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Effectiveness of Home Visits by Public Health Nurses in Maternal and Child Health: an Empirical Review

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Synopsis

The effectiveness of public health nursing in promoting maternal and child health through home visits is summarized from empirical studies published between 1960 and 1984. Eight reports identified through a comprehensive reference search were first classified according to the components of nursing service studied (assessment, teaching, counseling or support, referral, and clinical services). The results of each study were then analyzed for study population characteristics, the research design and statistical methods employed, the reliability of the measures used, significant treatment effects, sample size, and statistical power.

The research is evenly divided among studies employing an experimental design, a quasi-experimental design, and samples of low-income and middle-income mothers. The reliability of the measures was, with one exception, not reported. All but one study had final sample sizes for treatment and control or comparison groups of fewer than 100 subjects. Four of the studies thus had sample sizes sufficiently large to detect a medium treatment effect; power calculations showed that none could measure a small treatment impact.

Within the methodological limitations of these studies, our review found that under certain circumstances public health nurses can effectively impart health knowledge to high-risk mothers and can effect positive change in maternal attitudes and parenting practices that in turn can be associated with positive changes in infant health and development.

Cumulative knowledge from this body of research suggests that a priority for future evaluations of public health nursing is development of theoretical frameworks that maximize the fit between the needs of the population served and the services provided and between the outcomes measured and the nursing services being assessed.

HISTORICALLY, PUBLIC HEALTH NURSES have been viewed as advocates of the poor, the disadvantaged, minorities, and any population groups in need of community-based, prevention-oriented health care services. As early as 1859, with the founding of the first district nursing association, nurses were viewed not as mere attendants of the sick, but as social reformers (*1*). Public health

nurses were strategically located to become responsive to their communities' unmet needs.

During the decade 1900–10, the maternal-child health nursing specialty, known initially as "baby welfare" nursing, was developed in response to the high infant mortality rates observed in late 19th century urban areas. As early as 1902 in New York City, nurses were visiting sick babies and instructing mothers in baby care (*2*). Gradually the scope of the "baby welfare" nurses was expanded to include care to prenatal and postpartum mothers and preschool children. The major intervention provided was instruction with the aim of preventing illness and disability. Health education remains a major component of public health nursing (PHN) service today, and maternal and child health (MCH) remains a major focus.

Despite the intuitive appeal of deploying health care professionals whose target of care is the whole community, public health nursing has not been firmly institutionalized in the nation's health care system. Indeed, in many metropolitan areas, PHN services are facing unprecedented budget cutbacks and staffing reductions. Nursing lobbyists and consumer advocates decry the current state of affairs, yet public health nursing as a profession finds itself at the same crossroads of unclear professional identity, uncertain direction, and mixed mandate where it has stood over the last several decades.

Many factors account for the dilemma, including the politics of public health care and the growing pains of nursing as an evolving profession (*3,4*). Parallel with the organizational and financing changes affecting PHN is a growing demand for more definitive evidence of the effectiveness and costs of these nursing services. The press for information on cost-effectiveness comes from ubiquitous concerns about the inflationary costs of health care, the as yet unsubstantiated conviction that PHN services are cost-effective, and fear that cutbacks in nursing services are adversely affecting the very populations who incur high medical costs and who have the most to gain from preventive care.

The purpose of this article is to summarize the state of knowledge about the effectiveness of home visits by public health nurses in the field of maternal and child health, as derived from all published empirical studies between 1960 and 1984. Synthesis of what is known about the impact of PHN is intended to guide decisionmakers in allocating scarce nursing staff and to suggest an agenda for future research in documentation of the cost-effectiveness of specific nursing services.

The compilation of evidence on the effectiveness of public health nursing carries forward the tradition of concern with this issue. The importance of evaluation of PHN services has been recognized since the early 1960s, when two discussions regarding the status of nursing addressed this subject (*5,6*). In 1961 Freeman (*5*) maintained that the greatest challenge for public health nursing at that time was evaluation of the effectiveness of service. She emphasized the importance of established goals for service and emphasized that such goals must be made specific as applied to the population at risk, the exact health threat, and the link between the need and the service to be provided. Goals for service should be directly linked to the measures used in evaluation.

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Although Roberts's (*6*) discussion did not relate specifically to maternal and child health, she elucidated in 1962 the critical issues that still confront public health nurses in MCH today:

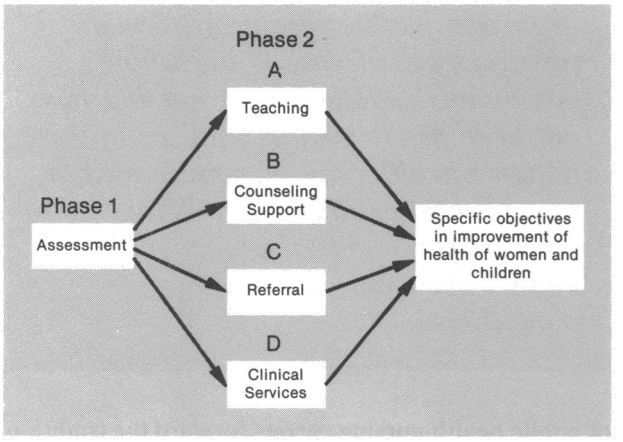
> The paucity of concrete evidence regarding the results of nursing service is a serious handicap to planning, evaluating, and directing the total Public Health program as well as nursing aspects of that program.

As Barkauskas noted in 1983, whether PHN is effective remains an unanswered question (*7*). The need for such information becomes even more critical as dwindling public resources force programs to demonstrate their effectiveness or face abolition or reduction.

Theoretical Framework of PHN

Modern PHN is a nursing specialty that is unique in its combination of nursing and public health. The American Nurses Association (*8*) has defined PHN as general, comprehensive, and continuing rather than episodic, and as emphasizing health promo-

A theoretical framework for public health nursing in maternal and child health



tion, health maintenance, health education, coordination, and continuity of care. Attention is given to entire communities at risk and to families, rather than to individuals in isolation.

A number of theoretical frameworks have been developed to categorize PHN services. Many of the models are global in nature, outlining broad factors and offering few details as to potential intervention points or potential outcomes of PHN services (*9,10*). These models are useful reminders of the broad scope of PHN. Their utility is limited, however, for conceptualization of PHN as a well-defined, delimited intervention with measurable impact on child well-being, parenting, or overall family functioning. Given the needs of this review for a specified construct of PHN as an intervention or a treatment, the authors present a broad model in the accompanying chart that may be applicable to the PHN process.

As the chart shows, the first phase in the PHN process is assessment, which would include evaluation of the health of both mother and child, as well as of the total environment. The second phase is the provision of services based on the assessment, and may include any or all of the following: teaching, counseling or support, referral, and clinical services. These services are seen as resulting in specific objectives in the improvement of maternal and child health in the third phase.

Review of the Literature

Methodology. The purpose of this section is to review the available empirical research concerning the effectiveness of public health nursing in home visits to women and children. The methodology for this review is taken from educational and psychological research on procedures for integrating evidence across research studies (*11*). The models for integrative reviews range from narrative reports to secondary statistical analysis of primary research data (*12,13*). The framework used for this review has been developed by Jackson (*14*) and posits six steps: (*a*) selecting the questions or hypotheses for review, (*b*) sampling the research studies to be reviewed, (*c*) representing the characteristics of the studies and their findings, (*d*) analyzing the findings, (*e*) interpreting the results, and (*f*) reporting the review. The first step was discussed previously in the section on theoretical framework. The remaining steps of the review process are presented in turn.

Sampling of studies. Studies were initially located through a computer search of the MEDLARS and Dissertation Abstracts International data banks. The bibliographies of all retrieved articles were examined for other pertinent research. A total of 12 empirical reports on the effects of home visiting were identified through this search procedure. Elimination of four studies that used home visitors who were not professionally trained nurses reduced the number of studies to be reviewed to eight. Reviews and discussions of home visitors in the field of MCH can be found in references *15* and *16*.

Presentation of primary research. Seven characteristics of the primary research studies were abstracted from each report. As shown in table 1, the first four characteristics were the emphasis of the PHN process, the research design, study population characteristics, and reliability of the measures used. Table 2 summarizes the statistical methods employed in the data analysis, significant treatment effects, the treatment and control or comparison group sample sizes, and the statistical power of the study.

Each of these characteristics pertains to a key theoretical, methodological, or effectiveness-of-treatment issue. Considering the theoretical underpinnings of the nursing intervention first, the authors have included a summary of the theoretical base of the nursing process because articulation of this theory into specific treatment effects is necessary for putting theory into practice. Failure to delineate the theory of the intervention or to link theory with discrete outcomes renders interpretation of the observed treatment effect difficult. The importance of articulating the theoretical model being used is underscored in this review in the discussion of observed significant treatment effects.

Table 1. Summary of empirical issues in public health nursing (PHN) evaluation studies

Study	PHN process emphasis	Research design	Sample	Reliability
Shyne and coworkers, 1963	Teaching	Experimental, posttest only	Low income, minority, married	Not reported
Lowe, 1970	Teaching	Experimental, pretest-posttest	Low income, black primigravidas	Not reported
Yauger, 1972	Not specified	Experimental, pretest-posttest	Multigravidas referred for nonemergency	Not reported
McNeil and Holland, 1972	Teaching	Quasi-experimental, pretest-posttest	White, well-educated, mid-income, married	Not reported
Gutelius and coworkers, 1977	Teaching, counseling, clinical	Quasi-experimental, pretest-posttest	Low income, black, unmarried young primigravidas	Not reported
Hall, 1980	Assessment, teaching, support	Experimental, pretest-posttest	Married primiparas	Not reported
Stanwick and coworkers, 1982	Teaching, counseling, support	Quasi-experimental, posttest only	French-speaking Canadians	Inter-rater 90 percent
Barkauskas, 1983	Assessment, teaching	Quasi-experimental, posttest only	Urban, young, unmarried	Reported from previous studies as acceptable

The three methodological issues abstracted from each study are integral to any research effort. The authors first determined the process of PHN practice emphasized, according to the theoretical model presented in the chart. The second important issue was the plan for data collection, that is, the research design. For purposes of this discussion, research designs were categorized as pre-experimental, quasi-experimental, and experimental. This simple typology follows the classification scheme commonly used in evaluation research (*17*): the design element distinguishing between a "true" experiment and a quasi-experimental study is the presence of a control group established through random assignment of participants to a treatment or nontreatment condition. The experimental design with random assignment is the strongest design for inference of a cause-effect relationship between the intervention and significant change.

The second element of table 1 shows selected characteristics of the study populations. Where provided by the authors, information on race, income, education, marital status, and place of residence is included.

Finally, the authors searched each report for statements about the reliability of the instruments and indices used to assess treatment outcomes. The summary of reliability listed in table 1 includes reports of internal consistency and inter-rater reliability where reported. Validity is not discussed because, with the exception of face validity, it was not addressed in these articles. The authors of these eight studies apparently generally constructed original measures that appeared to measure the concepts in which they were interested, although it is not possible to be certain to what extent they succeeded.

Analysis of findings. The original research findings were analyzed post hoc in terms of statistical power. Statistical power is the probability of correctly identifying a true treatment effect, and is determined by the sample size, the predetermined level of rejection of the null hypothesis (usually set at .05 by convention), and the size of the treatment effect (*18*).

The entries in table 2 are based on an alpha level of .05 (two-tailed). The mean power of each study (across all statistical tests performed) is shown, assuming conventionally defined small, medium, and large treatment effects. Thus, the variable taken from each research report was the total sample size reported. The probability of correctly observing statistically significant results using a given statisti-

Table 2. Statistical power issues in public health nursing evaluation studies

Study	Statistical method	Treatment effects	Final sample size[1]	Power at treatment effect size		
				Small	Medium	Large
Shyne and coworkers, 1963	Not stated	General health, readiness for delivery, nutritional practices	T = 80, C = 75	([2])	([2])	([2])
Lowe, 1970	MANOVA proportions correlations	No differences	T = 30, C = 26	.13	.47	.87
Yauger, 1972	Not stated	No differences	T = 21, C = 26	([2])	([2])	([2])
McNeil and Holland, 1972	*t*-tests	Knowledge of health care use	T = 56, C = 51	.18	.72	.98
Gutelius and coworkers, 1977	Chi-squares	32 of 300, including diet, developmental problems, parenting	T = 48, C = 47	.17	.83	.99
Hall, 1980	*t*-tests	Feelings toward newborns	T = 15, C = 15	.08	.26	.56
Stanwick and coworkers, 1982 ...	Chi-squares	Knowledge of immunizations	T = 49, C = 107	.13	.69	.99
Barkauskas, 1983	Multivariate contingency table analysis	Expressed concerns about health	T = 67, C = 43	([3])	([3])	([3])

[1] T = treatment group, C = control or comparison group.
[2] Power could not be calculated because authors did not present necessary information.
[3] Power could not be calculated because calculations not available for this statistical method.

cal test at a given alpha level and sample size is easily determined using tables constructed by Cohen (*18*).

Interpretation of results. The remainder of this discussion reviews each study in chronological order of publication, with special attention given to specific methodological difficulties encountered in each study. Where appropriate, alternative explanations for the observed treatment effects are discussed.

• Shyne and coworkers (*19*) evaluated the effects of home PHN visits, in addition to routine clinic services, for low-income minority maternity patients. Goals of the intervention were improvements in maternal competence and capacity to cope with health problems, correction of identifiable problems, improvement in health practices, and enhancement of understanding and use of available health and welfare services.

No theoretical link is provided between the goals of the intervention and the services provided. Neither are the services defined in such a way as to indicate how the services should meet those goals. Apparently the theoretical framework of the study places the emphasis on education (phase 2A of the PHN process in the chart).

According to the visiting nurses' judgments, experimental subjects made greater gains on general physical health, physical and psychological readiness for delivery, and family nutritional practices. No differences were reported in health knowledge and practices other than nutrition, health status of other family members, regularity of attendance at well-child care, or immunization status of the new babies. No data were presented on the reliability or validity of the public health nurses' judgments for either positive or negative outcomes.

• Lowe (*20*) studied the effectiveness of PHN teaching on compliance with prenatal care instructions by black, low-income primigravidas, who were randomly assigned to receive either teaching by public health nurses or routine clinic care and instructions. The theoretical framework of the study emphasizes teaching (phase 2A in the chart). Reliability and validity of the outcome measures were not reported. Power of this study could not be determined because the author neglected to state the type of statistical method employed.

No significant differences were found in changes in either behavior or attitudes regarding diet, rest, exercise, use of medications, and clinic and class attendance. In suggesting reasons for the lack of significant differences, Lowe suggests the social distance and cultural gap between nurses and patients, failure by the nurses to provide sufficient motivation for change, insufficient intensity of the

intervention, and failure of the teaching objectives to include compliance with medical instructions. The aforementioned methodological problems represent equally plausible explanations for lack of significant treatment effects.

• Yauger (*21*) randomly assigned maternity patients who had at least one young child either to an experimental (family-centered care, not defined) or to a no-treatment control group. No significant program effect was found on health status, health behavior, or health knowledge. The lack of significant findings in this study may be related to inadequate statistical power resulting from a small sample (treatment=21, control=26). Moreover, two factors may have introduced error that reduced the effect size of the intervention: (*a*) the independent variable was neither provided in a standardized manner nor measured to assess the adequacy and reliability of implementation, and (*b*) no information was provided regarding the validity and reliability of the outcome measures. The author did not document what statistical methods were used, so it is impossible to determine their appropriateness.

Perhaps the most critical problem with Yauger's study is the lack of a theoretical framework linking the service to the intended outcome. No rationale, either theoretical or empirical, was provided for "family-centered care," and no justification was provided for expecting such care to have any impact on the outcome measures. Indeed, the study cannot be assessed in terms of the model in the chart because the authors have omitted the pertinent data.

• McNeil and Holland (*22*) compared the effectiveness of individual and group teaching of mothers of newborns regarding the appropriate use of health care resources. The theoretical framework for service stressed instruction in infant care and primary prevention of illness (see the chart).

Of 189 mothers who received PHN postpartum visits when their children were 1 month old and who agreed to participate, 56 experimental subjects were switched to group sessions when their infants were 1 month old, and 51 control subjects continued to receive only home visits. The remaining 82 subjects were lost to the study due to failure to attend, moving, and other reasons. This sample was mostly white first-time mothers who were relatively well educated and financially advantaged.

This study does not describe the weekly interventions delivered over the 10-week period, although the authors stated that the intervention was based on established objectives for service to postpartum mothers and that no effort was made to influence

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the usual content, timing, and frequency of the home visits. Content was said to be based on clients' needs, but lack of a specific description of the intervention makes it difficult to know how clients' needs were determined.

Mothers who participated in the group sessions scored higher on knowledge of the appropriate use of health care resources. No data on the reliability or validity of the measure were reported, and the authors note that the measurement instrument was probably not well matched to the intervention. The power of this study to detect a medium treatment effect was determined to be .72.

• Gutelius and coworkers (*23*) evaluated an extensive intervention delivered to normal black infants with low-income parents. Over a 3-year period public health nurses and pediatricians provided well-child care (including physical and developmental assessment as well as clinical services), training in cognitive stimulation of infants, and counseling on numerous parental and personal problems. The authors report in good detail the number, timing, and content of the services.

The broad nature of the intervention suggests a theoretical framework that relates "well-baby care" to virtually every aspect of child health and development, with perhaps most emphasis on teaching mothers to enhance cognitive development in their infants. All mothers were given anticipatory guidance, counseling for parenting and personal problems, and personal support on the primary prevention level. Although home assessments may have been done, it is not clear what role an individual client's starting point played in selection of the content of her intervention.

Outcome measures (for which no reliability or validity data were presented) included measures of the infant's development, diet and feeding practices, parenting practices and attitudes, and other variables potentially contributing to the stability of the home environment, such as husband's job sta-

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bility and number of severe financial problems. Despite the importance of these environmental factors, no theoretical or empirical link was established among them, clients' needs, and child health outcomes.

The authors reported 32 significant differences in more than 300 comparisons, all favoring the experimental group over similar control mother-infant pairs. These items were spread among the various outcome categories. Interpretation of these differences requires caution due to the large number of chi-square tests performed and the fact that the tests were not independent. It is not clear why the authors did not use a more appropriate multivariate statistical method that could have taken correlations among the variables into account and could also have been useful in demonstrating interactions. Adequate power to detect a medium treatment effect was observed, but the high probability of erroneous significant findings due to chance must be kept in mind in interpreting this study.

• Married, healthy primiparas who had had normal deliveries were randomly assigned to treatment or control in Hall's (*24*) prospective evaluation of postpartum home visits. Before hospital discharge, all the mothers identified as eligible for participation in the study completed a baseline instrument that assessed their attitudes toward the "average" baby and their own babies in the areas of feeding, sleeping, spitting and vomiting, elimination, and predictability. The 15 treatment and 15 control group mothers completed the measure again 1 month following discharge. Reliability data on the instrument were not presented for either testing period.

Nurses visited the experimental mothers within 2 days of discharge and taught material in the content areas just described. No standard method of presenting the material was used; teaching was based on the participants' individual needs, knowledge, and experience, as assessed by the nurses. The theoretical framework thus emphasized the assessment (phase I), teaching (phase 2A), and support (phase 2B) components in the chart. Despite low statistical power, only the experimental group showed a significant change from Time 1 to Time 2, and the change was in the direction of more positive feelings about their own babies.

• Stanwick and coworkers (*25*) evaluated the effectiveness of home visits to new mothers within 21 days of delivery, with the purpose of teaching to enhance "a mother's confidence in caring for her infant and increasing her maternal knowledge and skill." More specifically, nurses engaged in counseling to reduce mothers' problems and concerns and offered instruction about immunizations and infant hygiene. Thus education and support and counseling appear to be the phases of the PHN process used as the theoretical framework (phases 2A and 2B in the chart).

Outcome measures included maternal confidence, knowledge, skills, and attendance at motherhood classes. Of 17 items included in the questionnaire (for which good reliability was reported), only knowledge regarding timing of immunizations in children favored the visited group, but this may have been due to the use of chi-square tests performed on scores of the 17 individual items, which were summed and then grouped into quartiles. A more appropriate method would have been a multivariate statistical method that preserved the continuous-level nature of the data. Power was inadequate to detect any but a large treatment effect.

• Barkauskas (*7*) screened birth certificates in one urban county and randomly selected normal mother-infant pairs for study. Her theoretical framework emphasized the assessment and teaching components in the chart. PHN services included assessment of mother and child and of health services, and instructions on diet, child care, use of health services, and feeding methods.

Two instruments were used at approximately 6 months postpartum to assess outcome on several dimensions: mothers' parenting practices; health and use of health care by mother and baby; and the quality and quantity of social, emotional, and cognitive support within the home. Data on the reliability and validity of the measures as used were not reported for this study but were declared to be adequate on the basis of previous studies.

Of the 18 variables used as outcome variables, only one proved significantly related to public

health nurse visits: visited mothers were more apt to express concerns about health matters. Lack of significant findings may be due to low statistical power resulting from a small sample (treatment=67, comparison=43) and from low reliability and validity of measurement instruments. Also, as the author notes, the treatment effect may have been weakened by inclusion of subjects who did not need the services.

Discussion and Conclusions

While one may note a number of methodological and substantive problems in the PHN literature overall, there is also evidence that in certain circumstances PHN services can be effective. For example, under certain conditions public health nurses can effectively impart health knowledge to high-risk mothers (*7,22,25*); public health nurses can be instrumental in effecting positive change in maternal attitudes (*19,24*) and parenting practices (*23*); and these positive changes may be associated with positive changes in health and development for infants (*23*).

In reviewing these results, it is important to remember that inadequacies in the evaluation research on public health nursing are likely to cause understatement, rather than overstatement, of its effectiveness. For this reason, it is important to understand the problems in this body of knowledge, for many failures to find significant treatment effects may indicate not an ineffective intervention, but inadequate research. Two major problems inherent in the eight studies reviewed here are discussed subsequently.

The first problem hindering synthesis of the available data on the effectiveness of public health nursing home visits in maternal and child health was the absence of, or limitations in, a theoretical framework that linked population needs; nursing activities; and changes in patient knowledge, health status, utilization of services, and so on. None of the eight studies reviewed here discussed in adequate detail the hypothesized match between the needs of the population served and the services provided, or between the outcomes measured and the nursing services being assessed.

The failure to articulate clearly a theoretical framework may have several negative outcomes. In the studies reviewed here, it appears that one consequence may have been inadequate attention to the visiting nurses' assessments of the home environment as an outcome of a PHN visit. Table 1 shows that home assessment either is being underutilized by public health nurses in their decisionmaking regarding who should receive services or is being used but not documented in reports of research.

Failure to cite home assessment as a regular component of PHN may be interpreted in several ways. If home assessment is being infrequently used, it would seem that public health nurses risk inefficient, even inappropriate, delivery of services since all families do not require home visits. If the completion of home assessment is underdocumented, public health nurses are being shortchanged by the recordkeepers. Future evaluations may wish to redress this situation.

Elucidation of a conceptual framework not only facilitates selection of outcome measures but assists in specification of the process through which these outcomes are achieved. Again, the eight studies reviewed were found to be wanting.

Only three of the studies (*7,23,24*) provided a reasonably replicable definition of the intervention they were evaluating. Such information is essential if evaluation research is to be useful in the design and implementation of PHN services or in the scientific process of replication.

A second problem observed in the studies reviewed here is low statistical power, meaning that there was very low a priori probability of finding significant differences even when they did exist. Table 2 shows that low statistical power emanated from several consistent flaws in the studies.

The most obvious problem in these studies was small samples. Not only did most studies begin with rather small samples, but high attrition often reduced further the samples available for analysis. Small samples and attrition are not uncommon problems in field trials of any type (*26*), but the result of attrition is particularly serious when one begins with a small sample.

Underlying the issue of sample size as it relates to statistical power is the more basic issue of effect size, or the impact of treatment on the dependent variables of interest. All else being equal, significant effects are more likely to be found for large treatment effects than for weaker ones. Although no specific evidence exists regarding the expected effect size for PHN interventions, Halpern (unpublished manuscript, R. Halpern, Home-based early intervention: dimension of present and future practice, High/Scope Educational Research Foundation, Ypsilanti, MI, July 1984) estimates a small to modest effect for home-based early intervention overall. Of the eight studies reviewed, calculations according to Cohen (*18*) show that none of the studies had sample sizes large enough to detect a small

effect size; one could reasonably have detected a medium effect size; four could have detected a large effect size; and one could not even have detected a large effect size. The power of three studies could not be determined due to missing information (two studies) or the use of methods not covered in Cohen (*18*) (one study).

The apparent inability of previous evaluations of the effectiveness of PHN to yield statistically significant treatment effects poses a clear challenge to future evaluations. In designing new studies, considerable thought will have to be given to selection of clinically sensitive measures, the sample size required to demonstrate statistical significance for the change expected to occur on these measures, and realistic procedures for standardization of the nursing service. A concrete definition of service and standard, replicable implementation of the service are perhaps most easily accomplished and lead to reduction of random error and therefore improvement in observed effect size.

Unreliable measures will introduce error and reduce effect size, leading to lowered statistical power. All but two of the eight studies reviewed failed to provide any data on the reliability of their measures. One reported good reliability and one provided only limited indications of reliability from other studies. This suggests the possibility that in some studies extraneous errors may have reduced the obtained treatment effect and thus prevented the finding of significant results. Increasing the treatment effect by reducing these common extraneous sources of variability is the most important and least expensive method of maximizing the treatment effect and thus the statistical power in the PHN literature.

In a similar vein, it appears that PHN researchers often do not avail themselves of the most powerful statistical methods that are available. Table 2 shows that two studies failed even to state their statistical methods, two used multiple *t*-tests (rather than a more appropriate multivariate method), and two used multiple chi-square tests (again rather than a more appropriate multivariate method).

In conclusion, while the public health nursing literature does not provide convincing evidence of the effectiveness of PHN, neither does it indicate that PHN is not effective. Some studies have shown that public health nurses can be successful in achieving specific objectives that improve the health of women and children. Moreover, careful scrutiny of deficiencies in the research suggests that, overall, these problems likely result in the identification of fewer significant findings than may exist. Correction of these weaknesses and more attention to development of a systematic research program would provide more definitive information on the effectiveness of public health nursing.

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Current Federal Activities in School Health Education

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Synopsis

In 1979, the Federal Government released a report, "Healthy People," that examined the major health problems and the associated preventable risks facing Americans. For the school-age population in particular, several problem areas are notable, such as violence (suicide and homicide), accidents, and drug and alcohol abuse. A number of risk factors related to personal behavior have been identified for these and other health problems facing young Americans. Comprehensive school-based health promotion programs have the potential to influence positively the health status of the school-age population. This article highlights some of the more important recent Federal activities related to school-based health education.

Although Americans generally continue to live longer and improve in most categories of health, the school-age population has shown some disturbing trends. Until recently, the death rate for young Americans 15–24 years of age had been increasing since the mid-1960s. Violence in the form of suicide and homicide continues to account for an alarming number of deaths. Accidents and drug and alcohol misuse are major contributors to these statistics (*1–4*).

Because a number of risk factors for young Americans are related to personal behavior, health promotion in the schools has significant potential for an important impact on the lives of these young people (*5*). The Federal Government has recognized this potential and has taken steps to encourage and support State and local school health education activity. This article highlights some of the more important recent Federal activities related to school-based health education—activities that are operationally defined as those occurring in schools or through school-based activities or personnel. This is not to imply that such activities exclude, or should exclude, the community. Indeed, health education activities that involve the total environment of the student are most likely to change health-related behavior (*6*).

Much of current Federal health promotion and health education activity is tied to efforts to achieve the 1990 health objectives for the nation (*7*). The Federal effort to attain these objectives is coordinated and monitored by the Office of Disease Prevention and Health Promotion (ODPHP), a staff unit of the Office of the Assistant Secretary for Health.

ODPHP Activities

ODPHP has acknowledged that schools have the potential for positive influence on the health of children and adolescents, and hence the nation. As tools for successful interventions have improved, ODPHP has increased its support for school health education.