

Investigation on Behavioral Change in Hospitalized School-Age Young Patients and Influencing Factors

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Abstract

Background: Hospitalization has been a source of anxiety for young school-age patients. In addition to taking care of young patients' physical problems, the primary caregivers will also encounter young patients' emotional reactions. Understanding the anxiety status in young patients and primary caregivers to provide relevant measures is an important issue.

Aim: To investigate the hospitalization anxiety levels in school-age children aged 6 to 12 years and primary caregivers, as well as their influencing factors.

Subject and Methods: Cross-sectional research with a questionnaire survey was used as the methodology for the study. The enrollment period was between December 1, 2021, and August 31, 2022. For hospitalized young patients aged 6 to 12 years in the orthopedic ward of a medical center, after the consent was acquired at admission for 24 hours, the primary caregiver was assigned to complete the questionnaire.

Result: The Post-Hospitalization Behavior Questionnaire (PHBQ) was used to investigate 39 young patients. The overall mean behavior scores was 51.5 ± 15.7 points, there were statistically significant differences for sex in general anxiety behavior scores, separation anxiety behavior scores, sleep anxiety behavior scores, apathy/withdrawal behavior scores, and total behavior scores, with higher post-hospitalization behavior scores in male young patients compared to that in females. In the Trait Anxiety Inventory for a family member, the mean score was 39 ± 12.6 points, with mild anxiety at 50%, moderate anxiety at 38.9%, and severe anxiety at 11.1%. Primary caregivers' level of anxiety reached statistical significance in economic status, with an increased level of anxiety for those who were in lower economic positions ($p=0.01$).

Conclusion: The PHBQ for young patients can be used as an assessment for their levels of anxiety, the levels of negative behaviors in boys are higher than that in girls. There were 50% of primary caregivers experienced moderate to severe anxiety, and the sources of anxiety were correlated with the economic status of the family.

Recommendations:

- (1) Hospital anxiety in children is often overlooked and can be found by observing behavior. The PHBQ is an easy-to-use assessment tool and is recommended for routine use in hospitalized children to assess behavioral changes after pediatric surgery/hospitalization to help parents and medical staff evaluate children's anxiety.
- (2) Hospitals can construct amusement equipment, and toys or arrange game activities to reduce the anxiety of hospitalization of school-age children.

Keywords: hospitalization, children anxiety, family anxiety

1. Introduction

1.1 Young Patients' Hospitalization Behavioral Reactions

According to Erikson's development theory, school age (6 to 12 years old) is an important stage to develop "industry vs. inferiority". They value the perspectives of their own body and themselves from peers' points of

view, considering hospitalization as a punishment, fearing the body being hurt and losing their power of control. For young patients, hospitalization is a source of anxiety. Anxiety is the basic human reaction in responding to illness and unknown status, which is a normal reaction to hospitalization and surgery (Al-Sagarat, Al-Oran, Obeidat, Hamlan, & Moxham, 2017). The sources of anxiety during hospitalization in school-age young patients involve separation anxiety, body image change, body comfort change, and loss of control capability. Physiological changes include increased heart rate, elevated blood pressure, increased body temperature, and sweating; psychological responses include agitation, weeping, nervousness, fear, strong verbal objection, withdrawal in interpersonal relations, and clamming up (Al-Sagarat et al., 2017). In the study of 28 young patients aged 6 to 11 years from Silva (Silva et al., 2017), 75% of hospitalized young patients were found to experience mild anxiety. Hospitalization for treatment is considered by young patients a deprivation of freedom and autonomy. They develop fear and anxiety when undergoing invasive treatment. For adolescent idiopathic scoliosis patients' anxiety, the most significant influence is (1) Self-image/body shape; (2) Mental health/stress resulting from the uncertainty during the treatment period in the hospital (Wei, et al.,2022). Lopez (Lopez et al., 2019) interviewed 57 parents of children who received anesthesia for surgery and found that 67% of the children showed behavioral changes and 16% showed significant behavioral changes. The negative behavioral changes were classified as (a) external environmental conflicts such as aggression, opposition (b) internal conflicts such as sadness, withdrawal (c) eating and sleep disturbances (d) unpleasant physical sensations such as pain. And the performance of negative behavior was individual.

Uhl (Uhl & Cravero, 2019) indicates the Post Hospital Behavioral Questionnaire (PHBQ) shows reliability and validity in measuring children's behaviors. At one week after surgery, 24% to 80% are found to experience negative behaviors, negative behaviors are correlated with age, anxiety characteristics, sex, race, and hospital length of stay. Wang (Wang, 2017) investigated toddlers' behaviors during hospitalization, findings using the Post Hospital Behavior Questionnaire and State Anxiety Inventory indicate an overall behavior scores of 68.8 ± 12.6 points. The behavior scores in other subscales are 18.1 ± 4.4 points in general anxiety behavior scores, 14.0 ± 3.4 points in separation anxiety behavior scores, 7.7 ± 1.9 points in sleep anxiety behavior scores, 7.9 ± 2.3 points in eating disorders behavior scores, 8.9 ± 2.2 points in aggressive behavior scores, and 12.2 ± 2.9 points in apathy/withdrawal behavior scores, respectively.

Boztepe (Boztepe, Çınar, & Ay, 2017) surveyed 130 sick children aged 6-12 about their perceptions of hospitalization. 50% of sick children suffer from pain during medical procedures during hospitalization. Expectations of nurses: 62% expect good care, 20% manage pain, and 12% play games together. 25% of sick children believed that nurses were influential in pain relief, and 12.3% believed that nurses provided good care. Sick children who did not know the hospital environment had higher levels of hospital anxiety ($p=0.049$), which was no different from age. Research recommends providing children with hospital information, pain-free care, and play together.

1.2 Primary Caregivers' Anxiety

During children's hospitalization, their parents experience emotions including helplessness, anxiety, fear, frustration, which may also lead to impaired quality of sleep. During children undergoing surgery, an increased level of anxiety from parents was found in measurement using the State Anxiety Inventory, with a significant increase 24 hours after surgery. The sources of anxiety for parents include unfamiliarity with the environment, lacking knowledge about medical devices, and the problem of wound pain (Al-Sagarat et al., 2017).

In the research from Wang (Wang, 2017) on young patients' primary caregivers, they are mostly mothers (42.1%), followed by fathers (34.7%). The measurement using the State Anxiety Inventory on primary caregivers' anxiety during toddlers' hospitalization shows scores varying from 20 to 73 points, with a mean of 44.2 ± 10.88 points. The difference among anxiety scores has no statistical significance in age, sex, education status, and economic status. In the study from Meletti (Meletti, Camargo, Silva, & Módolo, 2019) for 118 family members of young patients aged 2 to 8 years, the findings indicate that primary caregivers are mostly females and mothers (87.0%). The measurement using a visual analog scale (VAS) for levels of anxiety shows that parents experience moderate to severe anxiety before surgery.

This study aims to investigate the behaviors of hospitalized young patients in an orthopedic ward and the levels of anxiety in primary caregivers, as a reference for clinical medical personnel to provide relevant measures for reduced anxiety of young patients and primary caregivers.

2. Aim of the Study

The study aims to

- (1) Explore young patients' hospitalization behavioral reactions in PHBQ scores
- (2) Explore the levels of anxiety in primary caregivers
- (3) Explore the influencing factors for young patients' hospitalization behavioral reactions
- (4) Explore the influencing factors for levels of anxiety in primary caregivers

3. Methods and Subject

3.1 Research Design

Cross-sectional research, with questionnaire survey method.

3.2 Setting

The data collection site was the orthopedic ward of a hospital in northern Taiwan.

3.3 Participants

The subjects enrolled were the hospitalized young patients aged 6 to 12 years in the orthopedic ward and their primary caregivers. The enrollment period was between December 1, 2021, and August 31, 2022. Inclusion criteria: (1) Young patients aged 6 to 12 years who had been admitted for 24 hours. (2) The primary caregiver can clearly express in Mandarin or Taiwanese. (3) The young patient and caregiver agreed to participate in the study and agreed to sign the consent. Exclusion Criteria: Unable to communicate in Mandarin or Taiwanese, disagreed to undergo the questionnaire survey.

3.4 Methods and Phase of Data Collection

3.4.1 The Validity and Reliability of Research Instruments

The self-administered structured questionnaires include the young patient questionnaire and the primary caregiver questionnaire, respectively. Two parts are included in the young patient questionnaire: basic information (age, sex, hospitalization frequency) and the young patient's hospitalization behavior scale. Three parts are included in the primary caregiver questionnaire: basic information (including age, sex, education status, marital status, average household monthly income, constant employment, self-rated physical and mental health status, and relationship with the young patient), and the State-Trait Anxiety Inventory (STAI).

(1) Hospitalization behavior scale for children: The Post Hospital Behavioral Questionnaire (PHBQ) developed by Vernon (1966) was used, applying to children aged 6 months to 16 years. It comprises 27 items, including general anxiety behavior (the 4th, 5th, 6th, 8th, 12th, 13th, 21st, and 27th items), separation anxiety behavior (the 9th, 16th, 17th, 18th, and 20th items), sleeps anxiety behavior (the 1st, 19th, and 22nd items), eating disorders behavior (the 2nd, 3rd, and 24th items), aggressive behavior (the 14th, 25th, and 26th items), and apathy/withdrawal behavior (the 7th, 10th, 11th, 15th, and 23rd items). A 5-point Likert Scale was used, from "never" for 1 point to "always" for 5 points. Total scores ranged from 27 to 135 points, and a greater score indicates more behavioral changes. The Cronbach's α was 0.88. The content validity was evaluated by 11 experts using a 5-point assessment method, with an average level of 4.9.

(2) Trait Anxiety Inventory for a family member: It was developed by Spielberger et al. (1980), revealing the frequency of an individual's anxiety-related feelings or symptoms experienced in general conditions. This scale has been used to assess the subjective anxiety in healthy research subjects or patients in medical institutions, the Cronbach's α was 0.86. The trait anxiety inventory involves 4 levels including "almost never", "sometimes", "often", and "almost always", with scoring frequency from 1 to 4 points. The items for reverse scoring include the 1st, 6th, 7th, 10th, 13th, 16th, and 19th items, total scores ranged from 20 to 80 points. The scores of 20 to 39 points indicate mild anxiety, 40 to 59 points indicate moderate anxiety and 60 to 80 points indicate severe anxiety.

3.4.2 Administrative Approach

The survey period was between December 1, 2021, and August 31, 2022. For those young patients who met enrollment criteria, the research staff acquired agreement from young patients and their primary caregivers. The questionnaires were then completed by primary caregivers 24 hours after admission.

3.4.3 Ethical Considerations

The study complies with research ethics and acquired approval from the institutional review board (IRB, No. 2022-04-003AC). The study commenced with information that was purposed to be impaired by the completion of the study.

3.4.4 Statistics and Data Analysis

The data were keyed in using Excel with an anonymized encoding process. The statistical software SPSS 20.0 (IBM SPSS Inc. Chicago Illinois) was used, basic information was analyzed by quantity and percentage, Chi-squared test was used to examine the PHBQ, Anxiety Inventory, and Basic Attributes.

4. Results

4.1 Young Patients' Demographics

A total of 39 young patients participated, with 51.3% of boys, aged between 6 and 12 years with a mean of 10.2 ± 2.4 years old. They are mostly 10 to 12 years old, accounting for 56.4%. The highest hospitalization frequency of more than 3 times reaches 46.2%, followed by once reaches 35.9% (Table 1). Young patients diagnosed with scoliosis accounted for 90% who were admitted for undergoing spine correction surgery, others included young patients with osteosarcoma.

Table 1. Young Patients' Basic Attributes (N = 39)

Item	No	%
Age	6-12 years old, mean 10.2 ± 2.4 years old	
	Under 6 years old	1 2.6
	7-9 years old	16 41.0
	10-12 years old	22 56.4
Sex	Male	20 51.3
	Female	19 48.7
Hospitalization Frequency	Once	14 35.9
	Twice	7 17.9
	More than 3 times	18 46.2

4.2 Young Patients' PHBQ Scores

A total of 39 young patients were investigated using PHBQ. The overall behavior scores ranged from 31.0 to 92.0 points, with a mean of 51.5 ± 15.7 points, behavior scores for various subscales are shown in Table 2. In the analysis for the correlation of PHBQ scores with young patients' age, sex, and hospitalization frequency, the correlation was only found in sex with general anxiety behavior scores, separation anxiety behavior scores, sleep anxiety behavior scores, apathy/withdrawal behavior scores, and total behavior scores, with higher post-hospitalization behavior scores in male young patients compared to that in females (Table 3). In clinical observation, children's negative behaviors were found to include crying and screaming, refusing to separate from the caregiver, clamming up; impaired quality of sleep due to pain, nightmares, loss of appetite with small meals, nail-biting, embracing the fond dolls or quilts, and fear of machine noise in the recovery room.

Table 2. Young Patients' PHBQ Scores (N = 39)

Category	Minimum	Maximum	Mean \pm SD
General Anxiety behavior scores	8.0	26.0	15.7 ± 4.9
Separation Anxiety behavior scores	5.0	19.0	9.1 ± 3.5
Sleep Anxiety behavior scores	3.0	12.0	5.4 ± 2.3
Eating Anxiety behavior scores	3.0	10.0	5.4 ± 1.9
Aggressiveness Anxiety behavior scores	3.0	10.0	5.9 ± 1.8
Apathy Anxiety behavior scores	5.0	18.0	9.9 ± 3.3
Total behavior scores	31.0	92.0	51.5 ± 15.7

Table 3. The Correlation of Young Patients' PHBQ with Sex (N = 39)

Category/Item	Male	Female	p-value
	Mean ±SD	Mean ±SD	
General Anxiety behavior scores	17.9 ±4.8	13.5 ±4.0	**0.00
Separation Anxiety behavior scores	10.3 ±3.7	7.9 ±3.0	*0.04
Sleep Anxiety behavior scores	6.2 ±2.5	4.6 ±1.7	*0.02
Eating Disorders behavior scores	5.9 ±2.0	4.9 ±1.8	0.10
Aggressive behavior scores	6.3 ±1.8	5.6 ±1.9	0.23
Apathy/Withdrawal behavior scores	11.1 ±2.9	8.7 ±3.2	*0.01
Total behavior scores	57.6 ±15.8	45.2 ±13.3	*0.01

* p < 0.05

**p < 0.001

4.3 Primary Caregivers' Demographics

In the 36 primary caregivers investigated, 41 to 50 years old were in the majority (61.1%), with females accounting for 86.1%, 75.0% were above junior college in education status, 88.9% were married, 69.4% with constant employment, 61.1% with an income of more than NT\$ 70,000, 91.7% with good self-rated health status, and 80.6% were mothers in relationship with the young patients (Table 4).

Table 4. Primary Caregivers' Basic Attributes (N = 36)

Item	No	Percentage	
Age	31-40 years old	7	19.4%
	41-50 years old	22	61.1%
	Above 51 years old	7	19.4%
Sex	Male	5	13.9%
	Female	31	86.1%
Education Status	Under senior high school	9	25.0%
	Above junior college or university	27	75.0%
Marital Status	Single (divorced)	4	11.1%
	Married	32	88.9%
Constant Employment	Yes	25	69.4%
	No	11	30.6%
Income	Under NT\$ 70,000	14	38.9%
	Above NT\$ 70,000	22	61.1%
Health Status	Healthy	33	91.7%
	General	3	8.3%
Relationship	Father	5	13.9%
	Mother	29	80.6%
	Grandparents	2	5.6%

4.4 Primary Caregivers' Levels of Anxiety

In the Trait Anxiety Inventory for a family member, the scores ranged from 20 to 80 points, the scores of 20 to 39 points indicate mild anxiety, 40 to 59 points indicate moderate anxiety and 60 to 80 points indicate severe anxiety. Findings from trait anxiety in this study show the lowest score of 20 points, and the highest score of 64 points, with a mean of 39 ± 12.6 points. Among these, mild anxiety of 50% was in the majority, with moderate anxiety accounting for 38.9% and severe anxiety was 11.1%. Primary caregivers' level of anxiety reached a statistically significant difference only in economic status, with an increased level of anxiety for those who were of lower economic status (Table 5). Interviews with family members regarding worrying issues show a lacking of information about treatment plans, worrying about failed surgery, being concerned for young patients' wound pain, not knowing about how to care, medical expenditure, disease progression, and prognosis.

Table 5. The Correlation of Primary Caregivers' Level of Anxiety with Basic Attributes (N = 36)

		Anxiety Level						p-value
		Mild Anxiety (n = 18)		Moderate Anxiety (n = 15)		Severe Anxiety (n = 4)		
		N	%	N	%	N	%	
Age	Under 40 years old	3	16.7	2	14.3	2	50.0	0.258
	Above 41 years old	15	83.3	12	85.7	2	50.0	
Sex	Male	2	11.1	2	14.3	1	25.0	0.767
	Female	16	88.9	12	85.7	3	75.0	
Education Status	Under senior high school	11	61.1	10	71.4	3	75.0	0.772
	Above junior college	7	38.9	4	28.6	1	25.0	
Marital Status	Divorced	2	11.1	1	7.1	1	25.0	0.605
	Married	16	88.9	13	92.9	3	75.0	
Income	Under NT\$ 70,000	3	18.8	5	35.7	4	100.0	*0.01
	Above NT\$ 70,000	13	81.3	9	64.3	0	0.0%	
Constant	Yes	13	72.2	10	71.4	2	50.0%	0.669
Employment	No	5	27.8	4	28.6	2	50.0%	
Health Status	Healthy	16	88.9	13	92.9	4	100.0%	0.751
	General	2	11.1	1	7.1	0	0.0%	
Relationship	Father	2	11.1	2	14.3	1	25.0%	0.941
	Mother	15	83.3	11	78.6	3	75.0%	
	Grandparents	1	5.6	1	7.1	0	0.0%	

* P < 0.05

5. Discussion

5.1 Young Patients' Basic Information and PHBQ

Idiopathic scoliosis is commonly found in adolescents aged 10 to 17 years (Thomas et al., 2021).

Hospitalization for treatment is required due to undergoing multiple operations to correct the angles of scoliosis in coordinating with growth and development (Menger & Sin, 2021). Case diagnosis in this study are mostly young patients with scoliosis, aged from 6 to 12 years, with a mean of 10.2 years old, 10 to 14 years old are in the majority (56.4%), hospitalization frequency of more than 3 times accounts for 46.2%, which is consistent with the characters of young patients with scoliosis.

In the study from Wang (Wang, 2017) on toddlers' hospitalization anxiety, the overall behavior scores was 68.8 ± 12.6 points. The scores in other subscales were 18.1 ± 4.4 points in general anxiety behavior scores, 14.0 ± 3.4 points in separation anxiety behavior scores, 7.7 ± 1.9 points in sleep anxiety, behavior scores 7.9 ± 2.3 points in eating disorders behavior scores, 8.9 ± 2.2 points in aggressive behavior scores, and 12.2 ± 2.9 points in apathy/withdrawal behavior scores, respectively. Investigation findings in this study: the overall behavior scores was 51.5 ± 15.7 points, with 15.7 ± 4.9 points in general anxiety behavior scores, 9.1 ± 3.5 points in separation anxiety behavior scores, 5.4 ± 2.3 points in sleep anxiety behavior scores, 5.4 ± 1.9 points in eating disorders behavior scores, 5.9 ± 1.8 points in aggressive behavior scores, and 9.9 ± 3.3 points in apathy/withdrawal behavior scores, which shows that all behavior scores in findings of this study are relatively lower, that probably resulted from the subjects' different ages in age groups of these 2 studies. School-age young patients in this study value the perspectives of their own body, expecting to take control thus leading to less negative behaviors compared to toddlerhood. Moreover, Uhl (Uhl & Cravero, 2019) suggests that children in infancy or toddlerhood would not demonstrate observable behavioral changes. Furthermore, caregivers always expect their children to demonstrate more behavioral indications resulting from psychological distress, but symptoms manifested by elder children are not that significant to their parents. In the study by Meletti et al. (Meletti et al., 2019), no difference in levels of anxiety correlated with age was found. In this study, scores in young patients' behavior scales are correlated with only sex, with higher scores in males compared to females, which is consistent with the findings from Uhl (Uhl & Cravero, 2019).

5.2 Primary Caregivers' Basic Information and Anxiety Inventory

In this study, the primary caregivers are mostly females and mothers (80.6%), which is similar to the investigation findings from Wang (Wang, 2017). Moreover, mothers were in the majority of caregivers (42.1%), which is similar to the research from Meletti (Meletti et al., 2019), with caregivers mostly females and mothers (87%). In the study from Wang (Wang, 2017), primary caregivers' anxiety scores ranged from 20 to 73 points, with a mean of 44.2 points indicating mild anxiety. Furthermore, anxiety scores show no statistical significance with age, sex, education status, or economic status. The state anxiety scores in this study ranged from 20 to 64 points, mostly mild anxiety (50%), which is similar to that of Wang. Nevertheless, a positive correlation between anxiety score and economic status is found in this study, which is probably because young patients in the study are mostly with more than 3 times hospitalization. Moreover, the higher expenditure for self-pay medical devices in scoliosis surgery is another reason too.

The practical observation of the caregivers' sources of anxiety in this study found that primary caregivers' anxieties include worrying about repeated surgery, lacking knowledge about treatment measures, being concerned for wound pain, and feeling guilty about young patients' disease experience, which shows similar results as other research findings.

6. Limitations of the Study

In this study, the levels of anxiety in young patients and their family members 24 hours after admission were examined using scales. Hospitalization involves a long-time change, investigation of various stages is expected to acquire more comprehensive anxiety changes during hospitalization.

7. Conclusion

The PHBQ scores are statistically correlated with sex, the scores in general anxiety, separation anxiety, behavior scores sleep anxiety behavior scores, apathy/withdrawal behavior scores, and total behavior scores are higher in males compared to females. Primary caregivers' levels of anxiety are mostly mild, level of anxiety shows a positive correlation with economic status.

8. Recommendations

Based on the findings of this study, the recommendations include:

- (3) Hospital anxiety in children is often overlooked and can be found by observing behavior. The PHBQ is an easy-to-use assessment tool and is recommended for routine use in hospitalized children to assess behavioral changes after pediatric surgery/hospitalization to help parents and medical staff evaluate children's anxiety.

- (4) Hospitals can construct amusement equipment, and toys or arrange game activities to reduce the anxiety of hospitalization of school-age children.

References

- Al-Sagarat Y. A., Al-Oran, H. M., Obeidat, H., Hamlan, A. M., & Moxham, L. (2017). Preparing the Family and Children for Surgery. *Crit Care Nurs Q*, 40(2), 99-107. <https://doi.org/10.1097/cnq.0000000000000146>
- Boztepe, H., Çınar, S., & Ay, A. (2017). School-age children's perception of the hospital experience. *J Child Health Care*, 21(2), 162-170. <https://doi.org/10.1177/1367493517690454>
- Lopez, U., Martin, J., van Assche, M., Fleury Schubert, A., Fournet, M., Quartier, V., . . . Van der Linden, M. (2019). Classification of postoperative behavior disturbances in preschool children: A qualitative study. *Paediatr Anaesth*, 29(7), 712-720. <https://doi.org/10.1111/pan.13627>
- Meletti, D. P., Meletti, J. F. A., Camargo, R. P. S., Silva, L. M., & Módolo, N. S. P. (2019). Psychological preparation reduces preoperative anxiety in children. Randomized and double-blind trial. *J Pediatr (Rio J)*, 95(5), 545-551. <https://doi.org/10.1016/j.jped.2018.05.009>
- Menger, R. P., & Sin, A. H. (2021). Adolescent and Idiopathic Scoliosis. In *StatPearls*. Treasure Island (FL): StatPearls Publishing Copyright © 2021, StatPearls Publishing LLC.
- Silva, S., Santos, M. A., Floriano, C. M. F., Damião, E. B. C., Campos, F. V., & Rossato, L. M. (2017). Influence of Therapeutic Play on the anxiety of hospitalized school-age children: Clinical trial. *Rev Bras Enferm*, 70(6), 1244-1249. <https://doi.org/10.1590/0034-7167-2016-0353>
- Thomas, J. J., Stans, A. A., Milbrandt, T. A., Kremers, H. M., Shaughnessy, W. J., & Larson, A. N. (2021). Trends in Incidence of Adolescent Idiopathic Scoliosis: A Modern US Population-based Study. *J Pediatr Orthop*, 41(6), 327-332. <https://doi.org/10.1097/bpo.0000000000001808>
- Uhl, K., & Cravero, J. P. (2019). Measuring behavioral and emotional changes in children following hospitalization: Limitations and future directions. *Paediatr Anaesth*, 29(11), 1083-1085. <https://doi.org/10.1111/pan.13746>
- Wang, J. H. (2017). A Study of the Relationship Between Toddlers' Behavioral Reactions to Hospitalization and Primary Caregivers' Anxiety. *Cheng Ching Medical Journal*, 13(2), 60-67.
- Wei, P. C., Lin, M. L., Hung, W. H., Lin, Y. W., & Chiu, H. H. (2022). Patient Care for Adolescent Idiopathic Scoliosis. *International Journal of Studies in Nursing*, 7(2), 47-50.

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