

A Preventive Child Health Program: The Effect of Telephone and Home Visits by Public Health Nurses

ABSTRACT

A randomized trial was conducted to determine if a public health nursing intervention consisting of telephone contacts or home visits affected the receipt of preventive health services by children eligible for the Early Periodic Screening, Diagnosis, and Treatment program. Each nursing intervention was applied using a protocol, and outcome data for 1654 case subjects were obtained from state-paid provider claims. However, the trial revealed no statistically significant differences between the study groups, nor was ethnicity a significant factor. Methodological and study context issues were identified that may have affected the results, the generalization of which is limited by the strict selection of cases. (*Am J Public Health*. 1995;85:854-855)

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Introduction

The goal of the federally mandated and state-operated Early Periodic Screening, Diagnosis, and Treatment program is optimal health for low-income children. The program seeks to accomplish this through both disease prevention and early detection and treatment of health problems. Outreach efforts are payable and should be an integral part of the program. However, public health nursing field services consisting of telephone contacts and home visits, which are the allowable (payable) outreach methods in this program, have not been adequately tested by experimental means as to their effectiveness.

Research on such public health nursing field services has been conducted with mixed results.¹⁻⁹ Our study used a randomized clinical trial design to test the effect of a public health nursing telephone contact or home visit on the likelihood of young children obtaining preventive health care services in the Early Periodic Screening, Diagnosis, and Treatment program. We hypothesized that the groups receiving such interventions would have significantly higher health assessment rates than the group receiving no nursing intervention and that home visits would be more effective than telephone contacts.

Methods

All families interviewed by intake workers for Medicaid eligibility in one large county in northern California were screened for study inclusion. Only those referrals to the program of families who were "non-penalty liable" (did not require follow-up according to program regulations) were accepted into the study. This eligibility criterion was based on the need to assign families randomly to a control group that would not receive any public health nursing follow-up or other outreach service. The total number of case subjects in the study was 1654 children aged 0 through 7 years.

Eligible families were randomized to a telephone visit group, a home visit

group, and a control group. Randomization was stratified by several factors, including allocation according to geographic region—West county or "other"—owing to the large size of the county with a highly varied socioeconomic composition. Families rather than children were randomized as case subjects to avoid contamination that would result from children in the same family receiving different treatments. Because stratification by age of child was not possible, a composite stratifier (separated in the analysis) reflecting both the number and age of children was used.

Four public health nurses with experience in the program were assigned to the project by geographic region. They made telephone contacts or home visits according to randomized lists of families and used a protocol/checklist for each visit to ensure consistency.^{10,11} This protocol was developed by the participating nurses and the project team using the nominal group consensus method.¹² To test the protocol for content validity, 12 nonparticipating nurses in the same agency reviewed the protocol and reached an agreement level of 93%, indicating adequate validity. (A sample of the protocol is available from the authors.)

State records of paid provider claims were reviewed to assess receipt of health assessment services for each case. Logistic regression models assuming equal correlations between observations within each family cluster were fitted by using generalized estimating equations.^{13,14} These models were used to examine the relationship between the outcome (receipt of health assessment within 6 months of randomization) and independent variables for treat-

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TABLE 1—Estimated Odds Ratios for the Effect of Each Factor Level Relative to the Reference Level (Odds Ratio = 1.00) for That Factor

Factor and Level	OR	95% CI
Treatment		
Telephone call	0.94	0.71, 1.25
Home visit	1.05	0.80, 1.40
Control	1.00	
Race/ethnicity		
Black	0.95	0.72, 1.28
White	1.00	
Other	1.02	0.76, 1.37
Region		
West	1.84	1.42, 2.38
Other	1.00	
No. of children		
1	1.00	
2	0.81	0.62, 1.06
>2	0.92	0.67, 1.27
Age of child, y		
0 to <2	2.23	1.72, 2.88
2 to <5	1.18	0.91, 1.53
5 to 7	1.00	

Note. OR = odds ratio; CI = confidence interval.

ment and stratifying factors. Estimated odds ratios and their nominal 95% confidence intervals were used to characterize effects.

Results

The unadjusted rates of receipt of assessment were 39.6% for the control group, 36.1% for the telephone visit group, and 39.5% for the home visit group, with an overall rate of 38.4%. The statistical analysis indicated that none of the hypotheses was supported. There was no significant difference between the groups that received the public health nursing home visits or telephone contacts and those that received no nursing intervention. Further, no difference was detected between telephone contacts and home visits. Race/ethnicity was also not a significant factor between Black, White (non-Hispanic), and other (combined Hispanic, Asian, and Native American) subjects.

Two factors that did show significance were county region and age of child. The West area (high immigrant and low-income populations) had a significantly higher rate of children receiving health assessment services than the other region, and children newborn to younger

than 2 years had a higher rate of receiving such services than the older age groups (Table 1).

Discussion

A cause-and-effect relationship between the intervention and significant outcome variables mentioned previously cannot be inferred from this study in view of the overall results. Because public health nursing home visits are a long-accepted mode of field service,¹⁵ the results were unexpected. We offer some context for the findings of our study.

The county in which the study was located had workers who were specially trained in the program to question Medicaid applicants as to their eligibility. Therefore, our sampling frame consisted of families that had already undergone a systematic review of their need for further information and assistance. Their responses may have reflected their ability to access services more accurately than would have been the case had the applicants been less carefully questioned. All three groups would have then been very similar (in their capability to obtain care) to begin with, and additional assistance would have had little effect.

The limited and structured contact with clients that constituted the intervention was necessary to ensure consistency. Development of rapport and trust for comprehensive care was not possible within the parameters of the study. It is difficult to assess how this perceived constriction of nursing services affected the results, but its empirical importance as a qualitative variable should not be discounted.

Generalization of the lack of public health nursing intervention effect in this study to other programs, areas, and populations may be limited by the strict selection of program-eligible children who qualified for inclusion. Readers are cautioned against using our study findings as a basis for the deployment of staff. However, the results suggest that a positive effect cannot be assumed simply because a well-established nursing service is provided.

Future suggested areas for research that relate to the Early Periodic Screening, Diagnosis, and Treatment program and other preventive child health programs include a comparative study of professional and nonprofessional outreach efforts; children's health status changes following diagnosis and treatment of health problems; and methods to

increase overall participation levels of children in this and similar programs. □

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