METHODOLOGY IN A STUDY OF PHYSICIANS' ATTITUDES TOWARD NURSE-MIDWIVES

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Traditional solutions to the problem of the physician "shortage" in the delivery of health services have usually involved increasing the annual output, and hence the supply, of physicians (1). However, difficulties and limitations inherent in this approach have demonstrated the desirability of seeking alternative and/or supplementary solutions to this problem. One such alternative, currently the subject of wide interest, is to extend the productivity of practicing physicians by encouraging them to use other professionals and/or para-professionals, e.g., nurse-midwives, to provide medical care under the physician's professional supervision.

The feasibility of this solution, at least as far as the involvement of nurse-midwives in maternity care is concerned, indeed its effectiveness and efficiency, has been generally accepted, in settings other than the United States, e.g., in some Western European countries. Thus, in England and in Sweden, the evidence has indicated that nurse-midwives, at least in the settings characteristic of those countries, can deliver a high quality of maternity care, perhaps as high as that of physicians (2,3,4). This may also be true of other professional and/or para-professional personnel, but hard and fast evidence unfortunately is lacking, at least up to this point.

In considering the feasibility of this alternative solution, it seems clear that a major difficulty is likely to be the unwillingness of professionals to delegate tasks for which they must assume legal and professional responsibility. However, a major assumption of the present research is that the degree of this unwillingness is likely to be conditional, i.e., it is likely to depend upon the circumstances including, for example, their perception of the nature of the task itself and the extent to which, in their opinion, it can be performed by another professional or para-professional person. The objective of the present study was to determine the extent to which a professional group--in this instance, obstetricians--would be willing to permit a para-professional group--in this instance, nurse-midwives--to perform specific aspects of their jobs.

The development of this study, i.e., its movement from the stage of problem formulation to the stages of research design and methods, necessarily involved decisions which, it is thought, might be of interest to students in this field, especially those doing research on the use of para-professional personnel. The present discussion reports the bases for some of the major decisions made in this study, e.g., those involved in selecting the specific professional relationship to serve as the object of study; the selection of the specific attitudes within that relationship which were most pertinent to the present study; the selection of the most appropriate study setting; the selection of the study population; questionnaire design; and selection of a data-gathering strategy.

THE APPROPRIATE PROFESSIONAL RELATIONSHIP

Four physician-nonphysician health personnel relationships were initially considered: the anesthesiologist/nurse-anesthetist; the pediatrician/pediatric-associate; the internist (or general practitioner)/physician's assistant; and, the obstetrician/nurse-midwife. These are the four relationships which have been the focus of perhaps the most interest during the current discussions about the necessity for extending the productivity of physicians through the use of paramedical personnel.

From among these four, the relationship to be studied should provide the optimum mix of the following factors: a) it should readily permit generalization to the entire universe of physician/paramedical relationships; b) it should help to define the potential outer limits of the paramedical roles, i.e., the maximum degree to which the physician is likely to delegate authority and responsibility for the delivery of services to any paramedical person; c) it should be a clearly defined and structured role, so that physicians might be able, as objectively as possible, to appraise the paramedical person's ability to deliver a satisfactory level of care; and, d) the medical specialty concerned should consist of a series of routine, easily analyzed procedures which would be relatively amenable to study.

On the basis of these criteria, the obstetrician/nurse-midwife relationship was selected. The study of other paramedics such as physician's assistants and pediatric associates was rejected because the potential roles of these paramedics are extremely vague, a situation caused by the lack of common structure in their educational programs and role expectations.

The study of nurse-anesthetists presented quite the opposite problem; their role is too clearly defined. Asking anesthesiologists to define the already well-established role of the nurse-anesthetist would not in any real measure be determining the extent to which a professional group would be willing to permit a new professional group to perform aspects of their jobs. Nurse-midwives, in contrast to the other three, have had a well-defined and highly respected role in many other countries. Considering their high level of education and training, a definition of the extent of the nurse-midwives' role might well provide the utmost that could be expected in terms of the limits of paramedical authority and responsibility.

THE SPECIFIC ATTITUDE

Selection of the obstetrician/nurse-midwife relationship as the focus of the research, however, imposed certain constraints on the study.

For one thing, it dictated that the study measure attitudes toward a hypothetical possibility as opposed to the measurement of behavior in a real situation. This limitation occurs because very few of the real situations of the type required were available, i.e., very few nurse-midwives are available for employment, and the possibility of finding obstetricians who had had an opportunity to interact directly with nurse-midwives was, therefore, remote (5).

The specific attitude to be studied was the physician's opinion about the ability of nurse-midwives to perform specific technical functions. Since technical competence represents one of the foundations of professionalism and professional relationships, it seemed reasonable to study this dimension of professionalism as opposed, for example, to such other aspects of obstetrical practice as acceptability of a paramedical person to the patient, monetary or financial reward or penalty to the obstetrician concomitant upon the introduction of a paramedical person, etc. Discovering and defining the professional consensus, if any, about the ability of the nurse-midwife to perform specific technical functions should help to define the limits of authority and responsibility that practicing professionals might be likely to delegate to a paramedical person in the delivery of health services.

Finally, the question was: How were researchers to discover and define this professional consensus about the ability of the nurse-midwife to perform specific technical functions? The issue was: Should obstetricians be asked, "Do you think nurse-midwives should be able to ...?" or "Would you allow a nurse-midwife to ...?" If asked this first alternative question, it was reasoned, the obstetrician would merely be making an independent professional judgment about a nurse-midwife's probable abilities, but, in the second alternative, the obstetrician would have to make a decision which might be threatening to him, i.e., he would have to state whether he would, under unclear circumstances delegate professional authority and responsibility to a paramedical person. The first alternative wording of the question was deemed to be clearly preferable and was adopted.

THE STUDY SETTING

The choice of a study setting required a decision among the two major alternatives of using a national or local setting, and, if local, whether it should be a region, a state, e.g., Maryland, an urban, or a rural area. The decision was to use the State of Maryland as the study setting.

It is obviously easier to generalize from the findings based on a national sample. However, the expense of using a national sample--the cost of obtaining a list of the study population and gathering the data--was considered too great for this study. Additionally, the use of a national sample in this study would have lost the special advantages inherent in certain settings, such as physicians having had some previous experience with nurse-midwives. The final factor leading to the rejection of the national study setting was the inability to obtain a national medical or obstetrical association endorsement for the study. This lack of endorsement, it was reasoned, would be a serious handicap in the gathering of data for the study.

While the decision not to use a national or regional sample obviously imposed some limitations on one's ability to generalize from the findings of this study the advantages of doing research in the State of Maryland were considered an acceptable trade-off. The primary advantage of this study setting lay in the fact that for the past 25 years nurse-midwives have worked in the various health departments and hospitals throughout the State. Two of Baltimore's leading hospitals employ a large number of nurse-midwives and one of the two medical schools in the State is closely affiliated with a nurse-midwifery training program. Since this research was also interested in the effect of a number of background and experience factors on physicians' attitudes toward nurse-midwives, the fact that many physicians in Maryland had had previous contact with nurse-midwives was considered important.

From a logistical viewpoint, Maryland offered two advantages. First, the State Medical Society was interested in the study and was willing to endorse it. Such interest and endorsement were thought to be extremely useful in terms of gaining cooperation and increasing responses to the questionnaire. Second, the researchers were located in Maryland so that the possibility of telephone and personal follow-up of non-respondents became both convenient and monetarily feasible.

SELECTION OF THE STUDY POPULATION

It was decided that the universe studied should be comprised of obstetricians and general practitioners with a secondary specialty of obstetrics who were born prior to 1937. The choice of whether or not to have an age cutoff was the issue in making this decision. To get at the homogeneous group of physicians who could have had experiences with nurse-midwives or paramedics during internship, residency, or military service meant that a 32 year old cutoff point was required. Clearly, many physicians of that age might not have had these experiences; however, they would have had the opportunity for such experiences. Setting the age limit higher than 32 would not allow for the sampling of the largest possible number of physicians who could be used to test hypotheses relating to the association between age and experience variables and attitudes.

With this single age exclusion, all other physicians, regardless of type of practice, e.g., solo or group, or the nature of their principal

employer, e.g., government, medical school or self-employed, were considered part of the universe. Selection was not related to these factors because it was reasonably expected that all physicians practicing obstetrics had some attitudes toward the professional functioning of nurse-midwives. Further, although the importance of opinion leaders was recognized, no attempts were made in selecting the population to evaluate the extent of each physician's influence within medical circles and the community at large. Such evaluation was considered too time consuming and somewhat beyond the bounds of this study.

Having decided what the universe would be, the question was where and how could a list of the study population be obtained. Several possibilities were considered. One way would have been to compile a list of physicians' names from their signatures on birth certificates in the State. This was rejected as being too time consuming and, more importantly, not representative. The problem inherent in this alternative is that the signer of the document may not have been the actual deliverer of the infant or even the physician who cared for the mother during the prenatal or postpartum phases.

Such other potential sources of a physician list as the two State obstetrical societies, medical societies, and the State general practitioner association were investigated. It was found, however, that their information was difficult to obtain and essentially incomplete. The American Medical Association's directory was rejected as well because four to five years had elapsed since the collection of its data. The Physicians' Record Service of the American Medical Association presented the most reasonable alternative. For a fee of slightly under $100 the Association provided a list of all the obstetricians and general practitioners with a secondary specialty of obstetrics in the State. Their information also provided data about the physician's background such as medical school attended, date of graduation, year of birth, type of practice, and employer. Finally and perhaps most importantly, this data was current --two to four weeks old--an advantage not found in the other alternatives.

QUESTIONNAIRE DESIGN

The writing of the questions for the attitudinal questionnaire initially required a definition of the tasks performed by obstetricians in the course of delivering normal maternity care. One way of defining these tasks would have been to ask a number of obstetricians to enumerate the functions they perform in providing normal maternity care. This self-analysis was rejected as being too time consuming for both the physicians and the researchers.

An alternative process of analyzing maternity care by outlining standard obstetrical textbooks was chosen. While this means of defining the tasks might be considered by some to be too theoretical, it had the advantage of providing uniform information inexpensively. It was reasoned that the gap between the theoretical and the practical could be bridged at the time of the pretesting of the questionnaire. From the various textbooks, 150 statements were collected which described the normal obstetrical process. This number was reduced to 91 by editing and eliminating statements that appeared to overlap.

At this point, it was necessary to decide between the alternatives of devising an a priori Likert or Thurstone type scale or a post factum scale by using the Guttman model or factor analysis. Two complications were foreseen in the use of a priori scaling techniques. First, there would be the problem of using judges from an already small universe and thus depleting the universe of possible study subjects. Second, there would be the pragmatic consideration of the insurmountable logistical problems inherent in getting a large number of physicians to evaluate a number of statements. The use of factor analysis was chosen both because of its relative logistical simplicity and its value in testing the theoretical framework upon which the study was built. The final attitude scale was a result of the factor analysis, but a hypothesized scale existed prior to the creation of the new scale. Correlating this hypothesized scale and the devised scale was a possibility present in post factum but not in a priori scaling. A close correlation of the hypothesized and devised scale, as was the case, provides significant support to the theories underlying the hypothesized scale.

Having decided to do post factum scaling, the remaining 91 statements were then analyzed for clarity and functional relevance by the nurse-midwives at The Johns Hopkins University. Statements which clearly reflected the functions of the nurse-midwife, or those which were in doubt, were retained. As a result of this elimination process, 42 statements remained. These were then reviewed by the obstetrical consultants to the study who suggested that the tasks performed by physicians in providing normal maternity services could be grouped into five major categories: (1) diagnostic judgment; (2) prenatal care; (3) normal delivery; (4) postpartum care and family planning services; and, (5) operative medical care. These categories, it was reasoned, reflected not only the major functions performed during normal obstetrical care, but the continuum of technical and professional expertise required to perform these functions. This led to the hypothesis that obstetricians would perceive nurse-midwives as being most able to perform tasks requiring the least degree of technical and professional competence. In order to test the validity of this scale and, at the same time not influence the respondents, no attempt was made to reflect this continuum or categorization in the design of the actual questionnaire. The questionnaire asked the physicians to answer the 42 questions about the ability of the nurse-midwife to perform the obstetrical care functions. Re-

sponses were made along a five point scale of strongly agree to strongly disagree.

A pretest to check the clarity of the questionnaire, the procedure for its administration, and the validity of the instrument was carried out in another state. The specific hospital selected for pretesting had a large obstetrical service, employed a nurse-midwife, and was remote from the study site. Additionally, the chief of obstetrics and the administrators were interested enough in the study to make it possible to interview many of the respondents.

The alternative of using a part of the non-selected sample in the State of Maryland was considered an easier and less costly way of pretesting. However, the difficulty in interviewing physicians scattered throughout the State, along with the probable contamination of the sample made this alternative unacceptable.

DATA GATHERING

A review of several studies concerned with alternative data gathering strategies revealed that no single method is sacrosanct (6,7,8). Therefore, the realistic factors of time and personal bias governed the decision to use mailed questionnaires, rather than personal interviews. The time and financial constraints are perhaps best explained by the fact that there were 210 physicians in the sample, the land area of the State of Maryland is almost 10,000 square miles, and there was only one investigator to do all of the interviewing. Almost of equal importance in making the decision was a sensitivity about the introduction of the investigator's bias into the personal interview. This sensitivity was, in part, a result of the interviewer's experiences during the pretest where, at times, he was forced to leave the role of "detached observer" to play the role of "defender", or "advocate", of nurse-midwifery.

Because the mailed questionnaire and the strategy to increase responses resulted in an unusually high response rate (93.6 per cent), the data gathering stategy will be briefly described. A number of different techniques may have contributed to the success of this effort, but, since none of these variables were controlled, it is virtually impossible to state their individual significance.

The underlying strategy in data gathering was to approach the physician in a personalized manner, thereby, stimulating his interest and desire to cooperate in the study. All letters were personally typed and addressed on an automatic typewriter and then hand signed. The personal approach also was emphasized in the questionnaire on which the physician's name, medical school, and year of graduation were filled in beforehand.

Several days prior to the mailing of the first letter and questionnaire, the president of the State Medical Society sent each physician in the sample a letter asking for his cooperation in the study. The questionnaires and cover letters were then stamped by hand and mailed special delivery. Non-respondents received a follow-up special delivery letter and questionnaire 15 days later, followed by another special delivery letter to non-respondents 20 days thereafter. By the 40th day of the data collection effort, more than 90 per cent of the sample had responded at a total cost per response of approximately $1.42.

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This report has traced the development of a medical care research study from formulation of the problem through a number of critical decision stages to a final research design. These critical decisions involved alternatives that eventually led to the selection of the obstetrician/nurse-midwife relationship as the appropriate professional relationship to study, the selection of the physician's attitude toward the technical ability of the nurse-midwife as the specific relationship that was the most relevant to study, the selection of Maryland as the study setting, and the use of all obstetricians and general practitioners 32 years of age or older as the study population. This paper also reviewed the alternatives considered prior to the designing of the questionnaire and, finally, it described the strategy used in collecting the data. It is hoped that this presentation will be of interest to those responsible for conducting research on the use of para-professionals, as well as, to collaborators in such research.

FOOTNOTES

(1) Excellent reviews of previous health manpower studies are found in Rashi Fein's The Doctor Shortage: An Economic Analysis (Washington: The Brookings Institution, 1967), pp. 6-13 and the Report of the National Advisory Commission on Health Manpower, Volume II, (Washington: Government Printing Office, 1967), pp. 265-277.

(2) U. S. Department of Health, Education, and Welfare, International Comparison of Perinatal and Infant Mortality: The United States and Six West European Countries, (Washington: Government Printing Office, 1967).

(3) H. Arthure, et.al., Report of Confidential Enquiries Into Maternal Deaths in England and Wales, 1964-1966, (London: Her Majesty's Stationery Office, 1969).

(4) L. Runnerstrom, "The Effectiveness of Nurse-Midwifery In a Supervised Hospital Environment", Bulletin of the American College of Nurse-Midwifery, XIV:2 (May 1969), pp. 40-52.

(5) Nurse-Midwives--U.S.A. Descriptive Data. New York: American College of Nurse-Midwifery, 1968.

(6) J. Hochstim, "A Critical Comparison of Three Strategies of Collecting Data From

Households", Journal of the American Statistical Association, 62 (September 1967), pp. 976-989.

(7) W. L. Slocum, et.al., "Increasing Response to Questionnaires and Structured Interviews", American Sociological Review, 21:2 (April 1956), pp. 221-225.

(8) A. M. Burgess and J. T. Tierney, "Bias Due to Non-Response in a Mail Survey of Rhode Island Physicians' Smoking Habits - 1968", New England Journal of Medicine, 282:16 (April 16, 1970), p. 908.