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Article

TRAINING AND PREPAREDNESS TO MEET THE NEEDS OF STUDENTS WITH A CHRONIC HEALTH CONDITION IN THE SCHOOL SETTING: AN EXAMINATION OF TEACHER PREPARATION PROGRAMMING IN THE UNITED STATES

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Abstract: Despite the increasing prevalence of chronic health conditions among youth in schools, teachers report little exposure to specific coursework focusing on how to best support students with these conditions in the classroom. This study examined how teacher preparation programs prepare educators to meet the needs of this growing student population; findings also include survey results describing level of preparation to support students with a chronic health condition from the perspective of preservice and practicing educators enrolled in the nation's leading colleges of education. Results suggest that dedicated curriculum to prepare teachers to work with students with chronic health conditions is largely absent from teacher preparation programming, and that teachers feel they lack knowledge to adequately support students with a chronic health condition in the classroom setting. Recommendations and implications are discussed.

Keywords: *chronic medical conditions; chronic health conditions; teacher preparation; teacher training*

Introduction

School support for students with chronic health conditions is a relatively new and thus continuously evolving topic, given that decades ago, considerations for students with health conditions were largely deemed unnecessary due to low survival rates and poor long-term outcomes associated with most serious pediatric conditions (Pufpaff, McIntosh, Thomas, Elam, & Irwin, 2015). In a span of 34 years, however, several factors have shifted the dynamics associated with school for students with chronic illness. Perhaps most notably, the population of students shifted from what was previously deemed a low incidence to now a high incidence population, as cure rates for most pediatric illnesses have increased significantly (Aruda, Kelly, & Newinsky, 2011). Furthermore, for those with the most severe (and even incurable) conditions, advances in technology have allowed for children who historically would have been institutionalized to be treated on an outpatient basis, thereby increasing their participation in the traditional school setting (Perrin, Guyer, & Lawrence, 1992).

Despite the increased prevalence of students with a chronic health condition (or history of), the education field has been slow to catch up with the ever-growing demands of this student population (Pufpaff et al., 2015). Given the known implications associated with chronic illness (including compromised academic, social, emotional, and behavioral outcomes), it is widely understood that these learners warrant unique and specialized supports in the school setting, though research is limited in evidencing best practice and interventions most effective for students with a history of chronic illness (Roberts, 2006). Thus, it is no surprise that educators report worry, fear, and lack of preparedness relative to supporting this population of youth in the classroom (Heller, Fredrick, Best, Dykes, & Cohen, 2000; McCarthy, Williams, & Eidahl, 1996). Further contributing to teacher reluctance and confidence in supporting students with health conditions is the absence of teacher preparation and professional development on this topic (Bradford, Heald, & Petrie, 1994; Pufpaff et al., 2015). In 2004, it was reported that 59% of teacher respondents endorsed that they had not received any academic preparation and 64% had not received on-the-job training for supporting students with a chronic illness, yet nearly all (98.7%) reported knowing a student with such a condition (Clay, Cortina, Harper, Cocco, & Drotar, 2004). Six years later, the National Association of Secondary School Principals published the following statement:

> The gap between professional preparation and the need for knowledgeable professionals with regard to medical issues is wide. Without changes in preservice and in-service preparation, this gap is likely to grow wider (Shaw, Glaser, Stern, Sferdenschi, & McCabe, 2010, p. 16).

Most recently, Selekman (2017) illuminated that this issue persists, reporting that 52.3% of more than twelve hundred teacher survey participants described they received no training on children with chronic conditions as part of their teacher preparation programming; an additional 16.9% had only one lecture on the topic, and just 8% indicated that their preparation was helpful for this aspect of their role.

Failure to address this aspect of teacher training is not without consequences. Research on teacher perceptions suggests that there are many misperceptions about this population of students,

and these misunderstandings often translate into misguided focus and stereotypical attitudes which can compromise supports that would otherwise benefit these learners. For example, Olson, Seidler, Goodman, Gaelic, and Nordgren (2004) identified that educators may perceive that students with health conditions pose a threat in terms of personal liability and risk in the classroom for the educator, when, in reality, students with chronic illness are more likely to experience psychosocial difficulties and challenges with learning. The likelihood of these students having a medical emergency in the classroom and therefore creating liability risks for the teacher is very low. Though evidence exists to the contrary, and as Olson and colleagues reinforce, "few educators perceived their students' [with chronic illnesses] learning abilities as an issue" (Olson et al., 2004, p. 56). This unfortunate misunderstanding can result in educators overlooking indicators that may reveal a need for traditional classroom supports for their students with health conditions.

Completing a training program specific to increasing knowledge of chronic health conditions and associated treatments has been shown to significantly increase knowledge levels from pre-training to post-training among educators (Brown, Bolen, Brinkman, Carreira, & Cole, 2011). Prevatt, Heefer and Lowe (2000) endorsed the value of training, reporting that appropriate school personnel education programs may prepare educators to meet the overall needs of students with chronic health conditions by providing information and training that aims to increase the understanding and sensitivity necessary to successfully meet such student needs in the classroom. Cunningham and Wodrich (2006) further substantiated the positive effect of teacher preparation in this area; their study demonstrated that when teachers are provided with basic disease information and the associated classroom implications, the amount and type of accommodations designated more closely aligned with the specific needs of the student compared to teachers that did not receive such targeted information.

To date, while the literature suggests that teachers are ill-prepared to support students with chronic health conditions in the classroom, a thorough review of the availability of such curriculum and training is seemingly not available. Therefore, the purpose of this research was to determine how teacher preparation programs prepare educators to support the school-related needs of students with a chronic health condition and, secondarily, to examine the perception of need and level of preparation in this area from the perspective of preservice and practicing educators enrolled in colleges of education nationwide. Specifically, this mixed-methods study examined three research questions:

1. How do national teacher preparation programs prepare educators to support the school-related needs of students with chronic health conditions?
2. Are there any teacher preparation programs in the United States that seek to train educators on the school-related needs of students with a chronic health condition?
3. What is the perception of need and level of preparation relative to supporting students with a chronic health condition in the school setting from the perspective of the preservice and practicing educators enrolled in colleges of education across the country?

Methods

A combination of structured interviews, surveys, curriculum reviews, and a comprehensive web search were employed to answer these research questions. Table 1 outlines the research question and provides information on the research methods, related instrumentation used to address each research question, and the source for information or the sample for each research question.

Curriculum Review

To assess how teacher preparation programs across the country prepare educators to support the school-related needs of students with a chronic health condition (research question 1), the research team designed a Curriculum Evaluation Tool, a list of inclusionary/exclusionary terms, and steps for website review. The following steps were used to evaluate webpages: identify the official college webpage; search within the webpage for college of education (undergraduate or graduate); locate degrees offered within the college; locate course catalog; locate degree requirements; and then transfer data into the Curriculum Evaluation Tool. Three members of the research team examined the curriculum of 40 teacher preparation programs across the country to determine how these programs prepare educators to support the school-related needs of students with a chronic health condition.

A team of expert reviewers determined required courses for each major, minor, or certificate. While searching for any indication that curriculum in these programs specifically teaches the preservice and practicing educators how to support children with chronic illnesses in the school setting, researchers also searched for content related to other unique populations of students to compare whether other unique populations of students were explicitly cited in descriptions of teacher preparation courses as an area of focus (e.g. students with autism, English Language Learners [ELL], gifted students).

Structured Interviews

To supplement the findings from the curriculum review phase of this study, the curriculum review was followed by an attempt to interview the National Council for the Accreditation of Teacher Education (NCATE) Coordinator, curriculum director, or other faculty member responsible for curriculum development from each of the 40 identified teacher preparation programs. Potential participants were identified using the university's/program's website and/or by calling the program directly. A study recruitment script was used via phone and/or email to invite the curriculum representatives to participate in the research. Three attempts were made to invite each curriculum representative, and if the first university staff member (e.g., NCATE Coordinator) identified was not successfully recruited, study participation by another staff member at that university in charge of teacher preparation curriculum development was sought (e.g., Special Education Department Chairperson, a curriculum director, a department chairperson, the college dean).

Table 1

Research Questions, Methods of Data Collection, Source of Information, and Instrumentation

Research Question	Method	Source/Sample	Instrumentation
1. How do teacher preparation programs nationwide prepare educators to support the school-related needs of students with chronic medical conditions?	Curriculum review	Curriculum guides/course descriptions of 40 national teacher preparation programs (20 graduate & 20 undergraduate)	Curriculum examination data collection tool
	Structured interviews	Curriculum representatives (NCATE Coordinator, curriculum director, or other faculty member responsible for curriculum development) from undergraduate and graduate teacher preparation programs nationwide	Curriculum interview protocol
2. Are there any teacher preparation programs in the United States that seek to train educators on the school-related needs of students with a chronic health condition?	Web Search	Extensive web-search using a defined set of search terms to identify teacher preparation programs in the United States that seek to train educators on the school-related needs of students with a chronic health condition	Web-search data collection tool
3. What is the perception of need and level of preparation relative to supporting students with a chronic health condition in the school setting from the perspective of the preservice and practicing educators enrolled in colleges of education across the country?	Survey	29 students in one of the previously identified 40 teacher preparation programs	Investigator-designed perceptions survey

The interviewer received consent from participants and interviews were audio recorded. Early in the interview process with each interview participant, the researcher transparently reviewed the results of the associated curriculum review to give the university's curriculum representative an opportunity to speak to the findings of the curriculum examination for his/her program. Member-checking concluded each interview and interviews were transcribed and cross-transcribed.

Web Search

To determine if any teacher preparation programs in the United States seek to train educators on the school-related needs of students with a chronic health condition (research question 2), an extensive web-search (using a web-search data collection tool developed by the research team) was conducted using the Google search engine to identify teacher preparation programs in the United States that claim to train educators on the school-related needs of students with a chronic health condition. Search terms included various combinations of the following terms: [teacher preparation, teacher training, teacher credential, teacher certificate] coupled with [chronic illness, other health impairment, health disability, special health care needs, mental illness, chronic illness and orthopedic impairment].

Survey

To respond to the third research question on the perception of need and level of preparation relative to supporting students with a chronic health condition in the school setting from the perspective of preservice and practicing educators enrolled in colleges of education across the country, a small sample of preservice and practicing educators enrolled in the previously identified teacher preparation programs (from programs that also participated in the interview portion of the study) participated in a survey to examine perceptions of training. University instructors and professors who expressed a willingness to allow the students in their teacher preparation courses to participate in this survey were sent an email template with a recruitment script and a link to the electronic survey. University personnel who shared the survey with the students in their teacher preparation classes received two tools in PDF form via email (a chronic medical conditions accommodation recommendations tool and a chronic medical condition plan of care form) designed to support students with chronic health conditions in the educational setting as an incentive and were encouraged to share these tools with students in their courses. The final sample included 29 students, each of whom were current students taking at least one course in the respective teacher preparation program being evaluated.

Data Analysis

Curriculum Review

A separate Curriculum Evaluation tool was completed for each of the 40 schools. Three researchers read each course title and description and cross-referenced the content populated for each school and the assessment of content completed by the previous researchers. In instances in which the research team did not agree on a portion of the assessment, the team re-evaluated as a group and reached consensus. If the team had questions about the curriculum for any particular

course, the team made note of the question to be included in the follow up interview with the representative of that program.

Structured Interviews

The interview data were also examined at the question/item level by three members of the research team using the inductive analyses approach described by Thomas (2003): close reading of data (read and then reread) was conducted; a coding template was used to organize the analysis; themes were identified and a consensus on themes was achieved.

Web Search

Three investigators used the previously described web search tool to conduct the search and analyze findings. Results related to teacher training programs (affiliated with a university, college, or other formal training program) were included in the final product and the researchers eliminated results that were not affiliated with teacher training, such as courses tied to medical schools, training for medical professionals, and university-level training to teach or support individuals with a chronic illness.

Survey

Frequencies were calculated to assess demographic and participant characteristics, level of knowledge for taking care of the medical and educational needs of children in the classroom by different chronic health conditions (e.g., asthma, diabetes, cancer), level of training offered by the program regarding taking care of the medical and educational needs of children in the classroom by different chronic health conditions, and current methods offered by the program (e.g., single course, this topic is embedded throughout the curriculum) to prepare teachers to work with their future students who have a chronic health condition. A chi-square analysis was performed based on grade level to identify whether students enrolled in colleges of education that offered academic opportunities to prepare them to work with students who may have a chronic health condition differed between undergraduate and graduate-level programs. To determine the association between grade level and level of awareness of educational issues experienced by students with a chronic health condition, a one-way analysis of variance (ANOVA) was performed. This analysis was replicated to examine the association between educational specialty track and level of awareness of educational issues experienced by students with a chronic health condition.

Results

Curriculum Review

Table 2 summarizes the results of the curriculum analysis, coupled with prevalence estimates of each of the unique student populations that are typically addressed in teacher preparation programs. Results revealed that while the prevalence of students with a chronic health condition in U.S. public schools is the highest when compared to the other student populations (e.g., autism), content about this population had the lowest representation in teacher preparation

coursework. Very few of the of the 46 courses identified as addressing chronic illness actually addressed content specific to chronicity, illness, chronic medical condition, sickness, special healthcare needs, health condition, or medical impairments. Rather, most of the 46 courses were included because they mentioned the Other Health Impairment special education eligibility criteria (per IDEA) in the context of the course description.

Table 2

Curriculum Review Findings

Category	No. Courses Identified	Undergraduate Vs. Graduate	*Population Prevalence
Autism	112	U - 65 G - 47	1 in 59 children[1]
Chronic Illness	46	U - 39 G - 7	1 in 4 children[3]
Mental Illness	74	U - 53 G - 21	1 in 5 children[2]
English Language Learners	524	U - 345 G - 179	1 in 10 children[4]
Gifted/Talented Learners	177	U - 129 G - 48	1 in 7 public school children[5]

Note: U = undergraduate programs, G = graduate programs; *Citations indicated on reference list.

Structured Interviews

Fifteen university representatives (11 undergraduate and four graduate) participated in the interview portion of the study. At the start of each interview, results of the Curriculum Review were reviewed with each interview participant. While some participants provided explanation and clarification, all 15 university representatives agreed with the results of the Curriculum Review for their respective school. Table 3 presents the 12 themes within five categories that emerged in the analysis of the interview data.

Defining the population. Within the first category, *Defining the Population*, two themes were identified. The first common theme, Who Are They?, captured program representatives' responses that demonstrated a lack of understanding of who is included in this unique student population. Several participants correctly alluded to a few diagnoses that may be included within the category of a chronic condition (e.g., attention deficit hyperactivity disorder [ADHD], asthma, and diabetes), although most did not. A majority of the interviewees considered students with a chronic health condition as a low-incidence population and identified the population as encompassing exclusively students who are medically fragile. Statements associated with this theme, and represented by several examples in Table 3, indicated that participants believe students with a chronic health condition are likely too ill to attend school, asserting that as a result, not much attention is given to this population in preservice training, assuming if these students were in school, they would not be in a typical

Table 3

University Representatives Interview Results

Category	Theme	Explanation	Example Participant Quotes
Defining the Population	Who Are They?	Used when participants misidentified the population, for example: Thought population was only medically fragile students or students who had severe cognitive delay or students who had multiple disabilities or to be included in the low-incidence category	*"We're in ***, so if there was a child that had a chronic illness where they needed an extended hospital stay, they would not stay here. They would go to ***, which is five hours away."* *"Some of the barriers are actually getting all that equipment into the classroom. Um, you know the uh, the bed that the child might be in, or um the tube feeding, or the um IVs or whatever the case may be."*
	Special Education	Used when participants identified Special Education as the area that would or should cover teaching preservice teachers about the educational needs of students with chronic health conditions	*"…most of that would come through our special education uh, department. And uh, as far as a core class, where they get information in dealing with special needs populations and that is included, medical is included in that particular course."* *"I don't know how much we do with chronic diseases; I would have to find out from my special ed person because that would be the likely location for that"* *"…our low-incidence they're very involved in feeding aspects also. That's what we considered to be one of the key members of the team, is the nutritionalist, or the speech language pathologist, or an OT that's working with the students with feeding issues."*

	They are Doing It	Used when participants endorsed some type of dedicated effort in their curriculum relative to preparing teachers to support students with chronic health conditions (e.g., if they include coverage of the topic in a special education course)	*"I believe there's a chapter or there may be a section, I'm pretty sure there's a section in there that deals with chronic illnesses. Probably especially as those impact or cross over into the area of disabilities, so like for example traumatic brain injury, or maybe other health impaired or other impaired."* *"…it's embedded within a course, but is not the main focus of a course…"* *"a course in child health, safety and nutrition […], that specifically helps students understand, preservice teacher[s], understand chronic conditions and how to adapt them for the classroom."*
Teacher Preparation for Students with CHC	They are NOT Doing It	Used when participants indicated that they do not provide intentional instruction relative to preparing teachers to support students with chronic health conditions	*"I don't think specifically to children that are, that have a chronic illness, but um, children with disabilities. Um, and how to assist those."* *"know that diabetes, things like that, can be chronic, can be considered chronic illness. Asthma, that kind of thing. But that doesn't impact their learning, [so] that's not something we deal with in the classroom necessarily."* *"…cancer and those things, we really don't touch on a lot of that. Not on purpose, necessarily. Um, I do you know, discuss a lot about autism, ADD, ADHD"*

Barriers to Providing Dedicated Instruction	Barriers-Time	Used when participants described lacking time as a barrier to including intentional instruction/ content	*"We are so constricted by our state and the number of hours that we are allowed to put on degree plans. We have 139 hours, and they made us get down to 124. And we have a waiver because they want all degrees to be 120 hours. So I can't, I mean I don't see that happening, because we just don't have room on our degree plans. And if we have electives, they're not going to take it."* *"[time]…the main barrier, because, […] our state certification is so broad and […] we really want you to experience a lot of these different things, but we can't, you know."* *"we can't possibility …teach our students that every single possible um, health and physical issue, every disability."*
	Barriers-Curriculum	Used when participants described curriculum demands/limitations as a barrier to including intentional instruction/ content	*"We've got so many different things to cover in the statute, um as they're as they're currently written. And only and, because we're under increasing pressure to get kids out at 120 credits."* *"I think there might be barriers are far as um, how many we in our special education program get [meaning courses or credits] to influence the teacher ed students."* *"We've really paired down as much as we can […] to remain competitive with all the other external certifiers in the state."*
	Barriers-Lacking an Expert	Used when participants described not having someone who is an expert in this area as a	*"I don't have the ….expertise to be able to gear like an entire section of the course or section of material towards [CHC]"*

		reason why they would not be able to provide more education for preservice and in-service teachers in this area	*"We could probably use a faculty member with more expertise in that area, um but we just don't have the resources at this point."*
	Applying a General Framework	Used when participants endorsed the application of a general framework as a preparation strategy to prepare teachers to work with students with CHC	*"we don't have a specific course related to students with medical conditions….we would handle it more under a particular disability area, or a particular label"* *"… [our] approach is …a much broader brush...we have an entire course on teaching the diverse learner…the central core of it is essentially saying how do you look at each child as an individual and get to know them from what their specific set of needs and interests and readiness"* *"I think they [preservice teachers] have a very global awareness of how that [CHC] might impact the child's learning, integration, socialization, and academic performance, and all that. But the specifics, from my experience, usually come onsite at that school, during the preservice and the induction process."*
Solutions & Problem-Solving	Workaround	Used when participants described an existing strategy or a strategy they would be interested in employing in an effort to prepare preservice teachers to work with students with CHC	*"we've had people student teach in classrooms where there are medically fragile children…we have like 30 students a semester, so it's not possible for all of them to rotate through that." "every semester, there will be one or two [students who student teach in a classroom that has children who are medically fragile]* *"within our seminar series,*

		which is an hour a week, we have brought in […] a school nurse to talk about health care plans and the role of teachers in those health care plans" *"someone from the healthcare field, and have them come in and […] do either a take a part of a class, or do separate workshops for our teacher education students."*
Room for Improvement	Used when participants acknowledged room for improvement compared to current state	*"…our special educators […]take a methods of instruction class for low incidence disabilities and we talk um, quite a bit about specialize, kids with specialized healthcare needs. But, apparently there could be more."* *"there is an increase in childhood cancer, and some of the allergies, those kinds of things that […] I think we could better prepare our students to […] provide services for."* *"do talk about different, different disabilities that are served under IDEA, but certainly there's room for more" and that they could be "more systematic about making sure [their students] know about all [the] different […] chronic medical conditions that are possible."*

	Limited to No Awareness at Graduation	Used when participants described their graduates as having limited to no awareness of how to support students with CHC	*"I think they are aware of it, but I think, it's a very limited awareness. Uh, because, when we do our exit surveys, and when we go out and do alumni surveys, um one year out, two years out, and we ask what could we do better. Most individuals say they need more special education classes, learning how to work with uh, children with special needs or medical conditions. So they put, they still put that there. So I, I think, I think they're aware of it, I think they are certainly aware of it, but they still want more."* *"Most of them will have some textbook knowledge that those kids exist, but that'll be it."* *"I think they're fairly unprepared."*
Supporting New Teachers	Open to It – Content Needed	Used when participants expressed an openness or an active consideration for including content for CHC now or in the future	*"Yes, actually we are in curriculum revision right now due to some accreditation. And so we are looking at that, and looking at additional special ed courses and additional courses that deal with um populations, such as uh, medical."* *" I would say no officially, but after this discussion, I'll probably have it more in my mind, and when we have our program, our cord-our program meeting for our depart, for our department, I'll, I'll definitely be thinking about it even more."* *"If, if we could figure out a training type of thing that we might could do a PD for our preservice."*

classroom setting. As one program representative shared "the high-incidence teachers, […] get more content in, […] academic instruction, and less in the medical and personal needs of students cause they're really targeting to be teachers for students with learning disabilities and …behavior disorders."

The second theme in this category, Special Education, emerged in responses to the question inquiring about types of training experiences offered to preservice and practicing teachers at the respective colleges/universities relative to educating and assisting students with chronic health conditions in the classroom. Ten out of 15 program representatives indicated that this type of training would be covered under the umbrella of special education programing. When asked if these were required classes, almost 50% of the participants (seven of 15) indicated the courses they referenced were required for special education majors, and only three participants stated that general education majors were required to take at least one related course (e.g., Children with Exceptionalities). Most interviewees stated that the information regarding students with chronic health conditions would be covered under the umbrella of special education, but not a main focus of their preparation. Comments also mentioned preparing the preservice special education students in the development of Individualized Education Programs (IEPs) and 504s, with multiple suggestions from participants that this may be a way to address this topic. One program specifically stated they had a unit on health conditions that the elementary and middle school preservice teacher education students were required to take, but that it was an elective for those preparing to be high school teachers.

Teacher preparation for students with chronic health conditions. The following two themes support the second category, *Teacher Preparation for Students with Chronic Health Conditions*. The first theme, They are Doing It, includes active endorsements from the participants suggesting some type of dedicated effort in their curriculum exists relative to preparing teachers to support students with chronic health conditions. Of the 15 college/university representatives interviewed, only one representative shared that there was an entire class dedicated to providing preservice and practicing educators instruction on how to meet the needs of a student with a chronic health condition in the classroom. The participant shared that this class is required for some majors and is an elective for others, but did not say specifically which majors fell under which of the two categories. Any other positive endorsement of covering the subject was largely represented as a possible topic included in a special education course.

Data coded in the second theme, They are Not Doing It, in the Teacher Preparation category included participant responses which indicated that the associated teacher preparation program did not intentionally provide instruction relative to preparing teachers to support students with chronic health conditions (see Table 3). Seven of the 15 participants stated that their respective programs did not currently have dedicated material or courses focused on instructing preservice teachers about the specific needs of this unique population. Three other representatives shared that the most likely place one of their students would receive instruction and/or experience concerning students with chronic conditions is if it occurred in one of their field placement settings, as it is not currently embedded within their programming. Another respondent explained that the lack of instruction on students with cancer was not necessarily on purpose, but that much of their focus was on autism, attention-deficit disorder, and ADHD.

Barriers to providing dedicated instruction. Three types of barriers emerged as themes within the third category, *Barriers to Providing Dedicated Instruction* (see Table 3). First, six of the 15 respondents identified thematically Time as a barrier for including instructional materials in courses. Four of the interviewees specifically stated the increasing pressure to have students graduate in 120 credit hours as a limitation of what could be added to their already packed degree plans. Similarly, another participant explained "…there's so many disabilities and [their state] has what they call a general curriculum licensure. So we're preparing teachers to work with so many different types of special needs…we get spread pretty thin." Although they could not always include the content and some felt that they did not have expertise on the myriad of illnesses, they saw this content as valuable. As a second theme in this category, eight of the 15 respondents identified Curriculum Demands/Limitations as a barrier for inclusion of this type of dedicated content. As is evidenced by the quotes in Table 3, teacher preparation programs clearly have to contend with curriculum pressures that make it challenging to consider adding content to cover teacher training relative to supporting students with health conditions. Third, Lacking Expertise was another theme related to barriers associated with providing dedicated curriculum. Two undergraduate and one graduate university program identified not having someone who is an expert in this area as a reason why they would not be able to provide more education for preservice and in-service teachers. They acknowledged that it would help to have someone on the staff with more experience and expertise.

Solutions and problem-solving. Related to the fourth category, *Solutions and Problem-Solving*, three themes emerged in the analysis. The first theme, Application of a General Framework, included references to the application of a general framework as a preparation strategy to prepare teachers to work with students with chronic health conditions. In fact, 14 out of the 15 schools that participated in the interview portion of the study endorsed the application of a general framework as a solution to teacher training on this topic. Commonly, the participants representing these 14 teacher preparation programs described perceived issues for students with chronic health conditions as coming up in discussion regarding IEPs and 504 plans and, that by virtue of instructing preservice teachers in how to apply commonly referenced accommodations and modifications for students with special needs, they indirectly prepared preservice teachers to accommodate the unique needs of students with chronic conditions. A few participants described their generalist approach with confidence, asserting that a broad approach is the only way to address the many unique needs of students; yet, one of these participants stated that chronic conditions are not specifically mentioned within their broad approach.

Additionally, several participants mentioned that, within the generalist approach, they teach preservice teachers to rely on others if called upon to meet the needs of a student with a chronic condition. For example, one participant described their strategy as teaching preservice teachers to rely on a team approach, "we talk about the health care professionals, nutritionist, OT's, speech path, social workers, so, you know one response [to how they teach preservice teachers to work with students with chronic conditions] would be making sure to come address student's needs as a team. A lot of our preparation is really based in looking at functions of behavior, and for students to have the skillset to do functional behavioral analysis."

The second theme in this category, Workaround, was a descriptor for comments by participants describing strategies for a quick fix or an easy way to prepare preservice teachers to work with

students with chronic conditions. When asked how participants thought their students should be informed about supporting students with chronic conditions, none of the program representatives specified that dedicated curriculum was necessary, but instead suggested a variety of ways this topic could be incorporated within the present curriculum. For example, one interviewee stated, "I think it would be cool if there were some online modules or something that we could incorporate so that our teachers were better prepared." Similarly, another representative felt requiring preservice teachers to take an online module prior to entry into the program could be a possibility. Offering preservice teachers an opportunity for professional development relative to students with chronic illness was also suggested, as well as partnering with professionals in the healthcare field to volunteer to be guest speakers in teacher preparation classes. Five of the 15 participants mentioned field placement as a possibility for exposure to students with chronic conditions. In most cases, participants acknowledged the limitations of such experiences, and offered that it is likely that only a portion of their students would be able to work with students with health conditions in this way. One participant shared that their "special ed. faculty […] provide[s] wonderful supports for our students" suggesting that special education faculty could provide guidance to individual preservice teachers on the topic should they have a question and another mentioned that schools should provide this training for teachers.

As participants progressed through the interview, some began to recognize that there may be more that they could do to prepare their students to meet the needs of children experiencing chronicity. Thus, the third theme, Room for Improvement, emerged. For example, one program representative shared that although an attempt is made to provide students with all of the instruction they need to be successful teachers, most of their graduates provide feedback saying "they need more special education classes, learning how to work with […] children with special needs or medical conditions."

Supporting new teachers. The fifth and final category that materialized in the interview data was *Supporting New Teachers*. The first theme within this category, Limited to No Awareness at Graduation, was used when participants described their graduates as having limited to no awareness of how to support students with chronic health conditions. Ten of the 15 participants shared that their preservice teachers, upon graduation, are likely unprepared to work with students with health conditions. Words used to describe the level of awareness of their graduates included "surface knowledge," "limited awareness," "very limited," and "fairly unprepared."

The second theme, Open to It/Content Needed, captured comments reflecting ideas for including content for school support for students with chronic conditions in the curriculum. Of the 15 colleges/universities interviewed, three representatives indicated that their programs may be interested in adding instruction relative to this topic at the time of the study, and four additional representatives shared that they would be open to the possibility of including this type of instruction into their curriculum in the future. Two of the three participants who felt that their respective programs would consider including this instruction into their curriculum sooner rather than later were in the process of curriculum revisions at the time of the study. One of the four interviewees who stated that they could see their program including this type of instruction in the future referenced the increase in childhood cancer and some allergies as a reason for including this topic in programing. Another representative shared that the current interview was a catalyst for increasing their awareness about the topic. Specifically, the participant stated, "talking to you

has just made me want to […] try to make a better connection between our program and the […] physician's assistant program here on campus." All seven representatives indicated this type of instruction would fall within the special education programming and not general education.

Web Search

The combination of search terms "teacher preparation" and "chronic illness" and "teacher training" and "chronic illness" did not yield information about universities/colleges that provided training in the area of children with chronic illnesses. However, the terms "teacher training" and "health disability/health impairment" and "teacher preparation" and "health disability/health impairment" were more likely to yield information about university settings that offered teacher training in working with young children with health impairments (n = 59). Fifty-five of these programs offered a certificate or advanced degree in special education. Nineteen of the programs (29%) described working with children with health impairments as a major program focus. A review of curriculum at these programs indicated that only about 18% mentioned chronic illness terms or health impairment in their program description. When reviewing descriptions of courses for the programs that addressed health impairments, 64% mentioned other health impairment, 18% mentioned mental health and chronic illness, and 54% mentioned orthopedic impairment.

Survey

Demographic and participant characteristics. Of the 29 survey participants, 28 (96.6%) participants were female and one (3.4%) was male. The majority (n = 22; 75.9%) were undergraduate students and 24.1% (n = 7) were graduate students. Nine (31%) students reported they were in special education and 20 (69.0%) students were in regular education or other. Twenty-five (86.2%) students were pre-service teachers and four (13.8%) were practicing teachers.

Level of knowledge and training. When presented a list of specific chronic conditions, overall, participants rated their level of knowledge for supporting the medical needs of children in the classroom as low, with the exception of food allergies (58.6% rated their level of knowledge as high; see Table 4: Levels of Knowledge and Training). The majority of participants rated their level of knowledge for taking care of the educational needs of children with chronic conditions as relatively low, except for asthma (52.0% rated their level of knowledge as high), diabetes (50.0%), and food allergies (60.0%). Regarding level of training for medical needs, a significant proportion of participants (over 90%) rated their level of training offered by their program regarding taking care of the medical needs of children in the classroom as low for all chronic conditions, except for epilepsy (88.9% rated their level of training as low; see Table 4). Similarly, the majority of participants rated their level of training offered by their program regarding taking care of educational needs of children in the classroom as low for all identified conditions.

Level of awareness of educational issues. A one-way ANOVA was used to examine differences in responses for the level of awareness of the educational issues experienced by students with a chronic condition based on grade level and educational specialty track. No statistically significant difference in level of awareness was found based on grade level or educational specialty track (see Table 5). It is noteworthy that mean levels of awareness were

Table 4

Level of Knowledge and Training Frequency and Percentage

	Level of Knowledge for Taking Care of Needs in the Classroom				Level of Training Offered by Program Regarding Taking Care of Needs in the Classroom			
	Medical Needs		Educational Needs		Medical Needs		Educational Needs	
Chronic Health Condition	Low	High	Low	High	Low	High	Low	High
Asthma	15 (51.7)	14 (48.3)	12 (48.0)	13 (52.0)	25 (92.6)	2 (7.4)	18 (66.7)	9 (33.3)
Diabetes	19 (67.9)	9 (32.1)	12 (50.0)	12 (50.0)	25 (92.6)	2 (7.4)	19 (70.4)	8 (29.6)
Cancer	22 (84.6)	4 (15.4)	13 (52.0)	12 (48.0)	24 (92.3)	2 (7.7)	16 (64.0)	9 (36.0)
Sickle Cell Anemia	21 (87.5)	3 (12.5)	14 (58.3)	10 (41.7)	24 (92.3)	2 (7.7)	17 (68.0)	8 (32.0)
Hemophilia	22 (95.7)	1 (4.3)	14 (58.3)	10 (41.7)	25 (96.2)	1 (3.8)	17 (68.0)	8 (32.0)
Cystic Fibrosis	20 (80.0)	5 (20.0)	14 (58.3)	10 (41.7)	24 (92.3)	2 (7.7)	17 (68.0)	8 (32.0)
Heart Disease	23 (88.5)	3 (11.5)	15 (60.0)	10 (40.0)	24 (92.3)	2 (7.7)	17 (68.0)	8 (32.0)
Gastrointestinal Disease	24 (88.9)	3 (11.1)	13 (54.2)	11 (45.8)	25 (96.2)	1 (3.8)	17 (68.0)	8 (32.0)
Epilepsy	20 (71.4)	8 (28.6)	13 (52.0)	12 (48.0)	24 (88.9)	3 (11.1)	17 (63.0)	10 (37.0)
HIV/AIDS	20 (83.3)	4 (16.7)	13 (54.2)	11 (45.8)	24 (92.3)	2 (7.7)	17 (68.0)	8 (32.0)
Food Allergies	12 (41.4)	17 (58.6)	10 (40.0)	15 (60.0)	25 (92.6)	2 (7.4)	17 (65.4)	9 (34.6)
Renal Disease	22 (95.7)	1 (4.3)	14 (58.3)	10 (41.7)	25 (96.2)	1 (3.8)	17 (68.0)	8 (32.0)
Chronic Migraines	21 (72.4)	8 (27.6)	15 (60.0)	10 (40.0)	24 (92.3)	2 (7.7)	17 (68.0)	8 (32.0)
Juvenile Idiopathic Arthritis	23 (95.8)	1 (4.2)	12 (52.2)	11 (20.3)	25 (96.2)	1 (3.8)	18 (72.0)	7 (28.0)

Table 5

Awareness of Educational Issues

Variable	*M*±*SD*	*p*
Grade Level		
Undergraduate Student	1.62±1.02	
Graduate Student	1.57±1.13	.92
Educational Specialty Track		
Regular Education/Other	1.65±1.14	
Special Education	1.50±0.76	.74

low, between only somewhat to moderately aware, irrespective of grade level or educational specialty track.

Current preparation methods. Regarding methods used by their program to prepare them to work with students who may have a chronic health condition, nine (42.9%) undergraduate students reported that this topic was addressed within a single course that also addressed other topics; six (28.6%) reported this information was addressed using other methods; five (23.8%) selected multiple answers; and one undergraduate student (4.8%) reported that information about chronic medical conditions was embedded throughout the curriculum in his/her program. None of the undergraduate students reported that they had a single course dedicated to this topic.

For the graduate students, four (57.1%) reported that this topic was addressed within the curriculum of a single course that also addressed other topics; one reported that discussion of this topic was embedded throughout the curriculum; and one graduate student mentioned that a single course was dedicated solely to working with children with chronic health conditions. And one reported that the topic of chronic conditions was addressed through other methods besides having a course on the topic, while none of the graduate students reported that this topic was addressed through multiple teaching methods in their programs.

Regarding educational specialty track, nine (47.4%) students in regular education/other track reported that this topic was addressed within the curriculum of a single course that also addressed other topics; five (26.3%) reported that this information was addressed using other methods; two students (10.5%) reported that information about chronic conditions was embedded throughout the curriculum in their program; two selected multiple answers; and one student in the regular education/other track reported that he/she had a single course dedicated to this topic. For students in the special education track, four (44.4%) reported this topic was addressed within the curriculum of a single course that also addressed other topics; three (33.3%) selected multiple answers; and two (22.2%) reported this information was addressed using other methods. No students in the special education track reported that discussion of this topic was embedded throughout the curriculum in their program or that a single course was dedicated solely to this topic.

Academic opportunities offered by colleges of education. A chi-square analysis was used to examine differences in undergraduate and graduate student responses about their perceptions of whether their program offered academic opportunities that prepare them to work with future students who may have a chronic condition. There was a statistically significant difference between undergraduate and graduate students' perceptions of educational opportunities, $\chi 2$ (1, 29) = 4.15, p = .04. Thirteen (59.1%) undergraduate students reported that they were unsure or no academic opportunities were offered, while nine (40.9%) reported there were academic opportunities offered by their college of education. In contrast, all seven (100%) graduate students reported they were unsure or no academic opportunities were offered to prepare them to work with future students who may have a chronic condition.

Discussion

Similar to prior studies (Bradford et al., 1994; Pufpaff et al., 2015), results of this research indicated that teacher preparation relative to school support for students with chronic health conditions is lacking, both in quantity and quality (Bradford et al., 1994; Clay et al., 2004; Pufpaff et al., 2015). Few teacher preparation programs directly address how school personnel should provide school support for this population of learners. Furthermore, there are widespread misunderstandings about this student population and teachers generally report feeling ill-prepared to meet the needs of this growing population in the classroom setting.

Regarding the first research question, which explored how teacher preparation programs across the country prepare educators to support the school-related needs of students with chronic health conditions, curriculum review findings suggested that most programs embed any dedicated instruction on this topic into special education programming. There are limitations to such an approach; notably, many children and adolescents with chronic conditions are served in the general education setting, often failing to qualify for special education services. Because eligibility for special education services is not guaranteed, or even appropriate, for many children with a chronic condition and, given the general emphasis on inclusion in education today, both general and special educators must be prepared to meet the needs of this student population. Several university representatives who were interviewed erroneously viewed this group as a low incidence population. As more children with chronic illness are surviving and doing well, but still experiencing academic, health, mental health, and social challenges related to their disease, addressing their needs becomes important to ensuring a full and high quality educational experience for children with illness-related needs (Pufpaff et al., 2015). Thus, knowledge and skills regarding needs of children with health conditions should be included in undergraduate and graduate educational experiences. Content on the functioning of children with chronic conditions and their educational needs should be included in stand-alone courses or existing courses based on faculty expertise and experience. If faculty do not have expertise, linking with teaching hospitals and involving guest speakers in courses and program presentations is another way to incorporate this material in teacher preparation experiences.

Placement of curriculum under the umbrella of special education programming underscores the broader issue associated with defining the population of students with chronic health conditions. Interview findings suggested that there is significant confusion about who this population of learners includes; participants erroneously referred to this population of students as “low

incidence," and as including only youth who are hospitalized or served in specialized medical settings. Terminology defining this population is confusing, ranging from special health care needs to medically fragile to other health impaired to chronically ill, and others (Thies, 1999). Even within single terms such as special health care needs or chronic conditions, there is great variation, with no single accepted definition (American Federation of Teachers, 2009), thereby resulting in differences in prevalence estimates and understanding of need.

Given these inherent challenges, it is not surprising that this population has been under-represented in teacher preparation curriculum. There is a "ripple effect" associated with inconsistent terminology and misperceptions about the population. When programs perceive that a population is low incidence, it is difficult to justify separate and distinct programming dedicated to teaching school personnel about the population needs. Program representatives were forthright in asserting that, given curriculum demands, including additional content on school support for students with chronic health conditions would be challenging. The paradox is that students with health conditions represent a higher proportion of students than many other student populations addressed in teacher preparation curriculum. Curriculum review findings revealed a disproportionate allocation of curriculum relative to prevalence when compared to other high incidence student groups, including students with autism, English Language Learners, students with mental and behavioral health conditions, and students who are gifted. This is not to suggest that those particular populations should not be accounted for in teacher preparation curriculum, but rather to emphasize the relevance of also including content on school support for students with health conditions, commensurately.

Regarding the second research question, which sought to determine the frequency of teacher preparation programs that explicitly advertise an emphasis on training educators on the school-related needs of students with a chronic health condition, few programs specifically call this out as an area of expertise of specialization within their program descriptions or marketing materials. This finding was consistent with previous literature indicating that teachers do not receive training and are not prepared to meet the needs of children with chronic illnesses (Clay et al., 2004; Selekman, 2017). Educators have highlighted the value of this training for improving children's educational experiences and increasing teacher confidence and abilities to meet the needs of all children in their classroom (Cunningham & Wodrich, 2006; Prevatt et al., 2000). In contrast, to the Olson et al. (2004) findings, participants in this study perceived the needs of children with chronic illnesses to be critical and felt they were ill-equipped to meet needs and required more training to better serve this group. This may be indicative of stirrings of change in the field. Capitalizing on this research, as a type of needs assessment, will help educators move forward in incorporating training for working with children with medical conditions into their curriculum. Thus, a practical implication of this project was that preservice teachers enrolled in the nation's leading colleges of education felt ill-equipped to meet the needs of students with chronic health conditions, and desire more curriculum and preparation in this area.

Limitations

While this research study utilized multiple methods to examine the identified research questions, a primary limitation emerged due to the small sample size of survey respondents. However, findings were consistent with other studies that have examined similar content (e.g., Clay et al.,

2004; Selekman, 2017). Additional methodology limitations were inherent in the curriculum review process, such as the known variation associated with curriculum and online availability and completeness of such content; triangulation and member-checking with interview data helped to validate this process to the greatest extent possible. Furthermore, only 15 of 40 universities participated in the qualitative portion of the study; certainly, potential for bias existed within the interview process based on the respondent's role and position within the teacher preparation program. It is possible that the individual interviewed may not have always been fully versed on the complete breadth of educational programming at the respective university.

Conclusion

Through this research, it has become increasingly evident that while teacher preparation programs do not sufficiently address how to support students with chronic health conditions in program curriculum, the root cause for this underrepresentation is due more in part to larger, system-level issues as opposed to programmatic issues. That is, lacking definitional criteria and prevalence estimates, rigid curriculum demands, and misunderstandings about the population have led to inadequate training for teachers, without ill intention or deliberate oversight. Likewise, curriculum in teacher preparation programming is often guided by legislative mandates, which dictate areas of accountability for future practitioners. The populations accounted for in present curriculum align closely with the populations specifically addressed in, for example, No Child Left Behind (NCLB; now Every Student Succeeds Act [ESSA]), which explicitly acknowledges the student populations accounted for in curriculum, and does not necessarily distinctly acknowledge students with chronic conditions, in particular (ESSA, 2015; NCLB, 2002).

Given the known educational implications and lifelong complications associated with chronic conditions, teacher preparation programs must now catch up to ensure appropriate supports relative to the aforementioned prevalence increases are provided for students with these conditions. This includes prioritizing content in teacher preparation programming, although this may also be contingent upon acknowledgement in legislative mandates, which is likely contingent on prevalence (Pufpaff et al., 2015).

At minimum, an intermediary solution may be to shift how support for students with chronic conditions is incorporated at the university level in teacher preparation programming. Integrating content in this area into general education teacher preparation may provide a more realistic model for preparing the educators most likely, or equally likely, to serve these learners. Universities and colleges of education can begin integrating small steps of change by adding content on school support and best practice for students with chronic conditions into their teacher preparation programming through brief modules, project work, and intentional acknowledgement in existing curriculum. While more is likely needed to truly increase educators' confidence in supporting this population of learners, change must not be delayed while waiting for large scale, system-level changes.

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