

**ปัจจัยทำนายพฤติกรรมการดูแล
ของผู้ดูแลเด็กวัยแรกเกิด-5 ปี หลังผ่าตัดหัวใจแบบเปิด***
**Predicting factors of care behaviors among caregivers
of newborns up to 5 years old after open heart surgery**

บทความวิจัย

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บทคัดย่อ

การวิจัยเชิงพรรณานี้ มีวัตถุประสงค์เพื่อศึกษาอำนาจทำนายของตัวแปร ความรู้รายได้ของครอบครัว ความเครียดของผู้ดูแล ความเข้มแข็งของครอบครัวและคุณภาพการดูแลของบุคลากรทางการแพทย์ ต่อพฤติกรรมการดูแลเด็กโรคหัวใจแต่กำเนิดหลังได้รับการผ่าตัดหัวใจแบบเปิดของผู้ดูแล กลุ่มตัวอย่างที่ได้รับการเลือกอย่างเฉพาะเจาะจงเป็นผู้ดูแลเด็กจำนวน 133 ราย ที่พาเด็กมาติดตามอาการที่แผนกผู้ป่วยนอกของโรงพยาบาล 3 แห่ง เก็บข้อมูลโดยใช้เครื่องมือ 6 อย่าง ประกอบด้วยแบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามพฤติกรรมของผู้ดูแล แบบวัดความรู้ในการดูแลเด็กโรคหัวใจแต่กำเนิดที่ได้รับการผ่าตัดหัวใจแบบเปิด แบบวัดความเครียดของผู้ดูแล แบบสอบถามความเข้มแข็งของครอบครัว และแบบสอบถามคุณภาพการดูแลของบุคลากรทางการแพทย์ตามการรับรู้ของผู้ดูแล วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนา สถิติสหสัมพันธ์ถดถอยพหุคูณแบบเป็นขั้นตอน

ผลการวิจัย พบว่า ปัจจัยที่สามารถทำนายพฤติกรรมการดูแลของผู้ดูแลคือ ความรู้ ($\beta = .313, t = 3.738$) และความเข้มแข็งของครอบครัว ($\beta = .263, t = 3.141$) โดยร่วมกันอธิบายความแปรปรวนของพฤติกรรมการดูแลเด็กโรคหัวใจแต่กำเนิดหลังได้รับการผ่าตัดหัวใจแบบเปิดได้ร้อยละ 23.4% ($F_{2,130} = 19.873, p < .001$)

คำสำคัญ: พฤติกรรมการดูแล, ผู้ดูแล, การผ่าตัดหัวใจแบบเปิด, เด็กหลังผ่าตัดหัวใจแบบเปิด

Abstract

The predictive correlation research design aimed to determine the predictive power of knowledge, family income, caregiver’s stress, family hardiness and quality of professional care on care behaviors among caregivers of newborns up to 5 years old after open heart surgery. The purposive sample consisted of 133 caregivers, who took children after open heart surgery to visit outpatient department of 3 hospitals. Six instruments were used for data collection consisting of questionnaire on personal information, caregiver care behavior, caregiver knowledge of care for children with congenital heart disease after open heart surgery, caregiver’s stress scale, family hardiness index, and the caregiver’s perception of the quality of professional care scale. Descriptive statistics and stepwise multiple regression were utilized in data analysis.

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The results showed that predictors of caregivers' care behaviors were knowledge ($\beta = .313, t = 3.738$) and family hardiness ($\beta = .263, t = 3.141$), which accounted for 23.4% of the variance in care behaviors among caregivers of newborns up to 5 years old after open heart surgery ($F_{2, 130} = 19.873, p < .001$).

keywords: care behavior, caregiver, open heart surgery, children after open heart surgery

Introduction

Congenital heart disease is a leading cause of death in the first five years of life in children who has loss of diagnosis and treatment¹. The cardiac surgery is an effective treatment to deal with the defect of anatomy and physiology. However, even if the heart is totally corrected, the heart function is not fully effective. Therefore, during heart gradually improved, children need closely and properly care to prevent complications in physical, developmental and psychosocial aspects²⁻⁶. When they go back home, caregivers have an important role and should have proper care behaviors.

Based on previous studies, caregivers of children after open heart surgery could not perform proper care behaviors for their children^{7,8}. Moreover, it was found that care behaviors among caregivers of children with congenital heart disease and other chronic illness related to several factors including knowledge, family income, caregiver's stress, family hardiness, and perception of quality of professional care⁹⁻¹⁴. It was not found the any study that determined the predictive power of those factors on care behaviors among caregivers of newborns up to 5 years old after open heart surgery. This study, therefore, aimed to investigate the predictive power of those factors on care behavior among caregivers of newborns up to 5 years old after open heart surgery. The results of this study would be further utilized for promoting care behaviors among caregivers of newborns up to 5 years old after open heart surgery.

Theoretical framework

This study was conducted based on Orem's self-care theory¹⁵ which believed that human was an active agent who needed to perform self-care. Self-care was a kind of goal-oriented activity that an individual wished to perform deliberately. The aimed of self-care were to maintain life, health and well-being. An individual would perform self-care to meet three types of self-care requisites; namely, universal self-care requisites, developmental self-care requisites, and health deviation self-care requisites. Newborns up to 5 years old with congenital heart disease after the open heart surgery required meeting all of three self-care requisites. However, since children were in the early developmental stage, they were unable to perform self-care. As a result, they require assistance from dependent care agent or caregivers in order to fulfill self-care requisites of children.

According to Orem's theory, caregivers' care behaviors depended on caregivers' capabilities. Caregivers' capabilities consisted of three components: 1) capabilities for child care operations which were essential capabilities in examining oneself, environment, and child care adjustment requirement, deciding on what to act, and implementing activities in response to self-care requisites of children, 2) power components which are mediators that connect between perception and deliberate action for child care of caregivers, and 3) foundational capabilities

and dispositions which are the ability to know and act, as well as the qualifications or factor affecting how to search for the goal of the action. Foundation capabilities are basis of power components and capabilities for child care operations. In addition, Orem stated that basic conditioning factors were the specific factors which also influenced care behaviors¹⁵.

In this study, knowledge was conceptualized as the power components which helped to improve care behaviors of caregivers provided for children since knowledge would enable caregivers to understand and learn about the disease and treatment, and be able to consider the correct and proper activities to be applied to children efficiently and continuously. Therefore, knowledge would also contribute to proper care behaviors of caregivers. Moreover, the family income, caregiver's stress, family hardness, and quality of professional care for children with congenital heart disease after the open heart surgery were conceptualized as basic conditioning factors.

Material and Method

The samples were recruited from caregivers of newborns up to 5 years old after open heart surgery within 1 year follow up. Caregivers were excluded if they were not able to participate in the study completely, or their children had genetic disorder, or any other chronic illnesses which needed more special care. Data were collected from outpatient department of three tertiary hospitals.

The sample size was calculated using G*power program¹⁶. The effect size based on previous research⁹ was 0.11. Power analysis was 0.80 and significant level was 0.05. To prevent data

collection dropped out, the size of sample was increased by 10%. Therefore, the sample size of 133 caregivers was required.

Six instruments were used in this study consisting of: (1) The questionnaire on general information of caregivers and children (2) The questionnaire of caregiver care behavior for children with congenital heart disease after open heart surgery which was developed by Chatchada⁷ based on the Orem's self-care Theory. Content validity was approved by experts⁷. In this study, the Cronbach's alpha coefficient was 0.74. (3) The questionnaire of caregiver knowledge of care for children with congenital heart disease after open heart surgery which was developed by Chatchada⁷. Content validity was approved by experts⁷. In this study, the Kuder-Richardson 21 (KR-21) was tested and the reliability coefficient was 0.74. (4) Parental Stress Scale was developed by Berry & Jones¹⁷. For original version, content validity was approved, the Cronbach's alpha coefficient was 0.83, and correlation of test-retest reliability was 0.81. Thai version was translated by researcher. In current study, the Cronbach's alpha coefficient was 0.81. (5) Family hardness index was developed by McCubbin et al¹⁸ and translated to Thai version with the back translation process by Santati¹⁴. In this study, the Cronbach's alpha coefficient was 0.85. (6) The caregiver's perception of the quality of professional care scale (CPQPCS) was developed by Santati¹⁴ and modified from the Oncology Patients' Perception of the Quality of Nursing Care Scale (OPPNQCS) which was developed by Radwin et al¹⁹. Content validity was reviewed by experts. In this study, the Cronbach's alpha coefficient was 0.93.

Protection of human right subjects

This study was approved by the Institutional Review Board (IRB) at the Faculty of Medicine, Ramathibodi Hospital, Mahidol University, the Faculty of Medicine, Khonkaen University, and Maharat Nakhonratchasima Hospital. The participation of the subjects was voluntary. The data of subjects would be concealed to keep their personal information private. Research findings were presented as overall results without identification of the subjects.

Data collection

After receiving the permission from the Institutional Review Board (IRB) and permission to collect data from each setting. The researcher illustrated the purpose, process of data collection of this study to the physicians, the head nurses, and staff nurses of the out-patient department of each hospital for their permission and facilitation.

Then the medical recorded of all patients were checked to search for potential subjects and the researcher recruited the participants who met the inclusion criteria. During waiting to see the doctor, the researcher explained the purposes, research processes, benefits, and risks of this study to the participants before making decision to participate in this study. The researcher gave confidentiality to the subjects that they could refuse to participate in the study at any time they wanted. If they were willing to take part in this study, they were requested to sign the informed consent form. Afterthat, the researcher explained to the subjects how to complete the questionnaires and allowed the subjects to ask any questions if they did not understand or wanted more clarifications.

Data analysis

Frequency, percentage, range, mean and standard deviation were used to describe the demographic data of caregivers and their children. Step-wise multiple regression analysis was used to test the predictive power of variables.

Results

One hundred thirty-three caregivers of newborns up to 5 years old after open heart surgery were recruited in this study. The subjects' age ranged between 15 and 58 years old with the mean age of 34.53 years (SD=9.01). The majority of subjects, 86.50%, had direct relation with children. As regard to the direct relation, it was found that 78.20% were mother. Approximately four-fifth of them completed lower than bachelor degree with the average years of education equaled to 9.65 years, SD= 3.81 (range=4-18 years). Moreover, 60.20 % of subjects had monthly family income lower than 15000 baht with median of family income equaled to 15,000 baht/month (range=1500-70,000, mean=17,733.08, SD=13,230.41). As for the demographic characteristics of the newborns up to 5 years old after open heart surgery, 72.90 % of children were over 3 years old. Approximately three-fourth of them, 77.40% was diagnosed with acyanotic heart disease. Slightly more than half (62.40%) were undergone surgery when they were over 3 years old. The children who came for follow up for the treatments, 72.18% remained taking the medication. The score range of all studied factors: knowledge, caregiver's stress, family hardiness, quality of professional care, and care behaviors were shown in table 1.

Table 1 Range, mean and standard deviation of variables (n = 133)

Variables	Possible Range	Actual Range	Mean	SD
Knowledge	0 - 22	1 - 18	12.17	3.11
Caregiver's stress	18 - 90	21 - 66	38.71	9.29
Family hardiness	0 - 60	21 - 60	45.30	7.97
Quality of professional care	18 - 108	47 - 108	91.18	13.13
Care behaviors	0 - 100	59.42 - 96.30	84.64	5.89
Universal dependent-care	0 - 100	59.26 - 100	87.69	6.06
Developmental dependent-care	0 - 100	33.33 - 100	88.15	11.22
Health deviation dependent-care	0 - 100	33.33 - 100	79.05	11.28

Care behaviors of caregivers to take care of newborns up to 5 year old after open heart surgery were good (mean=84.64, SD=5.89). Considering each aspect, it was found that caring behaviors of caregivers in respect of universal self-care requisites and developmental self-care requisites were at a good level (mean=87.69, SD=6.06; mean=88.15, SD=11.22, respectively). In terms of health deviation self-care requisites, care behaviors was at moderate level, the lowest scores when compared to other

aspects (mean=79.05, SD=11.28).

As for multiple regression analysis, predictors of caregivers' care behaviors were knowledge ($\beta = .313$, $t = 3.738$) and family hardiness ($\beta = .263$, $t = 3.141$). Knowledge and family hardiness accounted for 23.4% of the variance in caregivers' care behaviors ($F_{2,130} = 19.873$, $p < .001$). In contrast, family income, caregiver's stress, and quality of professional care were found incapable to predict caregivers' care behaviors as shown in Table 2.

Table 2. Stepwise multiple regression analysis of independent variables on care behaviors among caregivers (n=133)

Predictor Variables	B	SE	β	t
Knowledge	.593	.159	.313	3.738**
Family Hardiness	.195	.062	.263	3.141*

Constant = 68.582 Adjusted $R^2 = .222$, over all $F_{(2,130)} = 19.873$, * $p < .01$, $p^{**} < .001$

Discussion

The results of this study revealed that caregivers performed care behaviors at a good level, possibly because approximately three-quarter of

children were diagnosed as acyanotic congenital heart disease. In acyanotic heart diseases, postoperative complications were less likely severe than cyanotic congenital heart disease, and child cares at home were

not much that complicated. In addition the children who entered to this study were not new patients. The caregivers provided continuous care to them since the initial diagnosis, so the caregivers had some experience to take care of them. It was actually that after operation the heart could not immediately work with fully effective function which resulted in some cares as pre operative care were performed; for example, fluid restriction, high sodium food controlled, endocarditis and congestive heart failure prevention, and ect. In addition, all caregivers were given care information before discharged and every follow up visits with the physicians. As a result, caregivers could take care of their children very well. This result was relevant to the study of Kanjana Phromreungrit²⁰ which was found that maternal care behaviors for children with congenital heart disease were quite accurate. Likewise, the study of Chayapa Vantum¹ revealed that overall score of care behaviors among caregivers of children after heart surgery were at a good level.

Regarding predictors, care behaviors, caregivers' knowledge and family hardiness could jointly predicted care behaviors of caregivers. However, family incomes, caregiver's stress, and quality of professional care could not predict care behaviors of caregivers. This finding was consistent with the previous studies that caregivers who possessed good knowledge would perform good care behaviors as well^{9,10}. Based on Orem's theory, knowledge was one of power component that could powerfully contribute to good care behaviors of caregivers. Since knowledge would enable caregivers to assess and contemplate children and their environment, as well as internal and external circumstances into consid-

eration, and to know which behaviors were significant, efficient, and appropriate with children's illness in order to perform the effective care behavior for children. Therefore, caregivers who had a high level of knowledge could decide to choose the suitable care behaviors to achieve children's health and well-being. In addition, this study found that family hardiness was the next variable which could predict care behaviors of caregivers with a statistical significance. It indicated that any family with a high level of family hardiness would perform good care behaviors. The results of this study were in accordance with the previous studies^{14,21-23}. Family hardiness was internal strength and stability of the family in controlling and handling various situations or problems. Therefore, it was enabled the family to control, manage, and solve possible problems arising from child care. Any strong family would have self-adaptation so as to be able to provide care for children appropriately. Therefore, family hardiness could contribute to good care behaviors of caregivers.

Recommendation for nursing practice

The result of this study showed that caregivers' knowledge and family hardiness could predict on care behaviors. Therefore, nurses should design intervention program to enhance knowledge and promote family hardiness for caregivers of newborns up to 5 years old after open heart surgery to perform appropriate care behaviors, resulting in children's health and well-being.

Recommendation for Future Research

For further study, research should be investigated which exemplify as follow:

1. Other factors, such as family income, caregiver's stress, family hardiness, and quality of professional care, affecting care behaviors among caregivers of newborns up to 5 years old after open heart surgery which were not included into equation, future studies should include these factors.

2. Care behaviors for newborns up to 5 years old were different in each age group. Further study should determine the predictive power of knowledge, family income, parental stress, family hardiness and quality of professional care on care behaviors among caregivers in specific age group, such as newborns to 1 year old, or 2-3 years old, or 4-5 years old.

3. The experimental research to study the effect of knowledge and family hardiness on care behaviors among caregivers of newborns up to 5 years old after open heart surgery should be further studied.

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