Refugee child vision screening curriculum for multidisciplinary trainees

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Abstract

Background: Conflicts, natural disasters, and persecution have led to growing refugee populations worldwide. Vision impairment within these populations is a significant concern. Eye conditions in refugee children appear to peak during times of resettlement. Future medical and nursing professionals need to be trained to detect treatable conditions that could lead to permanent vision loss and significant morbidity if undiagnosed. While curricula regarding refugee health exist, no curriculum exists on identifying common eye conditions in refugee children and performing pediatric eye screening. **Methods:** We created and delivered a virtual, single-session curriculum on pediatric refugee eye conditions and screening to medical and nursing trainees. A needs assessment survey assessing trainees' knowledge and confidence in detecting eye conditions in children and refugees informed curriculum design. Pre- and post-test assessments evaluated participants' knowledge and confidence before and after the module. A two-sided signed-rank test was used to compare pre- and post-test scores. **Results:** Twenty-seven respondents completed the needs assessment survey, which revealed low levels of confidence in performing vision screening, especially in evaluating the eye surface. Fourteen participants completed the module and pre- and post-test surveys. Mean knowledge test score improved from 52% to 75% (P<0.001). **Discussion:** As the global refugee population grows, this study supports the value of incorporating a refugee child eye curriculum into trainee education to empower providers to detect and address refugee eye conditions.

Keywords: refugee, vision, eye, screening, curriculum, pediatric, children, community-oriented, health professions education

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Background

Conflicts, natural disasters, and persecution have led to growing refugee populations worldwide. Vision impairment within these populations is a significant concern.[1] Nursing professionals and primary care providers are often the first healthcare providers who interact with refugee children and their families.[2] Therefore, the initial clinical encounter has the potential to make a lasting impact on the ability of the family to thrive in their new environment.[3] Refugee children are among the most at-risk groups worldwide for developing poor health outcomes, largely due to overcrowded living conditions, malnutrition, lack of access to clean water, and absence of timely, reliable healthcare services.[4]

Because the eye is an exposed organ, it is particularly vulnerable to trauma and infections. Eye conditions in refugee children are increasingly discovered and appear to peak during times of resettlement.[1] Common childhood vision problems that are otherwise treatable can worsen without timely intervention, and lead to visual impairment. It is imperative that providers treating the refugee population promptly recognize these conditions. To

date, there has been no structured curriculum for the detection of eye conditions affecting refugee children to meet the needs of a growing refugee population. The purpose of this study was to: 1) conduct a needs assessment to understand deficits in trainees' existing curricula; and 2) design a curriculum to improve trainees' knowledge of the components of a basic eye exam in children and knowledge of the health challenges faced by refugee populations.

Methods

Program Development

We developed and implemented a one-hour virtual educational module for medical and nursing trainees. Curriculum development was led by a fourth-year medical student receiving formal medical education training, with all steps of curriculum design supervised and approved by a clinician-educator with global ophthalmology experience, and experience designing lectures for healthcare trainees about unconscious bias. Curriculum development was informed by a needs assessment survey to allow learners to identify their own gaps in knowledge and clarify the competencies they wanted to obtain through the module.5 The needs assessment survey was emailed to students at the Schools of Nursing and Medicine at a large northeastern United States university from November–December 2020. The survey included questions measuring the degree to which respondents felt health professionals should possess certain types of knowledge (e.g., "Health professionals should know which eye conditions are most common in refugee children."), questions assessing respondents' experience level with specific aspects of the pediatric eye exam (e.g., assessing for red reflex), and an open-ended section to include other topics respondents were interested in learning.

Based on the needs assessment, we developed a module covering how to perform basic vision screening in children; etiologies, presenting signs, and symptoms of commonly diagnosed eye conditions in refugee children; factors that increase the risk of vision impairment; and "red flag" presentations that warrant urgent referral to eye care providers. The curriculum development team wrote multiple-choice questions that directly assessed trainees' knowledge of concepts taught during the module. Inclusion of knowledge-based questions on the pretest surveys primed learners to the knowledge they would acquire through the module.6 These questions were included on both pretest and post-test surveys.

Setting and Participants

We developed the curriculum to be broadly applicable to trainees at various stages of training. The module was advertised over email listservs for medical, nursing, and post-baccalaureate students at our institution. The module was delivered once in February 2021 in a virtual format given the COVID-19 pandemic. The study was deemed exempt from IRB review by the university's institutional review board. Participants created unique identifiers for tracking of anonymous responses. Students were entered into a random draw for gift cards for participating in the module and completion of pre- and post-test surveys.

Pretest and Post-test Surveys

Pretest and post-test surveys were conducted using REDCap.[7,8] The pretest survey was administered at the start of the module. We evaluated knowledge acquisition through a post-test survey administered immediately after completion of the module. Trainees provided feedback on the curriculum and reported learning points they took away from the curriculum.

Analysis

All data were evaluated anonymously. Data were summarized using percentages for categorical variables and mean and standard deviation for continuous variables. Inferential statistics (two-sided signed-rank test) were used to compare pre- and post-test performance. Statistical significance was set at $P<0.05$. Analyses were performed using Microsoft Excel version 16.74 and Stata version 14.2.

Results

Needs Assessment

Twenty-three respondents completed the needs assessment survey: 17 medical students (74%), three registered nurses (13%), one physician (4%), one nurse practitioner student (4%), and one nursing student (4%). Most respondents (96%) had no prior training in refugee eye conditions. Respondents reported low levels of confidence in performing vision screenings (Figure 1) and had the least familiarity with assessing eye surface, as well as assessing eyelids and eyelashes (Figure 2). Other areas where respondents reported low confidence included evaluating the blink reflex, the red reflex, and eye alignment (Figure 2).

Figure 1: Respondents' confidence level with performing vision screening

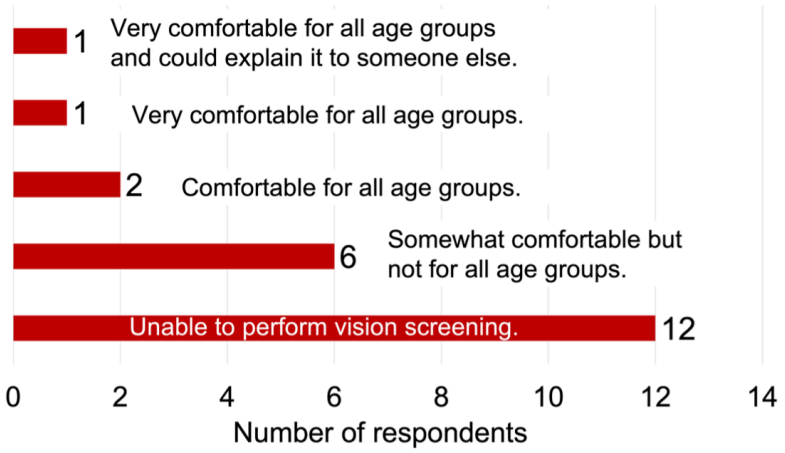
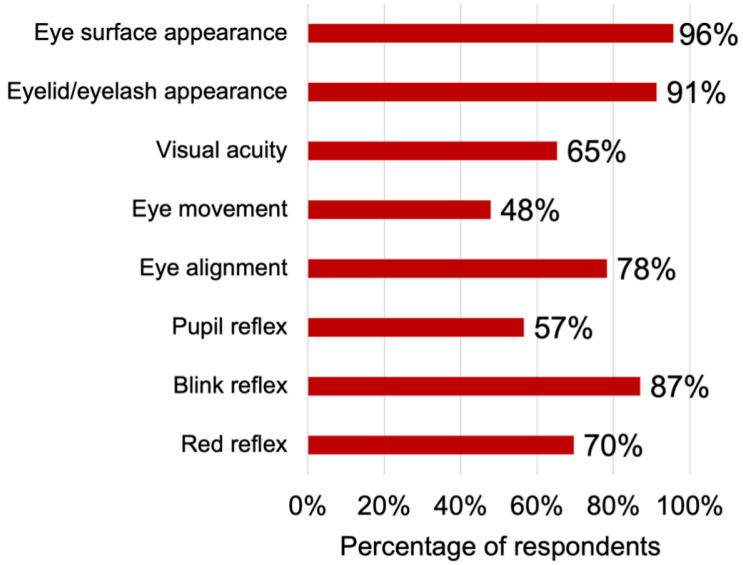


Figure 2: Percentage of respondents indicating "I would like more training" and/or "I have never been trained in this" for various eye exam skills



All respondents indicated a need for more training to determine urgent vs. elective referral for eye conditions. Ninety-six percent of respondents agreed, or strongly agreed, that providers should have basic skills to identify treatable ocular conditions.

Curriculum

Fourteen trainees participated in the curriculum and completed all assessments. This included eight medical students (57%), three undergraduate students (21%), two post-baccalaureate students (14%), and one nurse practitioner student (7%). Mean test score improved from 52% to 75% upon completing the module ($P<0.001$). All respondents answered "Agree" or "Strongly Agree" to the prompts: "I know more about refugee eye conditions than before I started this course" and "I would recommend this course to others." Most respondents (57%) stated the course had "Excellent" applicability to their future goals and interests, and 36% stated the course had "Good" applicability to their future goals and interests.

Trainees were given the opportunity to report takeaways from this curriculum. One trainee noted learning "the importance of an immediate examination from an ophthalmologist when prominent symptoms of eye disease are present." Another stated, "Refugee children may need vision

screening that they may have missed earlier in life." Areas for improvement suggested by survey respondents included incorporating more audience participation, and including images in the knowledge-based questions.

Discussion

To our knowledge, this is the first curriculum on eye health conditions with a focus on the refugee population. Most participants had no prior training in refugee eye health conditions, and upon completion of the curriculum, mean post-module assessment scores increased by 23 percentage points. Our work highlights the potential for a focused, condensed training module to enhance trainees' knowledge of refugee populations' unique medical needs.

The rapidly increasing global refugee population poses a unique challenge to healthcare workers and institutions training the future generations of providers. By the end of 2022, 108.4 million people were displaced from their homes worldwide due to political unrest, human rights violations, persecution, conflict, and regional violence.9 As a result of the conditions surrounding their displacement, refugees have unique healthcare needs. The current Western model of medical and nursing education lacks formal training on the special needs of refugee patients and recent graduates can feel inadequately equipped when caring for refugee patients. This curriculum joins existing efforts to improve providers' knowledge of refugee health needs. In 2013, a group of medical students designed a refugee health elective with the goal of improving participants' knowledge of medical and mental health issues common to refugees and awareness of social and logistical hindrances to medical compliance.10 This highlights the benefit of including refugee health education in the training of culturally sensitive physicians, and providing refugee health education to trainees who plan to serve refugee populations.

Limitations of our curriculum include the limited sample size. Utilizing email and in-person recruitment at multiple institutions may increase sample size, allowing for more robust assessment of this curriculum. There may be selection bias in self-selected participants who were likely already interested in ophthalmology, pediatrics, and/or refugee health. The ratings of applicability to future goals, even within a mixed cohort of learners, are promising. Learners who may not encounter refugee patients can still appreciate that environmental exposures can place certain populations at higher risk for certain conditions. Moreover, knowledge change measured immediately post-intervention is less informative than change measured weeks to months after completion of the module. Future course iterations should include questions on squint, tumor, and eye-watering, which were addressed in the curriculum but not assessed. Another limitation is the lack of hands-on practice with vision screening skills due to the COVID-19 pandemic; future iterations of this course should incorporate an in-person session so that participants can practice these skills. Finally, curricula should be developed that highlights the unique needs of other refugee populations (e.g., geriatric).

Our evaluation of this curriculum supports the utility of including refugee eye health in medical and nursing education to increase trainees' knowledge of key ophthalmic concerns and better support this culturally diverse population. By training healthcare providers to perform vision and eye health screenings, and to recognize the "can't-miss diagnoses," patients can be promptly referred for high-risk vision- and health-threatening pathologies. Future work is needed to combine knowledge acquisition with hands-on experiential learning.

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