

# Comparing the Number of Ill or Injured Students Who Are Released Early From School by School Nursing and Nonnursing Personnel

Linda L. Wyman, RN, MSN

---

**ABSTRACT:** There is a growing demand for research linking specific educational services with positive student outcomes. Little empirical evidence exists to show that school nursing services improve student success. School attendance is one of many factors that has been associated with improved learning; school nurses can affect that factor. This study compared the number of students in a Midwest urban public school district who were dismissed from school early for illness or injury with and without interaction with a school nurse. A student sign-out and sign-in log identified the number of students who left school prior to the official dismissal time, and a school nurse activity log indicated the students who were dismissed early from school after contact with a school nurse. Analysis of these data indicates that 57% fewer students left school early with school nurse contact compared with those who left school early without such contact. The results of this study indicate school nurses may positively influence student school success by reducing avoidable early release from school for ill or injured students.

**KEY WORDS:** absenteeism, academic achievement, school attendance, school nurse outcomes, student school dismissal

---

## INTRODUCTION

The impact of school nursing services on student academic achievement deserves greater attention at this time when primary and secondary schools are expected to be more accountable in providing quality cost-efficient education. School systems are operating with tighter budgets and need to show evidence of academic success to receive federal and state funding (Allen, 2003). U.S. citizens have spent in excess of \$321 billion (based on 2002 costs) since the Elementary and Secondary Education Act (1965) first passed Congress, yet almost 40 years later only 32% of 4th-grade students were reading at grade level (U.S. Department of Education, Office of the Secretary, 2002). As a result, school officials are closely examining

which specific educational services work best to support children's education. The purpose of this study was to more closely examine the impact school nursing services may have on student school success through improved partial-day attendance and school system health services cost efficiency by determining the number of students released early from school for student complaint of illness or injury with and without school nurse contact.

## REVIEW OF THE LITERATURE

To date, there are few published studies linking school nursing interventions to positive changes in student school performance (Allen, 2003; Fryer & Igoe, 1995; Kimel, 1996; Long, Whitman, Johansson, Williams, & Tuthill, 1975; Telljohann, Dake, & Price, 2004). Kimel (1996) and Long and associates (1975) examined specific nursing interventions on long-term absenteeism. Kimel found that elementary students who

---

Linda L. Wyman, RN, MSN, is a school nurse with the Columbus, OH, public schools.

received periodic hand-washing instruction had fewer illness-related absences for the duration of the instruction. Long and associates found that when elementary students who had historically high rates of absenteeism received focused interventions by the school nurse for one school year, the number of days they were absent from school decreased. Fryer and Igoe (1995) found a strong correlation between the rank order of students to school nurse ratio and three indicators of student well-being. In their study, children in states with more school nurses per pupil had lower death rates, were less likely to become teenage parents, and were more likely to graduate from high school on time. Allen (2003) found that elementary students with a full-time school nurse had significantly fewer student illness- or injury-related early releases from school.

Improved full-day and partial-day attendance has been linked to student school success (Borland & Howsen, 1998; Epstein & Sheldon, 2002; Johnston, 2000; Klerman, 1988; Lamdin, 1996; "Raising School Attendance," 2002). Children who were in class at least 95% of the scheduled school day were twice as likely to pass a Minnesota language arts test as those who were present 85% or less ("Raising School Attendance," 2002). Klerman (1988) found that children who missed more than 11% of scheduled school days fell behind in their work and had difficulty understanding and completing work at their grade level. Additional research showing a positive relationship between school nurse interventions and student school and class attendance is needed to support the value of school nursing services.

Children who were in class at least 95% of the scheduled school day were twice as likely to pass a Minnesota language arts test as those who were present 85% or less.

Controversy surrounds the use of unlicensed assistive personnel (UAP) to support or supplant the role of school nurses. The National Association of School Nurses (NASN, 2002) states that assistive personnel should function as a dedicated extension of baccalaureate-prepared school nurses and not be required to make clinical nursing judgments. In many school settings, however, this is not the reality. UAP frequently extend nursing care in situations where registered nurses (RNs) are not accessible for UAP supervision and direct assessment of students (Fryer & Igoe, 1996; Wold, 2001). Many states do not require schools to use school nurses as defined by NASN to provide health services (NASN, 2002) and, as a result, some school systems may choose to use the less-costly services of UAP to intervene with ill or injured students. Empirical evidence is needed to show if the actions of school nurses

are associated with positive outcome indicators of student success such as attendance. Such an association would provide valuable data to school stakeholders showing that funding of school nursing services is an efficient and effective use of school financial resources.

## THEORETICAL FRAMEWORK

Leibenstein's X-efficiency (XE) theory (as cited in Frantz, 1997) supports and guides this research. This theory asserts that the function of schools may be inconsistent with the cost minimization and profit maximization theory of microeconomics that is widely accepted in the contemporary business world as a measure of cost effectiveness. According to XE theory, nonprofit institutions such as schools have a "complex objective function" (Frantz, 1997, p.17) and "given inputs are not transformed into predetermined outputs" (Frantz, 1997, p. 29). This theory strengthens the idea that school support service personnel, such as nurses, counselors, and paraprofessionals, should and do bring unique abilities and perspectives to interactions with students. Knowledge, custom, judgment, authority, and motivation are intrinsic and extrinsic factors that influence rational decision making of individuals from different educational and social backgrounds, which in turn leads to variable outcomes. Therefore, despite being more costly than non-nursing personnel, the use of baccalaureate-prepared school nurses may be a more effective and efficient use of resources because nursing theory-based systematic processes can uniquely support student success.

## METHODS

This study was designed to examine the number of students dismissed early from school for student complaint of an illness or injury with and without school nurse contact. Specific objectives of the study were to:

1. Compare the number of ill or injured students released early from school by the school nurse and nonnursing personnel.
2. Explore the reasons why students were released early from school.
3. Compare the time of day that students were dismissed early from school for illness or injury.

As the design implies, no attempt was made to control or manipulate the number of students who did or did not see the school nurse for a health-related issue. Data were analyzed using descriptive and correlational statistical methods. A convenience sample of six schools was used in this study. Random selection of the sample was not used in an effort to control several extraneous variables in this diverse urban school system. The researchers chose the two elementary, two middle, and two high schools that were alike in total student population, percent of special education students, percent of students receiving free or reduced

price lunches, percent of student mobility, percent of students taking English as a second language, and percent of time that a school nurse was available in the facility. Given this, the total available study population, based on enrollment data, was approximately 4,120 students. The actual number of participants consisted of the number of the available student population who sought the assistance of the school nurse or who were signed out of school early on a student sign-in or sign-out log, or both, during the period of the study. Table 1 shows the characteristics used to match the two schools on each level.

The setting for this study was a large urban public school system in a Midwestern state. This system consists of 17 high schools (grades 9 through 12), 25 middle schools (grades 6 through 8), and 89 elementary schools (grades kindergarten through 5). The district also has 14 other schools not considered for inclusion in this study because they did not meet the definition of high, middle, or elementary school, or because they served special needs aggregates.

Following consent from the school system's Research Review Committee, data were collected using two instruments over the first 3 1/2 weeks of November 2003. We selected this period because it occurred after the month of October when many nurses' schedules were altered to accommodate mandated health

screenings, but before Thanksgiving and winter breaks and the peak cold and influenza season during the winter months. Two of the included days were student nonattendance days for all of the schools. Sixteen days (8%) appeared to be representative of the total student attendance days in this district without placing an undue burden of data collection on school staff.

Parents, family, and school office staff in each of the study schools recorded students' early dismissals from school. School nurses providing illness and injury assessment and intervention in the sample schools recorded the number of students they dismissed in a separate school nurse activity log. The chi-square test, used to test whether variables are independent or related (Burns & Grove, 1997), was used to compare the frequency of observed dismissals with and without school nurse authorization to that which would be expected if nurse contacts and school illness- or injury-related dismissals were independent of each other.

## RESULTS

Significant differences in the number of ill or injured students released early from school with and without school nurse contact were found in this study. Table 2 shows the number of students released early from school for illness or injury with and without

**Table 1.** Comparison of sample school characteristics

	High Schools		Middle Schools		Elementary Schools	
	A	B	A	B	A	B
Total student enrollment	931	784	515	586	574	409
Percentage of special education students	17	11	18	16	5	3
Percentage of English as Second Language students	0	11	0	0	0	13
Percentage of students receiving free or reduced price lunch	44	40	39	50	82	90
Percentage student mobility	12	5	11	3	21	46
Percentage of school nurse time in facility	50	50	50	50	50	50

**Table 2.** Number of students dismissed early from school for illness or injury with and without school nurse contact

School	Number of Students Dismissed With School Nurse Contact	Number of Students Dismissed Without School Nurse Contact
High School A (school nurse present 7 of 16 days)	14	48
High School B (school nurse present 7 of 16 days)	3	17
Middle School A (school nurse present 7 of 16 days)	20	28
Middle School B (school nurse present 6 of 16 days)	10	42
Elementary School A (school nurse present 8 of 16 days)	1	18
Elementary School B (school nurse present 7 of 16 days)	10	14
<b>Total</b>	<b>58</b>	<b>167</b>

school nurse contact. In total, 225 students were released by school nurses or nonnursing staff.

The nonparametric chi-square test was used to compare the relationship between the number of students released for illness or injury with and without school nurse involvement. Because one of the assumptions required for chi-square analysis states that frequency results cannot appear in more than one data cell (Munro, Visintainer, & Page, 1986), the number of students released without school nurse authorization on the days the nurse was present was not included in the data used to obtain the chi-square result. That is, it could not be determined that students released on the days the nurse was present, but who were released without school nurse authorization, had not been seen by only the school nurse or nonnursing personnel. Chi-square statistical analysis was completed using the observed and expected frequencies shown in Table 3. Using the .05 level of statistical significance, the results showed that significantly fewer students were released by school nurses than by nonnursing personnel,  $\chi^2(5, n = 225) = 17.34, p < .05$ .

Thirty percent of the populations of all six schools (1,087 students) checked out of school early during the 16 days of this study. Information collected on the student sign-out and sign-in log showed that 40.8% of students left school early for appointments ( $n = 443$ ) and 25% of students left for illness or injury ( $n = 272$ ). The "other" category was listed as the reason for 16.3% of the student releases ( $n = 177$ ); 9.7% of the students were dismissed for "personal" reasons ( $n = 105$ ), and in 7.2% of the cases, no reason was documented ( $n = 90$ ).

Comparisons about the time students were dismissed early from school for illness or injury were also made from the data collected in this study. Early releases were divided into those that occurred at or before the midpoint of each school's official complete school day and those that were documented after the midpoint. Of 272 early dismissals, fewer were in the first half ( $n = 115, 42.3%$ ) than in the second half of the day ( $n = 157, 57.7%$ ). Because this research did not record identities of students and times of their consultation with the school nurse or nonnursing personnel, it is not known how many and with whom contacts were made before students left school ill or injured. Whether or not school nurses, other staff, or students

themselves were able to delay early dismissals due to illness or injury remains a relevant question for future research.

## DISCUSSION

In the six study schools, slightly more than twice as many students were dismissed ill or injured on the days the nurse was not available in the school compared with those who were authorized to leave by school nurses on the days school nurses were present. Because a significant number ( $n = 272, 25%$ ) of students who left school early did so for illness or injury, this represents an important positive impact on student attendance by school nurses. There was no attempt in this study to identify students who made contact with the school nurse or nonnursing personnel, nor was there documentation of the content of the interactions. Both of these pieces of information would provide additional valuable data in future research. Questions about which individual students report, when they report, and the content of the school nurses' or nonnursing personnel's interactions with students might provide additional valuable information on how school nurses minimize student partial-day absences caused by illness or injury.

. . . slightly more than twice as many students were dismissed ill or injured on the days the nurse was not available in the school compared with those who were authorized to leave by school nurses on the days school nurses were present.

The data show that in four of the schools, 47 students who were released ill or injured on days the nurses were present had not been authorized to leave by those nurses. Because individual identification of students who reported to the school nurse or nonnursing personnel was not collected in this study, it is not known whether or not these students were assessed by the school nurses. It is possible that some or all of the students did have contact with the school nurse, but that the nurse did not authorize release based on his

**Table 3.** Observed and expected frequencies for the chi-square test

School	Early Dismissal with School Nurse Contact		Early Dismissal with Nonnursing School Personnel Contact	
	Observed Frequency $f_o$	Expected Frequency $f_e$	Observed Frequency $f_o$	Expected Frequency $f_e$
High School A	14	16	48	46
High School B	3	5	17	15
Middle School A	20	12	28	36
Middle School B	10	13	42	39
Elementary School A	1	5	18	14
Elementary School B	10	6	14	18

or her assessment findings. That is, the nurse may have determined that the student was able to remain in school despite the complaint. It is also not known whether or not these same students made contact with the nonnursing personnel or even other school staff regarding their illness or injury complaints. It is possible that students did complain about their illness or injury to other staff who released them from school without seeking the assessment of the school nurse. These students may have contacted family members on their own asking to be released and subsequently were signed out of school early by that adult without any school personnel contact. Although students and families may feel they should be able to have their students released from school early at their discretion, having a school nurse assess the situation and make recommendations may keep students from leaving unnecessarily, thereby missing important instruction time.

Although the designs of two related studies by Allen (2003) and Telljohann and colleagues (2004) were different from this study, results were similar. Allen's research results on school nurses' positive effect on student partial-day attendance was statistically significant ( $t = 2.27, p < .05$ ). In this demographically matched, experimental and control group, 20-day study of 5,000 elementary students, the mean early dismissal rate for the experimental schools was 11.1% while the control group's early dismissal rate was 15.7%. Telljohann and colleagues (2004) studied elementary students with asthma and found that, compared with part-time nurses, full-time nurses reduced the amount of school absence in low-socioeconomic-status or African American students by 23%.

The following limitations of this study methodology were identified:

1. Because the research was limited to one school district, results are not generalizable to other school districts.
2. School selection for participation in this research was not randomized. The study sample was selected from a relatively small matched convenience sample in an effort to control many extraneous variables such as nursing time and student socioeconomic and cultural differences that exist in this large district.
3. Data collection for this study was entirely dependent on the ability and willingness of students, students' families, school nurses, nonnursing personnel, or other staff to document their activities on the tools provided.

## IMPLICATIONS FOR SCHOOL NURSING PRACTICE

The results of the current study add to the foundation of knowledge that shows school nurses may have a positive impact on student academic success by reducing student early dismissal from school for illness or injury. It is important for all levels of school

leadership—boards of education, superintendents, financial officers, school principals, and health services administrators—to be aware of this information when making decisions about using financial resources to provide school health services. This study illustrates the application of Leibenstein's X-E theory (as cited in Frantz, 1997) to school health services by demonstrating that the use of school nurses to intervene with student health complaints may be a more cost-effective allocation of financial resources than seemingly less-costly assignment of UAP to this task. Moreover, school nurse contact with students for illness or injury complaints can reduce unnecessary partial-day school absence, thereby increasing student class attendance and academic success.

The findings of this study are also important to school nurses who work with students and their families in the school setting. The results of this research may serve to focus school nurses' attention on their role in minimizing unnecessary student illness- or injury-related release from school. This research should encourage others to conduct further investigation on the impact of the school nurse role on student attendance and school success.

The results of this research may serve to focus school nurses' attention on their role in minimizing unnecessary student illness- or injury-related release from school.

Future research that links school nursing practice to student school success should move in the direction of more closely associating the unique knowledge and actions of the school nurse to positive student outcomes. Subsequent studies in the area of school nurse impact on student attendance could document the nursing process used by the nurse in each student encounter. The process and student attendance outcome could then be compared to that of nonnursing personnel and student contact to provide data that goes beyond identifying the number of students who are dismissed. Differences in the actions and results of the school nurse and nonschool nurse staff would more clearly identify why school nurses positively impact student release from school.

## ACKNOWLEDGMENT

This study was supported by a grant from the Central Ohio Association of School Nurses.

## REFERENCES

- Allen, T. (2003). The impact of elementary school nurses on student attendance. *Journal of School Nursing, 19*(4), 225–231.
- Borland, M. V., & Howsen, R. M. (1998). Effect of student atten-

- dance on performance: Comment on Lamdin. *Journal of Educational Research*, 91(4), 195–197.
- Burns, N., & Grove, S. K. (1997). *The practice of nursing research: Conduct, critique, & utilization* (3rd ed.). Philadelphia: W.B. Saunders Company.
- Epstein, J. L., & Sheldon, S. B. (2002). Present and accounted for: Improving student attendance through family and community involvement. *Journal of Educational Research*, 95(5), 308–318.
- Frantz, R. S. (1997). *X-efficiency: Theory, evidence and applications* (2nd ed.). Norwell, MA: Kluwer Academic Publishers.
- Fryer, G. E., & Igoe, J. B. (1995). A relationship between availability of school nurses and child well-being. *Journal of School Nursing*, 11(3), 12–18.
- Fryer, G. E., & Igoe, J. B. (1996). Functions of school nurses and health assistants in U.S. school health programs. *Journal of School Health*, 66(2), 55–58.
- Johnston, R. C. (2000). As studies stress link to scores, districts get tough on attendance. *Education Week*, 20(7), 1–10.
- Kimel, L. S. (1996). Handwashing education can decrease illness absenteeism. *Journal of School Nursing*, 12(2), 14–18.
- Klerman, L. V. (1988). School absence: A health perspective. *Pediatric Clinics of North America*, 35(6), 1253–1269.
- Lamdin, D. J. (1996). Evidence of student attendance as an independent variable in education production functions. *Journal of Educational Research*, 89(3), 155–162.
- Long, G. V., Whitman, C., Johansson, M. S., Williams, C. A., & Tuthill, R. W. (1975). Evaluation of a school health program directed to children with a history of high absence. *American Journal of Public Health*, 65(4), 388–393.
- Munro, B., Visintainer, M. & Page, E. (1986). *Statistical Methods for Health Care Research*. Philadelphia: J.B. Lippincott Company.
- National Association of School Nurses. (2002). *Position Statement: Using assistive personnel in school health services programs*. Retrieved May 17, 2003, from <http://www.nasn.org/positions/2002psassistive.htm>
- Raising school attendance. (2002). *The Education Digest*, 67(6), 54–56.
- Telljohann, S. K., Dake, J. A., & Price, J. H. (2004). Effect of full-time versus part-time school nurses on attendance of elementary students with asthma. *Journal of School Nursing*, 20(6), 331–334.
- U.S. Department of Education, Office of the Secretary. (2002). *What to know and where to go: Parents' guide to No Child Left Behind*. Washington, DC: Education Publication Center.
- Wold, S. J. (2001). School health services: History and trends. In N. C. Schwab & M. H. Gelfman (Eds.), *Legal issues in school health services* (pp. 7–54). North Branch, MN: Sunrise River Press.