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Does Contact by a Family Nurse Practitioner Decrease Early School Absence?

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AQ1

Abstract

Chronic early school absence (preschool through third grade) is associated with school failure. The presence of school nurses may lead to fewer absences, and nurse practitioners in school-based health centers (SBHCs) can facilitate a healthier population resulting in improved attendance. Efforts to get students back to school are unexplored in nursing literature. This article describes a nursing intervention to decrease early school absence in two elementary schools K–3 ($N = 449$) and a Head Start program ($N = 130$). The Head Start Family Nurse Practitioner (FNP) contacted families of chronically and excessively absent students by telephone, clinic visit at school, or home visit. The aggregate percentage attendance was evaluated by grades (preschool to third grade), schools (Head Start, Elementary Schools 1 and 2), and grades and schools and compared with publicly available school district aggregate data. There were statistically significant increases in attendance from Year 1 to Year 2 at $p < .05$ at the elementary level but not at the Head Start level. Student demographics, types of contacts, absence reasons (including sick child), and medical diagnoses are described.

Keywords

absenteeism, early school, school nurse, nurse practitioner, doctorate of nursing practice

While efforts to get students back to school largely are unexplored in nursing literature, studies validating negative consequences for children with poor school attendance are consistently described in nursing, medical, educational, social work, and public health literature (Eaton, Brenner, & Kann, 2008; Gottfried, 2009; Jones, Hoare, Elton, Dunhill, & Sharpe, 2009; Newsome, Anderson-Butcher, Fink, Hall, & Huffer, 2008; Romero & Lee, 2007; Weismuller, Grasska, Alexander, White, & Kramer, 2007). Children chronically absent in early grades have less general knowledge and overall lower academic achievement, which predict end-of-grade failure in third grade, poor performance in middle school, and dropping out of high school (Chang & Romero, 2008). High absenteeism in primary grades is associated with future workforce absences (Reynolds, Temple, Robertson, & Mann, 2002). Low educational attainment is predictive of low earning potential, which may produce income inequalities for a community (Subramania, Blakely, & Kawachi, 2003).

Absenteeism among early school students is “eclipsed by concerns about truancy in older students,” so intervention with early school absence prevention has not been a priority (Jacobson, 2008, p. 3). Each day that the student does not attend school increases the potential for the student to fall behind, necessitating additional school resources to determine why a student is showing delay. The Head Start Impact

Study (U.S. Department of Health and Human Services, 2010) was mandated in 1998 by the Congress to measure the effect of Head Start on child development, learning, and school readiness. Beginning in 2002, the study evaluated 20,000 Head Start students and families around the United States to determine which approaches with parents and classroom teaching created the greatest impact. Although the study targeted programs with regular daily operating hours, it did not report attendance rates of participants. Without attendance information, it is difficult to determine whether the conclusion of Head Start’s limited effect on cognitive, social–emotional, health, or parenting at first grade was due to poor programmatic quality or high student absenteeism.

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Identification and Tracking Absences

Chronic absence is defined by the National Center for Children in Poverty (NCCP) as missing 10% of school days (18 or more days of the 180; Chang & Romero, 2008). Nationally, more than 11% of children in kindergarten and 9% of first graders are chronically absent, but the rates of chronic absence have been reported to be as high as 55% in different grades in some schools (Chang & Romero, 2008). Romero and Lee (2008) found that the majority of chronically absent first graders were also chronically absent children in kindergarten.

Identifying and tracking absent students require databases. Chang and Romero (2008) believe checking the prevalence of chronic, moderate, and excessive levels of absences by school and by ethnicity, special education, English Language Learners (ELL), socioeconomic status (SES), or some combination. Chronic absence, however, is easily hidden by aggregate statistics. For example, a school with 400 students and average daily attendance of 95% on any given day would have 20 students absent and 380 students present. The same 20 students would not be absent for all 180 days but may be part of a group as large as 120 children who miss school intermittently or for extended periods of time during the school year. In other words, a 95% attendance rate could mask the fact that up to 40% of the student population is chronically absent (Chang & Romero, 2008). Gottfried (2009) suggests disaggregating data allows better identification of student trends.

Types of Absences

Chronic absence can be lawful or unlawful episodic or for extended periods of time and is related to the student, the school, the family, and the family-school relationship. In North Carolina, there are 11 types of lawful absences: illness or injury, quarantine, death in the immediate family, medical or dental appointments, court or administrative proceedings, religious observance, educational opportunity, local school board policy, and absence related to deployment activities (Public Schools of North Carolina State Board of Education, Department of Public Instruction, 2009).

Demographics of Children With Excessive School Absenteeism

An NCCP study (Romero & Lee, 2008) found that children from families earning less than 300% of the federal poverty level were 4 times more likely to have chronic absences than children from families whose incomes were above that level (Romero & Lee, 2008). Absences were most prevalent in families with parents from minority backgrounds, large numbers of children, single mothers, a mother who had not finished high school, chaotic home environments, and household members with physical and mental health problems.

Absences also may be a proxy measure for underlying, chronic conditions in family members (Romero & Lee, 2008).

Frequent moving also affects chronic absenteeism. Frequent movement of children between schools can be related to parents dealing with job loss, divorce, housing problems including substandard housing, foster care, domestic violence, or parents' involvement in the criminal justice system—all of which affect attendance. There is a large body of research documenting maternal depression, mental illness, and substance abuse's effects on children, including higher rates of school absence (Fergusson, Grant, Horwood, & Ridder, 2005; Gall, Pagano, Desmond, Perrin, & Murphy, 2000; Olds et al., 2007; Reynolds et al., 2002). Many chronically absent children do not have homes with routines for school preparation, and/or children may be left alone in the morning. If they miss the bus and there is no transportation available, they do not attend school. School social workers have been useful in addressing some of these factors (Newsome et al., 2008).

Illness-Related Absences

Being "sick" is the most commonly given reason for absence but there is no consensus or common definition. Parents and students may have the misperception that stating illness as a reason for absence qualifies the absence as "accepted," because school staff often accepts the excuse sometimes under pressure to decrease unauthorized absences (Reid, 2006). Chang and Romero (2008) suggest school nurses have an important role in addressing academics and absences; however, a literature search of MEDLINE, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Education Resources Information Center (ERIC), and EBSCO from 2002 to 2011 found few articles about school nurses' role in reducing absences. Maughan (2003) found that since 1965, only 15 studies to assess school nurses' impact on academics had been conducted, and none examined absence as a variable. Allen (2003) looked at 10,000 students over a 20-day period and documented that where there was a school nurse there were fewer absences, but two studies (Guttu, Engelke, & Swanson, 2005; Weismuller et al., 2007) found that no absence referrals were made to the school nurses despite having a tracking system in place.

Weismuller, Grasska, Alexander, White, and Kramer (2007) conducted a retrospective study of school administrative student information and examined a stratified, random sample of 240 health records from kindergarten through fifth grades. The primary reasons for referral to the school nurse were screenings, physical illness, and injury. The number of interventions had no significant correlation to absences. This might be attributable to the sample, which had high SES, of 77% White, and had low levels of absenteeism.

Current Practice to Assess School Absenteeism

North Carolina General Statute 115C-378 outlines school personnel responsibilities in response to absences. It is the teacher's duty to ascertain whether the absence is excused or unexcused. It is the principal or designee, usually a social worker, who notifies the parent after three unexcused absences in a school year. After six unexcused absences, the parent must be notified by mail. After 10 accumulated unexcused absences in a school year, the principal or designee must meet with the parent. If the principal determines that there has not been adequate effort to comply with the law, he or she may file a complaint with the juvenile court counselor. The social worker's duty is "to investigate absences reported by the principal to analyze causes and steps to eliminate the problem" (North Carolina General Statute [N.C.G.S.] 115C-378, 2009).

Although three of the nine lawful absences in N.C.G.S. 115-C-378 (2009)—illness or injury, quarantine, medical, or dental appointments—involve the health care system and may require expertise beyond the scope of social work or educational practice, the statute does not include nurses as part of absence protocol. Historically, this has been the purview and role of the social worker. At the elementary level, the daily report lists reasons for absence, but traditionally the school nurse has not been involved in the process to contact parents for absences due to illness.

Head Start policy requires programs to achieve 85% average monthly attendance (U.S. Department of Health and Human Services, 1992, *Head Start Performance Standards*). This method of calculation masks individual absences as previously discussed. It allows the child up to 9 absences per month, or 90 of the 180 school days without being dropped from the program. Local Head Start procedure requires the teacher to contact the family after two consecutive days of absence and outlines the roles of the Family Service Workers and director; however, this procedure does not have universal adherence.

Nursing Practice Gap

Chang and Romero (2008) reported that when the National Center for Educational Statistics looked at the Early Childhood Longitudinal Study Kindergarten Cohort (ECLS-K) data, it found the lowest rates of absence in schools that provided outreach and home visitation by any school personnel. Jacobson (2008) found the same correlation. The majority of school nursing articles about absenteeism focus on treating chronic conditions to keep students in school (Murray, Low, Cross, Hollis, & Davis, 2007) rather than tracking students who are absent. Children with chronic illness comprise 23% of the student population but account for less than 14% of illness-related absences (Jones et al., 2009). For children with illness-related absence, 53% have respiratory problems, and asthma is the most prevalent childhood respiratory condition associated with lost days

of school (Alberg, Diette, & Ford, 2003). Although school nurses treat asthmatic children in the school setting under protocol, a study by Wilson, Moonie, Sterling, Gillespie, and Kurz (2009) demonstrated that physician consults with school nurses reduced absences by better managing asthma in school. However, most children who are excessively absent do not have a chronic illness.

Nurse home visitation is well established and associated with positive, long-term outcomes (Goodman, 2006; Olds et al., 2004, 2007). In the educational literature, Jacobson (2008) recommends that school personnel conduct home visits to better establish communication with families with children who have high absenteeism. This author was unable to find any literature about the efficacy of school nurse home visitation.

School-based health centers (SBHCs) and school-linked health centers are usually staffed with nurse practitioners. Murray, Low, Cross, Hollis, and Davis (2007) conducted a systematic review of the literature and found an association between SBHC clinic use and decreased absenteeism due to illness management at school. In the literature, there are articles about the roles of school nurses and nurse practitioners in providing primary and secondary preventive services to keep children in school (Clark et al., 2004; Guttu et al., 2004); however, their role in bringing children back to school when they are absent is largely uninvestigated (Wilson, Moonie, Sterling, Gillespie, & Kurz, 2009). The role of doctorate of nursing practice (DNP) is intended to improve outcomes by addressing gaps between the literature and nursing practice. This capstone project, as part of Duke University's School of Nursing DNP program, filled that gap by investigating the effect of the Family Nurse Practitioner (FNP) addressing early school absenteeism.

Intervention

Setting

The primary focus of the intervention was to contact parents whose children had missed more than 10% of the school year for illness-related reasons. The setting for this project was a school system in North Carolina with 12,000 students. The overall academic performance of the school district is highly rated by the public because of student performance on standardized tests compared to other schools in North Carolina; however, there is a significant minority student achievement gap, which begins in elementary school and widens over middle and high schools. The school system has a school nurse and social worker in each school. In August 2006, the local school board approved changing the preparation of the Head Start nurse from school nurse to that of an advanced practice FNP to fully utilize the education and training of the current itinerant Head Start nurse. The school district houses 18 Head Start classrooms in 9 of the 10 elementary schools. Since 1965 Head Start has been a federally funded early

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Table 1. Demographic Characteristics of Children ($N = 579$)

	Head Start (%)	Elementary 1 (%)	Elementary 2 (%)	Intervention Group (%)
White	2	42	45	30
Black	36	12	21	16
Asian	13	16	12	21
Hispanic	47	20	17	26
Multi-racial	20	10	5	7

childhood education program targeting young children of low-income households. Family income eligibility for Head Start is between 0% and 130% of poverty, and the children are at risk of poor health status and absenteeism (Romero & Lee, 2008). Racial and ethnic demographics for the Head Start program in this project had 130 students including 2% White, 47% Hispanic, 36% Black, 20% multiracial, and 13% Asian.

The project was modeled after the findings from the ECLS-K study and Chang and Romero (2008) that where there was outreach from the elementary school there was better attendance. The intervention was planned with school nurses ($N = 3$), social workers ($N = 2$), data managers ($N = 3$), and assistant principals ($N = 2$), and three principals ($N = 13$) at each school to assure buy-in and suitability. Head Start was 98% minority, and the two elementary schools in the project were both minority majority schools (see Table 1).

Elementary School 1 had 249 students in kindergarten through third grade. Elementary School 2 had 200 students kindergarten through third grade. All students in Head Start and kindergarten through third grades at the two elementary schools were eligible for FNP contact with the parents when their child's cumulative school absences reached $\geq 10\%$. Because the FNP was not on staff at either elementary school, she received contact information of the families from the respective social workers and school nurses. The Head Start director and principals at the two elementary schools agreed to allow the FNP, in collaboration with the school nurses, workers, and data managers to identify and intervene with students and their families who were identified as chronically and excessively absent from school.

Local Head Start Policy Council and the local school administration approved the project. Further, Duke University Medical Center Institutional Review approval was obtained before initiation of the project. Attendance surveillance was initiated in September 2009 (Year 1) and intervention in September 2010 (Year 2). Thus, attendance rates were examined for the initial 5 months of the school year before and after initiation of the intervention.

Initial FNP Contacting of the Parents

At the beginning of school year 2010–11, Head Start and one elementary school sent letters home to students K–3 that explained the importance of school attendance and the new

absence procedure for chronically or excessively absent students. The letter, in English and Spanish, described why and how the FNP would contact the family.

FNP Analysis of Attendance Patterns

Based on the recommendations to check attendance on the 30th school day described by Chang and Romero (2008) of the NCCP, the FNP obtained a cumulative absence report from the two elementary schools and Head Start data managers. Using definitions from the NCCP, the FNP categorized students by grade and school for good attendance ($\leq 4\%$ absent); moderate absence (5–9%); chronic absence (10–19%), and excessive absence ($\geq 20\%$). Between school days 30–35, the FNP met with the school nurses and social workers and telephoned parents of students whose attendance was categorized as chronically absent and assessed the reasons.

Beginning the 35th school day, as recommended by Chang and Romero (2008), the FNP and the social worker made unscheduled visits to excessively absent students' homes. The FNP then began active surveillance and intervention to reduce absenteeism. Each day the FNP received an absence report electronically from the two elementary schools' data managers to see which students met the criteria for chronic or excessive absences related to illness. Because ChildPlus, the Head Start database, does not have the capacity to generate such a list, the FNP, in collaboration with Head Start staff, attempted to check each classroom's attendance roster daily.

FNP Telephone Contacts of the Parents

When the student's absences reached 10% of the year (e.g., on Day 86, nine absences = 10%) and was illness-related, the FNP attempted to contact the parent by telephone. The FNP made calls from school-based locations to Head Start families between 9 a.m. and 2.30 p.m. and to elementary school families between 2.30 and 5 p.m. to assess the illness. The telephone calls were categorized as follows:

1. No parental response (no answers, wrong number, phone disconnected, no answering machine or machine full, or respondent was not the parent).
2. No answer; the FNP left a standardized message.
3. Someone answered but hung up before responding.
4. A parent answered and talked for more than 30 s.

When a parent was reached and willing to talk, the FNP named the child's teacher, social worker, or school nurse and explained that they had informed her that the child had been absent from school several times. If the parent reported that the absence was illness, the FNP offered to make a home visit or to see the child in the school nurse's office. Each conversation ended with 10 standardized sentences about the importance of school attendance.

FNP Home Visitation

If a student's absence reached 20% or a parent agreed to a home visit, the FNP and social worker visited the home. The project of home visits was conducted during school hours by the FNP and social worker and had five potential outcomes:

1. No one was at home, child was not at home, or person at home was not the custodial parent.
2. No one was at home, and a neighbor reported no one by that name lived there.
3. Someone was at home but did not answer the door.
4. A parent answered the door but closed it in less than 30 s.
5. A parent answered the door, communicated with the FNP and social worker, and sometimes allowed the FNP to examine the child.

If the family did not live at the given address, the social worker reported the information to the school system's assistant registrar who investigates families with children enrolled in schools, who do not live in district. The family then must prove residency or leave the school system after 30 days.

FNP Examination of the Child

If the parent allowed the FNP to examine the child during the home visit or at the school with the parent present, there were two potential outcomes:

1. The child appeared well, was recovering, or had no signs of illness.
2. The child appeared ill and met the objective criteria for a medical diagnosis (with *International Classification of Diseases, Ninth Revision [ICD-9]* code), potential treatment, or referral.

Each encounter ended with 10 standardized sentences about the importance of early school attendance, and the FNP left an information sheet for the parent to read about school absence and contact information for future assistance.

Measures

In North Carolina, all schools use the database NCWISE to track, report absences, and monitor average daily membership (ADM). Each school district's attendance and demographics are available online in the principal's monthly report (PMR) by school and grade on a monthly basis. The school district's lead data manager provided information for reasons for the 90-day school year attendance period for Elementary Schools 1 and 2. Head Start data are not publicly available and are stored in each program's database.

The outcome measure of the project intervention was attendance rate. The attendance rate was defined as the

number of student days attended divided by the total number of student days multiplied by 100. The attendance data for months 1–5 for each school and grade level for 2009–2010 (Year 1) was obtained online from the North Carolina Public Schools (2011) database. Year 2 (2010–2011) attendance rate data were matched month by month to avoid any seasonal variation.

Telephone calls; clinic visits; and home visit attempts and results were recorded on individual forms by name, date, number of school day, school, grade, absence rate to date, absence reason; and medical diagnosis (with *ICD-9* code). These data were stored in the school system's "Connect to School" virtual password-protected website. During the 90-day intervention, identifying information was retained but deleted when loaded into Statistical Analysis Software for the analysis phase of this project.

The database used for the intervention had variables to describe the population who met the criteria of $\geq 10\%$ absence by gender, race/ethnicity, and grade. The variables used to measure the type of contact included telephone call, home visit, clinic visit, and unexpected community encounter, FNP was advised not to contact, no translator available, or missed opportunity (FNP did not contact the family for various reasons including but not limited to late absence report, oversight of the absence, or FNP not at school). The variables used to measure result included no response when contacted, response but declined to talk, or discussion of situation. These applied to both telephone calls and planned and unplanned home visits.

Chang and Romero (2008) recommend recording absence reason by categories. Because the intervention was nursing based, the illness category was amended to be more specific (respiratory, gastrointestinal [GI], or genitourinary [GU], fever, dental, communicable disease, seizures, or other medical). If the reason for absence turned out to not be illness, the other categories used were family activity, family illness, transportation, or unknown, consistent with Chang and Romero's recommendation.

Results

Overall, in the two elementary schools, there were 1,600 absences in the first 90 days of the school year. The majority of the absences were excused (76%) and 24% were unexcused. Of the excused absences, 3% were religious activity or death in the family; 13% were for medical or dental appointments; 14% for educational opportunity; and 70% were recorded as illness or injury. Because absences related to illness or injury are listed as lawful by North Carolina State Statute 115c 378, fully, 100% of them were excused.

Descriptive statistics were used to summarize the results of the FNP intervention. Between the two elementary schools and Head Start, there were 117 students who met the criteria of 10% or more absent between the 30th and 90th days of school year 2010–2011. The absent student

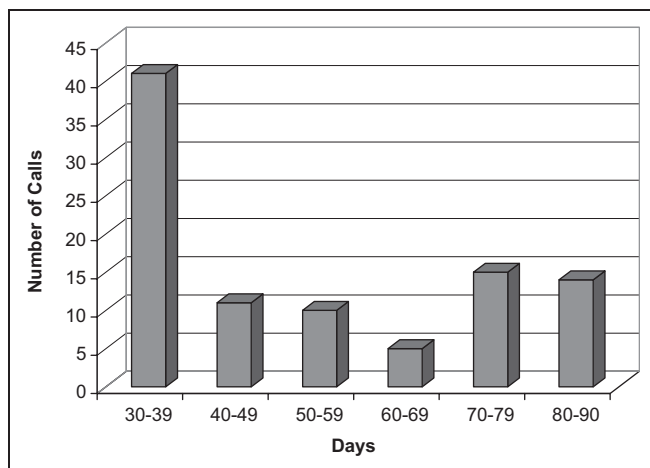


Figure 1. Family Nurse Practitioner (FNP) telephone calls by school day.

demographics matched their schools and grades with the exception of overrepresentation of Whites and Asians.

The FNP attempted 136 contacts regarding 117 students during the intervention, with a contact rate of 72% with the custodial parent or guardian. There were 82 telephone conversations that lasted more than 30 s, 13 home visit conversations, and 3 clinical visits. There were 19 unintended community encounters where the FNP saw the parents at the grocery store, mall, parent meetings, or in the school. The number of telephone call attempts was highest between days 30 and 39 and dropped from days 40 to 69. Between days 70 and 79, which included the days after the winter break, the number of calls increased slightly and dropped during the final days 80–90 (see Figure 1). During the telephone calls, the parents reported reasons for absence. Forty percent of the reasons were not related to illness or injury (transportation, family activity, family illness, or behavioral problems). Respiratory illness comprised 22% of absences reasons, followed by fever (9%), GI/GU (6%), communicable disease (3%), dental (3%), seizures (3%), and 14% other medical (G-tube and prosthetic eye problems, neuroblastoma, and glioblastoma; see Figure 2).

The FNP, accompanied by the school social worker, made 17 home visits, 4 of which were unannounced. A total of 13 students were at home, and 4 were not at their address of record. Of the 13 students, 5 did not have signs or symptoms of illness, and 8 were sick enough to meet the criteria for a medical diagnosis and *ICD-9* code. Three students were seen for clinical visits in the school nurse's office. Of the 13 students whose reported illness met the criteria for a diagnosis, 5 were respiratory, 2 fevers of unknown origin (FUO), 1 otitis media, 1 dental abscess, 1 urinary frequency, 1 hordeolum (sty), 1 selective mutism, and 1 ill defined problem. Of the 13 actual clinical encounters, 12 were Head Start students.

The primary analysis compared the attendance rates during the initial 5 months of Year 1 and Year 2 in the different

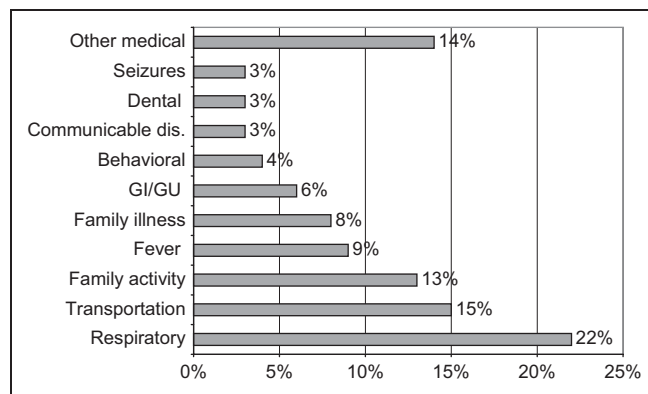


Figure 2. Parent's stated reason for absence.

programs, elementary schools, grade levels, and grade levels within each elementary school. Attendance rates in Year 1 and Year 2 were compared using a *z* test because it is specific for difference in proportions. Two-tailed tests were done to allow for either an increase or a decrease in attendance rate, and the level of significance for each test was set at .05.

At the program level, Head Start showed no change in attendance rate from Year 1 to Year 2 in any category. At the elementary school program level and in each elementary school, the improvement in attendance was significant at $p \leq .05$. At each grade level, there was attendance improvement at the .05 level. In Elementary School 1 at the kindergarten and first grade levels, there was no statistically significant improvement, but at each school in each grade, there was improvement at $p = < .05$ (see Table 2).

Implications

Not all illness reasons are valid. It was clear from the intervention that 40% of absences reported as illness or injury at the elementary level were related to transportation, family activity, or family illness. Although family illness is illness related, it is not the student who is sick. The demographics of chronically or excessively absent students matched the schools' demographics except the Whites and Asians. This could be because some of White students' illness or injury reports were in fact family travel. The overrepresentation of Asians may be related to a lice infestation that moved between refugee families at Elementary School 2.

There is a local saying that what gets measured gets done, meaning when attendance is monitored, staff will enter data daily. In Head Start, the inconsistency of monitoring and enforcing reporting absences prevented reliable information or a cohesive message to the community that preschool attendance is important. Thirty-one excessively absent Head Start students following the winter break brought the program's attendance from 93% to 84% and negatively affected the aggregate attendance from Year 1 to Year 2. Only 16 of the students were known to the FNP. Without systematic

Table 2. Percentage Attendance Change and Significance by Level

Program	Year 1 Attendance (%)	Year 2 Attendance (%)	z	p
Head start	92.9	92.9	-0.0	n.s.
Elementary School	95.9	96.9	-8.9	<.05
Elementary 1	95.6	96.3	-4.5	<.05
Elementary 2	95.4	96.7	-8.4	<.05
Grade				
Head Start	92.9	92.9	-0.0	n.s.
Kindergarten	95.5	96.2	-2.9	<.05
Grade 1	96.0	96.4	-1.96	.05
Grade 2	95.4	96.7	-5.2	<.05
Grade 3	94.8	96.4	-8.1	<.05
Elementary 1				
Kindergarten	95.5	95.8	-1.0	n.s.
Grade 1	96.0	96.2	-0.7	n.s.
Grade 2	95.8	96.5	-2.0	<.05
Grade 3	94.9	96.7	-5.3	<.05
Elementary 2				
Kindergarten	95.5	96.6	-3.2	<.05
Grade 1	95.9	96.6	-2.1	<.05
Grade 2	95.2	96.9	-5.32	<.05
Grade 3	94.8	96.9	-6.2	<.05

buy-in to address early school absence, the FNP role is palliative at best.

Inclusion of an FNP is effective but not available in most settings. The FNP was assigned to Head Start and performed these attendance activities with Head Start and two elementary schools in addition to regular job duties of maintaining immunization and other records, conducting screenings, and securing care for students in nine schools. The majority of students who reported illness in fact was not sick and did not need the diagnostic and prescriptive services the FNP could offer. Only 13 students that the FNP examined met the objective criteria for an *ICD-9* diagnosis at the time of the visit. It is logical that the school nurse could call to assess symptoms and triage sick children to the FNP, and school nurses can do home visits. It is difficult for the school nurse to break away from stream of children who present to the school nurse office, but where the nurse is itinerant or unable to call families, another staff member could make the initial call to determine who is truly sick and triage to the school nurse.

To begin a similar intervention, school nurses could target the incoming cohort. If on the 30th day of each school year, the school nurse disaggregates absence data on kindergarten, sixth-, and ninth-grade students and modifies this intervention's approach, within 6 years, the cohorts will have merged, and the school system may have decreased absences related to illness or injury. If the school nurse contacts the sick children's families and triages appropriate cases, the advance practice skills of the FNP could be maximized. School nurse home visitation at parent request could have an exponential effect when that parent teaches another.

Limitations

Data

Head Start program policy is for teachers to enter absences each morning, but more than a quarter of the classrooms do not enter all attendance by the end of the month. Because the program's ChildPlus computer system's attendance default is "present," the data are unreliable, absences undercounted, and surveillance incomplete. As of this writing, Head Start programs housed in public schools in North Carolina are not integrated into NCWISE. ChildPlus does not have the ability to generate a daily attendance report or to measure cumulative attendance from one month to the next. The Head Start program's 92% average monthly attendance exceeds the 85% federal expectation, so there is no urgency to address absences on a programmatic level. Many families' phone service is inconsistent, making parental contact challenging. Elementary school absence reports came at different times each day. When the elementary data people were not at school, the report did not come until the next day. For both programs, the lack of more than 1 year retrospective absence data limited trend analysis.

Multiple Factors Affect Attendance Rate

It is unclear from the intervention whether the effects were related to any call by school personnel, the call by a nurse, or a call by an FNP. The FNP intervention augmented the existing absence policy and procedures, but the improvement in program, school, and grade attendance rates from Year 1 to Year 2 was influenced by multiple factors. In school, Year 1 H1N1 flu affected school absences. In Year 2, there was universally accessible flu vaccine, which potentially prevented absences. Both these factors could have contributed to the improvement in attendance from Year 1 to Year 2.

At the elementary schools, the project and the FNP were minimally known to teachers, teacher assistants, and families, which made it difficult to establish relationships by telephone. Elementary School 1 did not send the letter explaining the intervention because a new principal took charge in the summer. There was no adequate time to translate the letter for the school's Burmese and Karin families. Scheduling conflicts prevented presentations to elementary school faculty; instead a mass e-mail was sent to all teachers and teacher assistants K-3 in both schools explaining the project.

Absence intervention protocols varied between the two schools as did collaboration and differentiation of school nurse and social worker roles. Some teachers bypassed the school nurse and excluded children. Translators were not immediately available, which delayed communication with some parents. Many contact numbers were disconnected or incorrect, adding additional steps to reach parents. If the FNP did not contact the parents on the exact day of absence, the parent said "but he's back at school. Why are you calling?" Most days it was difficult to contact families of both

Head Start and elementary schools on the same day. If the call was not made by 4 p.m., there could not be a home visit without an accompanying social worker.

Intervention Did Not Target at Risk Students

Measurement of significance by aggregate statistics hid the 21% (117 of 549) of students in this intervention whose absences reached 10% at some point during the 90 days. To say the children were at risk of academic failure was not true of all students. "Oh," a parent would say, "he's gifted and can easily make up whatever he missed at school. It's ok to miss school" or "I see what you are trying to do, but we're not one of them. We care about education." Some Head Start parents do not understand the difference between child care and preschool. Young children learn through play, and some parents do not perceive play as educational, believing that missed days means only missed playtime.

The 10 sentence script was too long and complicated for some parents who did not understand percentages. Also, some families viewed the FNP contact as meaning the absence was unexcused and began justifying why it was an excused absence. Three parents visited or called the principal to make sure the FNP did not call again. The staff had a list of which families not to call, with which the FNP complied. Consequently, the list included students whose excessive absences affected the aggregate. The school turned those parents over to truancy court.

Conclusion

Sir Geoffrey Vickers, a British systems scientist, noted "the history of *public health* might well be written as a record of successive re-definings of the *unacceptable*" (Vickers, 1958, p. 600). School absences have been a problem in the United States for the past 40 years and have complex etiologies. There is little debate that excessive absences waste school resources and contribute to educational deficits, but defining chronic absenteeism in early school as "unacceptable" has yet to happen. This is largely because truant young children do not commit crimes, and aggregate data hide individuals' absences.

If young children in poverty have high numbers of school absences, educational inequalities result, and health care and social inequalities continue. Personal contact and outreach from schools show concern about children's wellness and can help families understand the importance of attendance, even in early grades. The largest effect of the intervention was the school community's awareness that someone in the school was checking attendance.

School nursing's role should be defined in state statutes related to absence interventions. If chronic or excessive absences are reported to be because of illness, the school nurse or FNP should be involved. Improving school attendance is not solely the purview of the school nurse but absences related to illness or injury is. Indeed, school nurses,

who can demonstrate that their interventions improve students' attendance and by extension student performance, may secure their roles in the educational system.

Although further investigation is needed, these results suggest that school nurses and entire school teams, using targeted primary and secondary prevention may help achieve this. Ideally, these interventions target preschoolers through third-grade students, but intervening with at risk kindergarteners, sixth-, and ninth-grade students is a project many school nurses could do. School nurses are positioned to change the accepted to unacceptable and affect the health, educational, and social trajectory of early school children and by extension, the community's health.

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AQ 11

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AQ 12

AQ 13

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AQ 15

AQ 16

AQ 3