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Communication study

Improving patient recall of information: Harnessing the power of structure

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ABSTRACT

Objective: Assess the amount of medical information laypeople recall, investigate the impact of structured presentation on recall.
Methods: 105 first-year psychology students (mean age 21.5 ± 3.8 years; 85% female) were randomised to two information-presentation conditions: structured (S group) and nonstructured (NS group). Students watched a video of a physician discharging a patient from the emergency department. In the S Group, content (28 items of information) was divided into explicit "chapters" with "chapter headings" preceding new information. Afterwards, participants wrote down all information they recalled on an empty sheet of paper.
Results: The S group ($N = 57$) recalled significantly more items than NS group ($N = 41$) (8.12 ± 4.31 vs. 5.71 ± 3.73; $p = 0.005$), rated information as easier to understand (8.0 ± 1.9 vs. 6.1 ± 2.2; $p < 0.001$) and better structured (8.5 ± 1.5 vs. 5.5 ± 2.7; $p < 0.001$); they rather recommended the physician to friends (7.1 ± 2.7 vs. 5.8 ± 2.6; $p < 0.01$).
Conclusion: University students recalled around 7/28 items of information presented. Explicit structure improved recall.
Practice implications: Practitioners must reduce the amount of information conveyed and structure information to improve recall.

1. Introduction

Communication in health care often means the exchange of medical information. This is true for ward rounds in internal medicine [1], outpatients in internal medicine [2], and oncological consultations (e.g. [3,4]). Findings indicate that many patients and their relatives want to be fully informed about their condition [5–8]. For instance, questionnaire data indicate that 87% of patients "want to be told all information" and only 9% "want the doctor to choose how much information to give" [9] (see also [5,6]). Similarly, qualitative data show that both patients and parents expect physicians to inform them about diagnosis, therapy, and prognosis [10–12].

Patient–physician communication goes beyond the filling of knowledge gaps, however. It is also the basis for patients' inferences about the health practitioner. For instance, recent qualitative studies on communication in oncology have demonstrated that patients' *trust* is based primarily on the impression of clinical competence that emerges from their communication with oncological surgeons and haematologists [13]. Furthermore, Parker et al. [14] and Hagerty et al. [15] have reported that patients' *hope* depends largely on the impression that their physician is competent and "knows all there is to know about the disease". Physicians may not be aware of the importance that patients attribute to receiving information, however: In their studies of patient centeredness and consultation skills in primary care, Ogden et al. [7] and Robinson et al. [8] found that patients ranked items relating to patient information and the structure of consultations significantly higher than physicians did.

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However, other findings suggest that the exchange of information may be an ephemeral phenomenon. Specifically, several studies have found that patient comprehension and recall of information is limited [16,17]. Three examples from surgery illustrate these limitations: On average, only 2 out of 5 complications were recalled in the context of elective plastic surgery [18]; 5 out of 32 pieces of information were correctly remembered 2 h after the preoperative discussion prior to brain surgery and 4 out of 25 pieces of information prior to spinal surgery [19] (for a recent review, see [20]). Questionnaire data from patients with advanced metastatic cancer revealed how little patients understood of their clinical situation. Although they had been informed by their doctors about the advanced stage of their disease and the clinical consequences, they largely overestimated the chance of recovery and failed to understand the palliative rather than curative goal of their treatment [21].

These insights raise the following questions: How can patient recall and understanding of medical information be improved? One of the first authors to address these questions was Ley (e.g. [22]). Ley recommended using explicit categorisation, with the clinician presenting "information in categories, which he has announced in advance". Several review articles have since investigated whether patient understanding and recall of information can be improved by the use of additional communicative aids. Although results have been mixed and the evidence is not always convincing, the general picture to emerge is that patients recall slightly more information when they are given written or otherwise designed information material. For example, Ciciriello et al. [23] found weak evidence that the addition of multimedia material to standard instructions improved patient knowledge about medication (see also [24–26]). To our knowledge, however, none of the interventions evaluated in these review articles have focused on the explicit structuring of verbal information.

Although the provision of generic written information improves patient knowledge to some extent, it is associated with two major problems: First, information leaflets on diagnostic interventions usually cover the standard procedure in common diagnoses. However, the typical patient presents with a more complex combination of symptoms, diagnoses, and treatment options – a complexity that cannot be accommodated in standardised materials. Second, even when provided with the most sophisticated information material, patients show much lower recall capacity than physicians evidently assume: Physicians asked which information was essential for patients discharged from the emergency department after presenting with acute chest pain on average chose 36 out of 81 pre-defined items [27] – far beyond the typical recall capacity reported in the literature (e.g. [20]). Both problems are related. Tailoring information to more complex real-world cases is likely to involve the provision of even more information.

In principle, there are two ways out of this dilemma: less information or better communication. By better communication, we mean communication in ways that increase the likelihood that patients will later be able to retrieve the information. Here, we investigate whether structuring medical information improves recall. Specifically, information appears easier to retain when it is structured in a way that helps the recipient to organise it [28,29]. In written material, structure is reflected in the way content is ordered sequentially. For instance, in newspapers, headlines precede the main text and are easy to identify; they announce the topic elaborated on in the text. Books use even more sophisticated structural elements to guide readers through content: title, table of contents, chapter headings, text, reference list, etc. In our communication skills training for medical students, we have used the term "book metaphor" to help participants understand, appreciate and remember the value and function of "structuring information" [30,31].

In this pilot study, we investigated whether first-year psychology students serving as surrogate patients recalled more information when discharge information was presented in structured form, in accordance with the book metaphor, than they did when exactly the same information was presented in nonstructured form.

2. Methods

2.1. Participants

First-year psychology students were invited to participate in a trial measuring recall of medical information. Of the 167 students approached, 105 agreed to participate and provided informed consent. Sixteen of these students were male; mean age was 21.5 ± 3.8 years. Ninety-eight students returned completed recall protocols. The study was approved by the local ethics committee (protocol number: 362/11). Participants received no compensation for their participation.

2.2. Study design

On their arrival, students were randomly allocated to two lecture halls. They were informed that they were participating in an experiment about physicians' communication style, and that they would be shown a video of a physician discharging a patient from the emergency department. The patient was a white man of around 75 years of age, played by an actor. The information conveyed was defined after a careful Delphi process, in which three expert physicians agreed on 28 items of information that they considered essential for a patient with unstable angina pectoris after exclusion of acute myocardial infarction [32]. The experts were informed that this information would be given to a patient during discharge from the emergency department, that the time allotted for this consultation was a maximum of 15 min, and that the patient would see his GP within the next two or three days. Study authors reviewed the two versions of the video to make sure that both contained the same factual information.

The two student groups watched the same male physician deliver exactly the same 28 items of information in a friendly manner and without the use of medical jargon in either structured or nonstructured form. Specifically, in the nonstructured condition (NS group), the order of presentation was based on traditional clinical wisdom: pieces of information that belonged together because they pertained to, for example, the likely diagnosis of coronary artery disease were presented in one block of information (likewise, there were blocks of information on pathophysiology, further work-up, therapy, and red flags). However, there was no *explicit* structure. In the structured condition (S group) the information presented was structured following the structural elements of a book, in which the content is presented in a specific order, typically advancing from summary, high-level information (e.g., title, table of contents, chapter headings) to detailed, low-level information (e.g., text, annexes). Following this book structure [33], the physician initiated the interaction as follows:

Mr. Lehmann, I will now give you some *discharge information* (TITLE)

Before you go home, there are five points that I would like to inform you about (TABLE OF CONTENTS)

First: What is your diagnosis?

Second: What will happen next?

Third: What can you do yourself?