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Medical Decision Making

An experimental evaluation of patient decision aid design to communicate the effects of medications on the rate of progression of structural joint damage in rheumatoid arthritis

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ABSTRACT

Objective: To explore how effectively information presentation formats used in a patient decision aid communicated the ability of a disease modifying anti-rheumatic drug to slow the rate of progression of rheumatoid arthritis related structural joint damage (SJD).
Methods: 91 first year psychology students and 91 RA patients participated in a prospective randomized, single blind, factorial experimental design evaluating the effect of four information formats on: satisfaction with risk communication, verbatim and gist recall of a hypothetical anti-rheumatic drug's ability to slow the rate of progression of SJD.
Results: Both groups underestimated the hypothetical drug's ability to slow SJD. Formats that supported the narrative statement with a reinforcing graphic element resulted in recall closer to the true value. Comparison of the results from testing of RA patients and college students were remarkably similar across formats.
Conclusion: Rate of progression as communicated by narrative statement plus a graphic element (i.e. speedometer metaphor or pictograph) aided recall better than a narrative statement alone. Our results suggest that testing decision aid components with non-patients may provide data generalizable to patient populations.
Practice implications: Graphics must be used carefully in patient decision aids as they can enhance recall, but may also introduce unintended recall bias.

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1. Introduction

Three general approaches have been recommended to reduce unwarranted variation and improve the equity of medical care: increase the amount of effective care, reduce supply sensitive care and increase preference sensitive care [1]. To increase effective care the inter-professional healthcare team should disclose national standards of care to patients and the engage in a dialogue leading to informed patient choice. In the care of patients with rheumatoid arthritis (RA), the prescription of a disease modifying anti-rheumatic drug (DMARD) was designated as the first quality measure in the 2008 Physician Quality Reporting Initiative [2]. However a recent study of Medicare managed care enrollees, only 63% received a DMARD [3]. Patients with RA do have many DMARD options available, which include traditional synthetic drugs like methotrexate as well as an increasing number of targeted biologic molecules like etanercept and rituximab [4]. Each DMARD has important attributes that can influence a physician and patient's shared decision to initiate or switch to a new agent [5,6]. Factors that are considered include safety concerns like risk of serious infection, therapeutic benefits, costs and inconveniences associated with administration and monitoring. Beliefs about medications and risk tolerance effect patients' experience of side effects [7] as well as willingness to take DMARDs [8]. The ability to slow progression of structural joint damage (SJD) is also a distinguishing attribute of anti-rheumatic drugs that is important in a patient's choice of a new agent. Our understanding of the treatment effect of this class of drugs is evolving. However different agents have varied effects on the progression of SJD ranging from having no impact on the baseline rate of progression of SJD to nearly halting all progression [9–12]. For example, the most widely used anti-rheumatic, methotrexate, has been shown to slow the rate of progression of SJD by 85% in early RA patients [13]. How to best communicate the rate of SJD progression has not been previously

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evaluated. In this study we have two objectives. First explore how different information presentation formats used in a patient decision aid (PtDA) performed to communicate the ability of a DMARD to slow RA related SJD. Second to evaluate the generalizability of findings of message framing experiments obtained using the traditional method – college students in the experimental psychology laboratory – compared to rheumatoid arthritis patients in the clinic at the time of care.

2. Methods

2.1. Design

The study was a prospective randomized, single blind, factorial experimental design [14]. Prior to any study interventions, the research protocol was reviewed and granted exempt status by the Calvin College and Michigan State University Institutional Review Boards. After participants provided written informed consent, they evaluated one of four information presentation formats (depicted in Fig. 1) of a PtDA component that presents the effect of a hypothetical DMARD, "Drug C", on RA related SJD. The primary outcomes were participant satisfaction with risk communication as well as verbatim and gist recall of the rate at which the hypothetical drug slows RA related SJD.

2.2. Participants

The study was conducted in 2 different settings using similar experimental procedures. In the first setting, college students enrolled in an introductory psychology class answered questions regarding their age, gender, and ethnicity and if they had a history of any type of chronic arthritis. The participants received credit towards a research participation requirement in their course.

In the second setting, RA patients and, if available, their accompanying support person, were invited to participate in a "psychology experiment" following a routinely scheduled clinic visit. Consent for participation in the experimental protocol and consent HIPAA authorization to obtain regularly collected RA related data from the clinical record were both obtained. To ensure corrected visual acuity of 20/100 or better, participants' vision was screened with a Rosenbaum Pocket Vision Screener [15]. Measured variables included: age, gender, ethnicity, Medicaid eligibility, formal education, duration of RA, and number of previous DMARDs. In addition, all participants were screened for low or marginal health literacy with the Rheumatoid Arthritis Word Recognition Test [16]. Participants received identical instructions to simulate as closely as possible the conditions of the college students. Participants were offered their choice of either a lottery ticket or a candy bar as incentive for participation.

2.3. Experimental conditions

Participants in both settings were randomized to be presented with one of the four written information presentation formats with simulate a component of a decision aid. All contained a brief introduction to RA, a written description of SJD, and a narrative statement that a hypothetical drug reduces the rate of SJD progression by 85%. Participants were randomly assigned to one of four groups. They all received RA and SJD background information and statement of % SJD reduction alone (*N*). Participants were then

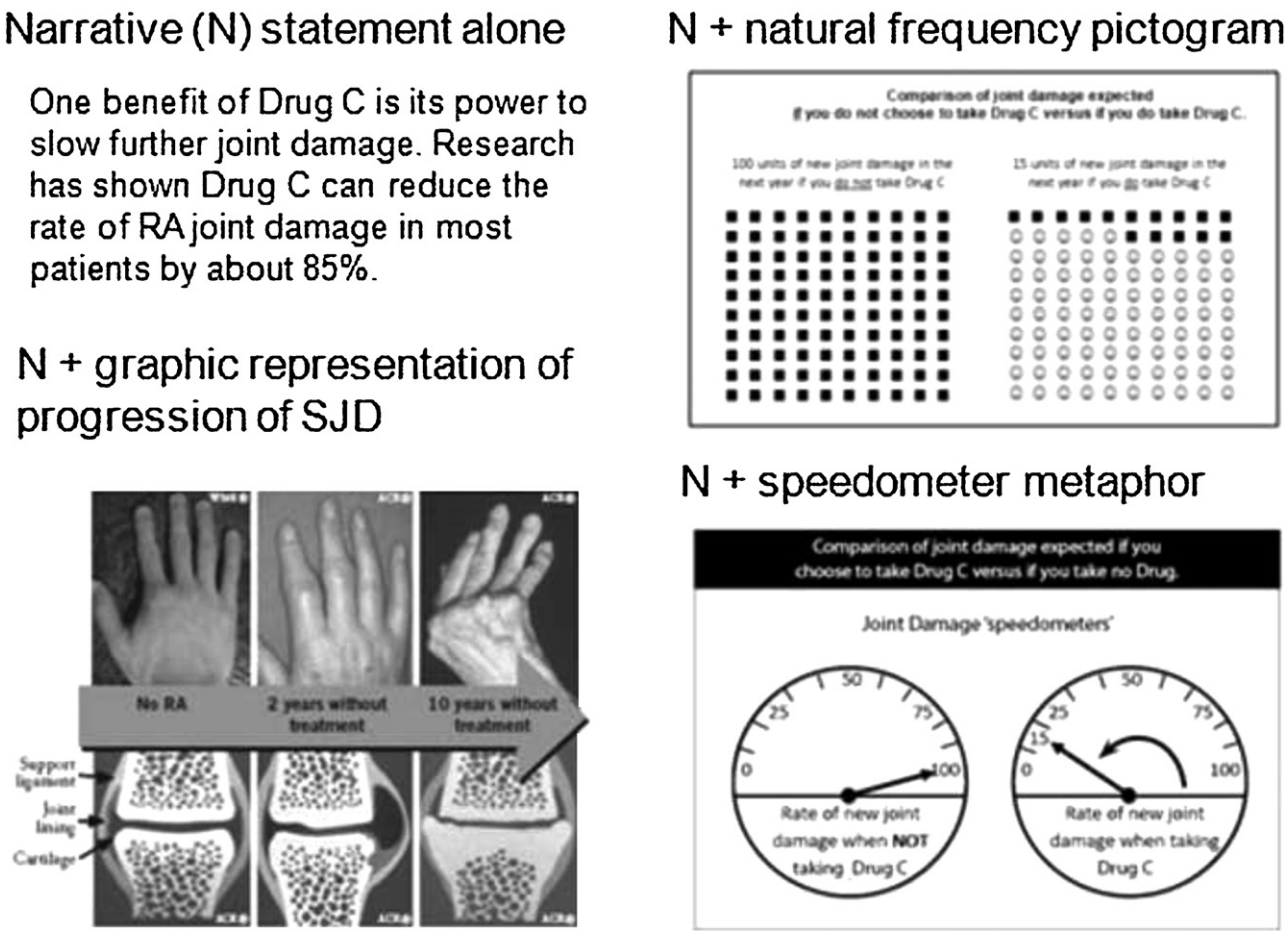

Fig. 1. Schematic of risk presentation framing formats.

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