



# Providing Nursing Care to Patients with Mental Disorders Based on King's Goal Attainment Theory: A Quasi-experimental Study

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## Abstract

**Background:** Failure in treatment plans is very common in patients with mental disorders due to the patient's non-adherence to treatment, which has serious effects on public health and imposes additional costs on the community. Thus, patient-centered methods can be used to empower patients to improve their mental health care.

**Objectives:** This study aimed to examine the effect of King's patient-centered nursing as a goal-attainment process in patients with mental disorders to improve interpersonal, personal, and social systems and adaptive responses in these patients.

**Methods:** A quasi-experimental single-group study with a pre-test/post-test design was conducted on 34 patients with mental disorders. The patients were selected using convenience sampling from patients admitted to psychiatric centers in Tehran in 2022. First, the socio-demographic information questionnaire was completed for all patients. Then, an intervention program designed based on King's goal attainment process was implemented for the patients: (1) nursing assessment (identification of the patient's needs and problems according to the mutual understanding between the patient and the nurse and based on three personal, interpersonal, and social systems using King's standard checklist), (2) planning with the participation of the patient (setting at least 3 goals, prioritizing the goals, and formulating a care plan for each goal), (3) interventions (interactive sessions and presentation of educational content), and (4) evaluation (determining the level of patient's adaptive responses using the same checklist). Data analysis was performed using descriptive and inferential statistics, including the paired samples *t*-test and analysis of covariance (ANCOVA), with SPSS-26 software.

**Results:** Thirty patients with an average age of  $39.23 \pm 6.33$  were examined in this study. The initial assessment showed that the main problem faced by the patients was related to the interpersonal system (communication and interaction), followed by the personal system (self-perception) and social system (control). The post-intervention evaluation showed that the patients scored higher in all three personal, interpersonal, and social systems, and there was a statistically significant difference in their scores for these systems ( $P < 0.001$ ). Moreover, socio-demographic variables had no significant effect on the patients' adaptive responses ( $P > 0.05$ ).

**Conclusions:** In line with King's theory, the present study showed the benefits of patient-centered care protocols, such as interpersonal relationship development, improvement of self-perception, and patients' interactive performance. Ultimately, this theory can lead to improving the patient's health status and the hospital's quality indicators. Therefore, nurses can enhance the effectiveness of nursing care, especially in psychiatric departments, using patient-centered care protocols based on King's theory.

**Keywords:** Nursing Care, Patient-centered Care, Nursing Theory, Mental Disorders

## 1. Background

Mental disorders are the sixth leading cause of disability in the world. The burden of mental disorders is increasing worldwide with significant health, social, human rights, and economic consequences (1). Mental disorders in Iran account for 59.6% of disability cases and 83.5% of all medical leaves (2). Correct control of mental disorders requires empowering the patient and family in

care and adherence to maintaining the patient's health. Accepting such responsibilities requires improving the knowledge and skills of the patient and family members to participate in the treatment (3). Patient-centered methods with an emphasis on empowering patients are getting more attention day by day (4). The World Health Organization (WHO) has identified several key principles for promoting mental health and treating mental

illnesses. These include prevention, isolation, seclusion, increased patient participation, and reducing the length of hospitalization to facilitate the patient's return to their living environment and support their psychological rehabilitation (5). Therefore, recovery in these patients requires interaction and collaboration between the patient, family members, and the treatment team. For this purpose, interaction, transaction, communication, and education have been highlighted as important factors in improving the conditions of patients with mental disorders (6).

Nurses must attract patients' participation and interaction in the care plan with purposeful, evidence-based practice. Using King's nursing process as "goal attainment" is one of the recommended methods in previous studies. Researchers believe that by using this process, nurses will be able to understand what is happening to the patients and their family members. This understanding will enable them to provide better suggestions for adaptation and stress control, as well as assist in care decisions made by patients and their families (7). As a result, using such an approach leads to more effective care and improvement of patients' health (8). In this process, the nurse examines the patient in a principled and very precise way through interviews, observations, and measurements and then sets the goals to resolve the patient's problems according to a mutual agreement with the patient. Then, the nurse and the patient collaborate to achieve the desired goals through mutual interactions (9).

A clinical trial study showed that King's theory was helpful for people referring to an obesity clinic in the United States. The results showed that clients obtained significantly higher scores on individual, interpersonal, and social systems after the intervention compared to the pre-intervention (10). Another study showed the effect of nursing care based on King's theory on primiparous women admitted to a public hospital in the United States. The findings of this one-week pilot study showed that nursing care prepared them for the continuation of labor (care for themselves and the baby). The data from the qualitative phase of the study indicated that setting mutual goals with the nurse, receiving individual and group training through mutual interactions, applying positive coping strategies, and participating in decision-making and care helped in the attainment of the goals (11). Another study measured the effect of applying King's theory on improving cancer patients undergoing chemotherapy, and the results indicated an improvement in the patient's self-efficacy in self-care (12).

A review of the literature suggests that researchers in

most specialized nursing fields have used this theory in nursing practice (13, 14). However, its use in psychiatric nursing has been neglected to a large extent.

## 2. Objectives

This study aimed to examine the effect of King's patient-centered nursing as a goal-attainment process to improve interpersonal, personal, and social systems and adaptive responses in patients with mental disorders.

## 3. Methods

### 3.1. Study Design and Participants

The participants in this quasi-experimental single-group study with a pretest-posttest design were 34 patients with mental disorders who had been admitted to the psychiatric centers of Taleghani and Imam Hossein hospitals in Tehran from April 2022 to February 2023. The patients who met the inclusion criteria to participate in the study were selected using convenience sampling. Before conducting the study, the researchers provided some instructions about the objective of the study and the research procedure. The participants were selected from the patients who were willing to participate in the study and expressed their informed consent.

The study included individuals who met the following criteria: Major depressive disorder, type 2 bipolar disorder (depressive phase), and mixed anxiety-depressive disorder (MADD), as indicated in their medical records, not having psychotic features, mental disabilities including any mental retardation or cognitive impairment, delirium, dementia, and Alzheimer's disease, or any other condition that hindered their ability to participate in the decision-making process, engage in mutual interaction, or adhere to the program. Additionally, participants were required to have proficiency in the Persian dialect.

The exclusion criteria were the participation in non-routine training programs or similar intervention at the time of the study and the inability to continue participating in the study for any reason (need for special care, recurrence of acute disease condition and symptoms, discharge, and death). Participation in all scheduled interactive sessions was mandatory for patients. In the event that patients were unable to attend all sessions, alternative or intensive sessions were arranged for them. Failure to attend these sessions would result in exclusion from the study.

### 3.2. Sample Size Calculation

In this study, the required sample size was determined using G-Power and the study of Nesari et al.. A confidence interval of 95% (an error rate of 5%) and a power of 80% were used. Based on these calculations, a sample size of 24 people was determined for both the pre- and post-test groups. In order to use parametric statistical tests, a sample size of 30 patients before and after was considered normal (15).

### 3.3. Data Collection

In the first meeting with all patients, the researcher completed the researcher-made demographic-clinical information questionnaire by interviewing the patients and reviewing the patients' medical files.

Another checklist was used to measure the needs of the King's interacting system. The checklist has 36 items in the three domains of personal needs (12 items), interpersonal needs (12 items), and social needs (12 items). The items are scored on a 5-point Likert scale from never (0) to always (5). The maximum score obtained from the checklist is 180, with higher scores indicating better adaptive responses and greater achievement of care goals. A lower score in each subsystem indicates the need to receive care and solve the problem in that subsystem. The checklist was developed based on King's three interacting systems, including personal, interpersonal, and social systems, and their subsystems, including self-perception, body image, current health status, time, space, communication, interaction, transaction, stress, stressor, role, control, organization, power, and authority. The checklist has been used in many studies (e.g., Joseph et al.) (16). Hence, its validity and reliability have been confirmed in previous studies. In the current study, the checklist was translated and back-translated, and its content validity was assessed and confirmed through cultural adaptation by a panel of experts, including 15 faculty members from the Faculty of Nursing and Midwifery and several psychiatrists. The CVI and CVR indicators of the checklist were checked. The minimum CVR required for a panel of 15 is 0.49. The items whose CVR was equal to or greater than 0.49 were accepted, and those that did not obtain the minimum CVR were removed from the checklist. The Waltz and Bussell method was used to assess the content validity index. The minimum acceptable CVI value was equal to 0.79, and the items with a CVI of less than 0.79 were removed. The reliability of the checklist was determined using the inter-rater reliability technique, and its correlation coefficient was 0.81.

### 3.4. Intervention

The intervention was conducted in 45-60-minute sessions. On average, 6 sessions were dedicated to each participant in a separate room. Generally, the sessions were concentrated on King's theory and elements such as observing, recognizing, interpreting, verifying, synthesizing, analyzing, and evaluating. The sessions were conducted based on the special characteristics of each patient to appraise the previously determined outcomes. However, the details of sessions for each patient varied. It is worth noting that if there was any problem or question, the patients could call the researcher to receive the necessary instructions.

In the first meeting with all patients, the demographic and clinical questionnaire was completed by the researchers by interviewing the patients and reviewing their medical records. Then, the process of achieving King's goal was implemented in these steps:

(1) Nursing review (identifying the patient's needs and goals, according to the common understanding between the patient and the nurse, based on the concepts of three interacting systems: Self-understanding, mental image, role, current health, etc.): At this stage, a checklist was used to identify the client's problems and needs based on King's three interacting systems.

(2) Planning with patient participation (setting 3 - 5 goals, prioritizing goals and planning meetings, and developing a care plan for each goal): In the planning phase, for the problems of each system, goals and care plans were mutually developed by the nurse and the patient. The set goals were "developing a positive self-perception" (personal system), "increasing good interpersonal communication" (the interpersonal system), and "improving social behavior" (the social system). For each goal, three nursing care programs were developed, plus a general health education program on "stress coping strategies, behavioral skills, and lifestyle modification", which was implemented for the clients for ten consecutive days during the implementation phase.

(3) Implementation: 45-minute interactive sessions were held between the nurse and the patient. Two researchers monitored the correct implementation of the sessions.

(4) Evaluation (assessing the level of adaptive response of the patients): In the evaluation phase, the level of adaptive response of the client was measured to determine the achievement of goals. To this end, the same checklist was completed by the clients. Additionally, in the evaluation phase, the level of the patient's adaptive response was measured to determine the achievement of the goals. Thus, the same checklist was completed through interviews with the clients. The difference in the scores

obtained by the patients in the subsystems, particularly the problematic subsystems that had received few points before the intervention, indicated the level of success in achieving the patient's care goals. Finally, the data were analyzed using descriptive and inferential statistics (Table 1).

### 3.5. Data Analysis

The data were analyzed using descriptive statistics and inferential statistics. Frequency and percentage distributions were computed to assess the demographic variables. Additionally, the paired samples *t*-test was used to compare the pre and post-test results. The analysis of covariance (ANCOVA) was used to diminish the role of confounding variables. All statistical procedures were performed using SPSS-26 software at the 0.05 significance level.

### 3.6. Ethical Considerations

The protocol for this study was approved by the ethics committee of the author's university (approval number: IR.SBMU.PHARMACY.REC.1399.090). After receiving verbal and written instructions, all participants expressed their informed consent to participate in the study. Since the participants were patients who did not have cognitive or psychotic problems, they were able to give informed consent. Patients' identities were not disclosed to ensure the confidentiality of the collected data.

## 4. Results

The participants were 34 patients aged 18 to 65. One patient who could not complete the study due to recurrence of symptoms and 3 patients discharged before completing the intervention were excluded. Finally, 30 patients completed the study. The majority of the patients were male and less than 38 years old. Most of them were unemployed, had diplomas, and had poor economic status. Moreover, most of the patients had type 2 bipolar disorder with a family history of this disease (Table 2).

In the personal system before the intervention, the average level of the patient's adaptive response was  $14.03 \pm 6.13$ . However, after the intervention, the average level of the patient's adaptive response increased to  $30.66 \pm 3.35$ . The paired samples *t*-test showed a significant difference between the average level of the adaptive response of the patients before and after the intervention ( $P < 0.001$ ). Moreover, this difference was found in the subsystems of the personal system (self-perception, body image, development, private space, and waste of time) so that after the intervention, the subsystem of "self-perception"

showed more changes than other subsystems of the personal system, and its value increased by 9.67 units compared to the pre-intervention phase.

The average level of the patient's adaptive response in the interpersonal system before the intervention was  $10.20 \pm 3.80$ . However, after the intervention, the average level of the patient's adaptive response increased to  $25.32 \pm 3.48$ . The paired samples *t*-test showed a significant difference between the average level of the adaptive response of the patients before and after the intervention ( $P < 0.001$ ). Moreover, this difference was found in the subsystems of the interpersonal system (interaction, communication, role, stress, and stressors). So, after the intervention, the "communication" subsystem showed more changes than other subsystems of the interpersonal system, and its value increased by 4.90. Besides, "stress" decreased by 3.23 units compared to the pre-intervention phase.

The average level of the patient's adaptive response in the social system before the intervention was  $15.20 \pm 3.73$ . However, after the intervention, the average level of the patient's adaptive response increased to  $20.94 \pm 2.75$ . The paired samples *t*-test showed a significant difference between the average level of the adaptive response of the patients before and after the intervention ( $P < 0.001$ ). This difference also existed in the subsystems of the social system (except for the power, authority, and decision-making). After the intervention, the "organization" subsystems had more changes than other subsystems of the social system, and their value increased by 2.76 units compared to the pre-intervention phase (Table 3).

Analysis of covariance (ANCOVA) was run to examine the impact of the socio-demographic variables on the patient's adaptive responses after the intervention while controlling the effect of the pre-test. The results showed that in King's three interacting systems, socio-demographic variables had no significant effect on the patient's adaptive responses ( $P > 0.05$ ). In other words, no significant difference was observed between the levels of socio-demographic variables of the patients with mental disorders in the adaptive responses after the intervention (Table 4).

Overall, the data analysis showed that the patients obtained significantly higher scores in the personal, interpersonal, and social systems after the intervention. This means that a high level of adaptive response was observed in patients with mental disorders after the implementation of nursing interventions based on King's model.

**Table 1.** The Content of Sessions Based on King's Goal Attainment Theory

Session	Content
1	Starting reliable communication with the participants and suggesting to take part in the counseling program
2	Identification of problems, mutual goal setting, and verifying by further observation by taking advantage of the nursing process
3	Exploring means to achieve the goals
4	Individual and group transaction
5	Synthesizing phase by combining nursing acts and information provided by the participants
6	Starting the evaluation phase

## 5. Discussion

In this study, an intervention program was conducted based on King's goal-attainment process for patients with mental disorders. In this interactive approach, the main problems in the three personal, interpersonal, and social systems were identified and intervened with the participation of patients. Through the patient-nurse partnership and the alignment of the patient's goals with the nurse, the patient achieved a significant level of adaptive response compared to the pre-intervention phase in the desired subsystems by controlling modifiable risk factors. Therefore, stress was reduced in these patients, and self-perception, interaction, and communication improved. Moreover, patients' control of behavior and body image improved significantly. Therefore, based on the positive effects identified in this study, a care program developed based on King's goal-attainment process is effective in helping these patients. The results showed that people with mental health conditions can be educated, so it is necessary to be aware of their self-care problems by using counseling and education. This can help them prevent the progress of their disease and avoid more complex psychological complications. The results also showed that using a targeted framework to determine the patients' problems helped them understand the aspects of their daily lives and identify the problems related to compliance with their treatment.

In line with these findings, a case study by Balasi et al. (13) using King's goal attainment process in a psychiatric patient showed that the most important factor in the re-hospitalization of a schizophrenic patient is non-compliance with the medication regimen. As a result, a unique care plan was designed and implemented that met the patient's needs to reveal the importance of medication adherence and find out the relationship between disease, medication management, and relapse symptoms. Ultimately, the application of this process benefited the patient and their family, as they were able to control the condition, reduce relapses and hospitalizations, and maintain social functioning (17).

Moreover, in a quasi-experimental study in Brazil, Araujo et al. (14) examined the effectiveness of nursing interventions based on King's goal attainment process in improving the care of diabetic patients and treatment adherence. During three interactive sessions, review and mutual understanding were done. In the next sessions, the care plan was implemented. King's goal attainment process in the intervention group led to a significant sense of responsibility in the patients, support from the treatment team, better adherence to the treatment regimen, and improved quality of life compared to the patients in the control group who received routine care. Other studies have also shown that the nursing process based on King's goal attainment process is feasible in patients with acute coronary syndrome in Iran as a cost-effective and non-invasive nursing intervention and is effective in improving patients' self-efficacy and self-esteem (16).

Patient participation is considered an international standard for the health care system and the legal rights of patients. Therefore, patients should be involved in health management planning decisions, effects, and evaluations. In particular, patient-centered health care should be planned based on patients' opinions, needs, and preferences to allow them to take control of their health (18). However, studies have shown that patients believe that nurses are only responsible for their control, and their role in developing preventive behaviors is relatively passive (19). Hence, patient-centered nursing and interaction through communication are effective for treatment (20). However, implementing care programs that involve effective individualized training for each subject and demonstrating and replicating training is still challenging. Therefore, in this study, the interaction between the patient and the nurse was considered through individual, interpersonal, and social systems to show that nurses are not the only ones responsible for making decisions and implementing care. Caring behaviors are most effective when performed by both patients and nurses. In this study, nurses understood patients better

**Table 2.** Socio-demographic Details of Study Subjects

Variables and Distribution of Variables, n = 30	Frequency (%)
<b>Age, y</b>	
Less than 38	16 (53.3)
More than 38	14 (46.7)
<b>Gender</b>	
Female	12 (40)
Male	18 (60)
<b>Education status</b>	
Under diploma	10 (33.3)
Diploma	15 (50)
Upper diploma	5 (16.7)
<b>Marital status</b>	
Single	12 (40)
Married	13 (43.3)
Divorced	5 (16.7)
<b>Job status</b>	
Employed	3 (10)
Worker	5 (16.7)
Self-employment	2 (6.7)
Workless	11 (36.7)
Housekeeper	5 (16.7)
Student	4 (13.3)
<b>Economic status</b>	
Good	1 (3.3)
Poor	16 (53.3)
Medium	13 (43.3)
<b>Type of disease</b>	
MDD	14 (46.7)
BIID	11 (36.7)
MDD & GAD	5 (16.6)
<b>Family history</b>	
Yes	20 (66.7)
No	10 (33.3)
<b>Duration of disease (y)</b>	
Less than 5	12 (40)
More than 5	18 (60)

Abbreviations: MDD, major depressive disorder; BIID, bipolar II disorder characterized with episodes of depression; MDD & GAD, major depressive disorder & general anxiety disorder.

and answered their questions about challenges. Such interactions allowed patients and nurses to pursue injury prevention behaviors even beyond the study. Park also suggested that understanding patient-centered care and patient participation in injury prevention programs is essential to prevent injury. In their study, patients and nurses set mutual goals, and the patient's wishes and needs were reflected in the program. Checklists were used for injury risk assessment, environmental assessment, patient education, and retraining (21). In the current study, pre- and post-tests were performed using a checklist, and this experimental study showed the effectiveness of this tool.

Another study showed that owing to the use of King's goal attainment process in the care of patients with high blood pressure, the intervention group had a significant reduction in systolic blood pressure compared to the control group after the intervention (91.7% vs. 70.6%) because the nurse's role in this program was focused on guiding the effective methods for each patient. In addition, all established care goals were achievable and available for patients. Therefore, this strategy led to the success of patients in correcting their behavior and managing their blood pressure. Moreover, in the process of self-management, nurses removed obstacles to patients' success and improved patients' self-care by continuing to monitor blood pressure control (22).

In the present study, nurses purposefully interacted with patients with mental disorders to set mutual care goals and discover and agree on ways to achieve them. The mutual goals in this study were set by identifying health problems and changes, understanding problems based on a set of verbal and non-verbal behaviors of patients, and sharing information with them to achieve the set goals. Each patient was studied separately based on the goals agreed upon in the nursing consultation. Araujo et al. (14) defined King's goal attainment as the process of perception and communication between the individual and the environment because each person has unique knowledge, needs, goals, expectations, perceptions, and experiences that exist in his/her interactions. Therefore, effective communication as a necessary principle and a powerful tool in the care process can fill patients' knowledge gaps by creating a common understanding between the patient and the caregiver (23).

Despite the results of the present study and all the proven benefits of applying nursing theories in practice, they are not still applied extensively in either nursing education or practice. Studies have demonstrated that merely knowing nursing theories does not lead to their implementation, but various factors affect the implementation of nursing theories. The imbalance

**Table 3.** Intragroup Comparison of the Adaptive Response of Patients Based on King's Three Interacting Systems Before and After Intervention

Variables	Pre-test (Mean ± SD)	Post-test (Mean ± SD)	Mean Differences	P-Value <sup>a</sup>
<b>Personal system</b>	14.03 ± 6.13	30.66 ± 3.35	-16.63	<0.001
<b>Subsystems of personal system</b>				
Self-perception	1.13 ± 0.27	10.80 ± 1.66	-9.67	<0.001
Body image	1.33 ± 0.31	6.43 ± 1.04	-5.10	<0.001
Development	5.50 ± 2.82	5.80 ± 1.66	0.30	0.197
Space	4.50 ± 1.67	5.43 ± 0.94	0.93	0.127
Time	1.56 ± 0.22	2.20 ± 0.8	0.64	0.195
<b>Interpersonal system</b>	10.20 ± 3.80	25.32 ± 3.48	-15.12	<0.001
<b>Subsystems of interpersonals</b>				
Interaction	1.83 ± 0.24	5.30 ± 0.74	-3.56	<0.001
Communication	1.73 ± 0.25	7.23 ± 0.89	-4.90	<0.001
Role	2.33 ± 1.06	2.80 ± 1.03	0.47	0.154
Stress	2.10 ± 1.91	5.33 ± 1.21	-3.23	<0.001
Stressors	2.20 ± 1.47	4.66 ± 0.95	-2.46	<0.001
<b>Social system</b>	15.20 ± 3.73	20.94 ± 2.75	-5.74	<0.001
<b>Subsystems of social system</b>				
Organization	1.80 ± 0.21	4.56 ± 0.81	-2.76	<0.001
Control	2.06 ± 1.08	4.66 ± 1.09	-2.60	<0.001
Power	2.56 ± 1.04	2.66 ± 0.8	0.10	0.273
Authority	5.16 ± 1.08	5.70 ± 1.31	0.53	0.168
Decision-making	3.06 ± 1.72	3.36 ± 1.15	0.30	0.193

<sup>a</sup> Paired t-test

between the number of nursing staff and patients, the time-consuming implementation of the care process based on theories, not having enough information about the concept of theories and their abstractness, not believing in them, not understanding the care process based on nursing theories in a practical way, even for teachers, lack of support from managers to implement standard care processes and evaluate performance accordingly, and handing over non-nursing matters to nurses are the most important obstacles to the implementation of nursing theories in clinical practice (24, 25). On the other hand, the present study and other studies showed that despite all the barriers to implementing nursing theories, the care process based on King's theory can be implemented with the existing facilities, and what hinders the improvement of the qualitative and quantitative level of care is the failure to apply a theoretical model that fits the facilities of clinical environments (26, 27). Therefore, it is possible to launch a regular nursing care system based on a known model in each specialized department to improve the quality and

quantity of nursing care.

### 5.1. Strength and Limitations

Although this study was conducted with a small number of participants (due to the unavailability of patients with mental disorders qualified to participate in the study and the interactive process of the study), the findings confirmed the improvement of adaptive responses and participation of patients in the care plan. In addition, the participants were patients with different mental disorders admitted to different psychiatric departments, and the findings indicated the differences and similarities between these patients. Future studies can examine care based on the goal attainment process in larger samples of patients with non-mental diseases across different care settings.

### 5.2. Conclusions

The present study showed the benefits of patient-centered care protocols, such as interpersonal relationship development, improvement of

**Table 4.** Association Between Post-test Adaptive Response Score and Socio-demographic Variables

Variables	df	Mean Square	F	P-Value <sup>a</sup>	$\eta^{2b}$
<b>Personal system</b>					
Pre-test	1	43.040	4.308	0.060	0.264
Age	1	1.111	0.111	0.744	0.009
Gender	1	8.589	0.860	0.372	0.067
Education	2	7.513	0.752	0.492	0.111
Married	2	6.462	0.647	0.541	0.097
Job	5	5.999	0.601	0.701	0.200
Income	2	0.318	0.032	0.969	0.005
Disease	2	7.269	0.728	0.503	0.108
Family history	1	5.116	0.512	0.488	0.041
Duration of disease	4	5.983	0.483	0.749	0.216
Error	7	9.990			
<b>Interpersonal system</b>					
Pre-test	1	0.651	0.060	0.811	0.005
Age	1	12.626	1.162	0.302	0.088
Gender	1	9.872	0.909	0.359	0.070
Education	2	0.225	0.021	0.980	0.003
Married	2	6.264	0.577	0.577	0.088
Job	5	11.309	1.041	0.438	0.303
Income	2	6.380	0.587	0.571	0.089
Disease	2	7.923	0.729	0.502	0.108
Family history	1	0.989	0.091	0.768	0.008
Duration of disease	4	3.167	0.214	0.922	0.109
Error	7	10.864			
<b>Social system</b>					
Pre-test	1	5.341	1.163	0.302	0.088
Age	1	3.094	0.674	0.428	0.053
Gender	1	0.001	0.001	0.996	0.000
Education	2	0.407	0.089	0.916	0.015
Married	2	3.851	0.839	0.456	0.123
Job	5	12.306	2.680	0.075	0.528
Income	2	0.262	0.057	0.945	0.009
Disease	2	3.065	0.667	0.531	0.100
Family history	1	0.101	0.022	0.885	0.002
Duration of disease	4	3.446	0.591	0.680	0.253
Error	7	4.593			

<sup>a</sup> Analysis of covariance (ANCOVA)<sup>b</sup>  $\eta$ : Partial Eta Squared



self-perception, and patients' interactive performance. The results can be used in nursing clinical practice to ensure that nurses have a correct understanding of patients' unique problems. Nursing managers also need to formulate care plans so that professional caregivers conduct effective interventions to empower patients in a structured way based on standard protocols. The King's goal attainment process can be used to improve the mental health of patients and, as a result, family and community health because there is communication and mutual interaction between the patient and the caregivers for better adherence to treatment. Patients should be treated with mutual respect to improve their willingness to interact. Communication elements of King's theory, such as active listening, the use of therapeutic communication techniques, and the use of appropriate expressions, can encourage patients to plan for stress management, anger management, mindfulness training, and good relationships, and as a result, regular use of medication, diet, and exercise.

This study highlighted the need for communication and mutual interaction between the patients with mental disorders and medical staff, based on a specific framework, to create a desire in these patients to adhere to the treatment and participate in the care plan and consequently increase the quality of life of these patients and their families. Efforts to institutionalize practical care theories in the routine practice of nursing are needed, especially for the care of chronic patients.

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## Footnotes

**Authors' Contribution:** M.A re-analyzed the clinical and statistical data and revised the manuscript. N.M conceived and designed the evaluation, drafted the manuscript, participated in designing the evaluation, performed parts of the statistical analysis, and helped to draft the manuscript. F.P was responsible for collecting data and interpreting them. All authors read and approved the final manuscript.

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**Data Reproducibility:** The dataset presented in the study is available on request from the corresponding author during submission or after publication.

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**Informed Consent:** The authors declare that they have obtained patient consent.

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