

ARAŞTIRMA

**IMPACT OF USING THE OMAHA SYSTEM OF PUBLIC HEALTH
NURSING STUDENTS WORKING AT COMMUNITY HEALTH CARE
CENTERS ON FAMILY HEALTH**

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Alınış Tarihi:08.04.2009
Kabul Tarihi:13.11.2009

ABSTRACT

The aim of this study is to examine the appropriateness of the Omaha Classification System in identifying health service needs and relevant strategies for interventions by public health nursing students working at community health care centers. This study is a descriptive one aiming to determine nursing diagnose. The study sample included families receiving health services at four community health care centers in Malatya, as well as further diagnoses made during visits to their homes. Data were collected from 55 families with a total of 284 participants.. The most frequently identified problems by domain were psychological (44.3%). Interventions were provided most frequently for diagnoses in the physiological domain and included health teaching, guidance, and counseling. The Omaha System provides a standardized classification and evaluation framework for describing clients' problems and nursing interventions. Results also indicate that the Omaha System provides a satisfactory tool for measuring client outcomes.

Keywords: Omaha System, community health service, standardized language

ÖZET

Halk Sağlığı Hemşireliği Öğrencilerinin Sağlık Ocağı Çalışmalarında Omaha Sistemini Kullanmalarının Aile Sağlığına Etkileri

Bu çalışmanın amacı; hemşirelik okulu, halk sağlığı hemşireliği öğrencilerinin sağlık ocağı çalışmalarında müdahaleleri için uygun strateji ve sağlık hizmeti ihtiyaçlarının Omaha Sınıflandırma sistemine göre belirleyerek uygulanmasını değerlendirmektir. Bu çalışma hemşirelik tanılarının belirlenmesi için tanımlayıcı bir çalışma olarak belirlenmiştir. Çalışmanın evreni Malatya merkezindeki 4 sağlık ocağına bağlı ailelerden oluşmuştur, ek olarak ailelere yapılan ev ziyareti sırasında da tanılar belirlenmiştir. Gönüllü 55 aileden toplam 284 aile bireyine ulaşılmıştır. En sıklıkla görülen problem %44.3 fizyolojiktir. Fizyolojik tanılar için en sık uygulanan hemşirelik girişimleri sağlık eğitimi, rehberlik ve danışmanlıktır. Omaha sistemi hastaların sorunlarının ve hemşirelik girişimlerinin tanımlanmasında standart bir sınıflama ve değerlendirme sağlar. Sonuçlar Omaha Sınıflandırma sisteminin hasta sonuçlarını ölçmede de iyi bir araç olduğunu göstermiştir.

Anahtar Kelimeler: Omaha sistemi, toplum sağlığı hizmetleri, standard dil

INTRODUCTION

Case management is a complex concept for which diverse definitions exist. For this study it was defined as a delivery model for providing client-focused care (Erci 2005). The impact of case management programs was reported in the literature varies. Case management was reported to be effective for providing information, influencing health beliefs, helping clients access the healthcare system, reducing risk for specific

populations, and improving health function and health behaviors (Barton et al. 2003).

The use of classification and information systems has enabled nurses to more readily describe clients' needs and nursing contributions to patient care. Various classification systems and vocabularies that provide structure for client's records and clinical information systems have been developed. Such structure is needed to generate reliable, valid, and useful data.

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The research-based Omaha System is one such classification system; it consists of nursing diagnoses/client problems, interventions, and client outcomes. The Omaha System has been used in many settings, including home care, nursing centers, colleges of nursing, and school health programs (Martin and Bowles 2002, Sloan and Delahoussaye 2003). It provides categories to link home health care clients' problems with nursing interventions. In addition to using the Omaha System in this study, intensity of need for care was determined using the Community Health Intensity Rating Scale (Erci 2005).

The Omaha System was selected for this study for several reasons. It is one of the few classifications that offers the opportunity to classify, code, and link client problems, signs and symptoms, nursing interventions, and client outcomes. Although the Omaha System is used

increasingly by clinical specialists and case managers, it has not been evaluated systematically for that expanded use in various countries (Yoo et al. 2004).

The Omaha System was initially developed to classify client data and make the data more manageable in community health practice settings. Now, it is also being used in academic, long-term care, and other settings (Martin and Norris 1996, Martin 2005).

The Omaha System

The Omaha System is a model for organizing, documenting, and evaluating the outcomes of comprehensive, community-based, client-centered care. The Problem Classification Scheme, the Problem Rating Scale for Outcomes, and the Intervention Scheme, the three components of the Omaha System are shown in Table 1 (Martin and Scheet 1992).

Table 1. Structure and Content of the Omaha System

Domains and Problems	
Domain I. Environmental Problems	
01. Income	04. Neighborhood/workplace safety
02. Sanitation	05. Other
03. Residence	
Domain II. Psychosocial Problems	
06. Communication with community resources	12. Emotional stability
07. Social contact	13. Human sexuality
08. Role change	14. Caretaking/parenting
09. Interpersonal relationship	15. Neglected child/adult
10. Spiritual distress	16. Abused child/adult
11. Grief	17. Growth and Development
	18. Other
Domain III. Physiological Problems	
19. Hearing	27. Neuro-musculo-skeletal
20. Vision	28. Respiration
21. Speech and language	29. Circulation
22. Dentition	30. Digestion-hydration
23. Cognition	31. Bowel function
24. Pain	32. Genitourinary function
25. Consciousness	33. Antepartum/postpartum
26. Integument	34. Other
Domain IV. Health-Related Behaviors	
35. Nutrition	40. Family planning
36. Sleep and rest patterns	41. Health care supervision

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|-----------------------|-----------------------------------|
| 37. Physical activity | 42. Prescribed medication regimen |
| 38. Personal hygiene | 43. Technical procedure |
| 40. Substance use | 44. Other |

Intervention Schemes

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|-------------------------------|----------------------|
| I. Health teaching | III. Case management |
| II. Treatments and procedures | IV. Surveillance |

Problem Rating Scale for Outcomes

Knowledge

Ability of the client to remember and interpret information	No knowledge	Minimal knowledge	Basic knowledge	Adequate knowledge	Superior knowledge
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Behavior

Observable responses, actions, or activities of the client fitting the occasion or purpose	Not appropriate behavior	Rarely appropriate behavior	Inconsistently appropriate behavior	Usually appropriate behavior	Consistently appropriate behavior
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Status

Condition of the client in relation to objective and subjective defining characteristics	Extreme signs/symptoms	Severe signs/symptoms	Moderate signs/symptoms	Minimal signs/symptoms	No signs/symptoms
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This study examined the appropriateness of the Omaha Classification System in identifying health service needs and relevant strategies for interventions by public health nursing students in both their public health nursing course and during home visits as part of their public health nursing course.

METHODS

Study Design

This study used a descriptive design to determine the usefulness of nursing diagnoses, based on the Omaha System framework, in explaining utilization of primary health care services in health centers. Erdoğan, who first examined the validity and reliability of the Omaha System in Turkey, has shown that the Turkish modified form of the Omaha system is a valid and reliable model for use in public health nursing and nursing education (Erdoğan and Esin 2006).

Study Sample

The population for this study was families living in Malatya, a city of about 850,000 residents located in eastern of Turkey. The study sample included families receiving health services at four community health care centers in Malatya. In each community health care centers fifteen families were randomly selected. Data were collected from the total of 284 participants of 55 families accepted this study. Predictor variables included nursing diagnoses, medical diagnoses, and client demographics. Nursing diagnoses, clients' problems, and interventions were described according to the Omaha System.

Methods and Procedures

Fifty-five senior nursing students instructed and guided by three researchers provided case management to the families in the study during the second semester of the 2005-2006 academic year. The student group consisted

of 30 female and 25 male students 20 to 25 years of age. Researchers trained those students in a 34-hour course on the application of the Omaha System before the study was initiated. Prior to the field research, students received 18 hours (three weeks, 6 hrs/week) of instruction on theory and application of the Omaha System as part of their community health care curriculum.

The researchers presented a client case load for student selection, and each student assumed the role of the primary case manager for one client family for a 5-month period. Student case managers had weekly or biweekly encounters with their clients. As part of the observation process, a minimum of two home visit sessions per family was made to facilitate home and neighborhood assessments. The researchers made joint visits with the students.

Data Collection

Data for evaluating the impact of case management were obtained from the Omaha System based documentation that described client services provided between February 14 and May 27, 2005. The records included a multiple-choice format that had space for recording individual information. When clients were admitted to the case management program, a comprehensive assessment was completed, identified problems and signs/symptoms were checked, and ratings were recorded for relevant levels of Knowledge, Behavior, and Status. On discharge, Knowledge, Behavior, and Status were re-assessed and ratings were recorded. Demographic data such as age, family members, marital status, education, and number of members in the household were recorded on the intake summary by the students who were responsible for collecting, analyzing, and assessing the data, which were finally assessed by the educators, as part of their course requirements.

Data Analysis

The data were analyzed by using the numbering system specific to the Omaha System and entering the data into a computer statistical program (Statistical Package for the Social Sciences, SPSS Version 10.0). Descriptive statistics, frequencies, percentages, and means were calculated for the demographic variables. Frequencies were computed to identify the most common problems and intervention categories. The mean number of problems and interventions per client were calculated. Means were calculated for the ratings at admission and discharge and compared using paired-samples t-tests (Daniel 1987). The alpha level for significance was $p < 0.05$.

FINDINGS AND DISCUSSION

As in the study mentioned above, the feedback obtained in our study about the survey tools mostly referred to the benefits of the Omaha System. Students indicated that the system guided them in practical experiences and provided motivation, and reported that the use of standardized language enabled them to save time in data collection. The feedback obtained in this study is consistent with the feedback obtained by Erdoğan that “The content of the Omaha System was reconfirmed through feedback from the nursing students at the end of the program” (Erdoğan and Esin 2006).

Data were collected for a total of 284 participants in 55 families. The mean number of persons per family was 5.3. The mean age of clients was 26.3 years; 49.3% of clients were males and 50.7% were females. Education levels of clients were low, with the most frequently reported level (38.0%) being primary school graduates. The majority of the persons (88.73%) had health security, (36.0%) economical situation was bad (Table 2).

Table 2. The Demographic Features of Persons

Demographic Features (n=284)	N	%
Sex		
Males	140	49.3
Females	144	50.7
Education Level		
Illiterate	96	33.8
Primary school	108	38.0
High school	80	28.2
Level of income		
Bad	103	36.0
Medium	114	40.14
Good	67	23.86
Health Security		
Yes	252	88.73
No	32	11.27

Problems Identified in the Omaha System Domains

The mean number of problems identified per client was 1.52, and problems were most frequently identified in the Physiological Domain. An average of 0.67 Physiological Domain problems were identified per client. The most frequently reported problems in this domain included decayed teeth (reported in 60% of families); and expressed pain or discomfort (40% of families).

The second domain with the second highest frequency of identified problems was the Health-Related Behaviors Domain, with an average of 0.38 problems identified per client. Substance use (predominantly smoking) was identified as a problem in 47.3% of client families, inadequate sleep. Also frequently reported were inadequate sleep (36.4%), inadequate mouth and tooth care (36.4%), inadequate knowledge regarding family planning (30.9%), and unbalanced diet (27.3%). Risk factors were generally related to genetics and life style. Hence risk factors, health promotion were not taken into consideration in this study.

An average of 26 problems per client was identified in the Psychosocial Domain. About 23.6% of families had one or more issues regarding communication with individuals at community resources; 18.2% were unfamiliar with the processes for accessing services and 18.2% were unfamiliar with providers' roles. Emotional stability problems were identified in about 20% of client families; these included being nervous and uncomfortable (18.2%) and difficulty managing stress (9.1%).

Caretaking/parenting problems were reported for 20% of families; within this category, the most common problem was inadequate prevention and treatment care (18.2%).

Problems were identified least frequently in the Environmental Domains, with an average number of 0.19 problems per client. Income problems were identified most frequently; 30.9% of families had low or no income and 27.3% had difficulty buying necessities. About 27.3% of the clients had residence problems, including inadequate heating/cooling (32.7%) and crowded living space (29.1%). Neighborhood safety problems were reported for 16.4% of families; and unsafe play area (14.5%) was the most frequent problem in this category.

In the light of the findings of our study, it can be said that problems were identified most frequently in the Psychological Domain, (44.3%), followed by the Health-related Behaviors Domain (25.4%). Bowles (2000), Brooten et al. (2002), and Erci (2005) have also found that problems were most frequent in the Physiological and Health-Related Behaviors Domains. For example, Bowles (2000) determined that of the 25 types of problems experienced by the patients, 46% were in the Physiological Domain and 27% were in the Health-related Behaviors Domain. The most frequently reported problems in the Psychosocial Domain involved communication with community resource providers and limited contact with doctors. The most frequently reported problems in the Environmental Domain were limited income and inadequate housing.

Income problems were identified by 40.0% of client families in this study; 30.9% had low or no income and 27.3% had difficulty buying necessities. These findings are consistent with current economic data for Turkey from the State Statistics Institute, that include a national unemployment rate of 8.95% and an inflation rate of 15.2%.per year.

The percentage of clients in this study with limited knowledge of family planning (30.9%) was similar to that reported for an American sample by Slack and McEwen (1999), who found that 26% of their clients had inappropriate or insufficient of birth control methods, and 10% used them inaccurately or inconsistently. A recent national survey of Turkish families by the Hacettepe University Institute of Population Studies (2004) reported that 58.5% of families do not use modern methods of family planning. The lower rate found in the current study could indicate that family planning problems were underreported by clients who were hesitant to mention such issues in a clinical setting. Family planning is a difficult subject to discuss in Turkey. Problems of sexuality are even more difficult to discuss, and so were not defined in this study.

Interventions According to Domains

A total of 707 interventions were provided to the 284 clients, for an average of 2.49 interventions per client (Table 3). Over half of the interventions were Health Teaching, Guidance, and Counseling (n=359, 51.7%), followed by Case Management (n=173, 24.9%)

and Surveillance (n=264, 23.5%). Over half of all interventions (n=354, 50.9%) were associated with problems in the Physiological Domain. Within this domain, 45.2% of interventions were in Health Teaching, Guidance, and Counseling, 32.2% were in Case Management, and 22.6% were in Surveillance. The Health-related Behaviors Domain ranked second for the total number of interventions (n=175, 25.2%). Within this domain, Health Teaching, Guidance, and Counseling interventions occurred most frequently (54.8%), followed by Surveillance (29.1%) and Case Management (16.0%). The Psychosocial Domain accounted for 12.5% (n=87) of total interventions; over half of these interventions (56.3%) were classed as Health Teaching, Guidance, and Counseling, with the remainder split evenly between Case Management and Surveillance. There were 79 Interventions for problems in the Environmental Domain (11.4% of the total), and the majority of these (64.9%) were in the Health Teaching, Guidance, and Counseling category.

Intervention Scheme analyses showed that 707 interventions were conducted, in a relatively short period of time (5 months). Interventions were provided most frequently for problems in the Physiological Domain. Health Teaching, Guidance, and Counseling was the intervention most frequently documented in this study. In another Turkish study, Erci (2005) also reported that most frequently used intervention category as Health Teaching, Guidance, and Counseling.

Table 3. Number of Interventions by Category and Problem Domain

Domain	Intervention Category								Total	
	I Health Teaching, Guidance, and Counseling		II Treatments Procedures		III Case Management		IV Surveillance			
	Number	Mean ^a	Number	Mean ^a	Number	Mean ^a	Number	Mean ^a	Number	Mean ^a
Environmental	54	0.19	-	-	12	0.04	13	0.04	79	0.27
Psychosocial	49	0.17	-	-	19	0.06	19	0.06	87	0.29
Physiological	160	0.56	12	0.04	114	0.40	80	0.40	366	1.28
Health-related behaviors	96	0.33	-	-	28	0.09	51	0.09	175	0.59
Total number of interventions	359	1.26	12	0.04	173	0.59	163	0.59	707	2.48

^a Mean number of interventions per client (N = 284 clients). More than one intervention per domain was reported.

Outcomes by Ratings Domain

Mean admission and discharge ratings by problem domain are shown in Table 4. Within each of the four domains, the posttest

(discharge) ratings was significantly higher than the pretest (admission) rating for each of the three outcome dimensions (Knowledge,

Behavior, and Status), with $p < .001$ for all comparisons. The mean ratings at admission were near the midpoint of the 5-point scale for each domain and for each dimension. At admission, clients could be described as generally having basic knowledge of the problem with behavior that was inconsistently appropriate and exhibiting moderate signs or symptoms. At discharge, their knowledge had improved to adequate, their behavior was more likely to be usually appropriate, and they were more likely to have minimal signs or symptoms.

In this study, assessment of client needs and prioritization of services were conducted by the students in collaboration with clients. The Problem Rating Scale for Outcomes was used to identify the effects or changes after treatment;

case managers completed both initial and discharge ratings to identify the success of interventions. Paired-samples t-tests indicated that differences between preintervention and postintervention problem classification scale points for Knowledge, Behavior, and Status were statistically significant at $p < 0.005$ in all domains (Table 4). The findings of this study are consistent with those published by other authors. Slack and McEwen (1999) and Erci (2005) who reported that interventions that increased client knowledge, provided an opportunity to express feelings, facilitated development of skills to access the health care system, or assisted in obtaining support were most effective in addressing client problems appropriate.

Table 4. Mean Outcome Ratings Before and After Intervention, by Problem Domain and Dimension

		Mean Outcome Rating		
		Knowledge	Behavior	Status
Environmental Domain	Pretest	2.98±3.61	3.03±3.64	3.05±3.75
	Posttest	3.65±4.35	3.56±4.19	3.34±4.05
	t	-3.190	-3.412	-2.667
	p	<0.001	<0.001	<0.001
Psychosocial Domain	Pretest	2.78±3.17	2.96±2.99	3.74±3.90
	Posttest	4.23±4.56	4.00±4.25	4.41±4.63
	t	-5.475	-4.187	-3.097
	p	<0.001	<0.001	0.003
Physiological Domain	Pretest	7.65±5.25	8.18±5.60	9.90±6.28
	Posttest	11.09±7.36	11.38±7.02	11.96±7.022
	t	-7.348	-7.848	-7.215
	p	<0.001	<0.001	<0.001
Health-related Domain	Pretest	3.85±3.26	3.81±2.93	4.38±3.31
	Posttest	5.76±4.33	5.23±3.75	5.61±4.04
	t	7.170	6.546	-5.957
	p	<0.001	<0.001	<0.001

Note: Paired-samples t-test was used to determine significance of pretest–posttest differences.

CONCLUSIONS

This study suggests that a case management program can have a significant impact on outcomes related to specific client problems. A board range of problems were identified, and interventions required to meet the needs this underserved population focused on

education, case management, and surveillance. The combination of a comprehensive and systematic case management model and standardized terminology (Omaha System) likely contributed to the impact of the program.

The Omaha System could be used to evaluate quality of care and could generate data

for future research. The results of this study suggest that data related to nursing diagnoses are a valuable source of information when examining home health care nursing resource use. The Omaha System provides a standardized classification and evaluation

framework for describing clients' problems and nursing interventions, and increases the quality of home care service. Results also indicate that the Omaha System provides a satisfactory tool for measuring client outcomes.

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