Transferring Public-Health Nursing Research to Health-System Planning: Assessing the Relevance and Accessibility of Systematic Reviews

Donna Ciliska, Sarah Hayward, Maureen Dobbins, Ginny Brunton, and Jane Underwood

Une étude descriptive a été conçue dans le but d'acquérir une compréhension des besoins en matière de recherche, de la perception des obstacles empêchant la mise en pratique de la recherche et des attitudes à l'égard des révisions systématiques effectuées par les décideurs en santé publique en ce qui a trait à la planification des systèmes. Les experts-conseils et les gestionnaires dans le domaine de la santé publique en Ontario ont été inter-viewés au sujet des obstacles empêchant l'utilisation de la recherche et des attitudes face aux révisions systématiques en tant que méthode/véhicule favorisant l'utilisation de la recherche. Cinq cas de révisions menées à terme ont été fournis sous forme de sommaire, de résumé et de version complète, sur disquette, en document imprimé et sur Internet. Des suivis sous forme d'entrevues ont été effectués après trois mois, évaluant l'utilisation, la pertinence, l'application et la diffusion supplémentaire des révisions. Ont participé un total de 242 personnes occupant des postes liés aux politiques en santé publique et au processus décisionnel. Les répondants ont signalé qu'il y avait un grand besoin de preuves générées par la recherche, et que celui-ci était loin d'être comblé. Selon eux, des révisions systématiques aideraient à surmonter les éléments faisant obstacles à l'utilisa-tion de la recherche liés à la critique, au temps, à la pertinence du moment, à la disponi-bilité, au coût et à la crédibilité, mais non les éléments liés au climat créé par les politiques existantes, l'autorité ou la mise en œuvre de ressources. Trois mois après avoir demandé une révision, 93 % disaient faire un suivi; 91 % se souvenaient d'avoir reçu le rapport et 71 % l'avaient lu alors que 23 % déclaraient que la révision influait sur la planification des programmes ou la prise de décision.

A descriptive study was designed to gain an understanding of the research needs, per-ceptions of barriers to research utilization, and attitudes towards systematic reviews of decision-makers in public health at the level of systems planning. Public-health consul-

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tants and managers in Ontario were surveyed about barriers to research utilization and awareness of and attitudes towards systematic reviews as a method of/vehicle for research transfer. Access to 5 completed reviews was provided in summary, abstract, and full form, and on diskette, hard copy, and internet. A follow-up survey at 3 months assessed use, relevance, application, and further dissemination of the reviews. A total of 242 people in positions of public-health policy and decision-making participated. Respondents reported a great, largely unmet, need for research evidence. They viewed systematic reviews as likely to overcome the barriers to research use related to critical appraisal, time, timeliness, availability, cost, and credibility, but not the barriers related to policy climate, authority, or implementation resources. Three months after requesting a review, 93% said they would follow it up; 91% remembered receiving it, and 71% of these had read it while 23% stated it played a part in program planning or decision-making.

The current proliferation of health-related journals makes it impossible to keep up with the relevant literature in one's area of practice. Increasingly, systematic reviews are seen as necessary in coping with the increasing volume of research and in avoiding the dissemination of conflicting results (Gray, 1997; Sibbald & Roland, 1997).

In 1992 the Hamilton-Wentworth Regional Public Health Department (Ontario) began an initiative to gather, appraise, and synthesize evidence related to the effectiveness of interventions in public-health nursing. Its purpose was to provide relevant and accessible research results to support evidence-based decision-making at the levels of practice, program planning, and policy direction. Provincial organizations of public-health nurses played an advisory role in the project, and the production of reviews was a collaborative undertaking with strong communications links between researchers and clinicians. Systematic review methods attempt to overcome some of the bias inherent in a literature review. The process defines a specific question; sets out explicit search strategies; retrieves the information; applies predefined relevance and validity (quality) criteria; extracts specific data; and combines, analyzes, and synthesizes the results. Emphasis is placed on methods that increase the replicability of the findings and reduce bias arising from reviewers' opinions, incomplete sampling, or methodologically flawed primary studies (Bero & Rennie, 1995; Cochrane Collaboration, 1993).

However, the existence of systematic reviews does not ensure their dissemination and application to practice or policy development. The many barriers to research dissemination and utilization include the characteristics of the individual, the organization, the environment, and the innovation (Dobbins, Ciliska, & DiCenso, 1998; Funk, Tornquist, & Champagne, 1995; Haines & Donald, 1998). Systematic reviews have the potential to overcome barriers associated with lack of access to jour-

nals, lack of time to read and appraise the articles, and lack of critical appraisal skills. In systematic reviews, a team has done the work of finding the relevant articles, assessing their quality, and synthesizing the results into recommendations for practice and research.

The purpose of the project was to survey decision-makers in public health in order to gain an understanding of their research needs, their perceptions of barriers to research utilization, and their attitudes towards systematic reviews. While the research utilization of front-line practitioners is an interesting area for investigation, this study focused on decision-makers because they make the first-level decisions concerning programs and provide direction in resource utilization. In Ontario, the Public Health Branch of the Ministry of Health has published *Mandatory Health Programs and Services Guidelines* (Ontario Ministry of Health, 1997), which determines the minimum requirements of each Public Health Department in the province. Based on these guidelines, the local Medical Officers of Health, epidemiologists, and managers must make decisions about resource allocation. Available, relevant, up-do-date systematic reviews could be helpful to both the public-health consultants in the Ministry of Health and local managers in deciding how best to utilize scarce resources. In addition, one of the goals of the funder of this project, the Ontario Health Care Evaluation Network, was to bring together researchers and policy-makers so that they would be made aware of each other's needs.

The specific objectives of this proposal were to:

1. Identify key targets for dissemination of research overviews in public-health policy environments.

2. Assess decision-makers' awareness of and attitudes towards systematic overviews as a method of research transfer.

3. Assess the current relevance and accessibility of available overviews to decision-makers.

4. Provide access to research overviews in four forms and describe user preferences.

5. Identify factors influencing the interpretation and application of overview results in public-health policy.

Methods

This descriptive study with public-health policy-makers in Ontario was carried out in five stages.

Stage 1: Development of Telephone Survey Tool

Two focus groups of 8–10 people each were held with public-health managers and administrators from Alberta to explore issues surrounding access to research and utilization of systematic reviews. The focus groups were conducted by one of the authors (SH), who was trained in conducting focus groups by a nurse prepared at the doctoral level in qualitative research. Participants in the focus groups represented the full range of disciplines of interest to the study. Each focus group included at least one Medical Officer of Health (one was an advisor to the Alberta Health Authority); four or five managers, mostly nurses practising in both urban and rural Alberta; and one or two research consultants or epidemiologist-consultants. The focus groups lasted 90 minutes and covered questions related to the use of research in public-health decision-making, barriers to research utilization, and attitudes towards systematic reviews. Participants were invited to give their input on what would be pertinent questions regarding the applicability and usefulness of systematic reviews.

The focus groups were audiotaped and transcribed verbatim. Thematic analysis was carried out jointly by the person who conducted the focus groups and the person who trained her. The themes were then combined with issues related to barriers to research utilization from the literature (Funk et al., 1995), to develop a structured questionnaire designed to elicit information about attitudes towards evidence-based practice, usual use of and access to research, perceived barriers to research utilization, and awareness of and attitudes towards systematic reviews. The questionnaire was pre-tested for content validity and verbal comprehension, then revised and tested for test-retest reliability. For the reliability testing, 18 decision-makers at the Hamilton-Wentworth Regional Public Health Department (Ontario), who were subsequently excluded from the full survey, were administered two identical telephone questionnaires 2 weeks apart. A few questions had dichotomous answers but most were answered on a five-point scale. On test-retest, any of those questions that resulted in a correlation coefficient below 0.5 were either reworded or removed from the questionnaire.

The proposal achieved ethics approval from the Research Advisory Group of Chedoke-McMaster Hospital in Hamilton, Ontario. The investigators determined that the potential group of participants was too small and too diverse in terms of disciplines and urban/rural differences for a sampling to be done. The decision was made to contact all the people who met the inclusion criteria. Thus a list of 277 decision-makers in public health in Ontario was developed by telephoning the

Public Health Branch and every public-health department in the province. The phone call was made to the administrative assistant for either the Medical Officer of Health or the Director of Nursing (or equivalent). They were asked to identify every manager to whom nurses reported in their line structure. The resulting list included all identified Program Managers and Directors responsible for making decisions concerning nursing practice, Medical and Associate Medical Officers of Health, and Public Health Officials within the Public Health Branch of the Ministry of Health. The 270 people identified were sent a letter asking them to participate in the study and letting them know that they would be receiving a phone call to set a time for an appointment.

Stage 2: Preparation of Overview

Using rigorous systematic review methods, five overviews of studies on the effects of various public-health interventions were completed by 1996. These were: the effectiveness of home visiting (Ciliska et al., 1994), community-development projects (Ploeg, Dobbins, et al., 1995), maternal-child interventions (Hayward et al., 1996), school-based adolescent suicide-prevention curricula (Ploeg, Ciliska, et al., 1995), and community-based heart-health projects (Dobbins, Thomas, Ciliska, Hayward, & Underwood, 1996). The decision was made to use systematic reviews produced by this group. As decision-makers and clinicians in Ontario had had input into the topics chosen for the review, these were seen as relevant and timely in the climate of the day.

Each overview was prepared as a full paper (about 30 pages), a summary of results and recommendations (2 pages), and a structured abstract (1 page). Each was made available on hard copy, on diskette, and on a website. The full paper and abstracts were written in academic style; the summaries of results and recommendations were written in more accessible language. However, no testing was done of the various presentations.

Stage 3: Telephone Survey

The structured 20-minute questionnaire was administered by telephone. Personal information included age, discipline, date of graduation, and years of experience in public health. At the end of the interview participants were informed of the five overviews available through this project and were asked if they were interested in receiving any of these, and in what form. Individualized packages were sent as requested. During this study period, the follow-up telephone survey was developed and pretested as in stage 1.

Stage 4: Follow-up Survey

The follow-up telephone questionnaire was administered 2 to 3 months after the first interview. It focused on receipt of whatever overviews had been requested, whether any of the requested material had been read, perceived usability, relevance, application, and further dissemination of the reviews. The questions about attitudes and barriers were identical for each telephone survey but the stem of these questions was changed to reflect the possibility of greater familiarity with systematic overviews. Personal information was not gathered a second time. All phone calls, for both surveys, were made by one of the investigators (MD).

Stage 5: Data Analysis

The data were analyzed using SPSS to provide descriptive statistics on attitudes, awareness, preferences for information, uptake of reviews, and subsequent utilization. Difference in actual use of the material by age, discipline, years elapsed since graduation, and educational background was tested using chi-square analysis. Chi-square analysis was also used to test for differences in attitudes towards systematic review from time 1 to time 2. Only participants for whom the survey data were available both times were included in the chi-square analysis.

Results

Participants

A total of 277 people were eligible to participate in the survey; 242 (87%) agreed to participate in the first survey and 225 (93% follow-up) participated at the second phone call. The people who did not participate in the first survey were from the range of disciplines and positions in the health departments and the Public Health Branch. As reasons for declining they cited lack of time and the need for only one response per health department. At the second phone call, the most common reason for non-participation was that the person was no longer employed in the department.

Age distribution is shown in Figure 1; the largest group were those in the 41–50 range. As for discipline, 67% identified themselves with nursing, 21% medicine, 4% inspection, 3% nutrition, 1% dentistry, and 4% other (e.g., health promotion, epidemiology). Education levels are shown in Figure 2; baccalaureate preparation was the minimal level achieved, with almost half the participants at the master's level. With respect to time elapsed since most recent graduation, the range was 0–42 years, with 39% under 10 years, 38% 10–19 years, 21% 20–29 years,

and 2% over 30 years. Table 1 shows the distribution of years in current position and years of experience in public health. Figure 3 shows the position, with the largest proportion employed as nursing managers.
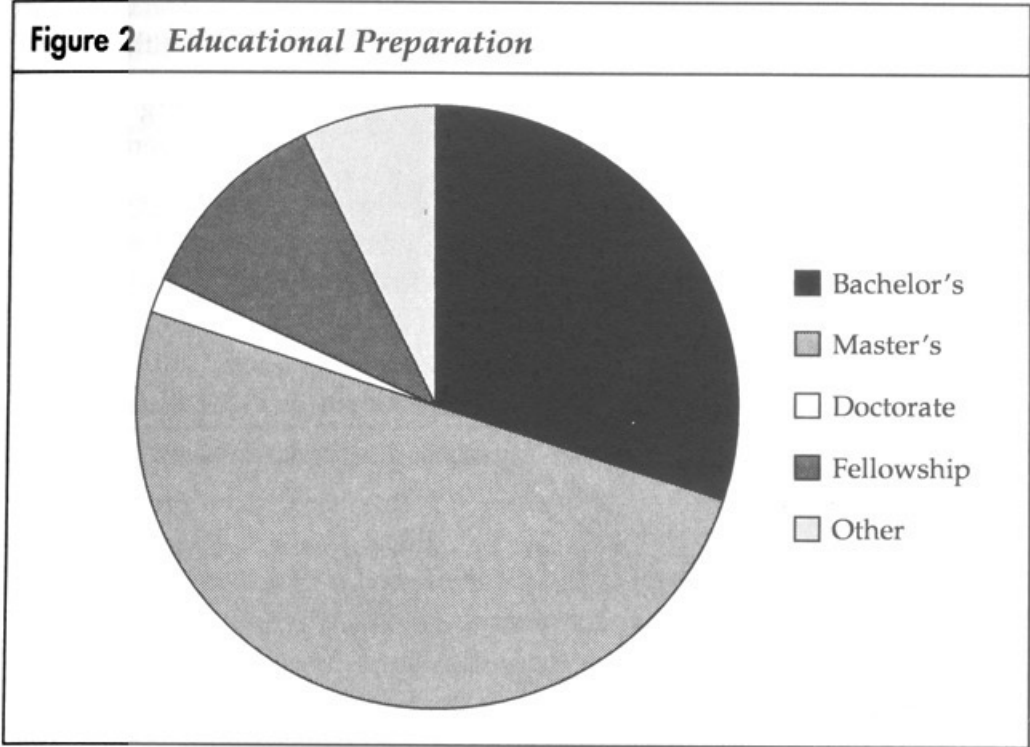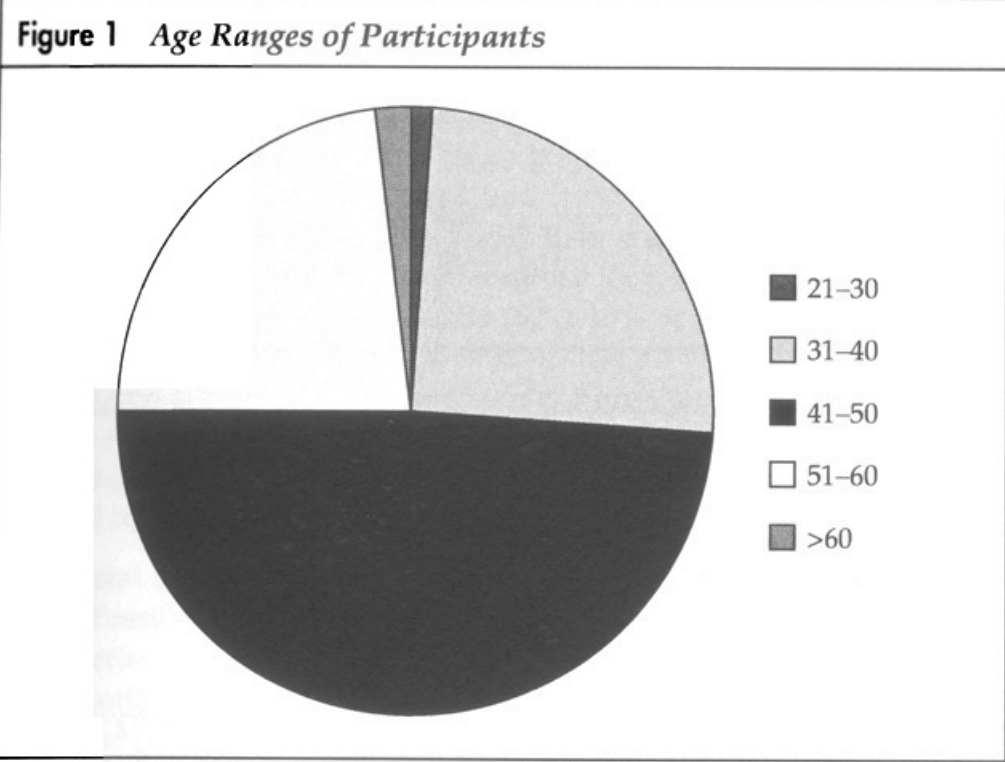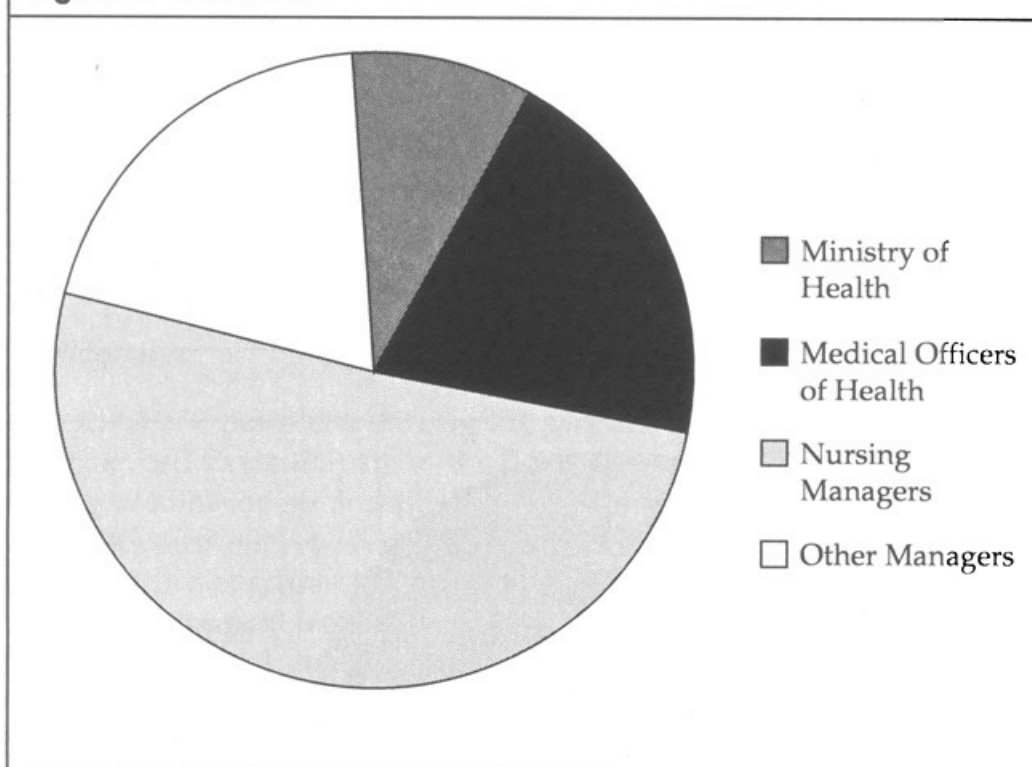
Figure 1 *Age Ranges of Participants*

- 21–30
- 31–40
- 41–50
- 51–60
- >60

Figure 2 *Educational Preparation*

- Bachelor's
- Master's
- Doctorate
- Fellowship
- Other

Table 1 *Distribution of Years in Public Health and Current Position*

	Years in	
	Public Health *n* (%)	**Current Position** *n* (%)
<5 years	6	39
5–9	17	44
10–14	22	10
15–19	21	6
>19	34	1

Figure 3 *Positions*

Ministry of Health

Medical Officers of Health

Nursing Managers

Other Managers

Results by Objective

1. Identification of key targets for dissemination of research overviews.
At the second phone call, participants were asked whether they remembered receiving the requested information and, if so, whether they used the information in program planning or decision-making. Chi-square analysis revealed no significant differences in reported use by age,

program responsibility, discipline, number of years since most recent graduation, current position, or highest level of education.

2. Assessment of decision-makers' awareness of and attitudes towards systematic overviews as a method of research transfer. Participants were asked about their current level of need for research information; 19% rated it as "very high," 54% "high," 24% "moderate," 3% "low," and none "very low." When asked if their need was being met, 56% responded negatively. Important sources of information about program effectiveness were explored (respondents were allowed to name up to three sources), with 98.8% listing journals as an important source, followed by unpublished literature (68%), expert opinion (30%), the popular press (21%), and books (8%); 45% of participants reported they had retrieved 1–9 journal articles in the previous month, with 7% retrieving no articles and 48% retrieving more than 10 articles; 43% had done or requested a literature search in the previous 3 months, 65% reported direct or indirect access to on-line search capabilities, and 46% reported internet access.

Several questions concerned perceived barriers to using research results. Possible answers were "not a problem," "minor barrier," "moderate barrier," "serious barrier," and "very serious barrier." Those barriers identified as "moderate," "serious," or "very serious" by at least 50% of the participants are listed in Table 2. Barriers more often rated as "not a problem" or "minor barrier" included cost of retrieving information (72%), critical appraisal skills (55%), credibility of the authors of the research (69%), workplace not supportive of the use of research

Table 2 *Barriers to Research Utilization*

Percentages of respondents who rated barriers as a "moderate," "serious," or "very serious" problem

Time	92%
Availability of research results	83%
Resources to implement research	80%
Relevance	76%
Policy climate — provincial	76%
Policy climate — regional	71%
Timeliness	70%
Current practice patterns	66%

(72%), insufficient authority to implement research results (70%), ethical disagreement (85%), and research information not valued at the community level (57%). At the second phone call, those who had received overviews were asked the same questions about the ability of overviews to overcome the barriers to research utilization. Chi-square analysis revealed no significant changes in their attitudes from time 1.

3. Assessment of the current relevance and accessibility of available overviews to decision-makers. Participants were asked if they had ever heard of systematic overviews; 57% responded affirmatively. For those who had not heard of them, or were not sure if they had, an explanation was provided; 86% then stated that the explanation sounded familiar, and 62% of these were able to give examples of overviews they knew about. In a manner similar to that used for the barriers questions, attitudes were assessed regarding the ability of systematic reviews to overcome barriers to research utilization. Response choices were "don't know," "definitely won't," "probably won't," "may," "probably will," and "definitely will." As shown in Table 3, respondents were positive in their attitudes towards systematic overviews and about their ability to overcome the barriers related to time, timeliness, and cost, but not about their ability to overcome the barriers related to policy climate or resources. When asked the priority in the research agenda that such syntheses should be given, 0 responded "bottom," 3% "low," 26% "middle," 62% "high," and 9% "top."

Table 3   *Ability of Overviews to Overcome Barriers to Research Utilization*

**Percentages of respondents who answered "probably will" or "definitely will" overcome barriers**

Time	82%
Cost	67%
Timeliness	62%
Relevance	46%
Current practice patterns	37%
Working culture	35%
Availability of research results	30%
Policy climate — provincial	30%
Policy climate — federal	29%
Resources to implement research	22%
Policy climate — regional	21%

4. Preferred form of systematic overviews. At the first phone call, 68% of participants were already aware of overviews from the Public Health Effectiveness Project. Ninety-one percent requested another overview (14% requested one more overview and 77% requested more than one more, for a total of 783 requests). The requested format was most often full paper (33%), followed by diskette (27%), abstract (16%), summary (14%), and internet (10%).

5. Factors influencing the interpretation and application of overview results in public-health policy. On the follow-up phone call, 91% of those who had requested an overview in any format remembered receiving the information. Of those who remembered receiving an overview, 71% had read it, either in whole or in part; 23% stated it played a part in program planning or decision-making, and 57% of these (approximately 14% overall) reported it influenced actual recommendations made to others; 64% of those recommendations were accepted.

Figure 4 shows responses to the question *To which part of the systematic review did you pay most attention?* Most participants focused on the conclusions, discussion, and results, while very few looked at the tables, often a source of important information. The same distribution was found for those who actually used the overview in program planning, in relation to the parts that were most useful in decision-making.

Figure 4 *Parts of Systematic Review Receiving Most Attention*
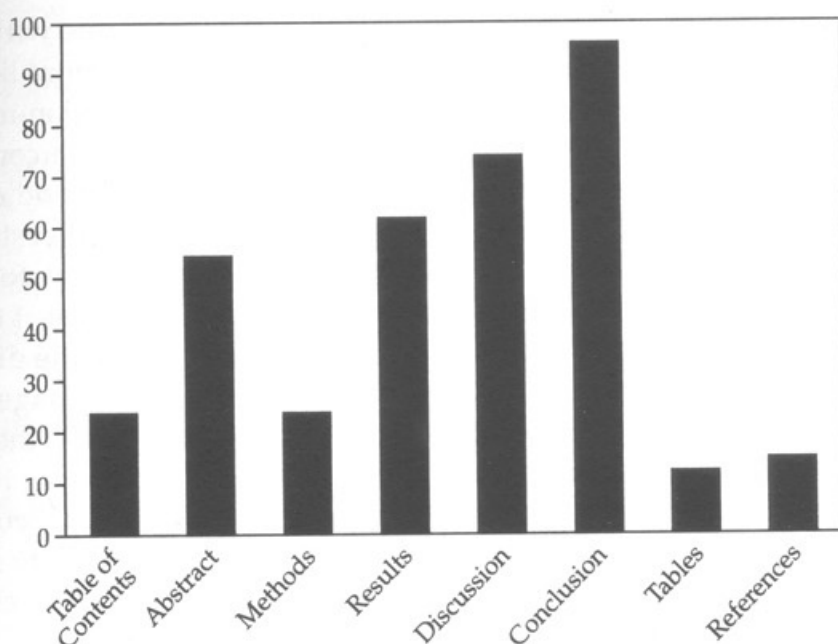
Discussion

Decision-makers in public health have a great perceived need for research information, which they judge is not being met. They actively request journal articles, literature searches, and retrieval of journal articles. This suggests that they are oriented to reading research. However, we cannot discern from this survey whether they actively use research. Reported barriers to research utilization are time, availability, timeliness, and resources to implement change. The majority of respondents in this study did not feel that critical appraisal skills were a barrier to their use of research literature, yet other studies report this as a major barrier (Lomas, Sisk, & Stocking, 1993; Pettengill, Gillies, & Clark, 1994). This may reflect the comparatively high level of education of the participants in this study. Most of those surveyed were familiar with systematic reviews and felt that overviews have the potential to overcome many barriers to research utilization. While the goal of this study was not dissemination of the chosen set of systematic reviews to policy-makers and decision-makers, the survey became a dissemination strategy for the prepared reviews. No a priori attempt was made to evaluate the effects of the survey as an intervention, although the study did gain information about requests and use of the systematic reviews: 91% of participants ordered at least one systematic review; most were aware of receiving it and had read some part of it, while a smaller number had utilized or planned to utilize the information from the review in decision-making.

In conclusion, this study was unable to target people within the group of public-health decision-makers who would be more likely to utilize systematic reviews for program planning and decision-making. Attitudes towards systematic reviews and their ability to overcome barriers to research utilization were positive at the beginning and did not significantly change as a result of exposure to additional systematic reviews. Preferred access to reviews was in full paper format, followed by disk, abstract, summary, and internet. The results suggest that an intervention for increasing research utilization might include distribution of systematic reviews in paper format that go to managers and decision-makers for whom the topic is timely and relevant to their area of influence. Application of overviews to decision-making is most limited by time and resources to implement change — a difficult area for any intervention to influence. Respondents felt that priority should be given to the synthesis of research literature within the research agenda.

During the second telephone interview many participants stated that they planned to use the information in the review in the near future. A third telephone interview is being planned to assess further utilization, and possibly the organizational characteristics that may be related to research uptake.

The area of research into dissemination and utilization of research is in its infancy. There is a need to continue case studies and qualitative exploration of factors that influence dissemination and utilization.

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