

A mail survey of health care professionals: an analysis of the response

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Mail questionnaires provide a cost effective alternative for the survey of geographically dispersed populations. However, mail questionnaires are also characterized by low response rates, particularly for medical and other professionals. As a result of the potential systematic differences between respondents and nonrespondents, the external validity of the results are jeopardized.

A number of techniques, such as follow-ups, have been developed in order to improve the response rates while at the same time retaining the cost advantage of the mail questionnaire. The present article is a discussion of a national survey of chiropractors.

Two follow-ups, a postcard reminder, and a second questionnaire were utilized in the survey. An overall response rate of slightly less than sixty-nine (68.78) percent was achieved.

These results indicate that satisfactory and realistic response rates can be achieved with health care professionals who are often viewed as being resistant to surveys.

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Introduction

The achievement of high response rates is an ever present challenge for survey researchers of all populations. Any response rate of less than the ideal 100% is always subject

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Les questionnaires postés constituent une alternative rentable pour enquêter sur les populations géographiquement dispersées. Cependant, le questionnaire postal se caractérise aussi par un faible taux de réponse, en particulier pour les professionnels du secteur médical et les autres professionnels. Étant donné les différences potentielles systématiques entre les répondants et les non-répondants, la validité externe des résultats est compromise.

Certaines techniques, telles que le suivi, ont été mises au point pour améliorer le taux de réponse tout en maintenant la rentabilité du questionnaire postal. Cet article est une discussion portant sur une étude nationale effectuée auprès de chiropraticiens.

Le suivi, une carte rappel et un second questionnaire ont été utilisés dans cette enquête. Un taux de réponse global légèrement inférieur à 69 pour cent (68, 78) a été obtenu.

Ces résultats démontrent que des taux de réponse satisfaisants et réalistes peuvent être obtenus auprès des professionnels de la santé souvent considérés comme des personnes s'opposant aux études.

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MOTS CLÉS : chiropratique, étude.

to biases of undetermined magnitudes and directions. The most important consequence of nonresponse is that research results may become biased because the part of the population that does not respond may differ from the responding segment.¹ According to Cochran, "There is ample evidence that these biases vary considerably from item to item and from survey to survey being sometimes negligible and sometimes large".¹

Potential response biases due to nonresponse are prob-

lematic in surveys of all populations but possibly nowhere is this more evident than in the survey of professionals such as physicians and other health-care practitioners, lawyers, professors and so forth. Due to their varying schedules, time constraints, lack of interest, antipathy, and potential loss of income from survey participation, professionals are generally perceived as being resistant to surveys.²⁻¹²

Health-care and other researchers have thus become increasingly concerned with the difficulty of obtaining adequate response rates in surveys of physicians and other health-care professionals.³ For example, the American Medical Association has witnessed a growing annoyance by physicians to participate in surveys,^{3,4,9,10} particularly those conducted by mail. Even though compliance rates have been favourable in a number of cases,^{11,13} researchers are reluctant to utilize mail questionnaires for health surveys.

Mail surveys do suffer from response rates which are frequently below those of other survey procedures. However, mail surveys do provide a very cost effective alternative for surveying geographically dispersed populations for which the costs of personal or telephone interviews would be prohibitive for most researchers. A variety of techniques and strategies have been developed and implemented for mail surveys that have effectively increased response rates to acceptable levels. In some cases, the response rates have approached or exceeded those of more costly survey procedures.

Sample design and methods

The objective of the survey was to study the attitudes, opinions and practice philosophies of chiropractors about clinical guidelines, and the organizations that developed the guidelines, in order to develop a strategic plan for guideline distribution and implementation. The survey was funded by the Chiropractic Foundation for Spinal Research and was conducted by two faculty members in the Department of Sociology at the University of Saskatchewan, and a practising chiropractor in Saskatoon with affiliated status at the University.

Questionnaire and administration

The questionnaire included fifty-seven (57) attitudinal items on clinical guidelines, standards of care, and practice philosophies. In addition, two (2) questions were in-

cluded to determine the respondents' familiarity with existing clinical guidelines of chiropractic practice in Canada. One question to assess the respondents' rankings of different chiropractic educational and regulatory bodies, and one question assessing individuals (for example, Chiropractic Presidents, Association Leaders, Licensing and Registration Boards, Technique Developers, Clinicians, Researchers and Medical Doctors), who may have potential input into the establishment of the guidelines.

Nineteen (19) questions to elicit information on the respondents' demographic characteristics (sex, year of birth, marital status, and number of children), province, educational background (type and college of graduation), income (amount and sources), and membership in chiropractic associations were also included. Many of the questions, particularly the fifty-seven (57) attitudinal questions, were adapted from Jansen's 1991¹⁴ survey of American chiropractors to provide Canadian-American comparison on these and related dimensions of chiropractic.

The preparation and distribution of the questionnaire generally followed the procedures advocated by Dillman.¹⁵ The questionnaire was eight (8) pages in length and was commercially printed in an attractive booklet. The outside cover consisted of brightly coloured paper with the University of Saskatchewan logo and title of the survey on the front cover. An identification number for administration and follow-up purposes was also printed on the front cover.

The questionnaire was printed in both English and French with the majority of the questions only requiring that the respondent circle the appropriate response. The questionnaire took about thirty (30) minutes to complete. Upon completion, the respondent was requested to return the questionnaire in the pre-addressed postage paid envelope.

The questionnaire was distributed by first-class mail on August 30th, 1994. The cover letter that accompanied the questionnaire outlined the purpose and importance of the survey and emphasized that all responses would be treated in a confidential and anonymous manner. The purpose of the identification number on the questionnaire was also explained to potentially alleviate any concerns about the lack of anonymity. The covering letter printed on University of Saskatchewan letterhead was personally signed by the three principal investigators.

Since the provinces of Quebec and New Brunswick are officially bilingual, respondents in these two (2) provinces were sent questionnaires and covering letters in both French and English. Respondents in the other eight (8) provinces received questionnaires and cover letters in English only.

On September 21, 1994, a postcard reminder requesting the respondent to complete and return the questionnaire was forwarded to all respondents whose questionnaires had not yet been received. Approximately a month later, on October 18, 1994, a second questionnaire and cover letter was mailed to those respondents whose first questionnaire had not been received. The cover letter indicated the response rate to date, and again emphasized the purpose of the survey and the importance of receiving the respondents' attitudes and opinions on the chiropractic guidelines. Similar procedures to those on the initial mailing were followed with the postcard reminders and the second questionnaire and cover letters. That is, selected respondents in the provinces of Quebec and New Brunswick were sent follow-ups in both official languages, whereas the selected respondents in the other provinces received the follow-ups in English only.

Two student assistants were responsible for the recording of the questionnaire numbers as they were received, and in the distribution of the follow-up reminder and second questionnaire. The student assistants were also responsible for the coding of the responses onto computer-readable forms.

Sample design

In 1991, the total number of chiropractors licensed to practice in Canada was approximately four thousand (4,000). As a result of the variation in the number of chiropractors in each of the provinces and relatively small number of female chiropractors, a disproportionate random sample of six hundred and ten (610) chiropractors, stratified by province and gender, was selected from the membership lists obtained from the ten (10) provincial chiropractic associations. In order to provide adequate numbers of respondents for reliable inter-provincial and gender comparisons in relation to the variability referred to above, female chiropractors and those in smaller provinces (Newfoundland, Prince Edward Island, Nova Scotia, New Brunswick, Manitoba, and Saskatchewan) were over-sampled in comparison to their actual representation in the

total Canadian population of chiropractors. For example, one hundred and eighty six (186) female chiropractors or 30.49 percent of the initial sample of six hundred and ten (610) were selected, whereas females make up approximately sixteen (16.5) percent of the population. The results reported below are based on unweighted data.

Results

The results reported in this article will be confined to a discussion of the overall response rate and the increment in responses resulting from the two follow-up procedures implemented in the surveys. Subsequent articles will provide a more detailed analysis of the effects of the three (3) response waves on response biases, variable relationships, and related data quality considerations.

Response rates

A general problem in the calculation and interpretation of response rates is the lack of clear guidelines over the appropriate denominator to be used in calculating the effective response rate.¹⁶ The operational formula used in the present analysis is:

$$\text{Response Rate} = \frac{\text{Number of Completed Surveys}}{\text{Number of Eligible Responding Units Selected}^{16}}$$

The potential denominator for the calculation of the overall response rate would be the initial sample of six hundred and ten (610). However, twenty-four (24) questionnaires were returned by the postal service as undeliverable to the address provided. These cases were excluded from the denominator in the above formula.

Eleven (11) individuals responded in writing without completing the questionnaire. Three (3) of these indicated that they had or would be retiring in the near future and believed that their responses on the subject of the survey would not be appropriate. These cases were excluded from the denominator of the response rate formula.

In addition to the retirees, eight (8) chiropractors indicated their objection to the purpose of the survey, the type and/or format of the questions, and that they did not have time to complete the survey. Out of the initial sample of six hundred and ten (610), these eight (8) were characterized as outright refusers in the typology of respondents developed below. These cases were retained in the de-

nominator for the calculation of the overall response rate.

The denominator for the calculation of the overall effective response rate has, therefore, been reduced to five hundred and eighty-three (583) (610 – 24 undeliverable – 3 retirees). Similar adjustments were made in the calculation of the effective response rates for the two (2) genders and the ten (10) provinces.

A total of four hundred and one (401) usable questionnaires were received for an overall effective response rate of slightly less than sixty-nine (68.78) percent (Table 1). The initial request (wave 1) resulted in a response rate of forty-seven (47.34) percent. The postcard reminder (wave 2) and the second questionnaire and cover letter (wave 3) resulted in response rates of eleven (11.15) and ten (10.29) percent respectively.

Approximately seven (7) out of ten (10) (68.83%) of the questionnaires received, were in response to the initial request (wave 1). The postcard reminder (wave 2) and the second questionnaire (wave 3), respectively contributed an additional sixteen (16.21) and fifteen (14.96) percent to the overall response rate.

Although any response rate less than one hundred (100) percent is never completely acceptable, the rates achieved in the present study with a sample of health-care professionals, who are frequently viewed as being difficult or resistant to surveys, may be defined as very good.¹⁷ The initial return rate and increments due to the follow-ups is also consistent with those found in previous studies.^{13,18} It must also be recognized that the response rates to all types of surveys have been declining since the 1950s and 1960s,^{19,20} when the majority of the surveys included in the two reviews^{13,18} were conducted.

In addition to the overall response rate, the response rates for the two (2) variables (gender and province of practice) utilized to stratify the initial sample are also of interest in the present analysis.

Gender and response rate

Based on the *adjusted* initial sample, the effective response rate for the female chiropractors was approximately sixty-seven (66.67) percent (Table 2), whereas the response rate for the male chiropractors was approximately three (3) percent greater (69.70%).

No consistent differences in female and male response rates have been reported in the literature. Although not statistically significant ($p = .05$), the lower response rate

for the female chiropractors may be the result of their greater parental and familial responsibilities, and their lesser degree of involvement and identification with the chiropractic profession, but this is only speculative. For example, the results of the survey indicate that female practitioners are younger, have less experience, are more likely to work part rather than full-time, and have lower incomes than their male counterparts. As a result, the female practitioners may occupy a more marginalized position in the chiropractic profession that may contribute to their lower response rate.

Provincial response rates

Considerable variation was evident in the response rates in relation to the chiropractor's province of practice (Table 3). The provincial response rates must be interpreted with a degree of caution, in that the size of sample in some of the provinces is relatively small. For example, the sample in Prince Edward Island was two (2), which included all of the practising chiropractors in that province.

As indicated in Figure 1, the response rates varied from a low of forty-three (42.86) percent in Nova Scotia, to a high of eighty nine (89.01) percent for the chiropractors in British Columbia. No explanation is readily apparent to account for the variability in the inter-provincial response rates.

Discussion and conclusion

The results of the survey indicate that satisfactory and realistic response rates can be achieved from mail questionnaires with health care practitioners. In addition to the chiropractors' apparent interest in the survey topic, the relative success of the study appears to be the result of a number of characteristics included in the survey such as: two cover letters emphasizing the importance of obtaining the chiropractor's opinions and attitudes, the attractive packaging of the questionnaire in conjunction with the relative ease of returning the completed questionnaire from the standpoint of the respondent, and the two follow-ups which together contributed to a further twenty-one (21.44) percent of the overall response rate.

The results of the present study, as with other surveys, is subject to nonresponse bias in that approximately thirty-one (31.22) percent of the target sample did not respond. Other than the eight (8) individuals who communicated their unwillingness to participate in writing, nothing is

Table 1
Questionnaires returned and response rates for successive contacts (waves) of chiropractor survey

Contact	Number	Response Rate
Initial questionnaire and cover letter (wave 1)	276	47.34
Postcard reminder (wave 2)	65	11.15
Second questionnaire and cover letter (wave 3)	60	10.29
Effective Sample ($n = 583$)		

Table 2
Questionnaires returned and response rates for successive waves by gender

Gender	Wave 1 Number	Wave 2 Number	Wave 3 Number	Total Number	Response Rate
Female Effective Sample ($n = 177$)	83	20	15	118	66.67
Male Effective Sample ($n = 406$)	193	45	45	283	69.70

Table 3
Return rates by Province of practice

Province	Effective Sample	Questionnaires Returned	Response Rate
British Columbia	91	81	89.01
Alberta	74	53	71.62
Saskatchewan	38	32	84.21
Manitoba	49	37	75.51
Ontario	159	102	64.15
Quebec	99	62	62.63
Nova Scotia	21	9	42.86
New Brunswick	21	13	61.90
Newfoundland	13	11	84.61
Prince Edward Island	2	1	50.00

known about those chiropractors who did not comply with the survey request.

On the basis of this and other surveys,^{21,22,23} it is possible to develop a typology of respondents:

Amenable	Hesitant	Resistant
Willing	Reluctant	Outright Refusals

The amenable group would be characteristic of those chiropractors who complied with the initial request (47.6% in the present study). The reluctant or hesitant group are those who complied with the two follow-up requests (21.44%). This group of temporary refusers are slower in cooperating, but ultimately do so due to the persistence of the researchers. The additional efforts and expenditures required for the follow-ups may have convinced these respondents of the importance of the study and of the researchers' desire to obtain their opinions and attitudes on the chiropractic guidelines. The latter category of outright refusers or the survey-resistant individuals (31.22% in the present study), includes the eight (8) individuals who communicated their objections to the purpose of the study and that the closed-ended attitudinal questions trivialized the nature of the subject matter of concern. These type of "hard core" nonrespondents are obviously resistant to survey requests and normal follow-up procedures. As a result, these types of individuals will always be problematic in survey research and the degree to which the obtained responses are "truly" representative of the target population.

As indicated previously, there is no response rate less than 100 percent which is guaranteed to be safe. That is unless a perfect 100 percent response rate is achieved, then the results should be interpreted accordingly. Determining the extent to which respondents and nonrespondents differ is an important concern to all survey researchers. At the same time, it is necessary to recognize that there is no simple way to determine if the answers and characteristics of the nonrespondents would differ from those of the respondents, while retaining the economic advantages of mail surveys.

No research results are any better than the quality of the data utilized in the analysis and interpretation of the various estimates of concern.²⁴ Like other researchers, the survey researcher must bear the problems of understanding, estimating, and potentially adjusting any biases in their

data.^{21,24} "To do good sampling one must face the problem of nonresponse and not bury it".²⁵ That is to say, if nonresponse is present in the data, the ability to derive valid population estimates is jeopardized. With careful planning in the design and conduct of studies, some of these problems can be minimized to some extent. Although "perfect surveys are not possible, good surveys can and should be done".¹⁷

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