BEHAVIOURAL INTERVENTIONS IN PRIMARY CARE: AN IMPLEMENTATION TRIAL

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ABSTRACT

Developing effective strategies to keep health care providers' practice current with best practice guidelines has proven to be challenging. This trial was conducted to determine the potential for using brief educational sessions to generate significant change in physician delivery of mental health and substance use interventions in primary care. A 1-hour educational session outlining interventions for depression and risky alcohol use was delivered to a sample of 85 family physicians. The interventions used a supported self-management approach and included free patient access to appropriate self-management resources. The study initially evaluated physicians' implementation of these interventions over a 2-month period. Physician uptake of the depression intervention was significantly greater than uptake of the risky-drinking intervention (32% versus 10%). A follow-up at 6-months posttraining (depression intervention only) demonstrated fairly good maintenance of intervention delivery. Implications of these findings are discussed.

Primary care is a crucial component of service delivery for mental health and substance use problems (Bilsker, Goldner, & Jones, 2007). Depression is an important clinical focus in primary care (Backenstrass et al., 2006; Williams, Kerber, Mulrow, Medina, & Aguilar, 1995; Wittchen, Höfler, & Meister, 2001); however, a high proportion of individuals with depression are seen in primary care for only one or two visits in the year after diagnosis (Bilsker et al., 2007). Risky drinking has an estimated 1-year prevalence rate of 17% (Adlaf, Begin, & Sawka, 2004), but detection and intervention rates in primary care are relatively low (Kaner, Rapley, & May, 2006).

Brief behavioural interventions may significantly augment primary care management of depression and risky drinking. Research indicates that individuals with mild to moderate depression benefit

from self-management relative to wait-list or attention-placebo control groups (den Boer, Wiersma, & Van den Bosch, 2004; McKendree-Smith, Floyd, & Scogin, 2003; Nelson & Loomis, 2005; Vos, Haby, Magnus, Mihalopoulos, Andrews, & Carter, 2005). Similarly, brief behavioural intervention involving patient education, feedback, and/or self-management is significantly helpful in reducing risky drinking (Apodaca & Miller, 2003; Moyer, Finney, Swearingen, & Vergun, 2002; Spivak, Sanchez-Craig, & Davila, 1994). The inclusion of self-management in each of these brief interventions is consistent both with the chronic disease management model (Hung, Rundall, Tallia, Cohen, Halpin, & Crabtree, 2007; Kates & Mach, 2007) and with recent epidemiologic findings that a large proportion of individuals prefer self-care for mental health problems (Nelson & Park, 2006).

Remaining current with the changing knowledge base is essential for health care providers; however, developing effective strategies to keep practice reflective of best practice guidelines has proven to be challenging. On the one hand, provider education is inexpensive and feasible for widespread delivery (Grimshaw et al., 2004), and the pharmaceutical industry has achieved substantial change in prescribing behaviour through provider education (Avorn, 1992). Yet, on the other, the results of studies examining the effectiveness of educational events in improving primary care management of mental health and substance use problems have been discouraging, whether education is provided through didactic presentations or outreach (Hannaford, Thompson, & Simpson, 1996; Hansen, Olivarius, Beich, & Barfod, 1999; Lin, Simon, Katzelnick, & Pearson, 2001; Worrall, Angel, Chaulk, Clarke, & Robbins, 1999). A systematic review of educational interventions to improve depression management in primary care concluded that "simple educational strategies to improve the recognition and management of depression, when given alone, have minimal impact on clinical practice and the outcome of depression" (Gilbody, Whitty, Grimshaw, & Thomas, 2003, p. 153). Similarly, education to improve the identification and management of risky drinking in primary care has yielded only a slight change in practice (Nilsen, Aalto, Bendtsen, & Seppa, 2006).

Researchers have recommended a new focus on evaluating innovative strategies to optimize uptake of best practices (Grol & Wensing, 2004; Sanson-Fisher, Grimshaw, & Eccles, 2004). This has been defined as *implementation research*, that is, "the scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care" (Eccles & Mittman, 2006).

The present study examined the impact of an educational strategy to disseminate brief behavioural interventions for depression and risky drinking to family physicians. Implementation of these interventions by physicians and patients was measured. The aims of this study were (a) to determine the level of uptake by family physicians of two brief behavioural interventions following an educational session, and (b) to determine patients' adherence to their physician's self-management recommendation.

METHOD

Participants

Calculating the appropriate physician sample size required defining a priori the magnitude of practice change the study sought to detect. Previous research on educationally mediated practice change

in primary care has determined an average behavioural change of 8% (Grimshaw et al., 2006). It was decided that it would be important to detect, at a minimum, an increase of 10% in the physicians' delivery of the interventions. With $\alpha = .05$ and $\beta = .10$, this criterion would require at least 30 physicians. In order to permit analysis of other variables, it was determined that a sample of 85 family physicians would be needed.

For the depression intervention, medical services data from the British Columbia Ministry of Health database were used. In order to meet the 10% criterion for minimal change, it was estimated that the sample of physicians would need to deliver the intervention to 255 patients over the 2 months of the study. For the risky-drinking intervention, the number of adult patients seen by a typical family physician in 2 months was combined with the established prevalence of risky drinking; it was estimated that the sample of physicians would need to deliver the intervention to 190 patients in order to meet the 10% criterion for minimal change (Adlaf et al., 2004; Bilsker et al., 2007; Morgan et al., 2005).

Invitations were distributed to family physicians via a medical newsletter, a conference brochure, and email through medical associations. The brevity of the training as well as the evidence base and feasibility of the interventions were emphasized. Reimbursement was provided for participation.

Design

A 1-hour training session on brief behavioural interventions for depression and risky drinking was delivered to groups of family physicians. The training session was based on social marketing principles formulated by Soumerai and Avorn (1990):

- The recommended behaviour change was defined in a specific and detailed manner.
- Training was delivered under the highly credible aegis of a university health sciences department.
- Graphic educational materials were used, including a videotaped role play.
- Essential messages were highlighted and repeated.
- Active participation was fostered to elicit barriers to implementation and suggestions for overcoming them.

The intervention for depression, "supported self-management," consisted of patient access to a self-management workbook based on cognitive behavioural therapy, plus advice and encouragement by the family physician. This intervention is recommended by a major depression guideline as an alternative to the use of pharmacological treatment for milder forms of depression (National Collaborating Centre for Mental Health, 2004). The risky-drinking intervention included provision of information to patients about the risks of hazardous alcohol use plus access to a self-management workbook. This intervention is consistent with guidelines developed by the World Health Organization (Babor & Higgins-Biddle, 2001).

In order to increase generalizability and reduce measurement burden, no attempt was made to precisely define appropriate patients. Rather, physicians were given broad guidelines regarding patients most likely to benefit from the intervention with clinical judgment as the final determinant. The guidelines were "adults who are mildly to moderately depressed" for the depression intervention and

"adults who are risky drinkers according to World Health Organization standards, but not alcohol dependent," for the risky-drinking intervention.

Physicians were asked to identify appropriate patients, provide them with information concerning their health problem, and encourage them to use a self-management workbook and to attend at least one follow-up session. No restriction was placed on physicians' use of other intervention modalities. Physicians gave appropriate patients a prestamped study envelope containing a consent sheet and a request form to receive the relevant self-management workbook (Bilsker & Paterson, 2005; Spivak et al., 1994); physicians were offered as many envelopes as they wished.

No feedback was provided to physicians regarding whether their patients had requested a workbook. Two months after the training session, physicians were asked to report the number of study envelopes they had distributed. They were also asked to complete a follow-up questionnaire rating the usefulness of the self-management material. The focus was on uptake of the interventions rather than changes in practitioner knowledge or clinical status. The measurement approach was chosen to be minimally intrusive, that is, unlikely to reduce uptake because of measurement demands.

Measures

- **Physician characteristics:** Gender, years in practice, participation in a chronic disease collaborative (a loose coalition of physicians working together to enhance quality of care for chronic diseases).
- **Physician rating of appropriateness of the interventions:** This was assessed immediately following the training session. Physicians were asked to rate the statement, "I learned to integrate these interventions into my practice in a smooth and practical manner, such that I can continue to deliver them over time."
- **Number of study envelopes distributed by physicians:** These data were collected by fax and telephone at 2 and 6 months posttraining for the depression intervention and at 2 months posttraining for the risky-drinking intervention.
- **Number of workbook requests mailed to the research group by patients over the data collection period:** Each request form included the physician code.
- **Physician rating of intervention utility:** At 6 months posttraining, physicians completed a questionnaire in which they rated, on a 4-point scale (*strongly agree*, *agree*, *disagree*, or *strongly disagree*), the usefulness of this brief intervention. Two items from this questionnaire were selected as most indicative of perceived utility: (a) "Having access to the workbook helped me to treat my depressed patients," and (b) "My patients told me that the workbook helped them deal with depression."

Data Analysis

T-tests and Pearson's correlations were used to evaluate the number of physician handouts that were distributed and the number of patient requests received (compared against a baseline rate of

zero), and also to compare uptake of the two interventions. A multiple regression analysis was used to predict physician uptake of each intervention from physician characteristics.

RESULTS

Description of Physician Samples

Eight-five physicians were enrolled in the trial. The sample was urban and predominantly (55%) female. In comparison to national data compiled in 2004 which shows that 38% of family physicians practicing in urban settings are female (Canadian Institute for Health Information, 2005), the rate of participation by female physicians was relatively high. The mean number of years in practice was 20.57 (SD = 10.8), and 39% of the sample indicated they were members of a practice collaborative.

Uptake at 2 Months

At 2 months, data reports were obtained from 51 physicians (referred to as "reporting physicians"), representing 61% of the sample. Uptake by reporting physicians of the depression intervention was higher than their uptake of the risky-drinking intervention. Over the 2-month study period, these physicians distributed a total of 567 depression envelopes (M per physician = 11.1, SD = 8.11) compared with 161 risky-drinking envelopes (M per physician = 3.16, SD = 4.02). This difference is statistically significant: $t(50) = 8.18$, $p < .01$ (two-tailed). There was a strong correlation between physician uptake of the depression and risky-drinking interventions: The Pearson's correlation between the numbers of depression and risky-drinking handouts was $r^2 = .52$ ($p < .01$).

During the 2-month study period, 410 patients requested the depression workbook (M = 4.88, SD = 4.63 per physician), and 75 patients requested the risky-drinking workbook (M = 0.89, SD = 1.46 per physician). With regard to patient adherence, 50% of patients who received the depression intervention from reporting physicians requested the workbook, versus 39% of patients receiving the risky-drinking intervention. Based on the 39 reporting physicians who handed out at least one study envelope, these adherence proportions do not differ by paired sample t-test, $t(37) = 1.59$, $p > .05$ (two-tailed).

At 2 months, a mean of 5.86 (SD = 4.91) depression requests were received per reporting physician, versus a mean of 3.36 requests (SD = 3.73) for non-reporting physicians, $t(82) = 2.49$, $p = .02$ (two-tailed). A mean of 1.02 risky-drinking requests (SD = 1.69) were received for reporting physicians, versus a mean of .70 requests for non-reporting physicians, $t(82) = .99$, $p > .05$ (two-tailed). The lower number of depression requests from patients of non-reporting physicians may suggest a reduced level of engagement with the depression intervention by these physicians.

Estimated Number of Handouts by All Physicians

The number of handouts provided by non-reporting physicians was estimated by utilizing the patient adherence rates reported above (50% for depression, 39% for risky drinking). Based on these adherence rates, the ratio between patient requests and physician handouts was calculated as 2.00 for

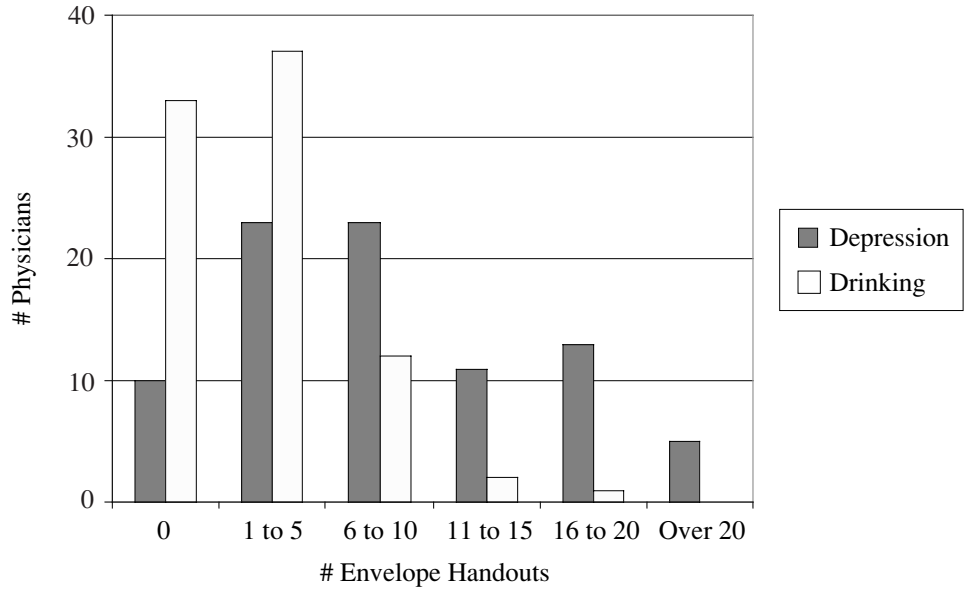
depression and 2.56 for risky drinking. This ratio was then applied to estimate the number of handouts provided by the non-reporting physician group, using the following formula:

Handouts = (2.00 *or* 2.56) x (# Patient Requests).

Combining observed (reporting physicians) and estimated (non-reporting physicians) data, the number of handouts across the entire physician sample at 2 months was 820 for depression (M = 9.77, SD = 9.26 per physician) and 192 for risky drinking (M = 2.30, SD = 3.75 per physician). The frequency distribution of physician handouts is shown in Figure 1.

Figure 1

Estimated Number of Handouts by All Physicians at 2 Months



A comparison of these data to the criterion for minimal change showed that for the depression intervention, the physician sample (N = 85) delivered the intervention at a frequency substantially above criterion (820 versus 255), while for the risky-drinking intervention, the physician sample delivered the intervention at a frequency marginally above criterion (192 versus 190). Using medical services data from the British Columbia Ministry of Health, we calculated that over a 2-month interval the equivalent number of family physicians in British Columbia would be expected to see 2,550 patients with depression (i.e., the intervention was delivered to approximately 32% of patients) and 1,900 patients with risky drinking (i.e., the intervention was delivered to approximately 10% of patients). Based on these differential outcomes, with much greater uptake for the depression intervention, a decision was made to collect data for an additional 4 months for the depression intervention but not for the risky-drinking intervention.

Uptake at 6 Months

At 6 months posttraining, data were obtained from only 32 physicians (38% of the sample); given the low response rate, these data were not analyzed. Between the 2- and 6-month data collection points, 282 patients requested the depression workbook (M = 3.36, SD = 3.98 per physician). Using the formula described above to estimate the number of physician handouts provided from the number of patient requests received, the physician sample had distributed 564 depression handouts (M = 6.71, SD = 7.95 per physician). Over a 4-month period, this sample of physicians would be expected to see 3,400 depressed patients (i.e., the intervention was delivered to 17% of depressed patients during the follow-up period).

Predicting Physician Uptake

A multiple regression analysis was conducted to predict the number of depression envelopes distributed by physicians at 2 months. Independent variables were physician gender, years in practice, membership in a chronic disease management collaborative, physician rating of intervention appropriateness, and number of risky-drinking envelopes distributed at 2 months. This group of variables did not significantly predict the number of depression envelopes distributed, R = .31, R^2 = .10, adjusted R^2 = .02, $F(5,63)$ = 1.32, $p > .05$. Beta weights were as follows: gender (β = .08, $p > .05$); rating of appropriateness (β = .03, $p > .05$); membership in collaborative (β = .06, t = .47, $p > .05$); years in practice (β = .03, $p > .05$); and number of distributed drinking envelopes (β = .27, $p < .05$). In this analysis, physician uptake of the depression intervention is predicted by their uptake of the drinking intervention, with no other variable contributing significantly.

The same analysis was conducted for distribution of the risky-drinking envelopes at 2 months. Independent variables were physician gender, years in practice, membership in a chronic disease management collaborative, physician rating of intervention appropriateness, and number of depression envelopes distributed at 2 months. This group of variables significantly predicted the number of drinking envelopes distributed, R = .46, R^2 = .22, adjusted R^2 = .15, $F(5,63)$ = 3.45, $p < .01$. Specific beta weights for the predictor variables were as follows: gender (β = .04, $p > .05$); rating of appropriateness (β = .09, $p > .05$); membership in collaborative (β = .34, $p < .01$); years in practice (β = .00, $p > .05$); and number of depression envelopes distributed (β = .23, $p < .05$). In this analysis, physician uptake of the drinking intervention is predicted by membership in a chronic disease management collaborative and by uptake of the depression intervention.

Physicians' Rating of the Self-Management Workbook

Thirty-eight percent of the sample responded to the questionnaire. Results for the two selected items were as follows: (a) *Having access to the workbook helped me to treat my depressed patients*: 47% strongly agree, 50% agree, 3% disagree; and (b) *My patients told me that the workbook helped them deal with depression*: 26% strongly agree, 71% agree, 3% disagree.

DISCUSSION

The central question of this study was whether a brief educational intervention would generate significant change in physician behaviour with regard to delivering a supported self-management intervention.

The physician group showed substantial implementation of the depression intervention: Over 6 months, approximately 1,400 patients received the intervention, equivalent to 27% of patients with depression typically seen in this number of primary care practices in British Columbia. A moderately high rate of patient adherence to the intervention (50%) was observed, comparable to adherence seen with pharmacological treatment for depression (Bulloch, Adair, & Patten, 2006; Hunot, Horne, Leese, & Churchill, 2007; Lin et al., 1995). This finding is encouraging with respect to both the potential for using brief educational interventions to enhance primary mental health care and the feasibility of disseminating supported self-management for depression.

It appears that this educational intervention was more effective in generating practice change than previously reported interventions of this nature. This may be due to the social marketing approach adopted in designing the intervention, the particular sample of physicians choosing to participate in this study (e.g., a higher-than-expected proportion of female physicians), the low level of demand made on physicians for training time and data collection, or a generally increased awareness of the need for non-pharmacological depression intervention options on the part of family physicians. Further research should be conducted to identify factors contributing to this positive outcome.

Relying upon family physicians as the providers of supported self-management is only one approach to disseminating this intervention: Utilizing primary care nurses or medical office assistants to distribute or support self-management material might be as effective or perhaps even more effective. For example, some patients might prefer to gain access to this material through the medical office assistant without disclosing it to their physician.

Although the physician group showed only a minimal level of implementation of the risky-drinking intervention, delivering it to 192 patients over 2 months, this is equivalent to 10% of the patients with risky drinking likely to exist in these primary care practices. This rate exceeded the criterion for significant change in physician behaviour. Findings for the risky-drinking intervention overall are modest compared to the depression intervention; the potential uptake of this intervention should be regarded with some caution. The risky-drinking intervention, structurally similar to the depression intervention, raised a different set of implementation issues: Informal feedback from physicians highlighted the lack of a specific diagnostic and billing code for risky drinking, the awkwardness of raising the drinking issue with a patient not considered substance-dependent, and doubts that risky drinking constitutes an important target for intervention. It is evident that dissemination of risky-drinking interventions into primary care will require careful analysis of implementation barriers and perhaps policy changes to support physicians in targeting this problem.

An intriguing finding was that physician uptake of the depression or risky-drinking interventions was not predicted by stated attitudes at the time of training or other variables including number of years in practice. The only significant predictors were uptake of the other intervention and, for risky

drinking, membership in a chronic disease management collaborative. Certain physicians may have a greater tendency to implement brief interventions, to support self-management, or perhaps simply to distribute educational material. The discrepancy in uptake between the two interventions among this particular group of physicians may relate to the position of each intervention along the diffusion-of-innovation curve. Awareness of and knowledge about interventions for risky drinking may lag behind those for depression given that local clinical practice guidelines for depression have existed for several years. This interpretation is consistent with the finding that belonging to a chronic disease management collaborative is associated with greater uptake of the risky-drinking intervention: One might reasonably expect collaborative members to be earlier adopters of interventions consistent with chronic disease management strategies.

The nature and role of traits associated with adoption of these interventions is worth systematic investigation to determine how best to foster implementation of behavioural and self-management interventions. Although the level of physician uptake differed between the two interventions, there was no significant difference in the rate of patient compliance, suggesting that the rate-limiting step for implementation may be the degree of physician uptake. Future studies should focus on physician awareness and knowledge of these brief interventions for depression and risky alcohol use, as well as on their motivation to implement these interventions in primary care. It would also be worthwhile to evaluate supported self-management when delivered by primary care nurses, counsellors, and perhaps medical office assistants. Most important will be measurement of the impact of this intervention. Given an intervention with minimal cost, minimal training requirement, and impressive physician uptake, the appropriate next step is determination of clinical effectiveness.

RÉSUMÉ

Le but de cette étude expérimentale était de déterminer la capacité de générer des changements significatifs dans la prestation d'interventions en santé mentale et toxicomanies par les médecins, en utilisant des brèves sessions de formation. Une session de formation d'une heure, couvrant des interventions pour le traitement de la dépression et de la consommation d'alcool à risque, a été donnée à un échantillon de 85 médecins de famille. Les interventions utilisent une approche d'autogestion supervisée et incluent l'accès gratuit au matériel d'autogestion pour les patients et patientes des médecins de famille. Durant la période de 2 mois de l'étude, les médecins ont pratiqué plus l'intervention pour la dépression que celle pour la consommation d'alcool à risque. L'étude montre que les médecins ont donné l'intervention pour la dépression chez 32% de leurs patients et patientes souffrant de dépression, avec un assez bon maintien de cette pratique au suivi plus de 6 mois plus tard. En comparaison, l'intervention pour la consommation d'alcool à risque a été donnée à 10% de leurs patients et patientes présentant ce problème. Les implications de l'étude sont discutées.

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