

Assessment and Modelling of Chiropractic and Allied Healthcare in Australia: Background and Need for a Formal Investigation

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ABSTRACT: There is need for a detailed investigation on the availability and impact of chiropractic and allied healthcare services, on healthcare choice and healthcare costs, as well as the delivery and spatial distribution of chiropractors in Australia. The goal of this paper is to discuss the background and to propose our intent to conduct an interdisciplinary assessment and modelling of the determinant factors of adoption of healthcare choices in Australia. Due to the highly complex nature of selecting a healthcare choice amongst available alternatives in today's world, it has been decided to design a research project using a new and innovative approach to the study of knowledge and knowledge systems in a social group. It was determined that the theory base of social interpretation of knowledge and knowledge implementation and change will drive this study. The study design will entail mixed methods including surveys, extensive document review, and a series of interviews of key stakeholders in the allied health professions within Australia. Studies such as this have potential to guide the planning process for federal and state governance bodies in chiropractic, in facilitating consumer choice between alternatives in healthcare. The knowledge gained through this study can drive healthcare change into the 21st century with chiropractic as a potential change agent.

INDEX TERMS: MeSH: CHIROPRACTIC; ALLIED HEALTH OCCUPATIONS; AUSTRALIA; RESEARCH; PUBLIC HEALTH; (Other): DATA MODELING; HEALTH ECONOMICS.

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INTRODUCTION

According to the Australian Treasury's Intergenerational Reports of 2002 and 2007, the most important challenge in health care is the ageing of the baby boomer generation and the projected costs of funding healthcare that this demographic group will require. According to the Productivity Commission's 2005 report, the major components of these costs relate to the cost of drugs covered by the Pharmaceutical Benefits Scheme and public expectations that new medical technologies and procedures will be widely available and taxpayer-funded. With the development of National Registration of chiropractors and accreditation within Australia, common principles and standards that have a strong consumer focus must be embodied in the new national legislative framework. It is possible that the health care delivery goals are out of synchronisation with the health care delivery process.

This paper will examine features of allied healthcare delivery in Australia, with particular emphasis on the chiropractic profession. We reference a key strategy of the Chiropractors Association of Australia (CAA) Board strategic plan, Strategy Two, which is to develop the required

research to influence health policy by shifting the focus of the health system to primary care and highlighting different models of primary care, particularly the chiropractic model of wellbeing.

To be able to produce the requisite knowledge about the possibilities of contributing to a reduction in healthcare costs in Australia, and the impact of the allied healthcare professionals, there is a need for a detailed investigation on the availability and impact of chiropractic and allied healthcare services, on healthcare choice and healthcare costs, as well as their delivery and the spatial distribution of chiropractors in Australia. To obtain this valuable information a study will be carried out, by the authors of this paper, in Australia in the period of the next three years. The study will be conducted using surveys of chiropractors, chiropractic patients, and the general public Australia-wide, and conducting interviews of key stakeholders in allied health. Results from this study will explore existing strategies and propose new ideas to assist strategic development of a range of allied healthcare professions in Australia. In this paper we present a research protocol for this study in order to inform the chiropractic community about it and invite the members to take part in it. We also invite chiropractors, public care experts and other interested parties to comment on the study, its aims, methodology and projected results.

PURPOSE

The goal of this paper is to discuss the background and to propose the intended conduct of an interdisciplinary assessment and modeling of the determinant factors of adoption of healthcare choices in Australia. Although the role of competitors must be examined the emphasis will

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be on the impact of the chiropractic workforce on overall healthcare costs, and its spatial distribution in urban and rural Australia. Due to the highly complex nature of selecting a healthcare choice among available alternatives in today's world, it has been decided to design this research using a new and innovative approach to the study of knowledge and knowledge systems in a social group. It was determined that the theory base of social interpretations of knowledge, and knowledge implementation and change will drive this study. Theories developed about the diffusion, infusion and adoption of alternatives and change, are also foundational to this project.¹

Within this particular context, and following standards developed by Fernandez-Caamano¹, we are defining *diffusion* as the spread of available knowledge about healthcare choices available in Australia, and *infusion* as the inclusion and implementation of such knowledge by the healthcare consumer when deciding on the type of healthcare to be used. In this context, the community member will be either a patient that already made a particular choice in allied healthcare, or a member of the general public in position to make that choice.

Therefore, the research questions that guide this study are:

1. What are the determinant factors that affect the diffusion of the preferred choice in allied healthcare?
2. What model of diffusion was used to transfer this knowledge base on allied healthcare by the end users?
3. What are the factors that affect the infusion of preferred choice in allied healthcare?
4. What model of infusion was used to transfer this choice in allied healthcare by the end users?
5. What processes are predicted to account for change when a healthcare choice is adopted by the end users?
6. What impact does the preferred healthcare choice have for these consumers?

The conclusions from this study will be framed by (a) the factors determined to have an effect on the diffusion process, and the relationship of these factors to the diffusion predictive model, (b) the factors determined to have an effect on the infusion process, and the relationship of these factors to the infusion predictive model, (c), models for diffusion and infusion, (d) sources of change when a healthcare choice is transferred, (e) conclusions on the sources of change, (f) the levels of infusion attained by these users, including concluding remarks on the relative significance and limitations of the attainment of such infusion levels for these users, and (g) the social impact of such healthcare choices.

BACKGROUND CONTEXT OF THE STUDY

According to the Australian Bureau of Statistics,² in June 1998 there were 1,969 practicing chiropractors in Australia versus 4,512 as of February 2009. In 1998, 76% of practitioners were male and approximately 1,078 were registered in New South Wales (NSW)-the latter statistic is to June 2002.³ The average national rate of chiropractor to

person ratio was 11.1 chiropractors per 100,000 people. This ratio is higher in NSW, Victoria and South Australia.⁴

Extrapolation of the costs to the Australian population gives an expenditure on alternative therapies in 2000 of \$AUD 2.3 billion. This represents a 120% increase in the cost of alternative medicine therapy since 1992. In 2000, expenditure on alternative therapies was nearly four times the public contribution to all pharmaceutical products. Although chiropractic was marginalized for much of the 20th century it has entered the mainstream of health care.⁵

Recent research suggests the upsurge in the use of alternative medicine in Australia,^{6,7,8} the United States,^{9,10,11} and the United Kingdom.¹² The reported reasons include: the disenchantment with conventional medicine,^{6,13} people searching for meaning in their lives, a search of control over the individual's life, the personal component of the patient-healer relationship, lack of faith in scientific experts, a response to the nature of chronic or terminal illness,¹⁴ and an upsurge in the uncritical reporting of medical breakthroughs that has created unrealistic public expectations about the prevailing medical model of health care.¹⁵ Some experts believe that medicine has lost its holistic perspective treating only the symptoms and not the whole person.¹¹ Another report suggests that alternative health care users appear to be doing so not so much as being dissatisfied with conventional medicine but largely because they find these health care alternatives to be more congruent with their own beliefs and philosophical orientations toward health and life.¹⁰

In the United Kingdom a survey was performed on the use of alternative medicine in ethnic populations. It was found that the regular users were likely to be women of African origin and of higher socioeconomic status.¹⁶ Unfortunately there does not appear to be any study reporting any information that reflects a deeper understanding as to why people seek these alternative therapies. There are limited studies on the qualitative and quantitative aspects of the spatial distribution of chiropractors. Sydney, for example, has both the market demand and growing availability of training courses for practitioners of complementary medicine through both private colleges and universities. Hence it is no surprise that it has become the home to a large number of practicing chiropractors.

According to a recent survey, which studied the distribution of chiropractors in Sydney and metropolitan regions, it can be seen that the distribution of practitioners is not uniform across the Sydney region. Practitioners are predominantly based around the Sydney Eastern Suburbs particularly Bondi Junction and Double Bay and the Northern Suburbs around North Sydney, Chatswood and parts of the Northern Beaches. Chiropractic services are sought to a greater extent by a particular subgroup of the population – university educated,^{11,17} fairly affluent, middle and professional groups. Relatively under-represented were skilled workers, blue collar workers etc. Nevertheless, it was concluded that these attributes were not the only key contributing factors for distribution.¹⁷ Another study reported the high use of complementary therapies in rural NSW, particularly chiropractic.⁷

In the United States and the UK it was found that people were more likely to use alternative therapies (particularly

chiropractic) if they are in poor health^{10,11,18} and less likely if they were male, the belief being (in males) that these therapies in general are ineffective or inferior to conventional methods. Avoidance of chiropractic tends to be associated with concerns for safety and side-effects.¹⁵ Chiropractic seems to be used by substantial proportions of the general population of a number of countries, but differences in study design and methodological limitations make it difficult to compare prevalence estimated both within and between countries.

The above research suggests that chiropractic could be catering for a small affluent minority of the population. It is well known that regional and rural areas are poorly served by health services, both orthodox and complementary – many local government areas on the fringe of cities like Sydney suffer poor health service provision (e.g. Camden, Penrith, Campbelltown, and Liverpool). This ultimately has policy implications for chiropractic professional bodies (such as the CAA).¹⁷

The structure and function of the workforce is critical to the organization and behaviour of the health system overall. Qualitative and quantitative information relating to supply and demand assists with strategic decision making and planning and thus will assist chiropractic training institutions, the Australian Government as well as the chiropractic registration boards in regulating the supply of chiropractic services in Australia.

Nursing is an example wherein it has been reported in many countries that a discrepancy exists between supply and demand. This has been attributed to low retention rates, declining nursing school enrolment, non-competitive wages, poor working conditions, alternative career opportunities for women and the lack of power and support within the nursing profession.^{17,19} In order to achieve the goal of providing adequate care at an affordable price, one report has proposed managed care models which incorporate financing and delivery of services, with the control of health care providers, facilities and services as well as programs like quality assurance and utilization review.²⁰ Other professions have developed strategies to diversify the training opportunities available by establishing short-term training initiatives to meet specific demands.²¹

In a setting where there is a disadvantaged population (for example indigenous Australians) with inadequate access to medical care, the introduction of regional specialist outreach centres that are responsive to local community needs, can effectively integrate with and support primary health care processes.²² There is an increase in interest in complementary therapies within the medical profession in Australia.²³ A rapidly increasing trend within the conventional health system is the development of 'integrated' health delivery systems incorporating conventional and complementary therapies using an evidence-based approach.^{10,25}

2003 STUDY OF CHIROPRACTIC IN NSW

In 2003 the need for a detailed investigation of chiropractic services delivery and the spatial distribution of chiropractors in NSW was recognized by the Chiropractors Registration Board of NSW and by the Department of Chiropractic at Macquarie University. In 2004 the Board provided funds to Macquarie University to carry out a workforce Study in

NSW. The aim was to provide a quantitative assessment of chiropractors in rural and urban areas in NSW and to systematically investigate various factors influencing the demand of chiropractic in the long and short term throughout NSW.

The survey respondents included 171 male (76%), and 54 female chiropractors. Most of these respondents (about 75%) were in the 30-50 age group. The survey included respondents from areas as diverse as Sydney inner city, Sydney suburbs, the Blue Mountains, and various coastal and inland regions. It is of importance to note that the sample in this study was considered statistically significant, and therefore representative of the population of chiropractors in NSW at the time of the survey.

At the time of the study, there was a fixed population of approximately 1,500 registered chiropractors in NSW. With a sample size of 225 registered chiropractors it can be stated with a 95% Confidence Level ($\alpha=0.05$), and within a Margin of Error of +/-6.03%, that the responses obtained from our sample are representative of the responses that would have been obtained from the whole population of chiropractors in NSW at the time, had they all been polled. The diversity of the sample was loosely representative of Australia's diversity. As expected, most respondents (81.8%) were of Australian origin, but 19 other nationalities were reported by these chiropractors. Most of these chiropractors in NSW had graduated from Macquarie University, with a total of 16 chiropractic schools represented in the study's sample. Of the 225 surveyed chiropractors, 94% were still in active practice, and six percent had retired. The rest of the preliminary statistics obtained via this study support the view that it depicted a thriving profession in NSW at the time.

The results of this study had implications for developing a comprehensive strategic plan in order to overcome any forecasted issues related to supply and demand of chiropractors in NSW. The research questions in a newly proposed national study arise from the knowledge gaps that became apparent from the analysis of that NSW study's data.

SIGNIFICANCE AND INNOVATION

The proposed study will not only inform the chiropractic profession on its state of affairs within Australia, but also inform industry partners, the Registration Boards of the profession, the Chiropractors Association of Australia, and the chiropractic field, governmental and regulatory bodies within Australia on how the Australian public is being served by chiropractic and allied health, and where adaptations are needed to better serve the needs of the Australian community. The results of this study will not only add to the knowledge base on chiropractic in Australia, but will also inform the teaching institutions on current trends in supply and demand on chiropractic.

This research is also expected to be of interest to government and regulatory agencies to justify not only alternative treatments, such as chiropractic, but also to find methods to promote overall wellbeing and health prevention methods that lower overall costs in healthcare.^{24,25}

RESEARCH PLAN FOR A NATIONAL STUDY

The study design will entail mixed methods.²⁶⁻²⁸ First stage consists of survey research, a cross-sectional study of

key stakeholders in Australia. The next stage will include a series of interviews of key stakeholders in allied and orthodox healthcare, as well as within chiropractic in Australia. The team will conduct surveys of chiropractors, chiropractic and allied healthcare patients, and of the general public Australia-wide. The study includes three distinct and separate questionnaires.

Extensive review of relevant government documents and data are also part of this study. Additional data will also be gathered to investigate various factors influencing healthcare choice in Australia. These results will be compared with previous data from similar studies. Data will be obtained from the Australian Bureau of Statistics, Department of Education, Employment and Workplace Relations, and the Department of Immigration and Multicultural and Indigenous Affairs.

To obtain results representative of the population, all participants must have the same probability of participating in the study.^{26,29} Thus, the method of choice, the survey, gives all stakeholders an equal chance of participating in this study. Stage one of this study will involve a process of peer review and questionnaire design. Stage two incorporates data gathering and data compilation efforts across Australia. Stage three will include the stakeholder interviews. Stage four includes data analyses and reporting phases of the study. Alternative methodological approaches were considered and deemed impractical for this study. For instance, a multisite case study would have involved over 1,000 different sites currently having access to chiropractic or another allied health care modality, spread across Australia. This type of study involves a great amount of time and resource investment in order to obtain in-depth data. Asserting a choice of health care is a time-sensitive process, and adopter attitudes and opinions about health and wellness can change over time. By using surveys to gather observations from the user base of allied healthcare and chiropractic, timely responses can be obtained from the totality of the user base. Therefore, the survey method was deemed most appropriate for this study.

Normally, the generalizability of the results is best achieved through quantitative analyses. Representation of the population was an overarching criterion in this study. The totality of the population that has some level of access to allied health in Australia is large. The robustness of the research model in this study is based on theories developed in the analysis of change processes in large social systems. These methods were selected to analyse relationships between multiple variables that could affect the selection of a healthcare choice.

Since the factors that affect these choices cannot be directly observed, statistical relationships between the multiple variables that inform each factor from a large sample are better reviewed through multivariate statistical analyses.^{27,30} The relationship between the unobservable factors that are informed by underlying observable criteria (the questions being asked) is best analysed by factor analysis, which allows the assessment of the relative weight of the factors that affect the relationship of diffusion and infusion of a complex knowledge base, such as a choice between treatment alternatives in healthcare.^{1,31} The study of multiple factors is further facilitated by using rotated factor analysis statistical techniques. The questions on the survey were created to address currently accepted theoretical operands of the factors,

such as measures of efficiency gains, return on investment, perceived efficacy of treatments, and perceived complexity of chiropractic or other alternative choices in healthcare.^{1,29,31}

In this study a number of sources of data will need to be accessed:

1. A survey of chiropractors
2. A survey of patients (users of chiropractic and other health services)
3. A survey of the general public (potential users of chiropractic and other health services)
4. Interviews of key stakeholders, including representatives of health professions.

VARIABLES

There are five types of questions or themes in the questionnaires designed for this study, questions to capture general demographic and descriptive data about the sample of chiropractors, most common ailments treated by these chiropractors, types of patients/illnesses most common in their practice, questions about the factors affecting the decisions, attitudes or opinions finally questions about economic variables that could affect a healthcare choice. This category of questions on the economic impact of healthcare choice in Australia, ranges from variables that address government or private insurers' support of the treatment, to the actual consumers' attitude towards the importance of economic variables when selecting healthcare for themselves and/or their family. All variables in this study represent explorations within those five general themes.

CURRENT STATE OF THE PROJECT

Generous support from the CAA National has allowed the commencement of preparations for the conduct of this national project. The secondary stage of the project which allows for predictive modelling activities to be conducted can go ahead if additional funding can be secured. Currently a large grant application to do this is before the Australian Research Council. Initial reaction from Council assessors has been highly encouraging. In early 2010 all chiropractors will be receiving survey forms on which to provide the data the team seeks. We are hopeful of a strong response rate from the profession to ensure that the findings are truly representative of the profession.

CONCLUSIONS

Development in health care is based on the interaction between health care consumer demand and the function of the health system as structured by its operating environment. Within the Australian socio-economic context, this includes governmental, political and professional bodies as well as the healthcare providers and consumers. The proposed study examines this interaction and proposes models which can be used to make the planning process better informed while facilitating the creation of an informed consumer base.^{1,24,25} Therefore, studies such as this one have enormous potential to guide the planning process for federal and state governance bodies in chiropractic, and in facilitating consumer choice between alternatives in health care. The knowledge gained through this study can drive health care change into the twenty-first century with chiropractic as a potential change agent.

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