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# The Population Characteristics of Children Served by a School-Based Interprofessional Clinic

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Thesis: The Population Characteristics of Children Served by a School-Based Interprofessional  
Clinic  
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## **Background**

The past year and a half of my education has been spent largely dedicated to my social work field placement at Vine School Health Center. My undergraduate program has given me the ability and opportunity to put my skills and knowledge from class into action through this internship. I have been afforded several opportunities to be challenged and grow here, particularly in this type of setting.

Vine School Health Center, or VSHC, is a school-based interprofessional integrated health clinic that provides services to Knox County Schools' students and families. It is funded primarily through third party providers (insurance carriers) and grants, but also receives its facilities as an in-kind donation from Knox County Schools in the old technical class building behind Vine Middle Magnet School.

The clinic was opened through a partnership between Nan Gaylord (a University of Tennessee faculty member in the College of Nursing) and the Knox County Health Department in 1995. Since then, it has grown under Gaylord's leadership and ferocity to seek and win grants to further the clinic's mission, which is to provide health services to underserved populations within the school system. It is the only clinic of its kind in the entire county school system. The services provided include: physicals, sick visits, Telehealth services, case management, therapy, mental health evaluations, insurance consultations, and resourcing.

The College of Nursing has helped to staff the clinic with Nurse Practitioners, Registered Nurses, and provided rotating internships to students attending various types of clinicals while obtaining a degree at UT. About 5 years ago, the clinic became more interprofessional and hired a full-time social worker, a recent grad of UT's Clinical Masters of Social Work Program. This

allowed further partnership with the university. To date, there are 6 social work interns at the clinic: 3 MSSW students and 3 BSSW students.

Though the clinic provides access to all of these services and is continually growing in ability to meet this mission, the demographics and characteristics of the population served have never been studied in the twenty years of existence.

### **Purpose and Research Methods**

The purpose of my research with the Vine School Health Center is to describe the school-level and individual-level characteristics of clients and patients served to see if the needs of underserved populations are being met. Providers have a good idea of whether or not the clinic's mission (serving the underserved students and families in the school system) is being met based on personal interactions with clients, however, without evidence and research to support this, we may be missing opportunities to better serve clients as well as find any gaps in services that can be closed.

To study the population characteristics of clients, this study analyzed individual data of clients served based on the data set provided by VSHC of all clients served in the time period of August 1, 2016 through July 31, 2017. Each client is required to fill out a Permission to Treat form, or PTT, before receiving any services from VSHC. The forms provided by VSHC to the researcher totaled 1,710 forms for this time period. This is the most recent completed data set based on the 2016-2017 school year. There is no reason to believe that data collected from this year would be any different than a data set from another year in the clinic's existence.

The data collected from this form includes: approximate age, grade, school, gender, approximate guardian age, state custody status, health insurance status, free/reduced lunch status, mental health/educational concerns, use of clinic services in previous years, primary healthcare

provider, and Emergency Room visits in the past year. All of this data is reported by the client or client's guardian. These forms have been collected every year, but remain only in paper format and have never been entered electronically to be assessed, analyzed, or researched. All data was entered into Excel spreadsheets to provide an easy system for the clinic to use in the future to have electronic record of this information for easier analyzation in future research of this data.

Public school-level and school district-level data was collected to compare the VSHC clients with total school and district students from Kids Count Data Center by the Annie E. Case Foundation and the Tennessee Department of Education.

Statistical tests include bivariate tests run with SPSS (Statistical Package for the Social Sciences) to create Pearson correlations and independent t-tests.

### **Schools Served by Clinic with Highest Frequencies**

First, the schools with the highest number of students who received services at the clinic were compiled. Each school's students based on report from PTT were totaled and placed into a graph for visual representation. Seeing the total numbers Knox County Schools has 87 total schools, which includes 50 elementary schools, 14 middle schools and 16 high schools. In addition, there are 7 special schools which provide Pre-K schooling, adaptive services, technical education, or are temporary alternative schools (Knox County Schools).

The graph of this section of the poster shows the top schools in each of the following categories: Pre-K, Elementary, Middle, and High Schools. It compares the total number of clients from each listed school based on the data set provided by the clinic with the average total of students seen by VSHC per school in KCS (17 students per school). It also shows the rate of VSHC clients per school in comparison with the average rate of clients at the county-level (3.6%).

Based on PTT data, VSHC sees clients from all of these schools except or four schools: Farragut Primary, Farragut Intermediate, Farragut High, and Shannondale Elementary. The top Pre-K schools include: Fairgarden Community Center and Sam E Hill Pre-School. The top Elementary schools include: Sarah Moore Greene, Christenberry, Lonsdale, Powell, Belle Morris, Dogwood, Green Magnet, and East Knox County. The top Middle schools include: Northwest, Carter, Whittle Springs, South Doyle, and Vine Magnet. The top High Schools include: Carter, South Doyle, West, Central, Fulton, and Austin-East.

As shown in the graph, a few schools have very large numbers of students who receive services from VSHC. These schools are Dogwood Elementary (73 students), Green Magnet Elementary (100 students), East Knox County Elementary (255 students), and Vine Middle (120 students). The highest percentages or rates of students per school who have permission to be treated by VSHC staff are also Green Magnet (27.5%), East Knox (52.6%), and Vine Magnet (34.3%). 10.5% of Dogwood students have permission to be treated by VSHC, but this rate is smaller than two other schools—Lonsdale Elementary has 11.9% and Belle Morris Elementary has 11% of students who are seen by VSHC staff. All calculations made through Excel and SPSS.

### **Economic Disadvantage Status**

When considering underserved populations, one of the first factors that comes to mind is money. In our country, especially with regard to healthcare, income level affects access to and quality of all kinds of services. The Tennessee Department of Education has defined and calculated economic disadvantage rate per school and school district based on whether a student is homeless, a runaway, migrant status, or directly certified based on household income level (Memo: Defining Economically Disadvantaged Subgroup for Accountability, 2015).

In the school year prior to this data being collected, the State of Tennessee created CEP or Community Eligibility Provision. Schools who receive this service must have an economic disadvantage rate, based on above specified criteria, of 40% or more. This CEP status provides free lunch to every student at the school regardless of income.

According to the Tennessee Department of Education for the 2016-2017 school year, KCS has an average economic disadvantage rate of 28.3%. 27 of the 80 schools that appear in PTT 2016-2017 data have an economic disadvantage rate of 40% or more. These include 4 special schools, 18 elementary schools, 4 middle schools, and 2 high schools.

The special schools include: Sam E Hill Preschool (100%), Emerald Charter School (54.6%), Knox Adaptive Education Center (57.8%), and Dr. Paul Kelley Volunteer Academy (58.8%). The elementary schools include: East Knox (42.8%), Green Magnet (76.9%), Lonsdale (68.1%), Belle Morris (64.3%), Dogwood (67.2%), Christenberry (64.9%), Sarah Moore Greene (77.9%), Mooreland Heights (52.1%), Inskip (60%), Spring Hill (58.8%), South Knox (64.1%), Beaumont (54.3%), Pond Gap (60.2%), Norwood (56.1%), Maynard (79.4%), West Haven (48.9%), West View (62.8%), Adrian Burnette (43.9%). The middle schools include: Vine Magnet (72.0%), Whittle Springs (59.9%), South Doyle (44.4%), Northwest (50.5%). The high schools include: Austin East (63.4%), Fulton (52.2%). These rates are provided by the Annual State Report Cards on the TN Department of Education Website (2017).

The clients at these 27 schools make up 60.7% of the total VSHC client population for the 2016-2017 school year. All of these schools listed and the clients we see from these schools will receive Community Eligibility Provision. As shown by the figure on the poster under section 2, the average economic disadvantage rate of schools not served by VSHC is 10.9%. This shows

that the clinic is serving all the schools who have the highest economic disadvantage rate and thus underserved.

Other variables considered when assessing economic disadvantage of our client population is individual use of free/reduced lunch and insurance status. On average, 42.2% of KCS students utilized free/reduced lunch services during the 2016-2017 school year (Annie E. Casey Foundation, 2018), while 72.0 % of clients from VSHC utilize these services. Only 3.5% of the KCS population is uninsured, whereas 9.8% of clinic clients report being uninsured. While 39.0% of KCS students receive state Medicaid Insurance or TNCare (Youth on TennCare, 2018), 68.1% of VSHC clients receive TNCare. 20.1% of KCS students receive private insurance, while only 8.9% of VSHC clients receive private insurance (Uninsured Children and Youth Under Age 19, 2018).

### **Clinic Accessibility by Distance**

One of the most important factors to consider for underserved populations is accessibility. Accessibility can be looked at through various scopes, but shown here in the third section is accessibility by distance in miles. The three maps show the locations of schools with the highest frequencies of students who receive services from the clinic, as shown in the first section. The three maps are broken up into high school, middle school, and elementary school categories. The Vine School Health Center is pointed out on each map by a star, and each of the top schools are shaded.

The striped sections are school zones which also receive Telehealth services. Telehealth is a service provided by VSHC that began five years ago from a grant. This grant allows the clinic and ten satellite schools to utilize these services through the use of Telehealth technology, which is comprised of a TV screen and various examination equipment at the ten satellite

schools. For example, a nurse can be onsite at VSHC, receive a video call from a satellite school's nurse. The VSHC nurse can not only look at the client via the TV, but also utilize technology like telehealth stethoscope which the school nurse can use on the client and the VSHC nurse can feel from miles away. Services like Telehealth provide accessibility to our nurses even offsite.

Another way that VSHC provides accessibility to services is through onsite presence at schools. Nurses on staff have rotating half-day schedules at various schools. In addition, all social work interns from the University of Tennessee provide case management and therapy services in schools across the county so that clients do not have to find transportation for weekly sessions.

In the graph of this section, there are four sections based on the distance of schools from the clinic. Based on the data in the 2016-2017 PTT dataset provided by the clinic for research, 626 clients attend schools within five miles of VSHC. 321 clients attend schools from 5-10 miles from the clinic. 439 clients attend schools between 10-15 miles away. Only 38 clients came from schools that are further than 15 miles from VSHC. Overall, there is a negative correlation between the number of students served per school and the distance of schools from the clinic ( $r=-0.276$ ,  $p=0.011$ ).

On average, each school in the KCS system is 9.45 miles from VSHC. 64% ( $n=912$ ) of the clinic's population is within this distance. 76.5% of schools shown in these maps are within this distance. There are 12 schools with are more than 15 miles away from VSHC. All of these schools are underrepresented in the VSHC client population. The 38 students that make up this category total 2.7% of the VSHC client population based on this dataset. However, these 12

schools have 12,991 students attending them and make up over 20% of all Knox County Schools students.

The strange part of this graph is the increase in numbers of students with PTTs in the category between 10-15 miles away. It would make sense for this number to be less than the previous category, but the determining factor here is East Knox County Elementary School. In the PTT dataset, there were 255 students from this school although it is approximately 12 miles away from the clinic. This is the most number of clients from any school throughout the dataset. The difference with this school is that the clinic has a consistent onsite presence at this school with a social worker coming one half day each week and one nurse coming a half day each week. In addition, the clinic has a strong relationship with school staff, allowing a very supportive symbiotic relationship between the school and VSHC.

Also, when considering accessibility, the context of the East Knox school zone must be examined. This school zone is on the edge of Knox County and is partially in Mascot, Tennessee. This area is rural and has few resources with regard to healthcare or otherwise. So, even if VSHC is 12 miles away, it may still be one of the most accessible sites for healthcare relative to this population. It is so important to consider distance and other forms of accessibility when creating a clinic or center for underserved populations.

### **Type of Schools Served**

In light of recent events with the Knox County School Board regarding cutting funding to programs to primarily low socioeconomic status schools served by VSHC, this section was added. All schools affected by budget cuts are community schools or magnet schools. Knox County has 15 Community Schools. These include the following schools: Lonsdale Elementary, Dogwood Elementary, Christenberry Elementary, Inskip Elementary, South Knox Elementary,

Pond Gap Elementary, Norwood Elementary, Maynard Elementary, New Hopewell Elementary, West View Elementary, Green Magnet Elementary, Sarah Moore Greene Magnet Elementary, Beaumont Magnet Elementary, Northwest Middle, and Vine Magnet Middle. Community schools are meant to be a “hub for organizing community resources to improve neighborhood health and safety and student academic success” (Great Schools Partnership, 2018). They also provide onsite services to connect and empower students and families from the school to the community.

Knox County Schools’ website defines Magnet Schools as “schools which provide unique learning opportunities in a specific area or theme not offered at other Knox County Schools” (2018). In other words, these unique programs have been started in low-SES schools to draw economic diversity. KCS has 10 schools with magnet programs. These schools include the following: Beaumont Magnet Elementary, Sarah Moore Greene Magnet Elementary, Green Magnet Elementary, Vine Magnet Middle, Austin-East Magnet High, Fulton High, West High, Career Magnet Academy, and L&N STEM (Science, Technology, Engineering, Math) Academy.

Community and Magnet Schools are overrepresented at VSHC. 100% of Community Schools are economically disadvantaged at a rate of 40% or higher. 67% of Magnet Schools are economically disadvantaged at a rate of 40% or higher (Tennessee Department of Education, 2017). This means that 16 of the 20 schools listed in these groups have significant amounts of the student population who are economically disadvantaged. This type of factor must be considered when looking at cutting or reducing funding to programs in these schools where the students already have fewer resources.

According to the numbers found on the Tennessee State Report Card, 82.8% of KCS students attend neither community or magnet schools. 6.4% of KCS students attend a magnet

school, 7.8% of KCS students attend a community school, and 3% of the total KCS population attend a school that is both a community school and a magnet school. Based on the calculations from the PTT dataset provided by VSHC, 64.7% of clients attend neither a community or magnet school. However, 5.7% attend a school with only a magnet program, 13.3% of clients attend a school that is exclusively a community school, and 16.3% of clients attend a school that is both a magnet school and a community school. Both magnet schools and community schools students are overrepresented in the VSHC client population. Both magnet and community schools are largely comprised of student populations who are economically disadvantaged. Several of these schools are very close to the clinic, as shown by the maps in the previous section.

### **Policy and Practice Implications**

As for policy implications, this research highlights the need for more clinics like the Vine School Health Center. This is especially true in areas of high economic disadvantage and communities or populations who are underserved. When looking at the Knox County School system, it is very broad and covers a large distance. Within this broad scope of the county, several pockets of unmet needs still exist. For instance, the average economic disadvantage rate of the schools not seen, three of which are in Farragut, is still nearly 11% of the population. We can surmise from this data that clinics designed for underserved populations need to be intentionally placed in an area that is accessible for clients based on distance.

As for practice implications, there are several. The first that have come about from this research relate directly to the PTT form at VSHC. The form contained a few areas of inconsistency in the order that yes/no answers were provided at the end of a series of questions, which could lead to inaccuracy in client-reported answers. One question on the form was double barreled, which could also potentially lead to error in answering. An inconsistency in format of

this form also occurred. It is unknown whether this was because of forms available online or which form each school re-used from years prior. This can be easily remedied by creating one updated form and distributing it to each school. Lastly, some forms – particularly if answered by a nurse and permission was verbal via phone for Telehealth services—were incomplete. A formal training or reminder in staff meeting for the importance of filling out forms completely for research purposes can remedy this.

This research shows that clinics for underserved populations like VSHC are most effective when within 5 miles of the population. The value of a clinic like this one is increased with on-site and personal connections as shown with East Knox County Elementary. Although it is 12 miles away, VSHC received the PTT form from 255 clients at this school in this singular allotted time period with on-site Telehealth and therapy services as well as maintaining and growing relationships with client guardians and school staff members.

### **Limitations**

The limitations of this study are particularly for the agency. As previously mentioned, some inconsistency arose in the forms provided to clients either through the agency, schools, or online KCS website. VSHC has room for growth in improving future data collection as all PTT data is self-reported by clients and/or guardians.

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