The effectiveness of community health aides was studied by assigning mothers to physicians, community health aides, and public health nurses for instruction in home care of upper respiratory infections. Findings are reported and discussed with implications for the role of community health aides.

COMMUNITY HEALTH AIDES: HOW EFFECTIVE ARE THEY?

Joy G. Cauffman, Ph.D., F.A.P.H.A.; Willis A. Wingert, M.D., F.A.P.H.A.; David B. Friedman, M.D.; Edward A. Warburton, B.A.; and Bernard Hanes, Ph.D.

Introduction

ACROSS the nation, the utilization of indigenous nonprofessional health aides is rapidly emerging as a major social force in the delivery of care. These aides are employed to improve lines of communication between community health agencies and disadvantaged families, and to alleviate a critical shortage of health professionals.[1] They perform a variety of functions and are given numerous job titles.[2-10]

This study, conducted in the Pediatric Emergency Room (PER) of the Los Angeles County-University of Southern California (LAC/USC) Medical Center, provides an indirect measure of the community health aide's ability to participate in an educational function related to patient care. Our major hypothesis was that mothers instructed by community health aides would be as likely to comply with Physicians' Upper Respiratory Infection (URI) Order Lists as would mothers who were instructed by public health nurses or by physicians. The rationale for this hypothesis was based upon a study which concluded that aides were no less effective than those of the so-called professionals in providing health education services in their home neighborhoods and communities.[11] Results from other related studies have indicated that aides were employed and trained successfully to fill important roles in health education.[5,7,8]

Method

A multidisciplinary team* developed an interview schedule to gather data about mothers and their children. Community health aides were recruited and trained to teach mothers how to care for their children when they had an upper respiratory infection (URI). Mothers were randomly assigned to aides, nurses, and physicians in order to receive instruction about their children's URI. Subsequently, data pertaining to mothers and their children were collected and analyzed. Due to the nature of the data ("reported behavior"), no formal measures of reliability or validity were made.

Interview Schedule

Members of the health care team developed the "How to Treat Colds Interview Schedule,"[12] which consisted of a *Clinic Interview Form* and a *Telephone*

* Two pediatricians, one health educator, one medical educator, two educational psychologists, two public health nurses, and six community health aides.

Interview Form. Data on the *Clinic Interview Form* identified demographic characteristics of both the child and his mother and indicated whether the physician, nurse, or community health aide provided the health instruction to the mother. Data on the *Telephone Interview Form* revealed whether the mother followed the specific orders which had been given by the physician (e.g., gave aspirin).

A physician's instruction sheet, "How to Treat Colds"[13] was used as a basis for developing the *Telephone Interview Form.* Each specific order (such as, feed light foods) was accompanied by a series of probing questions (e.g., What has Johnny been eating? Such as . . . ?) The probing questions, together with an introductory and concluding statement, provided a structured format for telephone interviews. The probing questions also made it possible to determine whether the mother followed the physician's orders without directly asking her if she had followed his orders. The purpose of this procedure was to minimize the number of "socially acceptable" responses and to maximize the number of "true" responses.

Members of the multidisciplinary team pretested the *Clinic Interview Form* in the classroom by using role-playing techniques and in the PER by using actual case studies. Team members also pretested the *Telephone Interview Form* by listening to actual cases and analyzing these cases in group conferences. Results from role-playing techniques and actual case studies provided the basis for instrument revisions.

Community Health Aides

Six women were recruited from either the Youth Opportunities Unit, Los Angeles County Civil Service Commission, or from the South Central Volunteer Bureau. These women were given the occupational title of Community Health Aides. They were of either Negro or Spanish-surname backgrounds, represented the dominant ethnic groups attending the PER, had a high school education, and ranged from 18 to 35 years in age.

The aides were trained for their new work in the PER by two pediatricians, two public health nurses, and a health educator. The training period was four weeks, including one week of socratic and didactic instruction in the classroom and three weeks of on-the-job training.

The aides first were oriented to the structure and function of the LAC/USC Medical Center, including the PER. Acceptable rules of personal conduct were stressed, particularly with reference to patients and their families.

The assistants then were given a specific role in the URI study. They learned the information presented on the "How to Treat Colds" instruction sheet and interpreted this information to mothers in layman's terms. They verified and transferred information from patient charts to interview schedules, and obtained background information from mothers and recorded this information on interview schedules. They also demonstrated to mothers those skills that they were expected to perform in caring for their child's URI.

Mothers

From all of the mothers who brought their children to the PER during the spring and fall of 1967, mothers were selected for the study (1) if they lived in the economically deprived study area* surrounding the PER, and (2) if their children's health problem was

* This study area was identified as Social Rank VI within the source book, Background for Planning.[14] The author developed an index to permit a socioeconomic rating of all study areas within Los Angeles County by using three indicators—occupation, income, and education. On a six-point scale an index score of six designated the lowest stratum or Social Rank VI, whereas a score of one, the highest stratum or Social Rank I.

diagnosed as an URI by a physician at the PER.

Collection of Data

1. After identifying a child's illness as an URI, the physician asked the mother to follow from 1 to 11 recommendations on the Physicians' URI Order List.* Specific recommendations were recorded on the child's chart by the public health nurse.

2. Community health aides transferred and verified identifying information (e.g., telephone number) from the child's chart to the *Clinic Interview Form.*

3. Aides interviewed the child's parent for demographic data (e.g., mother's education). They recorded and verified this information on the *Clinic Interview Form.*

4. Mothers and children were assigned randomly to a physician, a nurse, or an aide for specific health instructions relating to the recommendations on the Physicians' URI Order List. This phase of the study was structured so that each member of the health team presented mothers with basically the same information in either Spanish or English. The physicians' instruction sheet, "How to Treat a Cold," was discussed with mothers and they were given an opportunity to ask questions. Depending upon the physician's specific orders, demonstrations were presented by the health worker (e.g., using a nasal aspirator) and practiced by the mother. Finally, the instruction sheet was given to the mother for future reference, and the occupation of the health worker who provided the instruction was recorded on the *Clinic Interview Form.*

5. Public health nurses telephoned mothers approximately three days after their clinic visit to determine to what extent the mothers had followed the Physicians' URI Order List. In order to avoid personal bias, the nurses did not telephone the same mothers that they had interviewed in the clinic. Responses from mothers were recorded on the *Telephone Interview Form* by the nurses. In instances where a family did not have a telephone, a neighbor's or friend's phone was used. In many cases, it was necessary for the nurse to initiate as many as eight phone calls before she actually contacted the mother.

Analysis of Data

A mother was classified as having followed the Physicians' URI Order List, if she followed *all* of the URI orders that were assigned to her at the PER. When a mother performed anything less than "all applicable items" she was classified as not having followed the physician's orders. This measure of reported behavioral performance was cross-classified with relevant data obtained from interview forms and hospital charts. The chi-square analysis was used to assess the significance of all observed relationships.

Results

The major hypothesis was that mothers who were instructed by community health aides would be as likely to comply with Physicians' URI Order Lists as would mothers who were instructed by public health nurses or by physicians. An analysis of the data indicated that there was no difference in the level of compliance among mothers who were instructed by community health aides, by public health nurses or by physicians (Table 1). By partitioning the contingency table, separate comparisons were made between the aide and physician; between aide and nurse; and between aide and both physician and

* These recommendations included: giving nose drops, taking temperature by thermometer or estimating temperature by palpating, giving aspirin, feeding light foods, keeping indoors, forcing fluids, suctioning nose, clearing nose, using vaporizer, applying cooling measures, and improvising steaming technique.

Table 1—Instruction by health personnel related to mothers' compliance with physicians' orders

Personnel instructing	Total No. of mothers instructed	Mothers complying with all "applicable" orders	
		N	%
Nurse	94	54	57.4
Community Health Aide	90	45	50.0
Physician	91	40	44.0
Total	275	139	50.5

$\chi^2 = 3.38$; $P = .15$

nurse. No significant differences were found in any of these comparisons.

Selected characteristics of the children and of the mothers who visited the PER were examined as they related to whether or not the Physicians' URI Order List was followed. Five of these variables—the child's sex and age, and the mother's race, education, and family size—were unrelated to compliance. Could these "no significant differences" be attributed to an assignment bias related to the characteristics of the mothers and the categories of the health workers who gave the instructions? An analysis of observed versus expected frequencies was made within each assignment category with respect to the mother's age, race, education, and family size. In no case did the test reveal a significant finding. From a statistical point of view, the aides, the nurses, and the physicians served as instructors to the same number of mothers in each ethnic group, each educational group, and each "family-size" group.

Discussion

According to the indirect measure of the health aide's effectiveness in the PER, she performed as well as the physician and the nurse. This finding has implications for the utilization of health aides within a hospital located in a lower socioeconomic area of a large urban community. With leadership from a health care team (including a physician, health educator, and nurse), health aides can be trained to assume important responsibilities in specific aspects of maternal education and can be expected to assist mothers in complying with the physicians' orders when their children's health problem is an URI.

This finding also has implications for redirection of the educational services provided by physicians and nurses in the emergency room. During 1967, the URI constituted 25 per cent of all illnesses seen in the PER (35 per cent of otitis media is included). Thus, in terms of dollar cost, the money spent on physicians and nurses instructing mothers about the treatment of their children's URI was no trivial matter. The hourly rate for physicians was $8.85, compared with $5.00 per hour for nurses and $2.50 per hour for aides. It would seem logical that aides should be assigned the educational responsibility under appropriate supervision if they can perform the specified tasks as well as physicians or nurses in the same period of time, and if the costs of training and supervising the aides do not cancel their hourly wage advantage. Relieved of the responsibility of educating mothers about the treatment of minor ailments, such as uncomplicated URIs, gastroenteritis, or impetigo, the physicians and nurses could spend more time on other activities requiring greater technical knowledge and skill.

In this study, no qualitative comparison was made among the three instructional groups—that is, how well the mothers instructed by the aides, the nurses, and the physicians performed with respect to the various skills implicit in the physician's orders. Furthermore, this study does not evaluate the effectiveness of education per se. To measure the effectiveness of education, it would

have been necessary to compare one group of mothers who received instructions with another group of mothers who did not receive instructions. The medical leadership within the PER would not permit a subsample of mothers to receive no instruction. Future research perhaps should consider these points as well as the education of mothers by aides, nurses, and physicians in comparison with those mothers who receive instruction from health educators.

Future research should also focus on factors other than the health occupation of the individual providing the instruction. Does the personality and maturity of the individual instructor, regardless of training, influence compliance? Should health personnel of a particular personality type be matched with mothers of a similar or dissimilar personality? Does the mother's psychological readiness to receive the instruction affect her subsequent behavior? Do certain patterns of communication between the mother and the health worker have more impact upon compliance than others? Does the environmental climate (e.g., noise, interruptions, and the like) within the PER at the time instruction is provided affect compliance? What are the intervening influences outside the medical environment?

Summary

This study focused upon the effectiveness of community health aides who were recruited and trained to perform an educational function in the PER of the LAC/USC Medical Center. From an economically deprived population surrounding the center, 275 mothers were randomly assigned to community health aides, public health nurses, and physicians for instruction about home care of an URI. Data were obtained through clinic and telephone interviews with mothers and from the children's hospital records.

Regardless of who provided the instruction, there was no significant difference in whether mothers subsequently complied with all "applicable" items on the Physicians' URI Order List. Additional comparisons between aide and physician, aide and nurse, and aide and both physician and nurse, revealed no significant differences. According to this measure of the health aides' effectiveness, they performed as well as the physicians and nurses. With leadership from a health care team, aides can be trained to assume important responsibilities in maternal education and, with appropriate supervision, they can be expected to assist mothers in a low-income area to comply with the physician's orders when their child's health problem is an URI.

REFERENCES

1. Report of the National Commission on Community Health Services. Health Is a Community Affair. Cambridge, Mass.: Harvard University Press, 1966, Chap. 5.
2. Hollowitz, E., and Reisman, F. The Role of the Indigenous Non-Professional in a Community Mental Health Neighborhood Service Center Program. Am. J. Orthopsychiat. 37:766, 1967.
3. Older Poor Adults Trained as Health Aides in Alameda County. Pub. Health Rep. 83:184, 1968.
4. Grant, M. Health Aides Add New Dimensions to Home Care Program. Hospitals 40:63 (Dec.), 1966.
5. Conn, R. H. Using Health Education Aides in Counselling Pregnant Women. Pub. Health Rep. 83:979-982 (Nov.), 1968.
6. Callan, L. B. The H.E.A.T. Project. Abstracts. Ninety-Sixth Annual Meeting, American Public Health Association and Related Organizations, Detroit, Mich. (Nov.), 1968, p. 207.
7. Conn, R. H. Adjunct Health Workers: A Breakthrough in Health Education. Ibid., p. 208.
8. Hildebrand, G. I. Cancer Education Aide Project. Ibid., p. 208.
9. Hoff, W. A System Model for the Use of Auxillary Health Personnel in Health Programs, Results of an Evaluation Study of Health Aides in Migrant Projects. Ibid., p. 210.
10. Gales, H. Community Health Education Project. A.J.P.H. 60,2:322 (Feb.), 1970.
11. Hamlin, G. P., and Young, M. M. People

Workers—A Local Health Department's Experience with Health Education Aides. Ibid. 59,10 (Oct.), 1969.
12. Cauffman, J.; Bube, N.; Sunker, R.; Wingert, W.; Friedman, D.; Abrahamson, S.; Woolf, R.; and Thomas, C. How to Treat Colds Interview Schedule. Unpublished Interview Schedule, School of Medicine, University of Southern California, 1967.
13. Wingert, W., and Friedman, D. How to Treat Colds (Parent Information Sheet H-42-76H800). Los Angeles: Children's Division, Los Angeles County General Hospital (Jan.), 1967.
14. Meeker, M. Background for Planning. Welfare Planning Council, Los Angeles Region, Los Angeles, 1964, pp. 1-92, i-lxvii.

The authors are associated with the Department of Pediatrics, University of Southern California School of Medicine (2025 Zonal Avenue), Los Angeles, Calif. 90033.

This research was supported by Grant H 117, Children's Bureau, United States Department of Health, Education, and Welfare, Washington, D. C. Computing assistance was obtained from the Department of Pediatrics, University of Southern California School of Medicine, and from the Veterans' Administration, Western Research Support Center.

The paper was submitted for publication in June, 1969.

IMPORTANT

Houston Airport-Ground Transportation Information

1. The Houston Intercontinental Airport is 33 miles from downtown Houston.
2. Regular airport-hotel transportation as well as special APHA buses will be available. Hostesses will greet you at the airline baggage claim areas to direct and give you transportation information.
3. The fare on both regular limousine and APHA transportation is $2.50 per person to downtown hotels/motels, and $3 to outlying hotels/motels in the Astroworld area.
4. Taxi service is also available at regular meter rates and the fare can be shared equally by four persons going to the same destination. Single taxi fare would be from $10 to $15 to downtown hotels/motels, and $15 to $18 to outlying hotels/motels in the Astroworld area.
5. There will be a transportation booth located in a booth adjoining the airline booth in Exhibit Hall to assist you with ground transportation to the airport on your return flight.