Navigating School-Based Special Education Services: A Self-Paced Virtual Learning Module

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Abstract

Introduction: Children with disabilities are particularly vulnerable to school failure, as they are more likely than their peers to experience school dropout and academic struggles. Early identification of learning difficulties and access to special education services are critical to the success of children with disabilities. However, few pediatricians feel competent in screening for risks of school failure and/or assisting families with navigating the special education system. Due to restricted duty hours and limited scheduled didactic time during residency, flexible training options are needed to fill this educational gap and address this systems-based practice competency. Methods: We developed a 30-minute self-paced virtual learning module aimed at educating pediatric residents on strategies for navigating the special education system. The module used a knowledge, attitudes, and self-efficacy framework, as well as case examples and pictorial relationships to illustrate concepts. Wilcoxon signed rank tests were conducted to assess changes in total knowledge, attitude, and self-efficacy scores. Results: After completion of the module, residents' self-efficacy total scores significantly increased ($r = .88, p = .001$), suggesting that they were more confident in their ability to identify, recognize, and advocate for special education services. Discussion: This virtual learning module successfully increased resident self-efficacy in screening for school failure and navigating the special education system. This highly feasible, self-paced training module can be modified to fit demanding resident schedules and serves as a potential tool to teach trainees and other pediatric providers about the special education system.

Keywords

Pediatrics, Developmental-Behavioral Pediatrics, Special Education System, Video Learning Module, Self-Paced Learning Module, School-Based Services, Online/Distance Learning, Self-Regulated Learning, Virtual Learning

Educational Objectives

By the end of this module, learners will be able to:

1. Identify when and how to screen patients who may benefit from school-based services.
2. Describe the rules and restrictions of, and differences between, the different types of school-based supports.
3. Explain the evaluation process to patients and their families, including how and when to request an evaluation, obligations and process timeline, and postevaluation expectations.
4. Identify resources to support families when advocating for school-based special education services for their children.

Introduction

School failure is associated with adverse health outcomes and potential lifelong consequences. Regardless of cause, academic difficulty is associated with higher dropout rates and lower educational attainment. Low education level is linked to worse health outcomes and limited economic opportunities. Children with disabilities are particularly vulnerable to school failure since they face over twice the high school dropout rate compared to their non-disabled peers. The dropout rate for youth with disabilities is 12%, compared to 5% in children without disabilities. These statistics suggest that some children with disabilities are not receiving appropriate educational services that adequately protect against dropout and school failure.

The Individuals With Disabilities Education Act ensures that children with a disability or chronic health condition that affects
school performance receive free, appropriate educational services. This includes individualized education programs (IEPs), which allow for academic modifications, placement in special education classrooms, and access to speech and language therapy. While the law guarantees educational services to those who qualify, many children are not identified as having a disability until later in childhood when they have already fallen significantly behind in school. This can lead to an early dislike of school, increased dropout rates, and decreased educational outcomes. Pediatric providers have the opportunity to play a crucial role in the identification of disabilities as they have routine appointments with children and can incorporate academic success or difficulty into their well-child visits.

The American Academy of Pediatrics (AAP) has affirmed the importance of pediatric provider involvement in identifying school failure and advocating for further educational testing and assessment when appropriate. A clinician’s ability to screen for academic struggle and identify the cause of school difficulty is crucial for promoting early access to appropriate resources, thus increasing chances of improved educational outcomes. Pediatric provider competence in identifying children with disabilities and helping families navigate the special education system is critical to decrease the risk of school failure among children with disabilities. For instance, the AAP policy statement indicates that pediatricians should participate in planning IEPs, 504 modification plans, and individual family service plans for children with disabilities. Furthermore, the AAP notes that school health should be included in resident curricula.

The Accreditation Council for Graduate Medical Education (ACGME) lists proficiency in systems-based practice as one of its six core competencies for residents. According to the ACGME, the systems-based care competency encompasses proficiency in understanding patient care in the context of the larger health care system, with special consideration given to social, cultural, and economic factors. More specifically, providers must be able to understand and utilize resources available and communicate with professionals in other disciplines. For children with disabilities, access to special education services is an essential resource, and pediatric providers have an obligation to help families navigate these resources when appropriate. Through improved residency education in special education resources, pediatricians can work towards showing proficiency in this ACGME competency requirement while also providing for increased educational opportunities for children with disabilities.

For many residency programs, teaching advocacy and community influences on child health is an integral part of the pediatrics curriculum. However, surveys show that despite the inclusion of community pediatrics in residency training programs, there is a need for more education focused specifically on school health and the special education system. Furthermore, studies show that few pediatricians feel confident in their ability to adequately screen for school failure and/or help families navigate the special education system. This lack of knowledge and training at both the resident and pediatrician levels highlights the need for more learning resources aimed at improving educational competencies surrounding school health. Although there is a necessity for more training and education in school health, residency programs are faced with restricted duty hours and limited scheduled didactic time. Thus, innovative and flexible training options are needed to fill this educational gap. We developed an easily accessible virtual training module aimed at educating pediatric providers on strategies for navigating the special education system. We chose a self-paced virtual design so residents and pediatric providers with busy schedules would have more flexibility in obtaining this content area of training. Participants are free to start and stop the module whenever needed and can participate individually or within a group. Furthermore, the virtual design permits learner participation at sites where there is no live content expertise, and the pre- and postsurvey allow for self-assessment and reflection on a learner’s self-efficacy in this area of systems-based practice.

To our knowledge, there currently is no published self-paced virtual learning module on school-based special education services. While there is another resource that provides residents with an opportunity to learn about the special education system, it requires arranging a 3-hour small-group didactic session and a 1-hour follow-up session, for a total of 4 hours of residents and faculty meeting in person. Given the busy schedules of residents, that resource’s in-person format may make it difficult to offer to all residents. Our module is unique in that it is virtual, self-paced, and succinct and can fit into anyone’s schedule. To help illustrate the special education system’s request and evaluation process, we have integrated a sample attention deficit hyperactivity disorder (ADHD) clinical case into the module. ADHD is one of the most common childhood disabilities, with up to 70% requiring school supports, making it an ideal example for learning about the special education system. This self-paced virtual learning module gives pediatric providers an opportunity to improve their knowledge, attitudes, and self-efficacy (KASE) in navigating school-based special education services for children and their families. A KASE framework has been used to measure improvement in these variables from the presurvey to the postsurvey. This framework is based on a knowledge attitudes and practices model and the self-efficacy domain.
from Bandura’s social-cognitive theory.\textsuperscript{15,16} Other studies have measured KASE related to obesity and asthma management.\textsuperscript{16-18}

Methods

Participants and Setting

We recruited eligible participants ($N = 93$) who were PGY 1-PGY 4 pediatric residents at a large academic children’s hospital, Children’s Hospital Los Angeles (CHLA). We planned to administer the web-based training module during their ACGME-required developmental-behavioral pediatrics (DBP) rotation with a minimum of 35 residents; however, all residents were eligible to participate. Residents received an email notification inviting them to participate in the module and were also recruited in person. Twenty-three pediatric residents completed the learning module, which was a response rate of 66% for those on the DBP rotation and 25% among all pediatric residents. We obtained institutional review board approval for module dissemination.

Module Content

We developed the module initially using Microsoft PowerPoint and converted it to web-based content using iSpring Suite software (iSpring 2020). iSpring is a PowerPoint-based authoring software that allows for creation of video learning modules. We incorporated audio narration and hyperlinks into the module and added an ADHD sample case to provide clinical context and structure throughout the lesson. We distributed the virtual module at CHLA. The module guided residents through the child assessment using clinical strategies, measures, and tools. We organized module content to sequentially highlight (1) policies related to special education services, (2) clinicians’ roles in identifying and assessing school failure, (3) common services (and their limitations) available to children, and (4) support and advocacy resources. The residents navigated through the module content at their own pace, as they could stop the module at any time and return to it later (Table 1). No prerequisite knowledge was required to complete the module, although all participants were medical residents with basic clinical knowledge.

Module Implementation

Given the self-paced design of the module, trainees participated from a variety of locations as long as they had a device such as a computer, laptop, tablet, or smartphone for virtual learning. While all participants from the initial administration completed the module by watching the narrated PowerPoint video (Appendix A), they had the opportunity to read through the PowerPoint slides and script on their own (Appendices B and C). In order to view the narrated PowerPoint video, electronic devices had to be compatible with MP4 video files. Alternatively, if trainees viewed the PowerPoint by itself, MS-PowerPoint or Adobe Acrobat was required. For initial implementation of the module, we converted pre- and postsurveys (Appendix D) to online ones hosted by Survey Monkey. Participants were able to see answers to knowledge-based questions (Appendix E) after completion of the postsurvey. Since the module was self-paced, the residents could stop and then return to participate in the module at any time. Most participants completed the module and the pre- and postsurveys in 50 minutes: the presurvey in 10 minutes, the module in 30 minutes, and the postsurvey in 10 minutes. We also created a supplemental resource document for learners to access links discussed in the video module (Appendix F).

Development and Evaluation of the Assessment

We conducted a needs assessment with developmental-behavioral pediatricians. We determined that the residents needed to learn more about the IEP process because it came up routinely after clinic visit discussions where residents were uncomfortable about advocating for school-based services and how to support families. As a result, we realized there was a need to create this educational module. We used a knowledge attitudes and practices model along with the self-efficacy domain from Bandura’s social-cognitive theory as the framework of the assessment.\textsuperscript{15,19} Other studies have also used KASE frameworks.\textsuperscript{16-18} We presented knowledge items via multiple choice and attitude and self-efficacy items on 5-point Likert scales ($1 = \textit{Strongly disagree}, 5 = \textit{Strongly agree}$). For statistical analysis, we used Wilcoxon signed rank tests to assess changes in total KASE scores. The effect size was calculated for total scores that were significant.

Validity of Survey Questions

Content validity: Prior to implementation, a DBP fellow created case-based knowledge questions with input from supervising faculty. We used attitude and self-efficacy questions modified from scales identified from previous literature.\textsuperscript{18,20} Three DBP

| Module Content | Suggested Time |
|----------------|---------------|
| Pretest attitude, knowledge, and self-efficacy surveys | 10 minutes |
| PowerPoint/video module | 31 minutes total |
| Introduction (slides 1-3) | 2 minutes |
| Identification of disabilities (slides 4-25) | 9 minutes |
| Individuals With Disabilities Education Act law | |
| Role of pediatrician | |
| Types of school-based supports (slides 26-52) | 18 minutes |
| Individualized education programs | |
| Support and advocacy (slides 53-56) | 2 minutes |
| Role of pediatrician | |
| Legal advocacy services | |
| Posttest attitude, knowledge, and self-efficacy surveys | 10 minutes |
| Estimated total time | 51 minutes |

Table 1. Outline of Self-Paced Module With Suggested Time for Each Section

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faculty reviewed the questionnaires to ensure that the constructs were being measured appropriately and provided content expertise.

Response process: After initial administration of the questions, we constructed the knowledge survey by assessing responses of the residents from a developed question bank with one correct answer per question.

Consequences to residents, children, and parents for low knowledge-based score: We created the pre- and postsurveys to allow for formative and summative feedback. If a resident or pediatric provider did not perform well on the knowledge scale, it indicated that they would not be as prepared to identify, navigate, and advocate for supports and services; educate parents; and ultimately help children. However, the answer key was available for those with low scores to review the correct answers.

**Results**

Twenty-three pediatric residents participated in the module, which was a response rate of 66% for those on the DBP rotation and 25% among all pediatric residents. The majority were PGY 2s, followed by PGY 3s and PGY 1s (Table 2). About 30% (seven) had completed the DBP rotation prior to participating in the module. All residents completed the presurvey, and 57% (13) completed the postsurvey. Wilcoxon signed rank tests indicated that after the intervention, the mean total self-efficacy score increased significantly (p = .001), suggesting that residents were more confident in their ability to identify, navigate, and advocate for school-based services (Table 3). The effect size for the mean total self-efficacy score was r = .88, which was a large effect size.

No differences were seen in knowledge (p = .454) or attitude total scores (p = .058). However, in terms of individual attitude items, residents were significantly more likely to agree that they had a good strategy for guiding children once the IEP process had been initiated (p = .004). Upon completion, verbal feedback from residents was positive. For example, residents appreciated the flexibility of completing the module on their personal devices and smartphones. They also reported that the section explaining differences between an IEP and a 504 plan was particularly instructive in discussing the role of the pediatric provider and for providing suggestions for parent education on supports and services.

**Discussion**

To our knowledge, this is the first virtual learning module aimed at increasing pediatric provider self-efficacy in navigating the special education system for children at risk for school failure. Pediatric providers with increased self-efficacy in their ability to screen, recognize, and advocate for school-based special education services for children may be more likely to broach the topic of academic struggle with families. By raising this topic with families, pediatric providers are more likely to identify disabilities, help families connect with the services they need, and increase interdisciplinary communication between families, educators, and clinicians. Earlier identification and access to special education services, along with increased provider advocacy, lead to an improved likelihood of educational success for children with disabilities.21

Similar studies tracking changes in KASE corroborate the effectiveness of using this learning module in resident education.22 In the age of virtual learning, self-paced interventions allow for more flexibility with higher feasibility and can be a useful substitute for in-person training. Furthermore, related studies show that resident education about community services increases self-efficacy and likelihood of helping families utilize these resources.23 This learning module provides training programs with a convenient and effective way to empower pediatric providers to help families navigate special education services and advocate for resources when necessary. Additionally, providers can reference the module and supplemental materials when assisting children and their families with navigating the special education system. Pediatric providers with limited training or those who want an update can participate in this succinct training according to their own schedules.

One limitation in evaluation of effectiveness of this module is the small sample size, which may have limited our ability to detect positive changes in resident knowledge and attitudes based on survey response items. However, both summative and formative feedback showed benefits of using this virtual

| **Table 2. Characteristics of Pediatric Residents (n = 23)** |
|----------------|---|
| **Characteristic** | **No. (%)** |
| Gender | |
| Male | 15 (65) |
| Female | 8 (35) |
| Training level | |
| PGY 1 | 1 (4) |
| PGY 2 | 12 (52) |
| PGY 3 | 9 (39) |
| PGY 4 | 0 (0) |
| Did not answer | 1 (4) |
| Training track | |
| Categorical | 21 (91) |
| Preliminary | 0 (0) |
| Pediatric neurology | 1 (4) |
| Did not answer | 1 (4) |
| Postgraduate plans | |
| General pediatrics | 14 (61) |
| Subspecialty training | 9 (39) |
learning module. There was positive feedback about the flexibility and usefulness of the intervention, and residents gained more self-efficacy in their ability to navigate issues relating to the special education system. Moreover, research analyzing the relationship between self-efficacy and behavior has shown that increases in self-efficacy often lead to actual changes in behavior.\(^2\) Thus, an increase in self-efficacy, irrespective of actual changes in knowledge, can still have a meaningful impact on pediatric residents’ and providers’ ability to identify disabilities and advocate for appropriate special education services. If pediatric providers do not feel confident in their ability to navigate the special education system, they are less likely to raise the topic with children/families and attempt to advocate for needed services.

Another limitation in evaluation of our module is that generalizability is limited as the sample who completed the module included pediatric residents at one institution. While the results would likely translate to other specialties and disciplines, other groups in other locations did not participate. This training module was created specifically for pediatric residents but can be modified by other training or continuing education programs. Aside from residents, other interested learners could also participate in the module, including medical students, fellows, faculty, and other pediatric providers. In particular, family practice physicians, those in combined internal medicine and pediatrics residencies, and child psychiatrists could benefit from this computer-based learning module as they routinely see children with developmental disabilities. DBP fellows might also benefit from participating in the module.

One challenge we faced during implementation of this learning module was completion of the postsurvey. While all participating residents completed the presurvey, demanding resident schedules made it very difficult to follow up with the postsurvey. Initial administration of the module connected trainees to the postsurvey through a Survey Monkey link embedded at the end of the video module. While this method allowed for convenience, its design may have mistakenly disguised the postsurvey as an optional survey or feedback form. We recommend that for future use of this resource, training programs emphasize the importance of the postsurvey and set reminders for residents with busy training schedules.

There are several adaptations that are possible with our learning module. Participants can choose to complete the module individually to fit busy work schedules. Alternatively, program directors can choose to integrate the learning module into small-group or classroom lectures. Small-group learning may help facilitate integration of module material with clinical experience. For example, after completion of the module, participants could discuss how the newly learned information could be integrated into their future treatment of children with disabilities. Additionally, instead of using a Word document for the surveys, the knowledge-based questions could be embedded in an online survey to allow participants to review the results and answers to the questions in real time. Optionally, programs could host the module on an online platform (e.g., Canvas, Moodle, or Blackboard) to increase ease of use and integration with other training tools and learning modules. Further expansion of this resource could also include feedback about usefulness of the

### Table 3. Changes in Knowledge, Attitudes, and Self-Efficacy

| Survey and Questions | Pretraining M (SD) | Posttraining M (SD) | z    | p     |
|----------------------|-------------------|---------------------|------|-------|
| Knowledge total score\(^a\) | 4.14 (1.46) | 4.62 (1.39) | −0.75 | .454  |
| Attitudes | | | | |
| Q5. Has a good strategy for guiding patients once the IEP process has been initiated. | 2.48 (0.84) | 3.54 (0.66) | −2.92 | .004  |
| Q6. Counseling patients on how to go about initiating the IEP process is not an efficient use of my time. | 2.17 (0.65) | 2.00 (0.58) | −1.41 | .157  |
| Attitude total score\(^b\) | 24.08 (1.62) | 25.10 (1.52) | −1.80 | .058  |
| Self-efficacy | | | | |
| Q7. Confidence in ability to identify patients who may benefit from an IEP or other school supports. | 3.18 (0.66) | 3.92 (0.49) | −3.05 | .002  |
| Q8. Confidence in ability to educate patients on the various school supports available and which one may best suit them. | 2.45 (0.60) | 3.69 (0.63) | −3.15 | .002  |
| Q9. I am confident in my ability to assist patients in initiating the IEP process. | 3.14 (0.83) | 3.77 (0.44) | −2.64 | .008  |
| Q10. I am able to direct my patient to appropriate community resources to further assist with obtaining appropriate school services. | 2.68 (0.84) | 3.77 (0.73) | −3.22 | .001  |
| Q11. I feel confident reading through an IEP and identifying key information. | 2.32 (0.95) | 3.54 (0.88) | −2.57 | .01   |
| Q12. I am effective in assisting patients who continue to have difficulty obtaining appropriate supports and services at school. | 2.23 (0.61) | 3.38 (0.65) | −2.92 | .004  |
| Self-efficacy total score\(^b\) | 16 (3.07) | 22.07 (3.01) | −3.19 | .001  |

Abbreviation: IEP, individualized education program.
\(^a\)Knowledge total scores were on a scale of 1-7.
\(^b\)Attitudes and self-efficacy total scores were generated from 5-point Likert scales (1 = Strongly disagree, 5 = Strongly agree). Wilcoxon signed rank tests were conducted.
training module during visits with children and their families, as well as more knowledge-based questions and practice training cases.

In conclusion, given the new expansion in virtual learning, this resource provides an opportunity for residents and other pediatric health providers to participate in a single training module with information packed in a succinct, direct, quick, and easily accessibly format. This module provides residents with important training in the ACGME systems-based practice competency of promoting an optimal patient care system and prepares them to work with an interprofessional team in the community. Through completion of this learning module, residents can feel more competent in their ability to provide comprehensive care and integrate health care needs with appropriate special education services for children. This learning module is inexpensive and feasible, making it a low-cost option for programs without access to live content expertise. Access to the module is not constrained by scheduling conflicts or duty hours, making it an excellent educational format for training programs across the country.

Appendices

A. Video Module.mp4
B. PowerPoint Module.pptx
C. Module Script.docx
D. Pre- and Posttest Surveys.docx
E. Knowledge-Based Test Answer Key.docx
F. Resources Document.docx

All appendices are peer reviewed as integral parts of the Original Publication.

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Ethical Approval
The Children's Hospital Institutional Review Board approved this study.

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