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Exploring the influence of patient-provider communication on intraocular pressure in glaucoma patients

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ABSTRACT

Objective: We examined whether six patient-provider communication behaviors directly affected the intraocular pressure (IOP) of glaucoma patients or whether patient medication adherence and eye drop technique mediated the relationship between self-efficacy, communication, and IOP.
Methods: During an 8-month, longitudinal study of 279 glaucoma patients and 15 providers, two office visits were videotape-recorded, transcribed, and coded for six patient-provider communication behaviors. Medication adherence was measured electronically and IOP was extracted from medical records. We ran generalized estimating equations to examine the direct effects of communication on IOP and used bootstrapping to test whether medication adherence and eye drop technique mediated the effect of communication on IOP.
Results: Provider education about medication adherence ($B = -0.50$, $p < 0.05$) and inclusion of patient input into the treatment plan ($B = -0.35$, $p < 0.05$) predicted improved IOP. There was no evidence of significant mediation.
Conclusion: The positive effects of provider education and provider inclusion of patient input in the treatment plan were not mediated by adherence and eye drop technique.
Practice Implications: Providers should educate glaucoma patients about the importance of medication adherence and include patient input into their treatment plan.

1. Introduction

Glaucoma is the leading cause of irreversible blindness worldwide [1–3]. Over the next 35 years, the global prevalence of glaucoma is projected to nearly double from 60 million to 111.8 million patients [2], and a concomitant increase in glaucoma-associated blindness is likely unless patients receive and adhere to treatment. Topical glaucoma medications (i.e., eye drops) are commonly used to treat glaucoma and slow disease progression by lowering intraocular pressure (IOP); lowering IOP is the only intervention that has been shown to reduce vision loss in glaucoma [4,5]. However, patients are unlikely to experience the clinical benefits of their glaucoma medications if they: (1) are non-adherent to their medication regimen and (2) do not instill their eye drops correctly [6–9].

Street and colleagues posit that patient-provider communication can improve a clinical outcome like IOP directly as well as indirectly via increased patient engagement in self-care skills [10,11]. Glaucoma is an ideal condition in which to examine whether self-care skills (e.g., medication adherence and eye drop technique) mediate the effects of patient-provider communication on clinical outcomes for two reasons. First, there is great variability in patients' medication-taking behaviors and taking medications properly is associated with better-controlled IOP [6–9,12]. Specifically, non-adherence rates range

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from 40 to 72% [6,7,13,14], and approximately half of glaucoma patients demonstrate incorrect eye drop technique [15–18]. Second, there is an association between patient-provider communication and glaucoma patients' medication adherence and their eye drop instillation technique [17–21]. Although previous studies have provided piecemeal links between communication, medication-taking behaviors and skills, and IOP; no studies have examined whether communication-related changes in patients' medication-taking behaviors translates to improved clinical outcomes.

Both patient-provider communication and self-efficacy are important correlates of medication-taking behaviors [22]. More patient question-asking during medical visits, a component of patient activation, is associated with improved adherence to glaucoma medications [20,23] as well as better adherence and outcomes in other diseases [24,25]. In addition to patient question-asking, provider education about adherence is associated with better adherence in glaucoma [20] and other diseases like diabetes and asthma [26]. Because glaucoma is an asymptomatic disease and patients may not notice any direct benefits when they take their medications, positive reinforcement and encouragement to take medications from providers may be important for improving adherence and patient outcomes [27]; however, these relationships have not been formally examined in glaucoma. Many patients are unaware that they use their eye drops incorrectly [15,16,18], and provider education about how to use eye drops is associated with better patient technique [17,18]. Additionally, provider inclusion of patient input in the treatment plan is associated with better clinical outcomes for diabetes patients [28,29] and has been posited as important for glaucoma patients [30]. Last, medication self-efficacy is associated with better adherence and better clinical outcomes for glaucoma patients [8] and patients with diabetes [31].

Building upon prior research, our objective was to apply Street's model of communication [10,11] to examine the direct and indirect effects of patient-provider communication and self-efficacy on glaucoma patient IOP. We hypothesized that more frequent patient-provider communication and higher patient self-efficacy would indirectly improve IOP through better patient medication adherence and improved eye drop technique (Fig. 1). In terms of communication, we specifically examined whether more patient question-asking, more provider education about adherence and eye drop installation, more instances of provider encouragement and positive reinforcement for patients to take medications, and more frequent provider inclusion of patient input in the treatment plan were associated with better patient medication adherence, eye drop technique, and IOP.

2. Methods

2.1. Participants and procedures

We collected data for this multisite cohort study between 2009 and 2012. Providers from 6 ophthalmology practices (2 private offices and 4 academic ophthalmology departments) from five distinct geographical regions participated in the study. Providers were told that the goal of the study was to learn about communication during glaucoma visits. Fifteen of the 16 providers approached to participate in the study agreed to participate. This study was approved by the Institutional Review Boards at the University of North Carolina, Duke University, Emory University, and the University of Utah. All patients and providers gave written informed consent.

Providers completed a demographic questionnaire and clinic staff referred potentially eligible patients to a research assistant, who explained to patients that the purpose of the study was to improve health services provided in clinics. Eligible patients: (1) were ≥18 years of age; (2) spoke English; (3) were glaucoma or glaucoma suspect patients; and (4) were mentally competent as determined by the Mental Status Questionnaire [32]. Ineligible patients were thanked and given $5. Eligible patients were enrolled and had their office visit videotape-recorded. Videotapes were kept and the patient was followed for the 8-month study period if the patient was either: (a) newly-diagnosed with glaucoma and received a new prescription for glaucoma medications or (b) was already taking glaucoma medications.

Participants had their medical visits videotape-recorded at two visits (baseline and a 4–6-week follow-up). Immediately after their medical visits, a research assistant interviewed patients in a private examination room and videotaped their eye drop

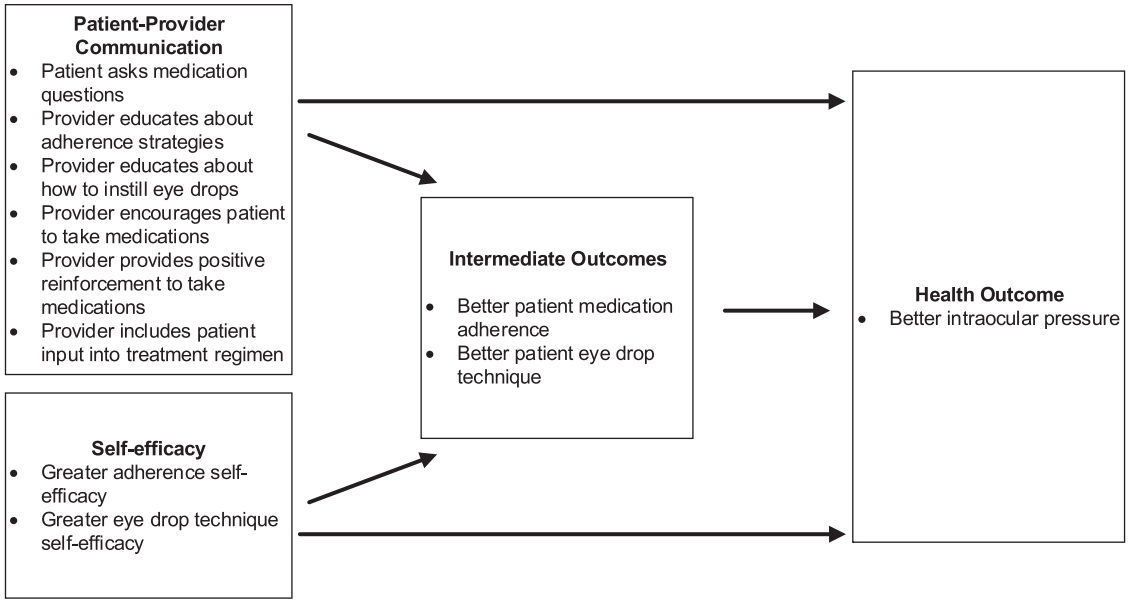

Fig. 1. Conceptual model showing the potential direct and indirect effects of medication-related communication on glaucoma patient intraocular pressure.