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Evaluating the Cost of School Health Services: A Case Study

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The Eugene, Oregon public school district, the third largest in Oregon, serves about 20,000 pupils. The district provides broad educational services including counseling, social work, special education, and health services, among others. In 1978-79, the Eugene school board directed that an evaluation of the school district's health services should be done. Recurrent concerns about the program's cost and the appropriateness of a school district providing a wide range of health services to pupils underlie the school board's order for an evaluation.

The health services program began in 1933 when the first school nurse was hired by the district. The program has evolved to 18 full-time nurses including two school nurse practitioners and a health services coordinator. In addition, the program employs six health clerks and contracts for a part-time physician. Its budget for the 1978-79 school year was about $450,000 or $23 per pupil. The program has a national reputation as a good program and has been described in health services textbooks (Mayshark, Shaw, & Best, 1977).

This case study of a modern health services program is illustrative because it shows readers the advantages and disadvantages of the methods used by researchers.

The board directed the district's Research, Development, and Evaluation (RD&E) Division to look at the costs of the program and develop options for the school board to consider in determining the appropriate level of school health services for the district.

The school district's evaluation unit contracted with the Western Oregon Health Systems Agency (WOHSA), a nonprofit regional health planning organization, to do the evaluation. The memorandum of agreement between the two parties detailed three tasks:

1. Development of information to determine which health services the district should provide;
2. Description of the types and extent of health services currently provided; and
3. Identification of planning options for future health services. The contract required considerable cooperation among the school district and the health systems agency staff so that the evaluation would be useful to the district.

The methodology of the work is first presented; second, evaluation results are analyzed; third, the reactions of board members and health services personnel are described. The article concludes with a discussion of the advantages and disadvantages of the evaluation and raises broad questions about evaluations of health services in public agencies.

Methodology

Interviews

The evaluation began in May 1978, with interviews with individuals involved in school health services. The more than 50 people interviewed included school board members, school nurses, principals, teachers, local physicians, local and state public school administrators, and health services coordinators in other districts. All school nurses and health aides working for the district were interviewed. The school district's administration requested evaluators to interview school staff and a random sample of parents. The interviews were intended to: (1) provide an understanding of school health services programs, and (2) show what school health professionals and individuals in related occupations believe to be an appropriate level of services.

Relevant journals, books, and descriptions of school health services programs were read to increase evaluators' understanding of such programs. This literature review showed that school health programs are rarely evaluated. Medical journals such as the *American Journal of Public Health*, the *Journal of Community Health*, and *Medical Care* did not contain analyses of school district programs. Moreover, a search of articles published since 1975 in the *Journal of School Health* did not yield any evaluations of a school district's health services. There exist few models or examples of how to evaluate school health services programs.

Data Collection Areas

The second phase of the evaluation tried to identify which health services should be offered by the school district. During this phase, three surveys were conducted with: (1) parents of pupils enrolled in Eugene schools, (2) school health services coordinators in 52 school districts similar in size to Eugene, and (3) the local school health services advisory council, which consisted of students, parents, school administrators, district counseling and social work staff, and local health professionals. A fourth data collection area involved 116 hours of observation of school nurses to determine how school nurses spent their time.

The first survey, mailed to 219 randomly selected parents, asked parents to indicate, on a five-point scale, the degree to which each of 25 different health services activities should be supported through school district funding and if they or their children would use each of the services provided. Also, parents were asked to weigh, on a five-point scale, health services program components, indicate if their children or family had received services through the program, and provide an overall evaluation of the current program.

All school districts in the United States with enrollments within ± 1,500 students of that of the Eugene district were mailed survey questionnaires designed to identify the types and costs of health services provided and the relative value placed on major health services components. The intent of the survey was to identify *actual* budget allocation decisions made in other districts so that Eugene board members and administrators could know the services and funding that other districts provided. Districts were asked to indicate the number and type of staff employed in their programs and personnel salary ranges.

The third survey involved the local school health services advisory council. The council was asked to do a series of psychometric scaling tasks to: (1) weigh the same four health service components weighted by the parents and the public school districts plus an additional component, and (2) rank the relative effectiveness of 25 health services activities with respect to these components. Measures of group agreement and individual consistency were obtained. Weights were summarized and converted to percentages such that the sum of the weights equaled 100 percent.

Discussion of Results

Interviews and Literature Review

In general, school nurses in Eugene were satisfied with the existing program but expressed a desire for greater acceptance by other school staff and more involvement in related school programs. A persistent theme in the interviews was a desire for greater support from the district administration in the form of better role definition, sharper administrative direction, and increased staff size.

Germane information obtained from interviews with nonschool district people and a review of Oregon law included:

1. No state agency in Oregon has specific responsibility for school health.
2. Oregon Revised Statutes and Department of Education Administrative Rulings require each school district to "develop a plan identifying health services needed by and provided for" its students; they further require that, although districts are not required to employ a school nurse, the person hired must be a registered nurse who has completed the professional requirements established by the State Board of Nursing.
3. The district's school health services and the local public health department worked well together.
4. The Eugene health services program provides the health services generally recommended by school health professionals.
5. Ratios ranging from 750 pupils per nurse to 3,000 pupils per nurse have been recommended by various school health professionals.[1]
6. School personnel generally support the health services program.
7. Emergency first-aid is a necessary activity but can, and often is, provided by trained personnel other than school nurses.

In the literature, school health services are described as including: (1) health appraisal, (2) counseling concerning health appraisal findings, (3) assistance in finding help for correcting defects, (4) assistance for handicapped children, (5) prevention and control of communicable diseases, (6) emergency first-aid, (7) planning for a healthful environment, and (8) modifying school programs to meet the needs of children with health problems (Nemir & Schaller, 1975, pp. 412-413). This description was congruent with the school nurses' description of their activities and with descriptions of other school health services programs (e.g., in Colorado, Massachusetts, Minnesota, California).

Surveys

Parents were selected to be surveyed, based on five variables: (1) zip code, (2) marital status, (3) employment status, (4) their child's grade level, and (5) with whom the child lives. Fifty-seven percent of the parents surveyed responded and the profile of the responding parents closely matched that of the population surveyed. The parents ranked four major health service components as shown in Table I. Parents saw emergency first-aid as the most important component of school health services but nearly 70 percent of the parents said their families had not received services through the school health services program. This suggests that many parents may not be aware of what is involved in school health or the services their children receive.

Parents were also asked which services, from a list of 25, ought to be provided using school district funds. Again, emergency care services predominated. Vision screening ranked high, as did monitoring for evidence of communicable diseases. Activities receiving little support included provision of direct services such as dental care, a free medical clinic, and transportation for ill and injured students.

Thirty-nine (75%) of the 52 school districts responded. Of these, 31 said that their districts have a formal health services program including written objectives and a separate health services budget. The average number of pupils per nurse in the 31 districts that had formal health services programs was 2,430 compared to 1,130 pupils per nurse in Eugene. In 1977-78, program costs averaged $9 per pupil among respondents compared to $21 per pupil in Eugene. School nurse salary costs for the Eugene program were approximately two standard deviations above the average cost of the districts surveyed. Moreover, the *average* hourly wage for Eugene school nurses was one dollar higher than the *maximum* hourly wage for head nurses at local hospitals.

As shown in Table I, survey respondents indicated highest priority for health appraisal and screening activities. Specific services which were most often provided by other districts include vision screening and communicable disease control. Home visits for health-related purposes were also provided by most districts.

[1] The June 1972 National Education Association's *Platform and Policy Statements* recommends a ratio of 750:1. Jerrick, writing for the American School Health Association in the October 1978 *Journal of School Health*, recommends a ratio of 1000:1. Nader (1978, p. 113) recommends 1500:1. Silver (1978, p. 247) recommends 2500:1 and Rosner (1975, p. 67) recommends 1000:1 to 3000:1, depending on the characteristics of the school districts.

TABLE I

Health Service Component Weight of Parents' and School District's Survey

Health Services Component	Parents' Weight (%)	School District's Weight (%)
Health Education	26.5	24.4
Follow-up of Identified Health Problems	17.8	25.9
Emergency First-Aid	33.4	19.7
Health Appraisal and Screening	22.2	30.0
Total Weight	99.9	100.0

TABLE II

Results of Advisory Group Scaling Exercise

Health Services Component	Definition	Weight (%)
Health Education	Teach children good health practices; develop good attitudes toward health; and provide basic knowledge concerning health.	19.6
Emergency First-Aid	Provide emergency care to injured and ill students.	21.6
Communicable Disease	Identify students and staff with actual or potential communicable diseases and take action to obtain medical care and control an outbreak.	19.2
Health Appraisal and Screening	Identify any noncommunicable health problems that interfere with effective learning and notify parents of such needs.	21.1
Follow-up of Identified Health Needs	Contact parents, contact other community agencies, make home visits, and provide other assistance in order to prevent, reduce, or eliminate identified health problems which interfere with effective learning.	18.5
Total Weight		100.0

Table I illustrates the differences in emphasis between parents and school district health personnel. Parents placed the greatest emphasis on the provision of emergency first-aid; first-aid was the lowest priority component of health personnel.

The Eugene district's health services advisory council was asked to participate in the scaling exercise because they are a local group of individuals who had expressed interest in the school health services program. The group included students, school nurses, local health professionals, parents, and other school district employees. As in the other two surveys, this group was asked to determine the relative importance of major health services objectives. This group showed less discrimination among the health services components than did either the parent group or the respondents from other districts. This occurred for two reasons. First, the group represented both parents and school health professionals resulting in a cancelling effect for strong opinions within either group. Secondly, advisory council members requested that communicable disease control be listed as a separate component rather than assumed to be part of the health appraisal and screen-

ing component. Evaluators went along with this request. The advantage of doing this was that it provided data to the council members in the form that they wanted. The disadvantage of their request was that it made the results difficult to compare to the parent and school district results. Although the group gave the five components nearly equal weight, as Table II shows, there was slightly greater support for emergency first-aid and health appraisal and screening.

The council was also asked to rate each of 25 health services in terms of their effectiveness in addressing the five major components they had earlier weighted. This task was different from that requested of parents because the group was asked to provide their opinion on the presumed effectiveness of services rather than the appropriateness of services as was done in the parent survey. The effectiveness scale resulting from this exercise showed that many of the items which received high scores are those generally associated with "follow-up" activities. The top three items fall into this category: explaining medical problems to students, counseling students and parents about ways to obtain medical help, and home visits to discuss health problems. Screening programs received scores that were scattered through the middle range of scores; emergency care fell in the lower half of the scores; services related to health education received both high and low scores; and communicable disease control activities ranked fourth and eighth among the 25 services.

One hundred sixteen (116) hours of school nursing time were observed. The observed activities were matched with 51 different activity classifications. Table III shows the distribution of time spent on major activities. Less time-consuming activities are grouped in the "Other Health Related Activities" category. Table IV shows the type, frequency, and duration of contacts between students and school nurses. The distribution of school nursing time, as indicated by the observation data, is generally consistent with the previously

TABLE III

Distribution of School Nursing Time

Activity	Percent of time
Follow-up Activities	23.9
First-aid and Accident Prevention	14.0
Health Cards and Related Records	8.7
Planning Health-related Activities	6.5
Health Education Activities	6.4
Other Health-related Activities[a]	30.4
Nonhealth-related School Activities	10.1
Total	100.0

[a] Includes time for the rest of the 51 activity classifications which each accounted for a relatively small percentage of the total school nursing time.

TABLE IV

Summary of Student-Nurse Contacts During Study

Total Student-Nurse Contacts	381 students
Average Student Contacts per Nursing Hour	3.3 per hour
Average Time per Student Contact	3.4 minutes
Type of Contact (% of Total Contacts)	
Student Conference	22
Individual Health Screening	29
Treatment of Illness	21
Treatment of Injury	29

mentioned priorities developed by the district's health services advisory council.

Options Presented to the School Board

The data gathered throughout the evaluation process was intended to guide the board in deciding on one of the three possible options available to them. The report did not recommend any one option, but rather left the choice of options to the school board: to (1) maintain, (2) increase, or (3) decrease, the current level of school health services.

To help the board in deciding the future direction of Eugene's school health services program, several examples taken from other school district's programs were outlined. The examples were not equally attractive; each was presented with its advantages, disadvantages, and approximate cost. Among these examples were:

1. Maintain the current level of health services as it is;
2. Increase the level of health services to a level of one school nurse per 750 pupils;
3. Reduce the program to a level of one school nurse per 1,500 pupils;
4. Contract with an outside agency to provide a specified set of services for a contracted cost per pupil.

The advantages and disadvantages dealt with the trade-off between the availability of school nursing service and the cost of these services. Annual program cost for these examples ranged from approximately $375,000 (Example 3) to approximately $630,000 (Example 2).

Outcome of the Process

When the evaluation was completed, a draft was submitted first to the district's health services staff and the district's administration for comment and then a final version was sent to the board for action (Smith, 1979). Realizing the possible impact of the evaluation on the future of school health services, the health services staff gave the report careful review. A primary concern of theirs was that the cost of their program had been compared to the cost of other programs across the nation, but the quality of the services offered had not been adequately evaluated. In addition, the health services staff felt it inappropriate to compare costs for the health services programs among the districts surveyed without also comparing the costs of other services provided by these districts. Some staff members felt that the costs of most of the Eugene district's programs, including health services, were higher than that experienced by other districts and, therefore, the cost of health services was not inappropriately high.

The comments received from the health services staff on the draft were considered by the evaluation team. Factual discrepancies were resolved. When conflicting interpretation of data occurred, opinions of the health services staff were included. In addition, the health services coordinator was given the opportunity to include in the report any comments or additional information she felt necessary. In February 1979, the report was submitted to the district's superintendent and school board.

The evaluation report was accepted by the board, as recommended by the superintendent. Initially, a motion was made to reduce the level of school health services to a level more consistent with that provided by other districts across the nation. The discussion following the motion focused primarily on the likely impact of a program reduction. Testimony was received from evaluators, school nurses, principals, and district administrators. The board voted to table the reduction motion pending additional information regarding effects of program reductions.

In response to the evaluation and the board's initial motion to reduce health services in the district, a health services constituency made up of school nurses, principals, relatives of nurses, health services advisory council members, and other interested individuals, joined in an attempt to prevent reductions in the health services program. Members of this group testified before the school board during the initial presentation of the report, meetings of the district's budget committee, and before the school board's final meeting on the report. Board members were thus well aware of the group's perception of the value of school health services. Their presentation was well received by the board since the board decided to keep the program at its current level, despite the data showing costs were higher in Eugene than in 95 percent of similarly sized school districts

in the nation. Evaluators concluded that the data showing the relative cost lines of the program were not persuasive enough to overcome the testimony offered by school staff as to how valued the program was.

A year later, in the Spring of 1980, the district's administration was directed by the district's budget committee to reduce its proposed budget for the following fiscal year by 3.5 percent. Rather than cut all district operations by an equal amount, the administration chose to cut some budget areas more than others. The health services budget was reduced 13.5 percent. The health services director's position was reduced from a full to half-time position and she subsequently resigned. These budget reductions increased the student/nurse ratio to 1,250:1.

Advantages and Disadvantages

A parallel set of advantages and disadvantages was generated by the evaluation. The advantages of the process were:

1. A substantial amount of cost data was generated comparing school district costs with local nursing salaries and per capita school district costs nationally. School board members and administrative officials had wanted cost data collected and thus the evaluation produced relevant data. The data confirmed the impression that the school district's costs were indeed high.
2. A good survey of parent and staff opinion was obtained. These data had also been requested.
3. The practice of reviewing a draft of the study with school nurses and administrative officials was useful. Factual errors and unsupportable judgmental comments were eliminated and did not enter into future discussions.
4. The process apparently had an impact on decisionmaking. The school board and administration were unwilling to reduce the program's budget in the face of organized opposition. However, a year later, when a suitable opportunity arose, substantial cuts were made. It is reasonable to infer that administrators' perceptions of high program costs were confirmed/reinforced by the evaluation's comparative cost data.

The disadvantages of the evaluation process mirror its advantages:

1. The study was criticized by school nurses for studying only costs and not cost-effectiveness. This is a reasonable criticism. The study would have been stronger if it had collected data on the outcomes of screening and communicable disease prevention activities. For example, how many and what kind of problems were found as a result of these activities? What kind of treatment was received by the students with these problems? The study would probably have been stronger if accidents, injuries, and first-aid situations had been studied. How many occurred, how long did people wait before they received help, who helped the person, how good was help, and so forth.
2. While evaluators did as they were requested to do and collected opinion data, it is questionable that the data should have been collected. Information about parent, school district, and advisory council perceptions of the important components of a health services program seemed to play little role in the deliberation or decision of the school board.
3. The practice of having program staff review the draft had limitations. The testimony of school health personnel in front of the board suggests that school staff perceived that their views and criticisms of the evaluation had not been taken sufficiently into account.
4. The school board had difficulty dealing with the welter of conflicting statements made about health service costs and interpretation of data. For example, it was not clear what effect a reduction in funding would have on the quality of health care. Lacking this information and faced with vocal program supporters, the board was reluctant to take action.

In retrospect, considerably more emphasis should have been placed on the collection of cost-effectiveness data and opinion surveys should have been deemphasized.

Questions for Future Research

While the study provided information which was previously unavailable, three issues remain unresolved:

1. How can different health programs be compared?

2. How can the long-term value of school health services be analyzed?

3. What process is used to make budgeting decisions regarding health services?

The problem of comparing different programs involves determining the bases for comparison. Such bases can be elusive. Should programs be compared based on total cost per pupil, or should the comparison be based on the percent of total school district budget allocated to school health services? Can the services in a district staffed primarily by health aides be compared to services provided by certified school nurses? What is the additional value of highly trained staff compared to a staff with less training?

The long-term effects of school health services are difficult to evaluate for two reasons. First, the effect of simply withholding services is difficult to establish, and second, the extent of using alternative health services given reduced school health services is unknown. Because the school district is not the sole provider of health services in the community, many true health needs could be identified and met through alternative sources of health care. Whether or not these needs *would* be met in the face of reduced school health services is not known. Thus, the question of the long-term effect of school health services remains unresolved.

The third question is the most perplexing. On what basis are decisions made regarding the cost and quality of health services provided through school districts and other public agencies? How are economic, political, social, and special interest factors balanced in the decision process? Do major budget decisions accurately reflect the desires of the constituencies which elect and select the decisionmakers? Decisionmakers must weigh the concentrated interests of providers and recipients of specific services against the more diffuse interest of the public whose tax dollars are used to support the services. These issues are difficult to resolve and are typically addressed through opinion rather than fact.

In summary, we have here an example of a difficult evaluation. Abrasive politics, technical subject matter, the lack of clear procedural models for carrying out evaluations of these kinds of programs, the conflicting information demands that had to be satisfied with the usual modest evaluation budget, and the delayed timing of the program's budget cuts combine to make this an illustrative case study.

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