

OTHER ORIGINAL PAPERS

A randomized trial of opinion leader endorsement in a survey of orthopaedic surgeons: effect on primary response rates

Mohit Bhandari,¹ PJ Devereaux,¹ Marc F Swiontkowski,² Emil H Schemitsch,³ Ketan Shankardass,¹ Sheila Sprague¹ and Gordon H Guyatt¹

Accepted 10 February 2002

Background Opinion leaders have been shown to have significant influence on the practice of health professionals and patient outcomes.**Methods** Using focus groups, key informants, and sampling to redundancy techniques, we developed a questionnaire of surgeons' preferences in the treatment of tibial shaft fractures. Twenty-two well-respected and widely known orthopaedic traumatologists endorsed the questionnaire. We randomized 395 surgeon members of the Orthopaedic Trauma Association to receive either a questionnaire that included a letter informing them of the opinion leaders' endorsement, or a questionnaire without the endorsement.**Results** Surgeons who received the letter of endorsement had a significantly lower response rate at 2, 4, and 8 weeks. The absolute difference in response rates was 7.8% (4.6% versus 12.4%, $P < 0.05$) at 2 weeks, 13.1% at 4 weeks (28.6% versus 41.7% $P < 0.02$), and 12.3% at 8 weeks (47.5% versus 59.8% $P = 0.02$).**Conclusions** The addition of a letter listing expert surgeons who endorse the survey lead to significantly lower primary response rates. Those interested in influencing physician responses cannot always assume a positive effect from endorsement by opinion leaders**Keywords** Survey, orthopaedic surgery, response rates, opinion leader, fracture

Mailed surveys represent a useful tool to study physicians' beliefs, attitudes, and concerns in health care settings. To minimize the risk of non-responder bias, any survey must achieve the highest possible response rate. Response rates following the first mailing of questionnaires in health care research have averaged 62% (SD = 21).¹ However, physicians tend to produce lower mean response rates—54% (SD = 17)—than other health workers.¹

Strategies to improve response rates such as pre-notification letters, faxing, personalized cover letters, limiting questionnaire length, monetary incentives, and the use of university envelopes have achieved varying success.² Investigators have attributed the huge variability in responses to increasing physician practice workloads, placing questionnaire completion at low priority. This has been especially true in surveys of surgeons who have responded at rates from 15% to 27%.^{3–5}

Opinion leaders in their surgical speciality are those surgeons nominated by their colleagues as educationally influential.⁶ Opinion leaders have been shown to have significant influence on the practice of health professionals and patient outcomes.⁷ However, the effect is not consistent, and it is not always clear in which circumstances opinion leaders are likely to influence the practice of their peers.^{8–11}

We hypothesized endorsement by opinion leaders in orthopaedic surgery would increase primary response rates among

¹ Departments of Clinical Epidemiology and Biostatistics, and Orthopaedic Surgery, McMaster University, Hamilton, Ontario, Canada.

² University of Minnesota, Minneapolis, MN, USA.

³ St Michael's Hospital, Toronto, Ontario, Canada.

Correspondence: Mohit Bhandari, McMaster University Health Sciences Center, Department of Clinical Epidemiology and Biostatistics, Room 2C3, 1200 Main Street West, Hamilton, Ontario, L8N 3Z5, Canada. E-mail: bhandari@sympatico.ca

surgeons. We therefore examined the effect of opinion leader endorsement in a mailed questionnaire of fracture care.

Methods

Questionnaire development

We developed a questionnaire to evaluate surgeons' opinions regarding optimal treatment of fractures of the tibial shaft. Using previous literature, focus groups with orthopaedic surgeons, and key informants, (individuals we felt had considerable expertise in the subject area) with sampling to redundancy techniques (contacting additional surgeons until no new information was obtained), we identified items that fell into four domains: (1) surgeon experience, (2) surgical options, (3) technical aspects of surgery, and (4) assessment of outcomes following surgery. Pretesting the five-page questionnaire established its comprehensibility, face validity, and content validity.¹²

Identification of opinion leaders

We identified 22 opinion leaders in orthopaedic trauma with the following criteria: (1) moderated or chaired an educational session on aspects of trauma care at an international meeting, (2) invited speaker on orthopaedic trauma at an international orthopaedic meeting, and (3) published at least three peer-reviewed papers in trauma within the last 4 years.

We asked opinion leaders to complete the questionnaire and to agree to have their name placed on a list of surgeons who endorsed the survey as an important study. All 22 agreed. We constructed a letter, on a single coloured sheet of paper, that included the following statement in large, bold font: 'Orthopaedic traumatologists who have already completed the questionnaire and endorse it as an important study'. Following the statement was a list that included the name of the surgeons and their city, state or province, and country.

Questionnaire administration

We used a computerized random number generator to randomize all 395 surgeon members of the Orthopaedic Trauma Association (OTA) to receive either a questionnaire with the endorsement list of 22 opinion leaders, or a questionnaire without the list. One of us coded packages to be sent to OTA surgeon members as A or B. An independent investigator, unaware of the surgeon's allocated intervention, mailed the packages which corresponded with the letter (A or B) beside the surgeon member's name. The mailed questionnaires included a personalized cover letter that ensured confidentiality of surgeons' responses and a stamped return envelope. We did not include a monetary incentive during survey administration. No additional interventions to improve primary response rates were initiated prior to 8 weeks from the initial mailing. We obtained institutional review board and ethics approval for this study. At 8 weeks, one of us, blinded to surgeon intervention group, tabulated the questionnaires received in each group.

Statistical analysis

We summarized response rates by the proportion of respondents at each time point. Chi-square or Fisher's Exact tests were used to compare the proportion of respondents between groups. We calculated all proportions utilizing 395 as the denominator,

thereby including those surgeons who were unavailable at the time of the survey (labelled as non-respondents). We calculated the 'minimum response rate', i.e. the number of returned questionnaires divided by the number of questionnaires (returned and non-returned). All statistical tests were two-tailed.

Results

Of the 395 surgeons, 196 surgeons received the endorsement letter and 199 surgeons did not. Surgeons in the two groups who responded by 8 weeks were similar in age, gender, type of practice, and geographical location when compared with those who did not receive the list (Table 1).

The overall response rate among surgeons at 2, 4, and 8 weeks was 8.6% (34/395), 35.2% (139/395), and 53.2% (210/395), respectively. However, surgeons who received the endorsement letter had a significantly lower response rate at 2, 4, and 8 weeks than those who did not receive the list. The absolute difference in response rates was 7.8% (4.6% [9/196] versus 12.4% [25/199], $P = 0.05$) at 2 weeks, 13.1% at 4 weeks (28.6% [56/196] versus 41.7% [83/199], $P = 0.01$), and 12.3% at 8 weeks (47.5% [93/196] versus 59.8% [117/199], $P = 0.02$).

Discussion

Ensuring the highest possible response rate often represents a daunting challenge for investigators conducting mailed surveys. The challenge may be particularly difficult when the respondents are physicians, and particularly when those physicians are surgeons. Previous research has demonstrated that monetary incentives, stamped return envelopes, telephone reminders, shorter length, and high interest can sometimes increase response rates.^{1,2,13-16}

In this study, we evaluated the influence of orthopaedic opinion leaders' endorsement in improving survey response rates. Contrary to our hypothesis, we found a significantly lower response rate among those surgeons who received the endorsement letter.

Our finding is surprising. Both the theory of diffusion of innovations and the social influences model of behaviour change suggest that using local opinion leaders to transmit norms and model appropriate behaviour may improve health professional practice.^{9,17} Thomson and colleagues, in a systematic review of randomized trials, identified eight studies involving more than 296 health professionals to assess the effects of local opinion leaders on the practice of health professionals or patient outcomes.⁷ The studies targeted a variety of patient problems, including acute myocardial infarction, cancer pain, osteoarthritis, rheumatoid arthritis, chronic lung disease, vaginal birth after

Table 1 Characteristics of the 210 surgeons who responded to the questionnaire by 8 weeks

| Physician characteristic | Endorsed (n = 93) | Non-endorsed (n = 117) |
|--|-------------------|------------------------|
| Age: <40 years (%) | 28 (30%) | 33 (28%) |
| Gender: Male (%) | 93 (100%) | 116 (99%) |
| Geographical location: North America (%) | 72 (77%) | 96 (82%) |
| Type of practice: Academic (%) | 67 (72%) | 89 (76%) |
| Trauma Fellowship (%) | 54 (58%) | 65 (56%) |

cesarean section, labour and delivery, and urinary catheter care. Six of seven trials that measured health professional practice demonstrated some improvement in at least one outcome variable, and in two trials, the results were statistically significant and clinically important. Of the three trials that measured patient outcomes, only one achieved an impact upon practice that was of practical importance: local opinion leaders were effective in improving the rate of vaginal birth after previous cesarean section.

In an effort to identify the reasons why physicians do not respond to questionnaires, Flortorp and colleagues conducted a qualitative study of focus groups with physicians who had previously not responded to a questionnaire. General practitioners who did not respond to questionnaires expressed a negative attitude towards 'superspecialists', who were perceived as arrogant and disrespectful.¹⁸ If we extrapolate this findings to surgeons,

it is plausible that the respondents perceived those on the endorsement list as 'superspecialist orthopaedic traumatologists'.

Our results challenge the assumption that those interested in influencing physician behaviour can always assume a positive, or at least a neutral, effect of interventions utilizing opinion leaders. However, it remains unknown whether these results are generalizable to surveys that utilize additional methods to reduce non-responder bias (monetary incentives). Further research is required to delineate the circumstances in which opinion leaders positively influence physician behaviour, and circumstances in which they have no effect, or a detrimental effect.

Acknowledgement

This study was funded, in part, by surgical research grants from the Department of Surgery, McMaster University, Hamilton, Ontario.

KEY MESSAGES

- Surgeons are less likely to complete a survey when it has been endorsed by experts in the field.
- This finding is contrary to previously held beliefs that opinion leaders can have significant influence on the practice of health professionals.
- Those interested in influencing physician responses in surveys cannot always assume a positive effect from endorsement by opinion leaders.

References

- Asch DA, Jedrzewski MK, Christakis NA. Response rates to mail surveys published in medical journals. *J Clin Epidemiol* 1997;**50**: 1129–36.
- Kellerman Scott E, Herold J. Physician response to surveys: A review of the literature. *Am J Prev Med* 2001;**20**:61–67.
- Matarasso A, Elkwood A, Rankin M, Elkowitz M. National plastic surgery survey: face lift techniques and complications. *Plast Reconstr Surg* 2000;**106**:1185–95.
- Almeida OD Jr. Current state of office laparoscopic surgery. *J Am Assoc Gynecol Laparosc* 2000;**7**:545–46.
- Khalily C, Behnke S, Seligson D. Treatment of closed tibial shaft fractures: a survey from the 1997 orthopaedic trauma association and osteosynthesis international-Gerhard Kuntscher Kreis Meeting. *J Orthop Trauma* 2000;**14**:577–81.
- Hiss RG, MacDonald R, David WR. *Identification of Physician Educational Influentials in Small Community Hospitals*. Washington DC: Proceedings of the 17th Annual Conference on Research in Medical Education, 1978, pp. 283–88.
- Thomson O'Brien MA, Oxman AD, Haynes RB, Davis DA, Freemantle N, Harvey EL. Local opinion leaders: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2000;**2**:CD000125.
- Hong SW, Ching TY, Fung JP, Seto WL. The employment of ward opinion leaders for continuing education in the hospital. *Med Teach* 1990;**12**:209–17.
- Lomas J, Enkin M, Anderson GM, Hannah WJ, Vayda E, Singer J. Opinion leaders vs audit feedback to implement practice guidelines. Delivery after previous cesarean section. *JAMA* 1991;**265**:2202–07.
- Soumarai SB, McLaughlin TJ, Gurwitz JH, Guadagnoli E, Hauptman PJ, Borbas C. Effect of local medical opinion leaders on the quality of care for acute myocardial infarction. A randomized controlled trial. *JAMA* 1998;**279**:1358–63.
- Stross JK, Bole GG. Evaluation of an educational program for primary care practitioners on the management of osteoarthritis. *Arthritis Rheum* 1985;**28**:108–11.
- Feinstein AR. The theory and evaluation of sensibility. In: Feinstein AR (ed.). *Clinometrics*. New Haven, CT: Yale University Press, 1987.
- Shiono PH, Klebanoff MA. The effect of two mailing strategies on the response to a survey of physicians. *Am J Epidemiol* 1991;**134**: 539–42.
- Cartwright A. Professional as responders: variations in and effects of response rates to questionnaires. *BMJ* 1978;**21**:419–21.
- Perneger TV, Etter JE, Rougemont A. Randomized trial of use of a monetary incentive and a reminder card to increase the response rate to a mailed health survey. *Am J Epidemiol* 1993;**138**:714–22.
- Kaner EF, Haighton CA, McAvoy BR. So much post, so busy with practice—so, no time!: a telephone survey of general practitioners' reasons for not participating in postal questionnaire surveys. *Br J Gen Pract* 1998;**48**:1067–69.
- Greer AL. The state of the art versus the state of the science: the diffusion of new medical technologies into practice. *Int J Tech Assess Health Care* 1988;**4**:5–26.
- Flortorp S, Oxman A, Bjorndal A. The limits of leadership: opinion leaders in general practice. *J Health Serv Res Policy* 1998;**3**: 197–202.