



## Effects of a Three-Stage Intervention Program on the Holistic Health Status of Patients with Drug Addiction after Discharge

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### ABSTRACT

**Background:** Patients with drug addiction experience negative effects, not only regarding their own personal health, including cognitive and psychosocial abilities, but also on the part of their family members and society at large.

**Objectives:** This quasi-experimental research examined the effect of an intervention program for patients, along with their families, on improving the holistic health status of patients after discharge.

**Patients and Methods:** Ninety patients were selected and were paired according to gender, age, education, and type of drug addiction. Simple random assignment was used to allocate each subject in the experimental (N = 45) and control (N = 45) groups. A standardized health assessment questionnaire (SF-36V2), covering eight study areas of holistic health status in terms of physical, mental, and social functioning, was administered. The experimental treatment, or the three-stage intervention program, consisted of an individual counseling program and a relapse prevention training program for patients, together with a family participation program. Descriptive statistics were calculated and chi-square test was used to compare the characteristics of two groups. Also t-test was applied to compare the mean scores of health status.

**Results:** The patients that received treatment in the experimental group had a higher mean score (before mean = 105.76 and after mean = 109.42; P = 0.013) regarding the difference in their holistic health status than those in the control group (before mean = 107.09 and after mean = 106.56; P = 0.713). This result showed that a three-stage intervention program helped improve the patients' holistic health status.

**Conclusions:** It is suggested that for addiction rehabilitation and relapse prevention, health practitioners should not only provide an intervention program to their patients, but they should design a program for families to participate in the treatment as well so that patients can function at a higher level of wellness. Therefore, the family participation program should be reinforced as part of the therapeutic intervention.

**Keywords:** Behavior, Addictive; Substance-Related Disorders; Holistic Health; Recurrence; Thailand

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Dissemination of these findings to a wider target group of practitioners that deal with other drug use disorders to create a more widespread impact is recommended. The policy implications derived as a result of this research may be both passive and active. Passive assistance can be provided to patients and their families in the form of rehabilitation, with a focus on self-implementation. Active assistance should be provided to risk groups with a focus on the prevention of drug use.

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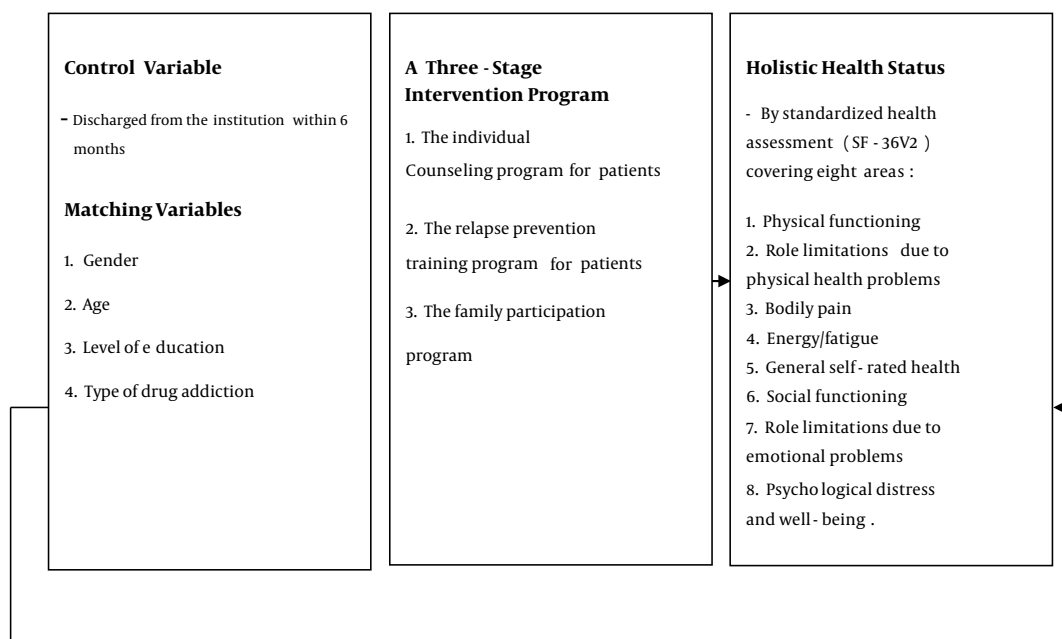
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### 1. Background

As a result of the Thai government’s urgent policy to counter the drugs abuse beginning in 2002, there has been a decrease in the number of major and minor drug crimes. However, in the same year, statistics of the Department of Mental Health (1) revealed an increase in the number of patients with mental illness as a result of methamphetamine use. Presently, drug abuse remains the country’s most critical problem despite the government’s efforts. It is generally known that drug addiction causes damage to both individuals and society. Once addicted users may have acute craving for drugs, resulting in symptoms such as agitation, high temperature and blood pressure, spasms, insomnia, delirium, and isolation. Related research (2) has found that there is a strong relationship between mental and physical health and has suggested that clinical attention to mental health issues could lead to improvements in the perceived physical health among drug users. Other studies (3, 4) have shown that family structure and peer socialization could be viewed as the factors influencing the risk of problematic drug addiction. Drug addiction, therefore, creates negative effects not only on personal health, and on the cognitive and psychosocial abilities of patients, but also on the life of family members and society at large. As the prevalence of drug addiction is an important serious individual, family, and societal problem, it is necessary to adopt holistic treatment for patients with drug addiction, beginning with the comprehensive assessment of their

health status. A holistic evaluation of health includes evaluation of both physical and mental health, as well as the social environment, to ensure that all aspects of well-being are included. Good health means wellness of body, mind, social life, and spirit (5, 6). Thus, in this study, the primary goal was to study the holistic health status of patients with drug addiction in order to prevent them from relapsing after they were discharged. Much of the related research (7-12) reveals that relapse prevention is a critical factor in treating patients with drug addiction. In Thailand, according to an annual report from 2002 to 2008 by the Institute of Drug and Substance Abuse (13), there were almost 10,000 patients seeking detoxification treatment, and approximately twenty-five percent of these patients relapsed. Previous studies (8, 11, 14) have shown that the key factors for addiction rehabilitation and relapse prevention include correct knowledge and understanding about the harm of drugs, the patients’ attitude, sense of self-esteem, and decision-making skills, along with an appropriate method to confront and solve problems, and the understanding of their families in caring for them. Reasonably, it is critical to help those patients by providing them with an individual counseling program, and a relapse prevention training program to improve the psychosocial and inner cognitive environmental factors surrounding their addiction, together with a family-participation program. Therefore, the purpose of this study was to examine the effect of an intervention program for patients, along with their families, on improving the



**Figure 1.** Conceptual Framework of the “Effects of a Three-Stage Intervention Program on the Holistic Health Status of Patients With Drug Addiction After Discharge”

holistic health status of patients after discharge. While there is evidence that separate programs, including an individual counseling program, a relapse prevention training program, and a family participation program, assist patients with drug addiction (7, 8, 10, 14), very little is known about the effects of a combination of the three programs on the holistic health status of patients, especially in Thailand. Further, no evidence has shown that a combination of the three programs was applied beforehand. It was expected that the combination of these programs would be able to affect the holistic health status of the patients. Therefore, a comprehensive assessment of the health status of those patients is crucial. This includes an evaluation of both physical and mental health, as well as the social environment covering eight areas (physical functioning, role limitations due to physical health problems, bodily pain, energy/fatigue, general self-rated health, social functioning, role limitations due to emotional problems, and psychological distress and well-being) (15). In this study, a combination of the programs was applied for patients that were in a follow-up phase or the addiction rehabilitation phase, because this phase opened the door for their families to have the opportunity to become involved in the treatment. However, according to the substantial amount of literature in this area (4, 7, 10, 16-18), the socio demographic variables of patients, such as gender, age, education, and type of drug addiction, might have affected the experiment, including the present one. This research study thus controlled for those variables, as described in *Figure 1*. The hypothesis was as follows: The indicator of the holistic health status of patients will be different between the experimental group after receiving treatment and the control group receiving routine nursing therapeutics—the self-help, occupational, and therapeutic-community groups—in the institutional units throughout the seven weeks of the experiment.

## 2. Objective

The specific objective was to compare the mean scores regarding the differences in the holistic health status of patients with drug addiction between the experimental group after receiving treatment (a three-stage intervention program) and the control group receiving routine nursing therapeutics (the self-help, occupational, and therapeutic-community groups) in the institutional units throughout the seven weeks of the experiment.

## 3. Patients and Methods

The study design was quasi-experimental, conducted from 2006 to 2008. The target population was patients with drug addiction using three types of common agents: depressants, stimulants, and hallucinogens. There was a follow-up for all patients at the out-patient department (OPD) of the institution within six months. Both males and females, with ages ranging from 15 to 60 years, consented to participate in this study. All patients and fami-

lies resided in or around the capital of Thailand.

### 3.1. Sample

Ninety patients, participating in post-treatment at the institution OPD, consented to participate in the study every week for seven weeks continuously. They were selected by matched pairs, with a power analysis of 0.80 and an effect size of 0.40 at  $P < 0.05$  (19, 20). For the blind technique, a simple-random allocation without replacement was used to allocate each subject in the experimental and control groups, thus generating forty-five pairs. They were paired according to gender, interval of age (the “adolescent and early adulthood” interval was from 15 to 25 years, and the adulthood interval ranged from 26 years to 40 years, and 41 years to 60 years), level of education (primary, secondary, and university education), and type of drug addiction (depressants, stimulants, and hallucinogens).

### 3.2. Control Variable

The match-paired method was used to control the variables, as mentioned above. To prevent error that might occur from other sociodemographic factors in the experimental and control groups, the chi-square test for testing internal validity was also applied to ensure the homogeneity of both groups.

### 3.3. Inclusion Criteria

The inclusion criteria were patients that: 1) used at least one of the three types of addictive agents—depressants, stimulants, and hallucinogens; 2) had been discharged from the institution within the same six-month period and were willing to follow-up every week for seven weeks. They did not have their relapsed symptoms assessed by using drug screens for each type of addictive agent at the study units; 3) ranged in age from 15 years to 60 years; and 4) had a similar educational background for both males and females.

### 3.4. Exclusion Criteria

The following exclusion criteria were implemented: 1) patients diagnosed with psychiatric symptoms that were not seeking treatment for a mental health disorder; 2) patients treated more than six months prior to the experiment; and 3) patients that did not consent to participate.

### 3.5. The Experiment

The combined programs were run over a 3-day period each week. The individual counseling program and the relapse prevention training program were conducted on the first and second days, and the family participation program on the third day of each week. One session of the individual counseling program was conducted for 45–60 minutes per individual, while the relapse prevention training program was conducted over approxi-

mately 90–120 minutes per group. Finally the family participation program took 60–90 minutes per group. Ninety participants were divided into 6 groups and each group consisted of 15 participants. Therefore, there were 7–8 pairs in the experimental and control groups per each round. The intervention took 7 weeks per group, for a total of 42 weeks. The control group did not undergo the intervention programs, but received routine nursing therapeutics throughout the seven weeks of the experimental protocol. The Ethics Committee of the Institute of Drug and Substance Abuse approved the protocol. The Committee reviewed the required human subject review form regarding the research protocol and sent written notification, giving permission to the researcher, to proceed with the research project. The subjects were informed of the purpose of the study and their rights in participating in the research project, guaranteeing that anonymity and confidentiality would be protected and maintained. Then they were asked to sign consent forms prior to their participation. A consort flow diagram of this study was as described in Figure 2.

### 3.6. Instrument

The Standardized Health Assessment SF-36 Version 2 (SF-36V2): This research instrument is a copyrighted questionnaire from Quality Metric Incorporated, USA, and is used in more than 45 countries (15). Both Thai and English versions of the instrument were subjected to multiple forward and backward translations to ensure compatibility with Thai society (15). The SF-36V2 was used to gather health-status information for the previous four weeks. Respondents answered questions based on their thoughts and feelings. There are 36 questions covering eight areas (physical functioning, role limitations due to physical health problems, bodily pain, energy/fatigue, general self-rated health, social functioning, role limitations due to emotional problems, and psychological distress and well-being). Answers were collected on scales from 1-5 or 1-3. For the 1-5 scale, the health status levels were: 4.50–5.00; excellent, 3.50–4.49; very good, 2.50–3.49; good, 1.50–2.49; fair, and 1.00–1.49; poor. For the 1-3 scale, the health status levels were: 2.50–3.00; good, 1.50–2.49; fair, and 1.00–1.49; poor.

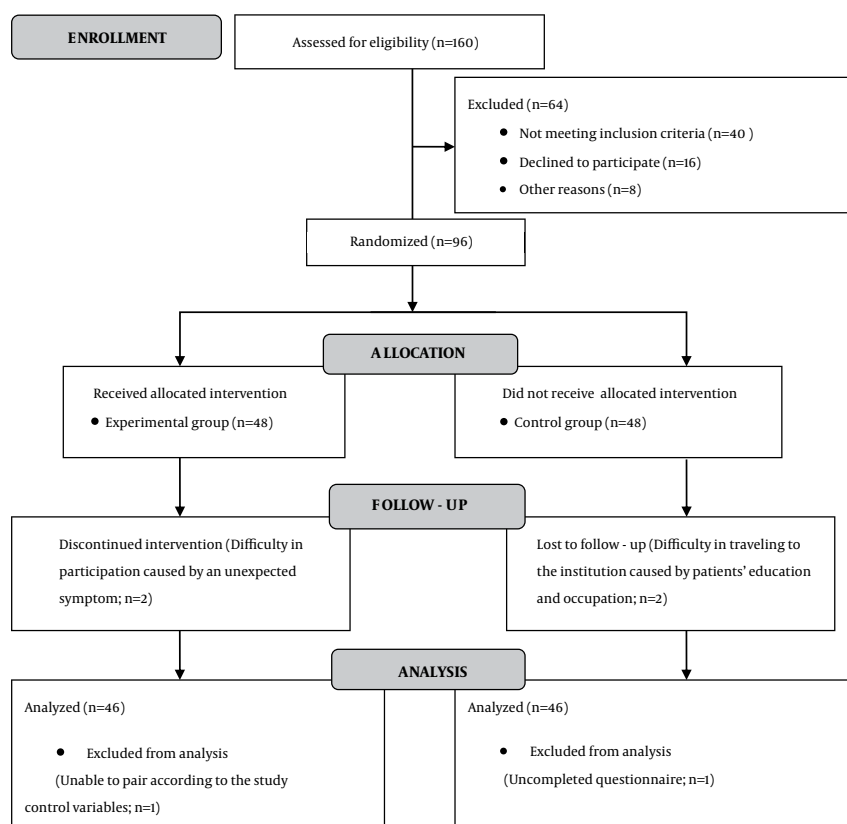


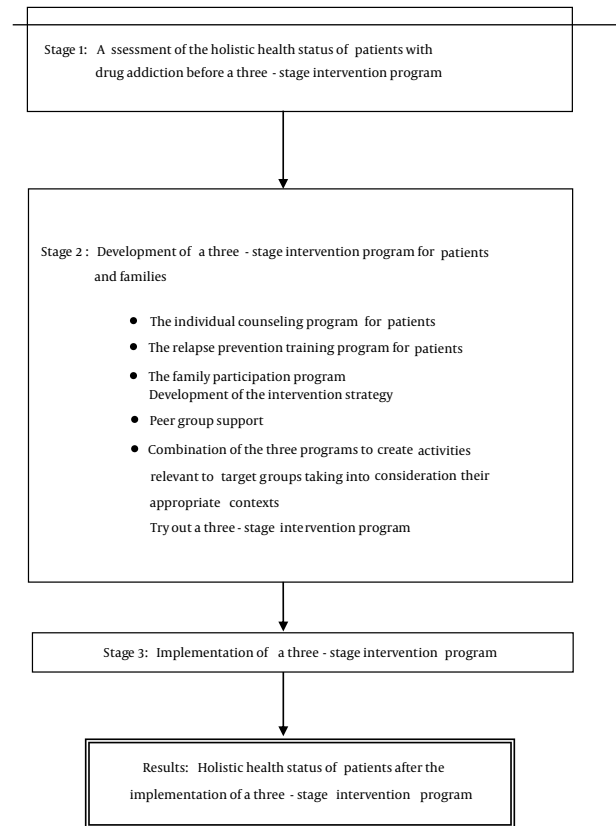
Figure 2. A Consort Flow Diagram of the Study

The intervention programs: A combination of the three programs was applied in this study: 1) the individual coun-

selling program and 2) the relapse prevention training program for patients, together with 3) the family partici-

pation program. The framework for developing the intervention programs for the patients and their families was as described in *Figure 3*: in stage 1 prior to the experiment, the holistic health status of the patients was assessed; in stage two the content of the three programs was used to generate learning materials that were understandable and appropriate for the target groups. All programs were piloted before implementation, and in stage 3 the developed programs and schemes were implemented with the experimental group. Following the implementation phase of the intervention programs, the patients' holistic health status was re-assessed. The details of each program are as follows. The individual counseling program is a program that provides individuals with a mechanism to solve problems systematically through four steps: 1) building relationships, between the counselor and the patient with respect to issues they found to be pertinent; 2) the exploration of details and the background of problems to best identify the root causes of problems to further assess the needs of patients; 3) prioritizing problems according to their urgency, difficulty, and tractability, taking into consideration the potential of patients to solve problems by themselves; and 4) closure of counseling, where patients more fully understand their problems and are able to find solutions and verbalize what they have learned through the counseling process. The relapse prevention training program is aimed at educating and adjusting the attitudes of patients to prevent relapse into drug addiction. It consists of the following steps: 1) generation of interpersonal knowledge, where patients meet each other and grow confident in sharing their thoughts, exploring their feelings, and building friendships; 2) education regarding the physical effects of drugs, including changes in brain chemicals when discontinuing drugs; 3) education regarding the relapse prevention process, including symptoms and stimuli that could cause relapse. In this step, patients also learn how to cope with possible relapse cravings and triggers; 4) tools for managing emotions that could lead to drug addiction, and managing their emotional state during the quitting process, including learning how to deny an invitation to use drugs; 5) tools for enhancing self-esteem; and 6) establishing personal goals to ensure that the patients can plan constructive management of their time and develop an appropriate life management plan. The family participation program aims to educate and provide support to patients' families to help prevent patients from relapsing. The steps of the program are as follows: 1) orientation and experience sharing is designed to prepare families to understand the objectives and scope of the program. Participating families are able to identify family status and understand the family system and lifespan perspectives; 2) mental-health education provides families with tools for stress management, effective confrontation, role development, and communication with other families; 3) education regarding emotional responses and behavior control helps families recognize the emotions of family members and how to express appropriate feelings; and

4) education designed to strengthen patients' awareness of community resources—for example, tools to understand new modes of family-professional relationships, to overcome barriers to cooperation, to access the client's advocacy organizations, and to better access the mental health system, legal resources, and appropriate referrals.



**Figure 3.** Framework for Developing a Three-Stage Intervention Program for Patients and Their Families

### 3.7. Validity and Reliability

Content validity was examined with the participation of five experts in the area of mental health and substance abuse. Agreement of the experts was higher than 80% (21). In this study, an item analysis of the SF-36V2 was conducted through a contrast-group approach to ensure that this questionnaire was suitable when applied to Thai participants. Each item of the questionnaire was administered to both high- and low-scoring groups, and the differences in scores were examined. A t-value greater than or equal to 2.00 was revealed for each item, and the discriminant function ability of the questionnaire was supported (21, 22). Reliability testing revealed a Cronbach's alpha coefficient of 0.753 for the total score of the SF-36V2, with subscale scores ranging from 0.721 to 0.782 at  $P < 0.05$ . Data were collected after the approval of ethical procedures by the Ethics Committee of the institution.

### 3.8. Data Analysis

1) The sociodemographic data were summarized using percentile, means, and standard deviations (SDs), and the characteristics of the experimental and control groups were compared using a chi-square test at  $P < 0.05$ ; 2) the holistic health status of patients according to the SF-36V2 before and after the treatment were summarized by means, and SDs, and were compared by t-test at  $P < 0.05$ ; and 3) the mean scores regarding the differences in the holistic health status of patients between the experimental and control groups were compared by t-test at  $P < 0.05$ .

## 4. Results

Descriptive analyses of the sociodemographic data after the comparison of the socio demographic factors, ho-

mogeneity was found in both groups. Sixty-two percent of the patients in the experimental and control groups were females and 68.9 % of them were addicted to stimulants or methamphetamines. Approximately 58% of both groups were between 26 and 40 years of age, and 53% had finished secondary school.

### 4.1. Comparative Analyses

Table 1 shows means and SDs of the holistic health status of patients including P values between the experimental and control groups before and after the treatment. When comparing the mean scores on the differences in holistic health status, it was found that there was a statistically significant difference at  $P < 0.05$ . The mean score regarding the difference in the holistic health status of the patients in the experimental group was higher than that in the control group, as shown in Table 2.

**Table 1.** The Mean Scores on the Differences, Means, and Standard Deviations of the Holistic Health Status (SF-36V2) of Patients With Drug Addiction in the Control (N = 45) and Experimental Groups (n = 45)

Holistic Health Status	Before Treatment, Mean ± SD	After Treatment, Mean ± SD	95% Confidence Interval of the Difference	t value	P value
<b>Groups</b>					
<b>Control</b>	107.09 ± 9.636	106.56 ± 10.319	-2.371, 3.438	0.370	0.713
<b>Experiment</b>	105.76 ± 8.558	109.42 ± 8.527	-6.519, -0.814	-2.591	0.013

**Table 2.** Comparison of the Mean Scores Regarding the Differences in the Holistic Health Status (SF-36V2) of Patients With Drug Addiction Between the Experimental (n = 45) and Control Groups (n = 45)

Variable	Experimental Group		Control Group		d <sup>f</sup>	t <sup>e</sup>
	D <sub>1</sub> <sup>a</sup>	SD <sub>D1</sub> <sup>b</sup>	D <sub>2</sub> <sup>c</sup>	SD <sub>D2</sub> <sup>d</sup>		
<b>SF-36V2</b>	3.667	9.494	0.533	9.669	88	2.079 <sup>f</sup>

<sup>a</sup> D<sub>1</sub>, Mean score regarding the difference in the experimental group (O<sub>2E</sub>-O<sub>1E</sub>)

<sup>b</sup> SD<sub>D1</sub>, Standard deviation of D<sub>1</sub>

<sup>c</sup> D<sub>2</sub>, Mean score regarding the difference in the control group (O<sub>2C</sub>-O<sub>1C</sub>)

<sup>d</sup> SD<sub>D2</sub>, Standard deviation of D<sub>2</sub>

<sup>e</sup> Comparison of the mean scores regarding the differences in the holistic health status of patients between D<sub>1</sub> and D<sub>2</sub>

<sup>f</sup> P < 0.05

## 5. Discussion

The presence of a majority female population was significant while in previous addiction studies typically had more male participants (1, 13, 23). However, the percentage of patients with stimulant addiction matched previous studies (7, 10, 16, 24). It was also found that 75% of the patients that successfully quit would relapse into drug addiction during the first two or three months after treatment (7). There is a tendency toward relapse when patients return to live in the same environment where there is prevalent drug addiction. Patients may lack motivation and there may be few drug suppression efforts in the community, while access to illicit drugs may be easy. Patients often socialize with the same friends with whom

they share experiences in using drugs (14). Concerning the holistic health status of the patients when comparing the experimental and control groups, it was found that the patients in the experimental group perceived a greater improvement in their holistic health status than those in the control group. This suggests that the combined programs help patients with drug addiction, resulting in improving their physical and mental health and well-being. This confirms the results of previous studies (7, 8, 10, 12) as far back as 2006, which show that the key factors related to patients' cognitive inner strengths are knowledge regarding the harm of substances, their attitude and decision-making skills, with appropriate methods to confront and solve problems, their skills in refusing drugs, their management of emotion and stress, and

their sense of self-esteem. In addition, family participation has been shown to be very important. The concept of family participation has been confirmed by other studies (8, 14, 25-27), which found that families play a role in the context of monitoring patients prone to substance relapse and in reducing peer influence. The family can perceive the patients' need for security, love, respect, and recognition after treatment. Therefore, it is very important to help patients by providing them with individual counseling, training them in relapse prevention skills, and encouraging family participation in their treatment in order to improve their holistic health status. This study focused on providing a combined intervention program to patients to determine if that approach improved their holistic health status. The three elements of the combined program were individual counseling, relapse prevention training, and family participation. Dissemination of these findings to a wider target group of practitioners that deal with other drug use disorders to create a more widespread impact is recommended. National policies should also focus on encouraging families to participate in caring for the patients so that they can function with a higher level of wellness.

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### Authors' Contribution

The author developed the original idea and contributed, in a significance manner, to the research design, analysis and interpretation of data, drafting, revising, and approving this manuscript critically with no conflict of interest.

### Financial Disclosure

The author declares that she has no competing interests.

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