Social Psychiatry 13, 29-35 (1978)

Social Psychiatry

Development of an Alternative, Efficient, Low Cost Mental Health Delivery System in Cali, Colombia Part I: The Auxiliary Nurse

C. E. Climent, M. V. de Arango, R. Plutchik, and C. A. León*

Universidad del Valle, Cali, Colombia

Summary. A new program was developed for the delivery of mental health services in Cali, Colombia utilizing auxiliary nurses who were given special training and supervision. In order to evaluate this program, equivalent groups of 30 patients each, who came to the psychiatric emergency room, were treated over a three-month period by the auxiliary nurses or by the "traditional" service which relies mostly on interns and residents. It was found that the experimental program produced a greater decrease in symptoms as measured by psychiatric ratings and by a self-report scale. A questionnaire completed by family members also revealed a similar difference. No differences were found between the two systems on patients attitudes toward services, on a self-esteem scale, or on a social adjustment scale. The cost of the new program was somewhat less than the traditional one. The results suggest that the new system should continue to be used and evaluated.

In Colombia and in general in the developing world, the following situations characterize the psychiatric care delivery:

1. Psychiatric services are provided exclusively in specialized institutions:
2. Training for physicians, nurses, auxiliary nurses and other health personnel is inadequate:
3. Dispensation of psychotropic drugs by non-psychiatric personnel is haphazard and insufficient and psychiatrists' time is used largely to prescribe drugs.

In Colombia, the above is aggravated by the fact that there are approximately 250 psychiatrist for a population of about 24 million. In the case of psychiatric nurses, the ratio is even lower.

In view of these factors an experiment was designed for the delivery of mental health care in Cali with the following stipulations: (1) low cost; (2) use of auxiliary nurses instead of nurses, physicians or psychiatrists for the treatment of patients; (3) emphasis on family and community contacts; (4) use of psychotropic drugs as the main therapeutic instrument; and (5) evaluation regarding efficiency and cost.

This service to be described here was conceived as part of a broader scheme with the main goal to provide mental health care outside specialized institutions, through adequate use of all health personnel, i.e. a multidisciplinary team, working at health centers (dispensaries) in urban and in rural areas.

* Dr. Climent is Associate Professor, Department of Psychiatry, Universidad del Valle, Cali, Colombia. - Dr. de Arango is Instructor, Department of Psychiatry, Universidad del Valle, Cali, Colombia. - Dr. Plutchik is Director of Program Development and Clinical Research and Associate Professor of Psychiatry (Psychology), Albert Einstein College of Medicine, Bronx, N. Y. - Dr. León is Chairman, Department of Psychiatry, Universidad del Valle, Cali, Colombia. -

0037-7813/78/0013/0029/$01.40

This paper deals specifically with the use of auxiliary nurses for delivering mental health care through the development of an innovative program, referred to throughout the text as "the experimental system".

A description of the training and work of the auxiliaries will be presented as well as a description of the "experimental" and "traditional" systems of mental health care, followed by a description of the formal experiment carried out to compare the "experimental" with the "traditional" system. Finally, some results regarding the comparison of costs will be presented for both systems.

Training of the Auxiliary Nurse: In Colombia, the candidates for Auxiliary Nurses come from the general population of students who have completed grammar school and two years of high school. They apply to the National Training Service (SENA) which is a national institution whose main responsibility is the training of auxiliary personnel in different areas.

In SENA the auxiliary nurse studies for 18 months with a curricula which includes: Fundamentals of Nursing (22 weeks); Medicine and Surgery (16 weeks); Pediatrics (8 weeks); and Psychiatry (8 weeks). After completion of this program, the auxiliary nurse goes to work in hospitals and/or health centers.

Selection of Auxiliary Nurses for the "Experimental System": From the group of 17 auxiliary nurses who were graduated from SENA in one given period, 3 were selected to take part in the experimental system, based on the following criteria: (1) good grades in the SENA program; (2) good performance in clinical work; and (3) they were judged to have a good ability to relate to other people based on a personal interview.

Special training: The three auxiliary nurses selected, received an intensive theoretical and practical course of 185 hours of instruction designed to enable them to work more effectively with psychiatric patients. The curriculum included: Psychiatric interview techniques; the use of psychometric test forms; psychopathology; clinical psychiatry; and treatment guide-lines.

The instructional methods included personal participation such as demonstrations; group discussions, seminars and direct observation of patients, as well as assigned reading material. The course was given by a trained psychiatric nurse under direct supervision of a psychiatrist.

As a result of this training the auxiliary nurses became qualified to obtain a clinical history using questionnaires and psychometric instruments designed for this purpose, to conduct mental status examinations, and to propose a diagnosis using broad diagnostic categories. They could also suggest guidelines for the treatment of patients and were able to follow patients and assess psychiatric status changes.

Description of the Experimental System: The auxiliary nurses were placed in separate offices, located near the Outpatient Clinic at "San Isidro" Psychiatric Hospital in Cali. As soon as a patient had been identified as a candidate for joining the experimental system (see below), one of the three auxiliary nurses was placed in charge of the patient and his relatives.

The patient filled out a patient self-report form with the help of his family for the auxiliary nurse who interviewed the members of the family, the patient, and then filled out an evaluation form designed to assess the patient's psychopathology. The auxiliary nurse then presented the case to the psychiatric nurse or the supervising psychiatrist, suggested a diagnosis and proposed a treatment plan without specification of dosage, if drugs were recommended. After this discussion and ensuing recommendations, the auxiliary nurse handled the patient and his family. There was no direct contact, at any time, between the doctor and the patient or his family.

Home-visits for the patients were planned and carried out within 48 h after the initial interview. The first two visits made by the auxiliary nurses were supervised by the nurse. After these, the supervision was discontinued unless the auxiliary nurse requested a consultation.

Patients and their relatives recognize the fact that the health system (the hospital in this case), has taken the trouble to send a representative to their home. During the visit the auxiliary nurse determines whether the medication is being taken as directed, possible side effects and if treatment guide-lines are being followed.

The home visits assure continuity of treatment by encouraging follow-up visits to the hospital when needed. In summary, the fundamental objectives of the home visits are to stress the links between the patient and the staff, to supervise the prescribed treatment, to clear-up doubts and answer questions regarding the patient's illness, and to assure the completion of the treatment program.

Description of the "Traditional" System: Within the Traditional System, patients enter the hospital at the emergency room or outpatient clinic and are seen by attending physicians who are first or second year residents in psychiatry or interns who are rotating through the psychiatric hospital. Supervised by a staff psychiatrist these physicians interview the patients, take the psychiatric history, conduct a mental status examination, decide on the diagnosis, and prescribe treatment. If the patient is not hospitalized they give him specific recommendations and make an appointment for a return visit to the hospital. No home visits are made and no contact occurs between the patient and a psychiatric or auxiliary nurse.

Examination of hospital records by the authors has shown that 35 percent of the patients who are evaluated by the traditional system return for a second visit; 12 percent come for three visits, and 6 percent return for four or more visits. These figures suggest that a great majority of patients do not return for follow-up visits, despite the fact that almost all patients are asked to return at least once.

Selection Criteria for Inclusion of Patients in the Study: For all cases, five inclusion criteria were established. These were: (1) no previous contact with the hospital; (2) 18-45 years of age; (3) patients living with relatives who could take care of them during the treatment; (4) home residence in Cali at a verifiable address; and (5) no suicidal or homicidal risk. All patients meeting these criteria were seen by the auxiliary nurses. The total number included in the experimental system was 30; these were patients coming to the psychiatric hospital during a period of approximately one month. The following month, 30 patients meeting identical admission criteria were selected from those seen by the physicians using the "Traditional System". Descriptive characteristics of both groups appear in Table 1.

Table 1. Demographic characteristics of the two patient samples

		Traditional group		Experimental group	
		N	%	N	%
Sex:	Males	10	33.3	9	30.0
	Females	20	66.7	21	70.0
Mean Age:	Males	31.2 yrs.		27.0 yrs.	
	Females	33.2 yrs.		27.2 yrs.	
Marital Status:	Single	9	30.0	15	50.0
	Married	8	26.7	7	23.3
	Common Law	4	13.3	4	13.3
	Single Mother	3	10.0	3	10.0
	Separated	4	13.3	1	3.0
	Widowed	2	6.7	0	0.0
Race:	Pure Black	1	3.3	2	6.7
	Mixed White-Indian-Black	26	86.7	19	63.3
	Mixed White-Indian	3	10.0	9	30.0
Religion:	Catholic	28	93.3	30	100.0
	Other	2	6.7	0	0.0
Presently Working:	Yes	10	33.3	7	23.3
	No	20	66.7	23	76.7
Weekly Income:	0 - 250	21	70.0	21	70.0
	251 - 1,000	7	23.3	7	23.3
	Over 1,000	2	6.7	2	6.7
Came to Hospital with:	Relative	20	66.7	19	63.3
	Friend	4	13.3	3	10.0
	Alone	5	16.7	7	23.3
	Other	1	3.3	1	3.3
Mean Number of People Residing with Patient:		5.3		5.1	

Evaluation Procedures: For purposes of comparing the results obtained with the two systems, six different evaluation instruments[1] were used:

1. A Patient Self-Report Form (PASSR): This was developed for routine use with all psychiatric patients seen at the "San Isidro" Psychiatric Hospital in Cali. The patient was asked to answer "Yes" or "No" to a series of 41 questions concerning his present condition. Some sample questions are: "Do you feel nervous, anxious or fearful"; "do you feel sad"; "do you have difficulty concentrating", etc.

A score is obtained which represents the total number of self-reported symptoms. Preliminary results with this instrument have been reported elsewhere (Climent et al., 1975). Normative data have been obtained on this instrument from several different groups differing in degree of psychopathology (Climent and Plutchik, 1975). In both the experimental and the traditional systems, the patient com-

1 Copies on request to the senior author.

pleted the "patient self-report form" at the initial contact and three months later. If the patient had difficulty answering all the questions, family members assisted in the completion of the form.

2. A Psychiatric Rating Form: This form was completed by either the psychiatrist or the auxiliary nurse after an interview and mental status assessment. The interviewer must indicate with "Yes" or "No" the existence of a number of problems or symptoms. Examples are: "disorientation regarding time, space, or person"; "aggressive, impulsive or destructive behavior"; "inappropriate affect", etc.

A score is obtained representing the total number of psychiatric problems which the patient is assessed to have presented at the time of the interview or during a 30 day period prior to the interview.

The patient self-report form and the psychiatric rating form were both completed on all patients at the time of initial contact at the clinic. They were again completed at the end of three months.

3. A Family Questionnaire: Members of the family were asked to complete this questionnaire at the time of a three months follow-up visit which was conducted for both groups in the study. A series of 26 symptoms were listed in very simple terms and the family was asked to answer two questions about each symptom:

(1) "When the patient first went to the hospital, was this a problem?".
(2) "Is this a problem NOW?"

Some sample items are: "lack of appetite"; "hearing voices that others don't hear"; "fighting with family members", etc.

4. The Patient Attitudes Toward Services Form (PATS): This form was designed as an attempt to assess the feelings of the patient toward the services. Some questions asked were: "Did you feel that you could talk about all the things that were on your mind?"; "Did you feel satisfied with the treatment you received in the emergency room?"; "Would you recommend this kind of treatment?"; "If you were to have treatment again would you choose the same one you had or would you change?". An overall score on each scale was obtained.

5. The Self-Esteem Scale (SES): This scale was developed as a short version of the Tennessee Self-Concept Scale. (Fitts, Stewart & Wagner 1969). Although self-esteem can be considered a relatively enduring personality trait it was hoped that such a index might be sensitive to changes in degree of psychopathology. The SES was administered to all patients at the end of the three month study period. Items from the scale include the following: "I get along well with people"; "I feel good", etc. (to be rated as often, sometime, or never).

Weighted overall scores obtained from the SES were used to compare the two patient groups.

6. A Reduced Version of the Katz Adjustment Scale (KAS): The original instrument (Katz Lyerly, 1963), has been widely used as a brief measure of the level of social adjustment in outpatients. It includes such items as: "I visited friends"; "I related well to my relatives"; "I worked"; "I took care of my family financially"; "I participated in social activities", etc.

Sixteen items of the KAS were selected, concerning events occurring during the last two weeks and rated under three categories: "often", "sometimes" or "never".

A second version of the KAS was used to determine the patient's degree of hopefulness. The same 16 items were used, but the patient was asked to respond to the items in terms of his expectations about the future. Both forms of the KAS were completed at the end of three months by all patients in both groups.

Cost-Effectiveness Analysis. A group of economists were asked to render a cost analysis of the two mental health systems being compared in the present study. They developed a detailed plan, carried out the analysis, and plan to report the results in a monograph. Only a part of their findings are presented in this paper.

Results

There were no significant differences between the two groups on age, sex distribution, marital status, income, religion or family size. The distribution of diagnostic labels attributed to patients in the two systems were quite similar; Neurosis and Psychosis were the two main diagnostic categories in both systems.

Regarding the reliability of diagnostic labels, twenty-one of the 30 diagnoses given by the auxiliary nurse are identical to those

Table 2. Scores on the patient symptom self-report form (PASSR) and the psychiatric rating scale (PRS) for patients in the traditional and experimental

	Traditional Group						Experimental Group					
	PASSR			PRS			PASSR			PRS		
Contact	N	X	SD	N	X	SD	N	X	SD	N	X	SD
Initial	30	15.4	5.3	30	2.5	1.6	30	17.8	3.9	30	4.1	2.7
Second	13	12.2	5.5	13	2.5	2.1	30	11.1	3.9	30	3.0	1.6
Third	7	10.6	7.1	7	2.8	2.3	27	8.1	4.0	27	2.3	1.4
Fourth	3	9.0	4.4	3	1.7	0.6	22	10.4	5.2	22	2.4	1.0
Fifth							12	10.5	5.5	12	2.5	1.9
Sixth							8	9.0	6.2	8	2.9	2.2
Seventh							4	6.0	2.7	4	3.0	3.2
Three Months Follow-up	24	11.1	6.6	24	2.9	2.0	23	8.3	5.0	23	2.0	1.5

given by the supervising psychiatrist. Only three of the diagnoses given by the nurses seemed to be clearly in error.

Table 2 shows a summary of the patient's symptoms in the two systems as assessed by the Patient Symptom Self-Report Form (PASSR) and by the Psychiatric Rating Scale (PRS). At the time of the initial visit the patients in the traditional group had a mean PASSR score of 15.4 while those in the experimental system had a mean of 17.8.

Regarding the Psychiatric Rating Scale, the experimental system had a significantly higher symptom rating than the traditional system (4.1 vs 2.5). This implies that patients in the experimental system showed more psychopathology at the time of the initial visit than those in the traditional system.

Also shown in Table 2 are the number of patients seen after the initial visit during the next three month period. Of the 30 patients seen initially in the traditional system, only three were still in contact with the clinic for a fourth visit. In contrast, 22 patients in the experimental system were still in contact with the auxiliary nurses for a fourth visit. This may simply reflect the fact that the auxiliary nurses went to the patients' homes while the psychiatrists expected their patients to come to the Outpatient Clinic.

An effort was made to contact each of the original 60 patients in the two groups to assess his or her symptom status. Twenty-four and 23 patients respectively in each system were contacted and reevaluated. Patients in the traditional group had a mean score of 11.1 on the PASSR and 2.9 symptoms on the PRS, in contrast to the experimental group with means of 8.3 and 2.0. The differences favor the experimental system although they do not reach statistical significance. Since the two systems were not exactly equal on these measures at the start of the experiment, score changes were analysed between the initial assessment, and the final assessment was calculated. The mean change in symptoms for each group was determined and compared by means of a t-test. The t for the PASSR was 2.46 which is significant at the 0.05 level, and the t for the PRS was 2.97, significant at the 0.01 level. This shows that when initial score differences between the two services were controlled the experimental cohort showed a greater decrease in symptoms than did the traditional patient group, according to both patients' self-report and the psychiatric rating.

On the family questionnaire, both groups were rated about 12 by family members during the initial clinic visit. Three months later, there was a significant decrease in both groups, but the experimental patients showed a larger decrease. There were, in fact, significantly fewer problems, as assessed by family members, in the patients treated by

auxiliary nurses than in the patients in the traditional system (Mean number of problems 3.6 vs 6.6).

Preferences for the two systems measured by the Patients Attitudes Toward Services (PATS) also showed that patients in the experimental system felt more positive toward the service than the other group, but this difference did not reach statistical significance.

The Self-Esteem Scale and the Present Social Adjustment or the Future Expected Social Adjustment did not show a trend in favor of either of the two groups. However, it is interesting to note that both groups reported a significant increase in their expected future adjustment.

The kind of psychotropic medication used by patients in the two systems showed no major differences: antidepressants, phenotiazines and minor tranquilizers were the drugs more commonly used in both systems. This probably reflects the fact that drug prescriptions are basically determined by psychiatrists in both systems.

At the end of the study, estimates were made of the average cost of a consultation visit, a home visit and the average daily cost per patient in the two systems. The average cost of a consultation in the traditional system was twice as much as in the experimental system ($ 54 colombian pesos vs $ 26 colombian pesos), largely because of the differences in salaries paid to psychiatrists and psychiatric residents as compared with auxiliary nurses. However, because of the time differential due to home visits made by auxiliary nurses, the cost per patient per day comes out only slightly higher in the traditional system ($ 149 colombian pesos vs $ 113).

Discussion

The results of this study comparing two mental health services indicate that patients treated by specially trained auxiliary nurses show a greater and more rapid improvement of symptoms during a three month period than patients admitted to traditional system. The greater efficacy of the experimental system in reducing psychiatric symptoms has been demonstrated by means of patient self-reports, psychiatrists or nurses ratings, and family ratings. The fact that several measures confirm this observation tends to reinforce the validity of the findings.

It is also important to note that there appear to be no significant differences between the two patient groups as to self-esteem, or present or anticipated future social adjustment.

It is remarkable that practices traditionally regarded as sophisticated such as history taking, diagnosis, prescription of drugs and clinical handling of patients can be performed appropriately by auxiliary nurses. The PATS, Patient Attitudes Toward Services measurements showing no significant differences between the two systems could be interpreted as an acknowledgement on the part of the public of the quality of the services dispensed by auxiliary nurses.

The analysis of costs of the two systems suggests that the experimental system is less expensive to run. Eventually, the differences may be greater than has so far been indicated, since a much larger ratio of auxiliary nurses to supervisors is planned, and the sample is small.

These overall findings suggest that the proposed system is reasonably effective at relatively moderate cost. However, whether it can be used in other settings is an open question at present since that will depend upon cooperation among nurses, psychiatrists and nursing schools. It is possible to argue that the traditional system has worked well and should be changed only by a system that is much better on all measures and not just marginally better. Another objection to changing the traditional system may relate to the fact that it fulfills multiple functions. Not only do the residents and interns perform a service for the hospital and the community, but they all receive supervised clinical training during their tours of duty. This training function of the traditional system cannot be ignored. However, it may be possible to develop a kind of two track system with both residents and auxiliary nurses working in parallel. In other words, instead of seeing these two health service delivery systems in competition, they could be considered as complementary and designed accordingly to serve multiple needs.

Acknowledgements. This work was supported by the Rockefeller Foundation through a Grant given to the Universidad del Valle, Medical School.

The authors wish to thank: Dr. Guillermo Calderon and Dr. Eduardo Lourido Directors of the "San Isidro" Psychiatric Hospital for their collaboration; Mrs. Amparo de Hadad for her dedication in the auxiliary nurses training and her participation in the study; Miss Amanda

Medina, Chief of the Outpatient Service of the "San Isidro" Psychiatric Hospital; Mr. Hugo Velasco, Director, and Mrs. Marta Ligia de Fajardo, Local Superviser Nurse, from SENA (Servicio Nacional de Aprendizaje, Cali, Colombia) for their collaboration through the different periods of development, especially in the facilitation of the auxiliary personnel; the auxiliary personnel for their participation; Mr. Julian Osorio for assistance in tabulation of data.

References

Climent, C.E., Plutchik, R., Estrada, H., Gaviria, L.F., Arévalo, W.A. comparison of Traditional and Symptom-Checklist-Based Histories. Am. J. Psychiatry 132, 4 (1975)

Climent, C.E., Plutchik, R.: The Reliability and Validity of a Patient Symptom Self-Report Scale. Paper presented at the Meeting of the American Psychological Association, September 1975, Chicago Illinois

Fitts, W.H., Stewart, O.C., Wagner, M.D.: Three Studies of Self-concept Change. Nashville Mental Health Center Research Bulletin, No. 6 1969

Katz, M.M., Lyerly, S.B.: Methods of measuring adjustment and social behavior in the community: I. Rationale, Description, Discriminative, Validity, and Scale Development. Psychological Reports 13, 503-535 (1963)

Accepted December 22, 1976

Dr. Carlos E. Climent
Department of Psychiatry
Universidad del Valle
Division de Salud
Apartado Aereo 2188
Cali, Colombia