COMPUTER INTERVIEWING: BEYOND DATA COLLECTION

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Abstract

The promise of improved patient care through better data collection by computer interviewing has not been realized as rapidly as proponents had hoped. Some difficulties were overlooked altogether or inappropriately minimized and the general problem of perfecting the feedback process to physicians was substantially underestimated. This paper reviews the problems and prospects of the field of computer interviewing, presents suggestions for next developmental steps, and raises questions about additional possible uses of computer interviews.

Introduction:

Following Slack's first report of a computer interview for patients with allergy (1), interviews have been prepared to collect information directly from medical and psychiatric patients or their parents (2-12). As described previously, the computer's capacity to model the human interviewer is ideal for this purpose. A general question can be asked (e.g., "Are you thinking of suicide?") with branching to appropriate subsequent questions based on the patient's response to the current question. Branching can also be conditioned on a patient's responses to earlier questions using boolean (algebraic) relationships. Thus, a "No" response to the general questions on thoughts of suicide leads to the next general question on anxiety; a "Yes" response to the general questions on thoughts of suicide leads to a series of frames that define or clarify the terms or concepts employed (e.g., suicide) before re-asking the general question; and "Skip It" may lead to the next general question or, as in the suicide thought sequence, to a series of frames that ask the patient to reconsider the decision to "Skip It". The feasibility of free text and open-ended responses allows the patient-respondent to accurately characterize problems and experiences and to provide detail not possible with multiple-choice questions. Patient acceptance of these techniques has been good and even psychotic patients often respond meaningfully to the interviews and, at times, appear less disturbed after an interview.

Data collected are complete, standardized, legible (a printer can prepare a summary for clinical use moments after the interview is completed) and accurate, and are stored immediately in computer-processable form for clinical use or research analysis. Patients are reinforced for giving information by the individualized branching of the interview, by humor, rest periods when fatigued, and the measure of control they exert over the interviewing process itself (13).

Because of these several advantages, computer interviewing has been viewed as a way to break the data-collection bottleneck (14). Early predictions of widespread use of computer interviewing have, to date, proven incorrect and the reasons for the slow acceptance and spread of computer interviewing are now somewhat more apparent and better understood.

Problems with Computer Interviewing: Real and Imagined

Ease of Computer Interviewing

While all who have worked with computer interviews are impressed with how easy most patients find the interviewing process and how much they enjoy the experience, we had underestimated the fundamental difficulty of setting up and maintaining a routine interview service. It is one thing to interview a few hundred patients in a research setting during development and evaluation of a computer interview and quite another to maintain a routine service where reliable interviews are readily available over a protracted period.

We want to thank Amy Nelson and Andrea Fouchia who prepared the successive drafts of this manuscript.
Most patients do not require assistance during the interviewing process, but it is usually necessary to have an interview attendant available to answer occasional questions which arise and to diagnose and correct the rare hardware and software problems which occur. The number of settings where routine interviewing has been successfully conducted is few, and it may well be that researchers who enjoy developing and evaluating interviews are not the best people to run a routine interviewing service.

Costs

While the costs of computing hardware and peripheral devices continue to decline, there is still a substantial start-up cost in establishing a computer interviewing service. Equipment must be purchased, suitable space obtained and prepared to ensure privacy, and budgeting provided for interviewing attendants. The maintenance of cathode ray and printing terminals must be arranged and stocks of printer paper and ribbons obtained. Mechanisms for scheduling interviews and distribution of computer summaries must also be evolved.

Methods of paying for computer interviews are still being worked out. In some instances, patients pay directly for interviews as an additional service. In other settings, physicians subsidize the cost of interviews and justify this expense on the basis of increased physician productivity through time saved from routine interviewing or through assumptions of improved patient outcomes. Some insurance carriers pay for computer interviews, recognizing them as analogues to laboratory tests which provide unique information for the physician's decision-making process.

Change in Physician Practice Patterns

The use of computer interviews requires a shift in the thinking and practice of physicians which may be difficult for some practitioners to make.

If the summary is to be available at the time the patient is seen, the interview must be scheduled before the appointment with the doctor, Physicians need time to develop confidence in the thoroughness of the interview process, the precise meaning of individual questions and to understand the meaning of the statements which appear in the computer summary. The summary itself may need to be tailored to the special interests of individual physicians – in the past, many multi-paged and loosely organized summaries have appropriately gone unread. The problems of integrating computer interviewing into an active practice of medicine are not trivial.

Dehumanization of Medicine

Medicine is much belaughter because the general tendency toward specialization and subspecialization sometimes leaves patients feeling that physicians are more interested in particular organ systems than in the patients themselves. Concern has been expressed that computer interviews are a further manifestation of this dehumanizing process.

The answers to this concern are two: first, for the most part patients enjoy the computer interviewing process and recognize its usefulness in facilitating meaningful communication between themselves and their doctor; second, a procedure which provides better medical information (whether history, physical findings, or laboratory tests) and presumably better medical care, is eventually embraced by physicians who wish to provide the best possible care and by patients who wish to receive it.

Relevance of Computer Interview Data

While there is a growing number of computer interviews for different problem areas, there are many areas for which useful interviews have yet to be developed, and there are still a substantial start-up cost in establishing certain parts of the mental status examination (affect, appearance, posture, gait, movement, rate of speech, vocabulary, etc.) where adroit computer questions are difficult or impossible to construct.

Paranoia

Some people view computer interviews as encroaching on the semi-sacred verbal domain of the patient-physician interaction. There is a tendency to mistakenly polarize thinking along lines of the false syllogism that if computers do any interviewing, they will do all interviewing. Computer interviews can properly be viewed as adjuncts to physician interviewing but few would advocate substitution of computer interviews by themselves for a combination of the best data available (from all sources) and the explicit and intuitive decision-making skills of the experienced physician.

Next Steps in the Integration of Computer Interviewing into Medical Practice

Now that the first blush of naive enthusiasm regarding computer interviewing has passed and some practical limitations are more clearly recognized, several next steps can be identified.

1. Computer interviews need to be carefully evaluated so that their reliability and validity can be explicitly defined. The best strategy for developing a comprehensive battery of computer interviews is to develop and polish them sequentially rather than attempting to prepare several at one time.

2. Summaries require careful planning if they are to be useful to physicians with different interests and needs. It may well be that a general medical history should produce different
Where possible, summaries should be beyond a simple recitation of the data collected to provide physicians with information helpful in treatment selection and prognosis. For example, results of a retrospective study of a suicide risk prediction interview (15) suggests that the program is significantly more accurate than clinicians in predicting risk of suicide attempt. Techniques are now available for developing predictions about the likelihood of several clinical phenomena (diagnosis, response to treatment, side effects or other complications of treatment, etc.) (16,17).

Studies could be done to measure what effects (if any) computer interviews have on the outcome of specific illnesses. In a somewhat analogous vein, McDonald (18) showed that providing computer generated reminders of relevant historical questions, laboratory tests, and treatment decisions to physicians working in a diabetic clinic very significantly improved their performance on criteria selected by experts as being important in the management of diabetes. Thus, one might appropriately follow up the first impressions of some psychiatric work (13) that computer interviewing to obtain psychiatric history may be therapeutic in and of itself.

Recognizing what McDonald has described as the "non-perfectibility of man" (referring to physicians in his study), it may be appropriate to give computer summaries not only to physicians but also directly to patients, thereby maximizing the likelihood that relevant data can be brought meaningfully to bear on the patient's problem. Thus, it would be interesting to learn whether providing information to patients about a substantial suicide risk (based on data they had provided by computer interview) would increase patient motivation for and adherence to effective antidepressant treatment. This approach has obvious appeal to those who believe that patients will act in their own self-interest, but it would be of little use to patients who overuse the mental mechanism of denial or to those who depend heavily on outside authority for their decision-making. Still, we would hold with Osler's aphorism, "When all else fails, ask the patient."

Conclusion

The first enthusiasm and fears about computer interviewing have now passed. Workers in the field are faced with the need to develop practical routine computer interviewing services, to continue to refine computer summaries to make them more useful to a larger number of physicians, to define the limits of computer interviewing, to extend the range and precision of predictions that can be based on computer interview data, and to explore the uses of computer interview feedback to patients themselves.

For computer interviewing to have the beneficial impact that its proponents still feel it is capable of providing, it will be necessary to go beyond the brave and mainly optimistic beginnings to a more certain knowledge of the strengths and limitations of this powerful technique. Much hard but interesting work lies ahead.

REFERENCES


