



Is change in global self-rated health associated with change in affiliation with a primary care provider? Findings from a longitudinal study from New Zealand



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ABSTRACT

Aims. To investigate the association of self-rated health and affiliation with a primary care provider (PCP) in New Zealand.

Methods. We used data from a New Zealand panel study of 22,000 adults. The main exposure was self-rated health, and the main outcome measure was affiliation with a PCP. Fixed effects conditional logistic models were used to control for observed time-varying and unobserved time-invariant confounding.

Results. In any given wave, the odds of being affiliated with a PCP were higher for those in good and fair/poor health relative to those in excellent health. While affiliation for Europeans increased as reported health declined, the odds of being affiliated were lower for Māori respondents reporting very good or good health relative to those in excellent health. No significant differences in the association by age or gender were observed.

Conclusions. Our data support the hypothesis that those in poorer health are more likely to be affiliated with a PCP. Variations in affiliation for Māori could arise for several reasons, including differences in care-seeking behaviour and perceived need of care. It may also mean that the message about the benefits of primary health care is not getting through equally to all population groups.

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Introduction

Primary health care emerged at the forefront of national and international health policy in 1978, when the World Health Organization identified its importance and potential for improving population health outcomes in the Alma Ata Declaration (World Health Organization, 1978). There is continuing interest in the role of primary health care for improving health outcomes, reducing health inequalities, and improving access to health services (World Health Organization, 2008). Affiliation, which refers to having a usual source of care (doctor, nurse or medical centre) or primary care provider (PCP), is a key attribute of primary health care systems (Starfield, 1992). Affiliation with a PCP is especially important for improving a patient's overall health given that a PCP is usually the first point of contact, provides ongoing preventive care, and in New Zealand (NZ) and some other countries is a "gatekeeper" who facilitates access to more costly secondary and tertiary care (Goodyear-Smith et al., 2012).

Our previous work has shown that male sex, never married, Asian ethnicity, current smokers, and having post school education were

independently associated with lower odds of affiliation, while older age, reporting poor health and having one or more co-morbid conditions were associated with higher odds of affiliation (Jatrana and Crampton, 2009). While previous research broadly reports a positive association between the provision of primary care services and population health (Gulliford, 2002; Macinko et al., 2003; Shi, 1994; Shi and Starfield, 2001; Shi et al., 2002; Starfield, 1991; Starfield and Shi, 2002; Vogel and Ackermann, 1998), our research suggests a greater likelihood of poor health among those affiliated with a primary care provider (Jatrana and Crampton, 2009). However, whether declining health predicts affiliation with a PCP is not known because previous work has been mainly cross sectional in nature and it is important to investigate associations between health and affiliation with a PCP to check that the health system is responding to population health needs.

Using data from a NZ longitudinal study we investigate whether a decline in SRH is associated with increased affiliation with a PCP and whether there are differences by ethnicity, age, and gender. We hypothesise that after adjusting for demographic, socioeconomic and behavioural factors, and accounting for unmeasured time-invariant confounders (unobserved fixed characteristics of individuals such as intelligence or beliefs that are likely to be associated with both health and affiliation), those in good to poor health would be more likely to be affiliated than those in excellent health. We also aimed to demonstrate

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the value of longitudinal methods to quantify associations between health exposures and primary care outcomes, thus adding to limited longitudinal research in the primary health care literature.

Methods

Data

This research used data from three waves of the SoFIE-Health survey, which is an add-on to the Statistics New Zealand Survey of Family, Income and Employment (SoFIE Version 2, Waves 1 to 7: Carter et al., 2010). SoFIE is an 8 year (2002–2010) longitudinal household panel survey. Computer-assisted face-to-face interviews were used to collect data annually on income levels and sources, and on the major influences on income such as employment and education, household and family status, demographic factors, and health status.

The population covered by SoFIE are those living in private dwellings i.e., excluding people living in institutions or establishments such as boarding houses and rest homes. The initial SoFIE sample comprised approximately 11,500 responding private households (response rate of 83%) with 22,200 adults (aged 15 years and older) responding in wave 1, reducing to just over 20,000 in wave 2 (91% of wave 1 responders) and over 19,000 in wave 3 (86% of wave 1 responders). By wave 7, there were almost 17,000 (76% of wave 1) from the original sample still participating. Higher rates of attrition occurred for youth, ethnic minorities, people on lower income, and people reporting poor health (Statistics New Zealand, 2011). On average, 16,354 respondents contributed information from at least 2 waves to this analysis.

The SoFIE-Health add-on is comprised of 20 min of questionnaire time in waves 3 (2004–05), 5 (2006–07) and 7 (2008–09), in the following health-related domains: SF-36 (Short-Form health survey), Kessler-10 (K-10), perceived stress (Cohen et al., 1983), chronic conditions (heart disease, diabetes, and injury-related disability), tobacco smoking, alcohol consumption, access and continuity of primary health care, and an individual deprivation score.

Measures

The main outcome measure was affiliation with a PCP which was measured by asking individuals “do you have a doctor, nurse or medical centre you usually go to, if you need to see a doctor?” and response categories included “yes”, “no”, “don’t know” and “refused”. We recoded this measure into two categories that contrasted affiliated with not affiliated, excluding the ‘don’t know’ and ‘refused’ categories.

The main exposure used in this paper was global SRH, based on the question: “In general would you say your health is: excellent, very good, good, fair or poor?” We treated this as a categorical variable after combining fair/poor levels into one category.

Time varying confounders measured at each wave were labour force status, marital status, family structure, NZ Deprivation Index 2001 (a measure of small area deprivation, categorized into quintiles, where quintile 5 corresponds to high deprivation: Salmond and Crampton, 2012), wave (accounting for the effect of time), and NZiDep (a measure of individual deprivation: Salmond et al., 2006). Also used in the analysis were the time-invariant covariates age (at first interview), sex and ethnicity. The ethnicity variable was constructed using a “prioritised” definition. Each respondent was assigned to a mutually exclusive ethnic group by means of a prioritisation system commonly used in New Zealand: Māori (the indigenous people of New Zealand), if any of the responses to self-identified ethnicity was Māori; Pacific, if any one response was Pacific but not Māori; Asian, if any one response was Asian but not Māori/Pacific; the remainder non-Māori non-Pacific non-Asian (nMnPnA; mostly New Zealanders of European descent, but strictly speaking not an ethnic group). The reference group was nMnPnA. Early adulthood is a time of important transitions and the same is true of the period post-retirement and so the age covariate was categorised into those less than 25 years, 25–65 years, and 65 years or over to see whether these life-course events impacted on the health-affiliation association.

Analysis

Analyses were conducted on an unbalanced panel of eligible wave 1 respondents who responded in waves 3, 5 or 7, and were aged more than 15 years. Transition probabilities for health and affiliation averaged over waves 3, 5 and 7 were computed to illustrate the dynamic nature of health and affiliation “behaviours”.

Since affiliation is a binary outcome variable, we modelled the probability of being affiliated using a fixed effects conditional logistic model. Such models eliminate nuisance variables representing time-invariant unobserved confounding, modelled as a set of fixed parameters (one for each respondent), by conditioning on a sufficient statistic (Agresti, 2002; Allison, 2005; Wooldridge, 2002). Exponentiated parameter estimates for the affiliation model can be interpreted as odds ratios: specifically the odds of having a health provider relative to the reference level of the specified covariate.

Conditional fixed effects analysis only uses changes occurring within the same individuals over time to estimate effects and ignores observations on variables that do not change temporally. However, it is possible to fit interactions between time-varying and time-invariant variables in a fixed effects model. We tested for interactions between age and health, gender and health, and ethnicity and health to detect differences between younger and older age groups, between men and women, and between ethnic groups respectively in the association of SRH with affiliation.

All counts presented in this paper are rounded means of sample counts from waves 3, 5 and 7 and comply with the Statistics New Zealand protocols for such quantities. Analyses were carried out within the Statistics NZ data laboratory using the R statistical environment (<http://www.r-project.org>) for statistical computation, version 3.0.1, available from the Comprehensive R archive Network (CRAN) website (<http://cran.r-project.org>).

Table 1

Means and standard deviations of study sample counts and proportions by demographic strata for the unbalanced SoFIE-Health panel used in this study (waves 3, 5, and 7).

	N (SD)	% affiliated (SD)
<i>Total</i>	16,354 (943)	91.8 (0.6)
<i>Health</i>		
Excellent	5099 (538)	88.2 (0.9)
Very good	5831 (194)	91.6 (0.6)
Good	3770 (144)	94.7 (0.4)
Fair/poor	1654 (76)	97.1 (0.2)
<i>Marital status</i>		
Never married	3672 (232)	84.5 (1.2)
Previously married	2386 (115)	95.3 (0.2)
Married	10,296 (601)	93.6 (0.5)
<i>Family status</i>		
Couple only	4770 (235)	94.2 (0.6)
One person	3408 (196)	89.0 (1.0)
Sole parent	1496 (127)	91.4 (0.7)
Couple with dependents	6680 (385)	91.6 (0.7)
<i>Labour force status</i>		
Working	10,740 (587)	90.7 (0.8)
Not working	5614 (364)	93.9 (0.3)
<i>NZ deprivation</i>		
Least deprived	10,086 (365)	92.0 (0.6)
Medium deprived	3356 (264)	91.5 (0.5)
Most deprived	2912 (315)	91.3 (0.7)
<i>NZ individual deprivation</i>		
0	3672 (232)	84.5 (1.2)
1–2	2386 (115)	95.3 (0.2)
3–7	10,296 (601)	93.6 (0.5)
<i>Highest qualification</i>		
Degree or higher	2435 (65)	88.3 (0.7)
No qualification	3899 (337)	93.7 (0.3)
School qualification	4361 (264)	90.7 (0.7)
Vocational qualification	5659 (277)	92.8 (0.9)
<i>Age</i>		
25 years or older	13,532 (933)	93.8 (0.6)
Less than 25 years	2822 (12)	82.6 (1.1)
<i>Sex</i>		
Male	7512 (452)	89.0 (0.9)
Female	8842 (491)	94.2 (0.4)

Note: Total counts are rounded means.

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