Long Term Outcomes of a Curriculum on Care for the Underserved

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Background: Evaluations of curricula to enhance ability to care for the underserved are often limited to short-term medical student outcomes.

Purpose: This study evaluates retention of short-term improvements in outcomes from post-curriculum to graduation.

Methods: Third-year students on 2003–2004 pediatric clerkships were randomized to a curriculum on caring for the underserved in one of three formats: established "readings only", faculty-led, or web-based. Outcomes (knowledge, attitudes, self-efficacy and clinical skills) were assessed at three timepoints—pre- and post-curriculum and at graduation. Analyses, from 2009–2010, included Fisher's exact test to assess the relationship of curriculum group with response patterns, demographics, and outcomes at graduation. Multivariate regression was used to model the longitudinal relationship between outcomes and curriculum groups, adjusting for prior clerkship experiences, baseline scores, and clustering by student.

Results: Of 137 students, 135 (99%) completed the pre-curriculum survey, 128 (93%) completed the post-curriculum survey and 88 (64%) completed the graduation survey. Post-curriculum improvements in self-efficacy and clinical skills seen among students receiving the faculty-led or web-based curricula were retained at graduation. At graduation, web-based curriculum students' self-efficacy was significantly greater for "establishing achievable goals with underserved families" compared to established curriculum students. With regard to skills relevant to caring for the underserved, few graduates had facilitated a referral to Women, Infants and Children (33%) or followed up to ensure a patient accessed a needed resource (56%).

Conclusions: Self-efficacy and skills gained through web-based and faculty-led curricula were retained at graduation. Data from items at graduation support targeted curricular improvement.

Key words: underserved ■ web-based curricula ■ medical students ■ long term outcomes ■ pediatrics

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INTRODUCTION

Experts in health professions education have long recognized the need for curricula that help students learn to care effectively for the underserved.[1–3] The extent to which curricula can influence long term outcomes such as students' actual practice is unclear. Several studies suggest brief educational experiences such as preceptorships, clerkships, or electives have little impact on students' future practice with the underserved,[4–6] while more intensive programs can influence longer term outcomes such as increasing students' practice or intention to practice in an underserved community.[7–12] The cornerstone of these intensive experiences is often a service learning component that extends over months or years. Despite the need to prepare every student to care for the underserved, lengthy service learning experiences are not feasible in all institutions for all students.

"Caring for the Underserved," a curriculum developed and evaluated in the researchers' prior work, was taught as part of a 6-week pediatric clerkship experience to address the need to teach medical students to care for the underserved.[13–15] Two formats of this curriculum were developed—a faculty-led format and a web-based format, the latter being responsive to the resource limitations and offsite educational experiences commonplace in academic medicine today. Both formats blended traditional approaches (didactics, role playing and written materials) with a service learning experience. Student outcomes were compared by curriculum format, demonstrating improvements in faculty-led and web-based students' abilities to care for the underserved immediately following the six-week curriculum.[13, 14]

To address whether a brief curriculum that incorporates a service learning experience could have sustained effects on students' abilities to care for the underserved, this study presents a longitudinal comparison of students' knowledge, attitudes, self-efficacy and clinical skills by curriculum format. Evidence of longer term benefits in student outcomes could facilitate decisions about which curricular format to implement. Similarly, evidence that short-term gains diminish over time could be used to refine and improve training. To inform these refinements, any significant differences occurring across curriculum group or between post-curriculum and graduation are subjected to further item-level analyses.

METHODS

Setting, Participants, and Design

At the start of their 2003–2004 pediatric clerkship, 137 third-year medical students were randomized by six-week clerkship blocks to one of three curriculum groups:

"established" (readings only), faculty-led (taught by two authors, ATB and EDC, using standardized materials), or web-based. A summary of the curricular formats and elements follows, including the "I CARE" mnemonic screening tool used to identify underserved health concerns (details published previously).[13,14]

CURRICULUM FORMATS

Established "Readings Only" curriculum

All students received identical packets of pediatric clerkship materials, including readings relevant to caring for the underserved (information about working effectively with interpreters and resources to address underserved needs). No other instruction or materials were provided to students in this group.

Faculty-led curriculum

Students randomized to the faculty-led curriculum attended two one-hour sessions, the initial one on first clerkship day and the second at the clerkship's conclusion. The initial session consisted of students sharing experiences and reflections about underserved patients, case-based role playing and feedback around screening for underserved health issues, a review of public and private resources to address these issues and information about working effectively with an interpreter. The screening tool, I CARE, was taught as a method for identifying underserved health issues. Designed to facilitate student recall, the mnemonic represented five domains (**I**njury, **C**ommunication, **A**ccess to Care, **R**esources and **E**motional Well-being).[13] In addition to the readings in the clerkship packet, students received written copies of curriculum objectives, the I CARE tool and details about Women, Infants and Children (WIC) and Wisconsin's State Children's Health Insurance Program (SCHIP or BadgerCare). At the second session, students received peer and faculty feedback on insights gained and barriers encountered in their work with underserved families.

Web-based curriculum

On the first clerkship day, students randomized to the web-based curriculum received a 15-minute introduction to the curriculum URL, troubleshooting resources and encouragement to begin the module immediately to allow time for completion. Learning objectives were identical to the faculty-led curriculum objectives and web-based learning activities were designed to mirror those of the faculty-led session. For example, students viewed several short videos of clinical scenarios similar to those in the faculty-led role plays (37 minutes total video time), were queried about the videos, and then compared their answers to those of faculty and peers. As with the faculty-led students, web-based students received the clerkship readings, were taught the I CARE screening tool (via online instruction), and had access to printable versions of materials distributed to faculty-led students.

Independent clinical project

Both faculty-led and web-based students applied curriculum content to "real world" clinical experiences through an independent clinical project (ICP). During the clerkship, each student assessed an underserved family's health needs, located and shared resources with the family to address at least one need, and mutually set need-related goals and followed up to ensure success. Students submitted a brief description of their project for faculty feedback during the third clerkship week. During the last clerkship week, students submitted a final ICP progress report, reflecting upon insights gained and barriers encountered.

MEASURES

Surveys were administered at three timepoints: 1) pre-curriculum, 2) post-curriculum (at the end of the six-week clerkship) and 3) at graduation (mean (range) 18 (12–24) months since curriculum completion), referred to subsequently as pre, post and graduate surveys, respectively. All three surveys included student characteristics as well as four domains: knowledge, attitudes, self-efficacy and clinical skills. When possible, items were selected from relevant published literature that suggested validity of the measures on surveys of similar populations. All items were pilot-tested with students and faculty prior to study inception.

Pre- and post-curriculum surveys were administered during the clerkship orientation and wrap-up sessions; graduation surveys were administered via mail or electronically in six waves. A token incentive was provided to graduate responders (certificate for ice cream or coffee and entered into a drawing for an iPod). The evaluation was exempted from human subjects review. Detailed descriptions of student characteristics and graduate survey items follow.

Student characteristics

Demographics included age (<30 years vs. ≥30 years), gender, ethnicity (White, non-Hispanic; yes/no; recoded to reflect minority ethnicity) and disadvantaged status (i.e., comes from a low-income family; yes/no). A 'prior clerkship experiences' item allowed students to select from a list those clerkships completed previously, including primary care clerkships likely to have considered underserved issues (e.g., family medicine or internal medicine).

Knowledge

Six multiple choice items assessed knowledge. Item content was drawn from the literature and from information about community or public agencies that serve the underserved[16–27] and represented key underserved issues such as WIC or SCHIP (Badger Care) eligibility, services and impact, as well as cross cultural communication. Each item was worth one point if answered correctly. Total knowledge scores at each timepoint were calculated as the sum of the number correct (maximum=six).