form 29 August 2017; Accepted 4 September 2017

Available online 12 September 2017

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outnumbering conventional primary care providers in some areas (Wardle et al., 2011). Underlying concerns about the impact of CM on preventive adult vaccination may have some merit: a survey of older people in the US, for example, found that those who did not use the influenza or pneumococcal vaccinations were more likely to believe that they could prevent those diseases with alternative therapies (Santibanez et al., 2002), and a preference for CM over conventional treatments and utilization of most CMs in the previous 12 months was found to be a predictor for vaccine rejection (Browne et al., 2015). Moreover, some CM practices have been associated with high-profile anti-vaccination activity (Wardle et al., 2013).

Despite such concerns, the relationship between CM and preventive adult vaccinations such as influenza and pneumococcal vaccination remains unclear, with little critical or rigorous examination of this relationship undertaken to date. Studies of the interface between CM and other vaccinations – for example childhood vaccination – do suggest that the relationship between CM and vaccination is complex, multifactorial and often highly individualized (Wardle et al., 2016). For example, not all CM use may have the same impact on vaccination uptake. Analyses of National Health Interview Survey (NHIS) data suggest that users of non-chiropractic forms of CM are in fact more likely to receive the influenza vaccination (Davis et al., 2012) and CM users generally are more likely to receive the influenza and pneumococcal vaccines (Stokley et al., 2008). The broad definition of CM may also add to the complexity of the relationship between CM and vaccination as not all CM practices appear to influence adult vaccination equally. French general practitioners practicing acupuncture or homeopathy were less likely to receive the occupational influenza vaccine than those who did not practice CM modalities, but were not less likely to vaccinate for other diseases, (Pulcini et al., 2013). A study of US health fair attendees found that CM use was not associated with reduced uptake of the influenza vaccine, but this association was identified among attendees using provider-based CM services (Robinson et al., 2002).

Chiropractic practice has been the most extensively studied CM modality in relation to associations with preventive adult vaccination uptake (Wardle et al., 2016). However, even within this specific discipline there is significant heterogeneity of results. For example, analyses from NHIS data in the US has drawn contrasting results of the correlation between chiropractic use and the uptake of the influenza vaccine, showing chiropractic use as being correlated with both higher influenza vaccine use (Stokley et al., 2008) and lower vaccine use (Jones et al., 2010) in different studies. Re-analysis of this data by different authors has suggested these differences are dependent on the definition of chiropractic use is employed (i.e. ‘ever used’ versus ‘have used in past 12 months’) and how ‘high-priority’ conditions for vaccination were built into the multiple regression model (Smith and Davis, 2011). Additional re-analysis of this dataset also determined that for high-priority patients there were no significant differences in vaccination uptake between those patients who used chiropractic and those who did not use chiropractic (Davis et al., 2012). A review of childhood immunization has found that participants in younger cohort of CAM users (excluding chiropractic users) were more likely to have received the influenza vaccination when compared to non-CAM users (Davis et al., 2012).

Given the importance of public health vaccination in improving population health outcomes it is essential that we address the lack of information regarding the association of vaccination with other health behaviors. In direct response to these circumstances, the analyses reported in this paper examines whether consulting with CM practitioners or using a variety of CM interventions is associated with uptake of influenza and pneumococcal vaccine uptake in Australian women aged 62 to 67 years.

2. Methods

The study reported here was conducted using data from the Australian Longitudinal Study on Women's Health (ALSWH) – a study designed to assess a range of factors associated with health and well-being in Australian women. Study participants consist of women randomly selected from the national Medicare database in 1996 in three different age groups (18–23, 45–50, 70–75 years) (Brown et al., 1998). The women participating in the ALSWH are broadly representative of the national population of women in their respective age cohorts (Brown et al., 1999). For the study reported here, analyses focused on 9151 women from the ALSWH 1946–1951 cohort, who were aged between 62 and 67 years at the time of the 2013 survey. Ethical approval for the ALSWH was gained from the Human Ethics Committees at the University of Queensland and University of Newcastle. The study participants provided written consent.

2.1. Vaccination

The primary outcome was uptake of pneumococcal vaccine. Women were asked whether they had been vaccinated for influenza and whether they had a pneumococcal vaccine (also called PPV, for pneumonia) in the past 3 years. These questions were answered on a yes/no basis.

2.2. CM utilization

All participants were asked if they had consulted with any of the following CM practitioners in the last 12 months: a massage therapist, a naturopath/herbalist, a chiropractor, an acupuncturist or a ‘other’ alternative health practitioners (e.g. an aromatherapist, a homeopath, a reflexologist and a iridologist). These questions were answered on a yes/no basis. Participants were further asked how often they had used the following CM therapies for their own health in the past 12 months: vitamins/minerals, yoga/meditation, herbal medicines, Chinese medicines, and other alternative therapies. For this question participants were able to select the following categories: never, rarely, sometimes or often, with responses being categorised as: not used (including never and rarely), used sometimes (including sometimes) and used frequently (including often).

2.3. Statistical analyses

Chi-squared tests were used to compare uptake of vaccinations between those who had or had not consulted particular CM practitioners or used particular CM therapies. Results of these analyses were used to inform the subsequent logistic regression model, including variables with significant bivariate associations of $p < 0.1$ only. Multiple logistic regression analyses were conducted to determine whether consulting a particular CM practitioner or using a particular CM therapy (independent variables, categorical format), was associated with having been vaccinated for influenza or pneumonia (dependent variables). Adjusted odds ratios with 95% confidence intervals were computed for all predictor variables. Analyses were adjusted for known confounders relating to socio-demographic and other factors associated with CM use in the Australian population (Reid et al., 2016), as well as known confounding factors from previous analyses of pneumococcal vaccination uptakes (Davis et al., 2012; Stokley et al., 2008) These factors included: marital status, education, income, area of residence, consultations with family doctors/GPs, hospital doctors or specialists, being diagnosed with chronic diseases, mental health conditions; and/or cancer. The primary outcome was the outcome as per logistic regression analysis, and the statistical significance was set at $p < 0.05$. Statistical significance was set at $p < 0.05$. All statistical analyses were performed in 2016 using IBM SPSS® software (IBM SPSS Statistics for Windows, release 22.0. Armonk, NY: IBM Corp.).

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