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Factors Influencing Health Status of Caregivers of Postoperative Neurosurgical Patients

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Abstract

Background: Becoming caregivers effects individuals' lives and health especially when people have to adapt to the role of caregivers of severely ill patients, such as neurosurgical patients.

Objective: This research was a descriptive study, based on transition theory, aiming to analyze the factors influencing the health status of caregivers of postoperative neurosurgical patients.

Materials and Methods: The participants were 110 primary caregivers taking care of postoperative neurosurgical patients at home, at least 3 weeks after hospital discharge. Data collection was conducted at the Neurosurgical Out-Patient Department, Bhumibol Adulyadej Hospital, from January to February of 2002, using the Demographic Questionnaire, Extended Glasgow Outcome Scale, Short Sense of Competence Questionnaire, Personal Resource Questionnaire 85 Part 2, Denyes & Filday Dependent-Care Agency Instrument, Appraisal of Caregiving Scale, and Laffrey Health Conception Scale. To analyze the data, descriptive statistics, Pearson's Product Moment Correlation, and Stepwise Multiple Regression were employed.

Results: The majority of caregivers were female (80%) whose ages ranged from 41 to 60 years (Mean = 47.23, SD = 18.08). More than half of the caregivers were married (73.6%), and 29.1 per cent of them were housewives or housekeepers. Nearly half of the participants had sufficient income with saving money (47.3%), while 32.7 % of them had sufficient income without saving money and 20% of them had insufficient income with debts. The most common relationship of caregiver to the patient was that of spouse (42.7%), and most caregivers had secondary caregivers to help them take care of their patients (72.7%). About thirty-six percents of primary caregivers had some disease or illness before becoming caregivers, while 62.7 per cent developed physical symptoms, diseases or illness during caregiving. The results indicated that capability of caregiver and social support had a positive relationship to the health status of caregivers ($p < 0.001$), but stress and sense of competence, had a negative relationship to the health status of caregivers ($p < 0.001$ and 0.05). The Stepwise Multiple Regression Analysis showed that capability of caregiver, together with stress, could explain the variation of health status ofcaregivers of postoperative neurosurgical patients by 27.7 per cent

Conclusion: Nurses and other health care providers should encourage promoting health status of caregivers by establishing a training program that focuses on the capability of caregivers and knowledge and skills training in regard to caregiving, providing a stress reduction program, and supplementing the supportive resources in caregiving to reduce the burden of caregivers, which will lead caregivers to good health.

Neurosurgical operations are the treatment of preference for patients who suffered various neurological diseases including trauma. These procedures provide a greater chance for neurosurgical patients to survive.[1] Statistical information concerning public health in Thailand were lacking of details in specific group of neurosurgical patients' data.[2] The existing data regarding neurological patients and other neurosurgical conditions included brain tumor, intracranial hemorrhage, vascular malformation, head injury, and traumatic brain injury. Research conducted in other counties with neurosurgical patients undergoing surgery had also shown that patients suffered from severe brain damage had a greater chance of survival

due to advance technology in relation to diagnosis, medical, surgical procedures and postoperative cares.[3-5]

Nevertheless, neurosurgical procedures could not immediately correct pathological lesions in the brain that cause patients disabilities or problems with immobilization, speech, swallowing, excretion control, and communication difficulties. In other words, a neurosurgical operation may save the patients' life, but disability and morbidity after the surgery are still be largely present.

Although, some patients can resume their previous physical functions but this takes time. Thus, the patients have to depend on family caregivers to undertake the burden of providing continuous care to the dependent patients. These caregives usually are family members, relatives, or spouses, but sometimes they can be colleagues or close friends of the patients. Furthermore, caregiving is a complex, difficult, and potentially unfamiliar task for many caregivers; thus, it could lead to the caregivers' feelings of exhaustion and irritation resulting from insufficient rest, irregular eating habits, and exposure with emotional disturbance of the patients as well as the rehabilitative problems at home. As a result, these caregivers might experience the feelings of despair, hopelessness, and worry. In short, persons who have to undergo the transition to being caregivers of neurosurgical patients at home have to cope with various problems which could lead not only to adverse effects on the caregivers' health but also to other indirect psychological, emotional, and social problems. Moreover, the caregivers have to adjust themselves to perform the continuous caregiving role, family roles, and social roles as well as to the work roles as they have to provide care to the patients at home. Caregivers are very important in the rehabilitation process of the patients who have been discharged from the hospital. They can help promote the patients' well-being to live in society. However, these caregivers should have good health themselves so that they can maintain the quality of care provided to the patients. Little is known about the factors influencing the maintenance of health status of caregivers during the transition period to a caregiver's role. Therefore, the present study aimed to investigate the health status of caregivers of postoperative neurosurgical patients. In particular, it aimed to explore influencing factors which affect the transition to caregivers of neurosurgical patients after being discharged from the hospital leading to quality and effective caregiving. It was expected that the findings of the present study could provide a guideline for nureses to understand various factors affecting the health status of caregivers of postoperative neurosurgical patients so as to be able to improve the quality of nursing care to this group of patients.

Materials and Methods

The participants were 110 caregivers, 80 per cent (88/110) of them were female whose ages ranged from 15 to 76 years old, with the mean age of 44.61 years (SD = 13.08). About three-quarters (81/110 or 73.6%) were married; 72.7 per cent (80/110) had secondary caregivers to help them taking care of their patients. The largest group of subjects were housewives and completed elementary education. In addition, nearly half of the subjects (47.3%) had sufficient income with saving money, 42.7 per cent were spouses of the patients. The majority of primary caregivers (67/110 or 60.9%) spend 24 hours taking care of the patients; 62.7 per cent (69/110) had physical symptoms diseases before they started caregiving.

The present study used purposive sampling to select the subjects based on the aforementioned criteria from January to February 2002. One hundred and ten participants were recruited to take part in the study from. A questionnaire survey was performed at the Neurosurgical Out-patient Department, Bhumibol Adulyadej Hospital, where recent past statistics recorded 2,950 and 2,803 neurosurgical patients came to follow-up in 2000 and 2001, respectively.

The data were collected by employing the following instruments.

1. The demographic characteristics questionnaire of caregivers and their patients included sex, age, educational level, marital status, occupation, financial status, period of illness, health promblems, and co-mobidity of patients, numbers of hours spent taking care of the patients each day, period of time spent taking care of the patients after discharge, relationship with the patient, number of secondary caregivers, underlying disease and other physical symptoms or illness that may occur while providing care to the patients.

2. The Extended Glasgow Outcome Scale (GOSE) was developed from GOS by Wilson and colleagues[6]; it was translated into Thai by Thosingha O[7] and two bilingual linguists were also asked to check the accuracy of the language. Cronbach's alpha coefficient for the scale was 0.98 and the kappa value

for this scale was 0.74.

3. The Short Sense of Compentence Questionnaire (SSCQ) was developed from SCQ by Vernooij-Dassen and colleagues[7] which consisted of 7 items; it was translated into Thai by Thosingha O and others[8] and backtranslated by two bilingual linguists. Cronbach's alpha coefficient for this questionnaire was 0.72.

4. The Personal Resource Questionnaire 85 part 2 (PRQ 85 part 2) was adapted from PRQ 82 by Weinert[9] which consisted of 25 items; it was translated into Thai by Sinsuksai N.[10] Cronbach's alpha coefficient for this quest-ionnaire was 0.84.

5. The Denyes & Filday Dependent-Care Agency Instrument was developed by Denyes[11] and subsequently translated into Thai by Somnarin O[12] which consisted of 31 items. Cronbach's alpha coefficient for this questionnaire was 0.82.

6. The Appraisal of Caregiving Scale was adapted from Oberst[13]; it was translated into Thai by Gasemgitvatana S[14] which consisted of 22 items divided in to two categories. Cronbach's alpha coefficient for this questionnaire was 0.93.

7. The Laffrey Health Conception Scale (LHCS) was developed from "Health Conception Scale" by Laffrey[15] which consisted of 28 items; it was translated into Thai and tested its language by two bilingual linguists. Cronbach's alpha coefficient for this questionnaire was 0.89.

Analysis

The data collected were analyzed using the SPSS/PC (Statistical Package for the Social Personal Computer Plus) that included descriptive statistics, Pearson's Product Moment Correlation, and Stepwise Multiple Regression.

Results

The majority of caregivers were female (88/110 or 80%), whose age ranged from 41 to 60 years (Mean = 47.23, SD = 18.08). More than half of the caregivers were married (80/110 or 73%) and 32/110 (29.1%) of them were housewives or housekeepers. Nearly half of the participants had sufficient income with saving money (52/110 or 47.7%), while 36/110 (32.4%) of them had sufficient income without saving money, and 22/110 (19.8%) of them had insufficient income with debts. Forty seven caregivers were patients' spouses (42.7%) and most of them (80/110 or 72%) had

Table 1 Demographic characteristics of the caregivers of Neurosurgical patients (n = 110)

Characteristics	Number	Percent
Sex		
Male	22	20.0
Female	88	80.0
Age (years)		
< 20	4	3.6
21-40	40	36.4
41-60	51	46.4
> 60	15	13.6
Marital Stauts		
Single	22	20.0
Couple	81	73.6
Widowed, divorced, separated	7	6.4
Educational Level		
No educational	5	4.5
Elementary level	43	39.1
High school	24	21.8
Diploma	20	18.2
Bachelor degree of higher	18	16.4
Occupation		
Government officer	7	6.4
Trader	27	24.5
Employee	16	14.5
Unemployed	11	10.0
Pensionary	8	7.3
House wife	32	29.1
Others	9	8.2
Caregivers' financial status		
Insufficient income with debts	22	20.0
sufficient income without saving money	36	32.7
Sufficient income with saving money	52	47.3
Hour of caregiving (per day)		
6-9	4	3.6
10-13	31	28.2
14-17	3	2.7
18-20	5	4.6
24	67	60.9
Relation of caregiver		
Spouse	47	42.7
Bother/sister	7	6.4
Son/daughter	26	23.6
Father/mother	21	19.1
Others	9	8.2
Secondary caregivers		
No secondary caregiver	30	27.3
Had secondary caregivers	80	72.7
Underlying diseases (UD)		
No problems	71	64.5
Had UD before caregiving	39	35.5
- Hypertension	8	20.5
- Hypertension c DM or Rheumatoid	3	7.7
- Knee, Back, Neck pain, or Ostalgia	6	15.4
- Allergy	5	12.8
- DM	3	7.7
- High cholesterol	3	7.7
- Headache oMigraine	3	7.7
- Others	8	20.5
Caregivers' illness during caregiving		
No problems	41	37.3
Had physical symtoms or illness*	69	62.7
- Backache	18	26.1
- Knee pain	17	24.6
- Ostalgia or neck, shoulder pain	11	15.9
- Headache c itching	17	24.6
- Heartburn or abdominal pain	7	10.1
- Fatigue	6	8.7
- High cholesterol	3	4.3
- Insomnia	2	2.9
- Others	7	10.1

**Each Participant reported more than one physical symptom or illness*

Table 2 Demographic characteristics of the postoperative Neurosurgical patients (n = 110)

Characteristics	Number	Percent
Sex		
Male	88	80.0
Female	22	20.0
Age (years)		
< 20	7	6.4
21-40	38	34.5
41-60	36	32.7
> 60	29	26.4
Marital Stauts		
Single	29	26.4
Couple	67	60.9
Widowed, divorced, separated	14	12.7
Educational Level		
No educational	2	1.8
Elementary level	36	32.7
High school	35	31.8
Diploma	24	21.8
Bachelor degree of higher	13	11.8
Family Suatus		
Head of family	68	61.8
Member of family	42	38.2
Occupation		
Government officer	20	18.2
Employee	12	10.9
Unemployed	45	40.9
Pensionary	16	14.5
Others	17	15.5
Average income per month (Baht)		
No income	40	36.4
< 5,000	19	17.3
5,001-10,000	23	20.9
> 10,000	28	25.4

secondary caregivers to help them taking care of their patients. It was also found that 39/110 (35.5%) of them had some disease or illness before becoming caregivers, while 69/110 (62.7%) of them developed physical symptoms, diseases or illness after they became the caregivers of postoperative neurosurgical patients (Table 1).

The majority of the patient participants (88/110 or 80%) were male. The average age of the participants were 47.23 years, and 67/110 (60.9%) were married. In addition, 45/110 (40.9%) of them were unemployed, and 40/110 (36.4%) did not have personal income even though more than half of them (68/110 or 61.8%) were the head of the family. Therefore, they were heavily dependent for resources and incomes of their families and the caregivers (Table 2).

The mean score of the LHCS was 132.45 (range: 79-161) indicating relatively high health status of caregivers. The scores in health status scores of functional or role performance health perception, adaptive health perception, and eudaimonistic health perception were all greater than the clinical health perception (Table 3).

Significantly, capability of caregiver and social support, had positive relationship to status at $p < 0.001$ ($r = 0.464$ and 0.335), while stress and sense of competence had negative the health ofcaregivers at $p < 0.05$ level ($r = -0.367$ and -0.205), but severity of illness and caregiver's illness during caregiving did not

Table 3 Level of health status in caregivers of postoperative Neurosurgical patients (n = 110)

Variables	Possible Range	Actural Range	Mean	SD
Health status	28 - 168	79 - 161	132.45	16.92
Clinical health perception	7 - 42	7 - 42	24.05	7.85
Function / Role performance	7 - 42	18 - 42	37.44	4.45
Adaptive health perception	7 - 42	20 - 42	35.91	4.53
Eudaimonistic health perception	7 - 42	19 - 42	34.84	5.45

Table 4 Correlation between Severity of illness, Sense of Competence, Capability of caregiver, Social Support, Stress, Caregiver's illness during caregiving and Health Status (n = 110)

Variables	1	2	3	4	5	6	7
1. Sence of Competence	1.000						
2. Severity of illness	.246**	1.000					
3. Capability of caregiver	-.155	.073	1.000				
4. Social support	-.098	.031	.450***	1.000			
5. Stress	.521***	.281**	-.276**	-.333***	1.000		
6. Caregiver's illness durign caregiving	.014	.229**	.008	-.080	.091	1.000	
7. Health status	-.205*	.014	.464***	.335***	-.367***	-.014	1.000

*$P < 0.05$, **$P < 0.01$, ***$P < 0.001$

Table 5 Capability of caregiver and stress regressed on health status of caregivers of postoperative neurosurgical patients (n = 110)

	R	R2	R2 change	F change	B	Beta
Model 1						
Capability of caregiver	.464	.216 (21.6%)	.216 (21.6%)	29.685	.238	.464
Model 2						
Capability of caregiver and Stress	.527	.277 (27.7%)	.062 (6.2%)	9.139	.201 -.294	.393 -.258

correlate with caregivers' health status (Table 4).

The result obtained from the stepwise multiple regression analysis showed that capability of caregiver and stress predicted the variation of health status of caregivers of postoperative neurosurgical patients by 27.7 per cent (Table 5).

Discussion

The findings that 88 caregivers subjects, or 80 per cent, were female, and 73.6 per cent of them were married were in congruence with previous studies that most of caregivers were female.[14,16,17] Almost half of the caregivers or 46.4 per cent, were between 41 and 60 years old. Since they themselves were middle-aged, they began to face with various health problems, espectically female caregivers who experienced the menopausal symptoms which could affect them physically, psychologically, and emotionally due to the hormonal changes. As such, it was found that 69/110 (62.7%) of these caregivers had developed health problems including backache and knee pain which could be resulted from having to lift or move their patients. In this study, the caregivers' average hours spent on taking care of patients per day was 19.49 hours. Likewise, previous studied of Kenchaiwong F[18] reported that the average hours per day caregivers spent on caregiving was 19.70 hours. Devoting almost all of their time and energy taking care of patients can greatly affect their own health. As a results the score of clinical health perception was lower than other dimensions. However, it is worth noting that clinical health perception does not mean the total health condition of a person, as a person's holistic health condition is also dynamically related to the person's environment as well as how well a person adapt to their physical problems.[19] These cargivers could very well perform their role even though they had to take up the role of a caregiver in addition to the other roles they already had, so that the score of role performance/ functional health perception were highest than those for all other dimensions. Although 39/1110 (35.5%) of the caregivers who took part in the present study had some form of health problems prior to becoming caregivers, and 69/110 (62.7%) experienced health problems during caregiving, they still showed relatively second highest scores on adaptive health perception (Mean = 35.91, SD = 4.53). The caregivers were able to adapt and performed their caregiver roles relatively well despite that the responsibilities of the caregivers roles may become an added burden. The score of eudaemonistic health perception (Mean = 34.84, SD = 54.5) came in the third rank indicated that providing care for neurosurgical patients might have affected happiness in the caregivers' life.

Our study revealed that, capability of caregiver, stress, and social support were significantly related to caregivers' health status ($p < 0.001$), while sense of competence was less significantly related to caregivers' health status ($p < 0.05$). The Stepwise Multiple Regression Analysis indicated that capability of caregiver could explain 21.6 per cent of the variance when stress was added (Table 5). As such, it could be said that the most important factor that would enable the patients to undergo transition was the caregivers' capability in taking care of the patients. If the caregivers are lacking of capability, they may have to spend more time taking care of the patients, and thus, have less time to take care of themselves. They would eventually have worsened health status.

This findings are congruent with the previous studies[20,21] which found that an increase in knowledge and skill development is necessary for family caregivers of postoperative neurosurgical patients during their transitional period from hospital to home. This notion is also supported by Schumacher and Meleis[22] who asserted that planning for knowledge and development necessary during the transition would enable individuals to go through the transition period sucessfully.

Stess is another important factor that could explain

caregivers' health status by 6.2 per cent (Table 5). In general, if caregivers feel that their caregiving responsibility is stressful, their health could be adversely affected – both mentally and physically. Likewise the study of Lezak[23] pointed out that cargivers tend to experience stress at a high level, as well as depression and loneliness, all of which resulted from the heavy burden of taking care of the patients.

Conclusion

The results of this study evidently supported that capability regarding caregiving and stress in caregiving were the important factors effecting the health status of caregivers of postoperative neu-rosurgical patients.

Caregivers' training that focus on knowledge and skill in regard to caregiving and stress reduction programs for caregivers are important in fulfilling the role of caregivers responsibilities.

Social support was positively correlated with caregivers' health status. Nurses should therefore facilitate caregivers in gaining access to all available resources necessary for the caregivers' as well as the patients' health.

During each follow-up treatment, caregivers' health problems or complaints should be carefully assessed and managed. Nurses who work at the follow-up department should pay more attention on caregivers' health. Counselling program for caregivers is worthy of achieving balance between caregivers' self-care and providing care for the patients.

References

1. Hickey JV. The clinical practice of neurological and neurosurgical nursing (4th ed). Philadelphia: JB Lippincott; 1997.
2. Suphlon O, et al. Public health statistics AD. 2000. Ministry of Public Health: Bareau of health policy and planning office of the permanent secretary Ministry of Public Health, 2000.
3. Adams JM, Graham DI, Jennett B. The structura basis of moderate disability after traumatic brain damage. J Neur, Neur and Psych 2001; 71: 521-4.
4. Poca MA, et al. Shunt related changes in somatostatin, neuropeptide Y, and corticotropin releasing factor concentrations in patients with normal pressure hydrocephalus. J Neuro, Neurosurgery, Psychiatry, 2001; 70: 298-304.
5. Rowland LP. Trauma. In: Rowland LP, (ed). Merritt's textbook of neurology (6th ed). Baltimore: Williums & Wilkins; 1995: 417-40.
6. Wilson JTL, Pettigrew LEL, Teasdale GM. Structured interviews for the Glasgow Outcome Scale and the Extended Glasgow Outcome Scale: Guideline for their use. J Neuro 1998; 15(8): 573-85.
7. Vernooij-Dassen M, Felling AJA, Brummelkamp E, Dauzenberg MGH. Van Den Bos GAM, Grol R. Assessment of caregiver's competence in dealing with the burden of caregiving for a dementia patients: A Short Sense of Competence Questionnaire (SSCQ) suitable for clinical practice. J Am Geri Soc 1999; 47: 256-62.
8. Thosingha O, The effects of transition care on facilitating severely burn survivors from hospital to home. Dissertation for the degree of Doctor of Nursing Science, Faculty of Graduate Studies, Mahidol University, 2000.
9. Weinert C. A social support measures. PRQ 85. Nursing Research 1987; 36: 273-7.
10. Sinsuksai N. The relative contributions of maternal demographics, social support, stress and maternal self efficacy to home environment of 6-12 months old infants of Thai mothers. Dissertation for the degree of Doctor of Philosophy, The University of Texas at Austin, USA, 2000.
11. Denyes MJ. Measurement of self-care agency in adolescents: Abstract. Nursing Research, 1982; 31(1): 63.
12. Somnarin O. The relationship between anxiety, basic conditioning factors and dependent care agency of caregiving of the AIDS patients. Dissertation for the degree of Master of Nursing Science, Faculty of Graduate Studies, Mahidol University, Thailand, 1995.
13. Oberst DE. Nursing: concept of practice. 5th ed. St Louis: Mosby Year Book; 1995.
14. Gasemgitvatana S. A casual model of caregiver role stress in wives of chronically ill patients. Dissertation for the degree of doctor of nurisng sicence, Faculty of Graduate Studies, Mahidol University, 1993.
15. Laffrey SC. Development of a health conception scale. Research in Nursing and Helaht, 1986; 9(2): 107-13.
16. McCarty EF. Caring for a parent with Alzeimers disease: Process of daughter caregiver stress. J Advanced Nursing 1996; 23: 792-803.
17. Walker AJ, Pratt CC, Eddy L. Informal caregiving to aging family members: a critical review. Family Relations 1995; 44: 402-11.
18. Kenchaiwong F. Relationships among patient depandency social support and burden of stroke patient caregivers Dissertation for the degree of master of nursing science, Graduate school, Chiang Mai University, 1996.
19. Smith JA. The idea of health: A philosophical inquiry. Advances in Nursing Science, 1981; 4: 43-50.
20. Potaya S. Model for family caregivers' participation in caring for traumatic brain injuried patients. Dissertation for the degree of doctor of nursing science, Faculty of Graduate Studies, Mahidol University, 2001.
21. Suwanno J. Family caregiver's capabilities in caring for hospitalized stroke patients befroe discharge. Dissertation for the degree of doctor of nursing science, Faculty of Graduate Studies, Mahidol University, 1997.
22. Schumacher KL, Meleis AI. Transitions: A central cencept in nursing. IMAGE: J Nursing Scholarship, 1994; 26(2): 119-27.
23. LeZak MD. Living with the characterologically altered brain injuried patient. J Clin Psychi 1978; 39: 592-8.