Home Health Clients: Characteristics, Outcomes of Care, and Nursing Interventions

ABSTRACT

Objectives. The purpose of the study was to provide descriptive data about the characteristics of home health clients, the services that nurses provide, and the outcomes of those services. Such data have been sparse.

Methods. This study examined 2403 home health clients served by four agencies in Nebraska, New Jersey, and Wisconsin. Demographic, health history, and clinical data were analyzed. The Omaha System was used as the model for describing and measuring data specific to clients' health-related problems, nursing interventions, and outcomes of care.

Results. The median age of home health clients was 68.6 years. Nurses conducted 70% of all home visits, identified 9107 client problems, and provided over 96 000 interventions. Between admission and dismissal, clients improved by at least 0.52 point on three 5-point problem-specific outcome subscales (Knowledge, Behavior, and Status).

Conclusions. These data show important characteristics of home health clients in a large national sample. They also support the usefulness of the Omaha System in describing and quantifying nursing practice in the community health setting. The magnitude of positive client change between admission and dismissal suggests that community health services do make a difference. (*Am J Public Health.* 1993;83:1730–1734)

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Introduction

What are the characteristics of home health clients and the services they receive in today's complex milieu? What effect do nursing services have on those clients? In this article we report the findings of a recent Visiting Nurse Association of Omaha research project that used three classification schemata for examining client–nurse interactions. The schemata are referred to as the Omaha System.

A variety of client characteristics and trends are evident in the health care literature. One of the most extensive documents about current and anticipated health-related problems of the US population is *Healthy People 2000.*[1] That publication, however, emphasizes medical diagnoses; it addresses home health issues, the effect of nurses, and nursing-focused client concerns in a relatively limited manner. Research conducted in community health settings contributes to the understanding of home health clients. Three nationally reported home-care client studies documented the increasing severity of illness and decreasing reimbursement sources. However, the studies emphasized medical diagnoses rather than nursing services.[2–4]

Nurses, the primary providers of home health services, have designed few studies involving home health clients and nursing practice. Rarely have they systematically explored or quantified physical, environmental, and social characteristics of home health clients and the services they receive.[5–7] Few nurse researchers have investigated the effects of health care services on clients, especially on home health clients.[8–11] Increasingly, however, all health care providers are receiving pressure from reimbursement sources, accreditors, and legislators to consider the outcome effectiveness of client services.[12–15] Establishing the relationship between nursing services and client progress is an important element of a minimum data set useful to the nursing profession.[16] The purpose of a nursing minimum data set is to provide an abstraction tool for standardized, comparable, and essential data. Williams[17] noted the importance of a nursing minimum data set but cautioned that pilot tests were needed, especially tests involving public health and home health settings.

Noteworthy for nurses is a compilation of studies edited by Waltz and Strickland.[18–21] It includes three studies that involve client outcome measurement instruments for community health nurses. Nursing diagnoses were used as the framework for home health measurement tools in two of the studies. Nursing diagnoses were based on the Omaha Problem Classification Scheme[22] and on North American Nursing Diagnosis Association vocabulary.[23]

Methods

The Omaha System research project, carried out from 1989 through 1983, was designed to accomplish multiple purposes. In this article we report the frequency and type of the clients' problems; the clients' problem-specific knowledge, behavior, and status outcome changes; and the frequency and type of nursing in-

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terventions occurring in diverse home health agencies. Elsewhere we describe research findings in addition to the client demographics and service characteristics noted in this article; the conceptual framework and structure of the Omaha System; previous research; and the system's applicability, reliability, validity, and efficiency.[24–26]

The Omaha System has been described as a comprehensive schema of nursing diagnoses, client outcomes, and nursing interventions.[25,27,28] The three schemata were developed during a series of research studies conducted between 1975 and 1986. The Omaha System provides a framework for merging a practice and documentation system and offers a method of organizing client and provider data and integrating them into a manual or automated management information system.

Omaha System Schemata

The first component of the system is referred to as the Problem Classification Scheme; it is a client-focused taxonomy of nursing diagnoses. The most global level of the scheme consists of domains called Environmental, Psychosocial, Physiological, and Health Related Behaviors. At more specific levels, these domains comprise 40 client problems, each with a cluster of signs and symptoms. One of the problems from the Physiological domain is circulation; it was the most frequently occurring problem in this study.

The second component of the Omaha System, the Problem Rating Scale for Outcomes, consists of three 5-point Likert-type subscales. The Knowledge, Behavior, and Status subscales offer a numeric measurement framework with which to evaluate changes in the clients' knowledge, behavior, and status in relation to specified health-related problems and selected time frames. At admission to service, a client who exhibits a circulation impairment problem may have a status rating of 2 as evidenced by pitting edema of the ankles and lower extremities. Ideally, with nursing care, client involvement, and a medical plan of care, at dismissal the client may have no edema at dismissal and therefore a status rating of 5.

The third component of the Omaha System is an Intervention Scheme. This is a hierarchical organization of nursing actions that is designed to describe and quantify problem-specific plans and interventions. At the most global level, the Intervention Scheme comprises four broad categories of interventions: Health Teaching, Guidance, and Counseling; Treatments and Procedures; Case Management; and Surveillance. More specific targets or objects of nursing actions and client-specific information are used in conjunction with the categories. For the client who has a circulation impairment problem, the nurse is likely to (1) make a home visit, complete a physical assessment, and provide care and (2) document the intervention category referred to as Health Teaching, Guidance, and Counseling; the target of cardiac care; and specific details about fluid restrictions and potentially contributing factors such as smoking and stress.

Sample

Four home care agencies were purposively selected for diversity in relation to their history of using the Omaha System, size, organization, length of operation, and geographic location. Client records were included in the sample if the clients were admitted and dismissed during each agency's 18-month data collection period, had at least one physiological problem, and received at least two home visits from a nurse.

Home health nurses who visited clients and documented services in client records participated in the study if they had been employed at the agency for at least 3 months, used the Omaha System to document client services, and participated in the initial 4-hour orientation session. All nurses who attended were introduced to the Omaha System schemata and observed a videotape simulating a nurse–client home visit. Working independently, they identified and recorded the client's problems, outcome scale ratings, and interventions.

Data Collection

A two-part client data collection form was developed, pilot tested, and revised. The first part addressed demographic and health history information, including payment source. Service data included the first and last visit dates and number of home visits made by various types of caregivers. The second part included specific service data based on the three schemata of the Omaha System. Data collection focused on client problems, problem-specific knowledge, behavior, and status outcome changes, and interventions provided by various community health staff members.

Procedures

Project personnel who met specific criteria were selected to serve as data abstractors. Criteria included Omaha System expertise, community health experience, and demonstrated proficiency in documentation. Preliminary reliability of project personnel was established prior to data collection and visits to the four sites were scheduled every 3 to 4 months. The data collectors monitored record data to ensure that all staff at the sites were implementing the Omaha System appropriately. They selected client records on the basis of established criteria and abstracted data from these records. Random samples of abstracted data were assessed for reliability throughout the data collection period.

Analysis

Descriptive and inferential data analyses were performed with the Statistical Analysis System (SAS).[29] To maintain confidentiality, each client record was assigned a number and all data were analyzed in the aggregate by agency or total sample. Frequencies and *t* tests were used for the descriptive analysis presented in this article.

Results

Data were collected between October 1989 and October 1991. A total of 2403 clients and their records were admitted into the sample. The client records were obtained from a large urban Nebraska agency (n = 1063), a large urban New Jersey agency (n = 896), a small rural Nebraska agency (n = 263), and a small rural Wisconsin agency (n = 181).

Demographic and Health History

The home health clients served by the four agencies presented a distinctive composite demographic profile. Older, female, married or widowed Caucasian clients dominated the sample. The clients' ages ranged from birth to 104 years; the median age was 68.6 years. Females accounted for 58% (n = 1389) of the sample. Approximately 39% (n = 925) of the sample were married and 35% (n = 850) were widowed. Eighty-five percent (n = 2045) of the clients were Caucasian, 12% (n = 293) were African-American, 2% (n = 43) were Hispanic, and 0.3% (n = 8) were Asian, and another 0.3% (n = 7) were Native American.

The clients' living accommodations, caregiving arrangements, dependency characteristics, and dismissal status were noted. Approximately 40% of the clients lived alone (n = 883), were independent in relation to functional status (n = 973),

TABLE 1—Frequencies of the Most Common Primary Medical Diagnoses of Home Health Clients, According to ICD-9-CM Diagnostic Groups

Diagnostic Group	Frequency (n = 2403)	%
Circulatory system disorders	572	23.8
Neoplasms	406	16.9
Injuries/poisonings	260	10.8
Respiratory system disorders	227	9.5
Endocrine, metabolic, and nutritional disorders	197	8.2
Digestive system disorders	151	6.3
Musculoskeletal system and connective tissue disorders	137	5.7
Ill-defined signs/symptoms	106	4.4
Skin and subcutaneous tissue disorders	82	3.4
Genitourinary system disorders	58	2.4
Other	207	8.6

Note. ICD-9-CM = *International Classification of Diseases*, 9th Revision: Clinical Modification.[30]

TABLE 2—Visits to Home Health Clients, by Caregiving Category

	No. Clients	Visits per Client			Total Visits
		Minimum	Maximum	Mean	
Nursing	2403	2	116	9.11	21 880
Home health aide	634	1	188	9.66	6122
Physical therapy	289	1	61	6.90	1993
Medical social work	249	1	12	1.86	462
Occupational therapy	32	1	29	6.84	219
Speech pathology	19	1	67	12.47	237
Total	2403	2	282	12.87	30 913

Note. Sample selection criteria required a minimum of two nursing visits. Clients could receive visits from one or more types of caregivers.

TABLE 3—Frequency of Problems Experienced by Home Health Clients (n = 2403), by Domain and Agency

Agency	Physiological		Health Related Behaviors		Psychosocial		Environmental		Total
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
Urban Nebraska	2183	68.3	782	24.5	208	6.5	21	0.7	3194
Urban New Jersey	3014	74.1	909	22.3	88	2.2	56	1.4	4067
Rural Nebraska	567	72.1	139	17.7	70	8.9	10	1.3	786
Rural Wisconsin	722	68.1	271	25.5	60	5.7	7	0.7	1060
All	6486	71.2	2101	23.1	426	4.7	94	1.0	9107

and were dismissed to self-care (n = 930). However, it should be noted that over 50% of the clients were partially dependent (n = 1207) and the remaining 10% were dependent (n = 223). Client dependency was also evidenced by the fact that 59% (n = 1425) of the clients required a spouse or adult child to serve as the primary caregiver and 30% (n = 731) of the clients were dismissed to family or friends.

Reimbursement of services is a critical issue for all home health agencies. Funding sources directly influence the length and amount of service provided to clients. In this study, Medicare was the primary source of reimbursement for 73% (n = 1755) of the clients. The length of service ranged from 1 to 375 days; the mean was 34.74 days.

The primary medical diagnoses of clients were categorized according to ICD-9-CM diagnostic groups.[30] The diagnostic groups that occurred more than 50 times are shown in Table 1; they account for 91.3% of the sample's diagnostic groups. The frequent occurrence of circulatory system disorders and neoplasms, accounting for 40% of the diagnoses, is consistent with national mortality trends. Within the ICD-9-CM diagnostic groups, the three specific medical diagnoses that occurred most frequently were diabetes mellitus, congestive heart failure, and cerebrovascular disease.

Clients' drug profiles were directly related to medical diagnoses. No drugs were prescribed for 67 clients. The 2336 clients who received at least one drug averaged 5.2 drugs per length of service for a total of 12 460 drugs. Cardiac drugs, analgesics and antipyretics, gastrointestinal drugs, diuretics, and central nervous system agents were the most frequently prescribed drugs.

The number of visits made to clients by each of six types of caregivers varied markedly during the clients' length of service (see Table 2). The length of service (range = 1–375 days; mean = 34.74 days) was mentioned above in relation to reimbursement. Nurses conducted 70% of all home visits. Because nurses were the focus of this study, it should be noted that sample selection criteria required a minimum of two nursing visits. Therefore, clients from each agency who received only one nursing visit or only visits from other types of caregivers were not included in the study; a relatively small number of clients were excluded from the research for these reasons. It should also be noted that the sampling plan used in this research reflects the purpose of the study and the number of nurses in the community health practice setting; the plan was not intended to diminish the importance of interdisciplinary contributions to client care.

Omaha System

Based on the sample of 2403 clients and the Problem Classification Scheme, home health nurses identified a total of 9107 client problems or nursing diagnoses. The mean number of problems per client was 3.79; the median was 3 and the mode was 2. Identified problems ranged from 1 to 15 per client. The frequency of problems from the Physiological, Health Related Behaviors, Psychosocial, and Environmental domains for the entire sample and for each agency is depicted in Table 3. For the total sample, problems in the Physiological domain accounted for 71% of all problems. Problems in the Health Related Behaviors domain accounted for 23% of the problems, whereas Psychosocial and Environmental problems accounted for approximately 5% and 1%, respectively. Although inclusion in the sample required that each client have at least one problem in the Physiological domain, the preponderance of physiological problems is typical of home health clients and their reasons for referral. The frequency of occurrence for the total sample and that for each agency were highly similar.

The second component of the Omaha System is the Problem Rating Scale for Outcomes. Table 4 shows the clients'

Knowledge, Behavior, and Status ratings at admission and dismissal for the entire sample and for each agency. It also depicts the average amount of change that occurred during the period of home health nursing service. Clients' Knowledge, Behavior, and Status ratings increased by at least 0.52 point overall. In addition, Table 4 shows the paired *t*-test scores and probability values for the test. The increase in each rating was greater than zero. The magnitude of the *t*-test values demonstrates the overwhelming consistency of clients' improvement in problem-specific knowledge, behavior, and status as they received service from home health nurses and other professionals. It should be noted that every client did not improve, especially on all three subscales. For example, some clients were admitted to an agency's hospice program and were expected to die relatively soon. Their status ratings associated with the primary medical diagnoses were expected to deteriorate.

The third component of the Omaha System is the Intervention Scheme used by nurses to document their actions as they provide nursing service to clients. The order of frequency of occurrence for the four intervention categories is the same for all four agencies: (1) Surveillance; (2) Health Teaching, Guidance, and Counseling; (3) Treatments and Procedures; and (4) Case Management. Table 5 depicts the frequency of interventions for the nine problems that occurred most frequently in the sample: circulation, integument, neuromusculoskeletal function, respiration, medication regimen, nutrition, bowel function, technical procedures, and pain. The order of frequency of occurrence for the four intervention categories was examined. Surveillance was the most frequently occurring intervention category for seven of the nine problems. Health Teaching, Guidance, and Counseling was the primary intervention category for medication regimen problems, and Treatments and Procedures was the most frequent intervention category for technical procedures problems.

TABLE 4—Outcome Ratings on Admission and Dismissal and Mean Increase, by Agency

	Agency				
	Urban Nebraska	Urban New Jersey	Rural Nebraska	Rural Wisconsin	Total
Knowledge rating					
Admission mean (SD)	2.60 (0.65)	2.52 (0.68)	2.65 (0.76)	2.87 (0.54)	2.60 (0.67)
Dismissal mean (SD)	3.18 (0.76)	3.19 (0.82)	3.40 (0.69)	3.54 (0.69)	3.25 (0.79)
Mean increase (SD)	0.58 (0.01)	0.67 (0.01)	0.75 (0.03)	0.67 (0.02)	0.65 (0.008)
t test[a]	45.24	51.71	27.08	32.96	79.91
Behavior rating					
Admission mean (SD)	2.60 (0.66)	2.88 (0.71)	2.75 (0.86)	3.09 (0.65)	2.80 (0.72)
Dismissal mean (SD)	3.16 (0.81)	3.35 (0.84)	3.48 (0.88)	3.60 (0.79)	3.32 (0.84)
Mean increase (SD)	0.56 (0.01)	0.47 (0.13)	0.73 (0.03)	0.51 (0.02)	0.52 (0.008)
t test	43.71	35.78	23.73	23.25	63.97
Status rating					
Admission mean (SD)	2.50 (0.76)	2.84 (0.72)	2.46 (0.84)	3.28 (0.93)	2.74 (0.81)
Dismissal mean (SD)	3.06 (0.95)	3.34 (0.93)	3.38 (0.99)	3.74 (0.97)	3.29 (0.97)
Mean increase (SD)	0.56 (0.01)	0.50 (0.14)	0.92 (0.04)	0.46 (0.02)	0.55 (0.009)
t test	37.43	35.09	25.73	19.13	59.33

Note. In the sample of 2403 clients, 9107 problems were identified.
[a]Paired *t* test of difference between admission and dismissal ratings. For all paired *t* tests, $P \leq .0001$.

TABLE 5—Frequency of Interventions for Selected Problems

	Surveillance		Health Teaching, Guidance, and Counseling		Treatments and Procedures		Case Management		Total
Problem	Frequency	%	Frequency	%	Frequency	%	Frequency	%	Frequency
Circulation	12 459	69.5	4 193	23.4	185	1.0	1 085	6.1	17 922
Integument	7 645	51.0	2 637	17.6	4 120	27.5	581	3.9	14 983
Neuromusculoskeletal function	8 285	67.8	3 135	25.7	123	1.0	668	5.5	12 211
Respiration	7 955	72.1	2 430	22.0	291	2.6	362	3.3	11 038
Medication regimen	3 576	41.4	4 032	46.7	601	7.0	422	4.9	8 631
Nutrition	2 812	49.1	2 466	43.1	360	6.3	84	1.5	5 722
Bowel function	3 358	61.1	1 680	30.6	311	5.7	144	2.6	5 493
Technical procedure	1 309	24.7	1 004	19.0	2 342	44.3	632	12.0	5 287
Pain	3 106	70.1	933	21.1	74	1.7	317	7.1	4 430
All	57 218	59.3	25 335	26.3	8 463	8.8	5 428	5.6	96 444

Note. In the sample of 2403 clients, 9107 problems were identified.

Discussion

This study is unique because it was designed from a nursing perspective and included analysis of an extensive national home health client sample. The analysis demonstrates the complexity of the clients being served by four community health nursing agencies in Nebraska, Wisconsin, and New Jersey. Indeed, the age, caregiving requirements, dependency, and dismissal status of the clients from each agency were very similar. The large number of clients whose services were reimbursed by Medicare further suggests that most clients are homebound, since Medicare regulations require that recipients of service be homebound. The extent of chronic illness experienced by clients in the sample is supported by the most frequently occurring medical diagnoses and the number and type of client problems in the Physiological domain. Client characteristics noted in this study and the dramatic national aging trend confirm the presence of a significant population of frail elderly persons in our society.

The results of this observational study support the usefulness of the Omaha System in describing and quantifying nursing practice. The system provides a reliable and valid method for gathering large quantities of pertinent client problem, nursing intervention, and client outcome data from differing home health agencies.[24–26] Armed with data from individual clients as well as aggregate data, nurses and administrators can use the Omaha System to guide practice, struc-

ture documentation, and organize a client management information system. Such a method reflects the criteria required for a nursing minimum data set.[25]

The ability of the Omaha System to characterize large aggregate populations across different agencies has great potential for future research. Administrators, practitioners, and policymakers can use aggregate data as a basis for examining the client case mix and relating that mix to specific nursing diagnoses, interventions, and client outcomes. Furthermore, the cost-effectiveness of such relationships can be evaluated, an action that is of increasing interest to policy makers. Changes in clients' knowledge, behavior, and status outcome ratings between admission and dismissal in such a large sample strongly suggests that home health service does make a difference. In fact, this is the largest documented observational study that has examined clients' knowledge, behavior, and status both before and after nursing intervention.

Home health nurses can and do provide multidimensional and comprehensive services that they can describe and quantify. They identify and document client problems specific to the referral reason as well as other problems that they consider priorities. Even when Treatments and Procedures was the prescribed intervention, nurses frequently documented Surveillance; Health Teaching, Guidance, and Counseling; and Case Management interventions as well. Such professional practice suggests that nurses recognized the interrelated, complex nature of client problems, the responsibility to judge whether prescribed services were compatible with the home environment, and the need to provide diverse interventions before problem resolution occurred. Nurses should continue to conduct research that addresses client characteristics and the impact of nursing services. Such research is especially timely because of the increasing demand to measure the outcome effectiveness of health-related services. □

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