Predicting Factors of Uncertainty in Illness Among Children with Leukemia Undergoing Chemotherapy

Chayabhorn Tiwaree, Seepan Kantawang, Tipaporn Wonghongkul, Wanchai Lertwatthanawilat

Abstract: Leukemia in children is a life-threatening disease and chemotherapy is a complex treatment with severe side effects and complications. Furthermore, the treatment results are unpredictable. This leads to uncertainty in illness resulting in psychological distress. This descriptive cross sectional study aims to examine the predicting factors of uncertainty in illness among children with leukemia undergoing chemotherapy. Ninety-six children with leukemia undergoing chemotherapy in four tertiary hospitals in Bangkok participated in this study. The research instruments included the Children's Uncertainty in Illness Scale, the Symptom Pattern Scale of Children with Cancer, the Information Support from Health Care Provider Scale, the Information Support from Parent Scale, the Information Support from Peer Scale, the Illness Knowledge Scale, and the Parent Perception of Uncertainty Scale. The results of stepwise multiple regression analysis revealed that symptom pattern, information support from health care providers, illness-related knowledge, and parental uncertainty accounted for 34.8% of variance in uncertainty in illness among the participants. This study provides more understanding for predicting factors of child uncertainty. The results of this study can be used for developing a nursing intervention to reduce uncertainty in illness among children with leukemia undergoing chemotherapy if nurses help them to better understand symptoms as having a pattern, provide information support and illness related knowledge, and decrease parental uncertainty.

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Introduction

Leukemia is the most common childhood cancer.[1,2] Leukemia in children under 15 years of age accounts for about 70% of childhood cancers in the United States[3] and for about 50% of childhood cancers in Thailand.[4] The annual incidence in 2008 for lymphoblastic leukemia in children aged under 15 years was 21 per million in boys and 10 in girls.[5] As chemotherapy is the primary treatment modality for

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leukemia in children, this incidence indicates that a large number of children with leukemia are affected by illness and chemotherapy.[6,7]

Potentially life-threatening aspects of leukemia and suffering from side effects and complications of chemotherapy lead to uncertainty in illness among children with cancer during the time of cancer diagnosis and through each stage of treatment.[8] Previous studies have demonstrated that children with cancer undergoing chemotherapy experience moderate to high levels of uncertainty in illness.[9,10] This uncertainty in illness leads to psychological distress,[11,12] interferes with children's ability to cope with illness-related stressors, and decreases their ability to take care of themselves.[12] Thus, nurses should be aware of uncertainty in illness of children with leukemia undergoing chemotherapy and its consequences, and provide nursing interventions to reduce their uncertainty. Currently, there is no research on interventions for reducing uncertainty in illness of these children. Interventions in any form can be effectively developed only if predicting factors of uncertainty in illness are clearly identified.

To date, knowledge regarding the predicting factors of uncertainty in illness among children with cancer is limited. There have been only two studies examining factors predicting uncertainty in illness of children with cancer.[10,12] One study was conducted with American children with cancer aged 8 – 18 years and another was done in Thai children with cancer aged 8 – 15 years receiving chemotherapy. The findings from the two studies did not support well Mishel's uncertainty in illness theory[13]. According to Mishel,[13] uncertainty in illness is influenced by the stimuli frame including symptom pattern, event familiarity and event congruence; as well as social support. However, a previous study[10] revealed that the stimuli frame and social support explained only 9.3% of variance in uncertainty in illness. As children's level of cognitive development could differently affect their ability to determine the meaning of illness-related events,[14] younger children might have had difficulty understanding the abstract nature of the stimuli frame and vice versa. In addition, various types of cancer and different treatment modalities – i.e. chemotherapy, radiation and surgery – would result in different illness-related events, and thus different experiences. Therefore, previous studies of factors predicting uncertainty in illness done in a heterogeneous sample might yield different result from that done in a homogenous one. This finding needs to be confirmed in a homogenous sample of children with similar cognitive development level.

To overcome the limitations in previous studies regarding age, cancer types and treatment modalities, this study examined the level of uncertainty in illness and its predicting factors among children with leukemia aged 10-15 years undergoing chemotherapy. The findings of this study can be used to develop an effective intervention to reduce uncertainty of these children, thereby increasing their well-being.

Theoretical framework and Review of Literature

Uncertainty in illness theory[13] was used to guide this study. According to this theory, uncertainty is the inability to determine the meaning of an illness event. Uncertainty in illness of individuals occurs during the diagnostic and treatment phases in four forms: ambiguity regarding illness events, complexity about the treatment, lack of information about the diagnosis and the illness, and unpredictability of the health outcome.[13,15]

Uncertainty in illness is influenced by the stimuli frame that includes symptom pattern, event familiarity and event congruence. In addition, uncertainty is also influenced by structure providers, including social support from friends, family and those with similar experiences, as well as information from credible authorities such as health care providers also influence uncertainty.[15]

Symptom pattern is the degree to which symptom occurrence – including number, frequency, intensity, duration and location – has enough consistency to be perceived as having a pattern.[13,15] A symptom pattern is a predicting factor of uncertainty explaining 9.2% of the variance in uncertainty of children with leukemia and lymphoma.[16] According to Mishel,[15] the symptom pattern is considered the important component of the stimuli frame, a major concept relating to uncertainty. It was thus included in the present proposed model predicting uncertainty in illness among children with leukemia in this study.

Information support, as a dimension of social support, is another major factor influencing uncertainty in illness, and has been argued to be more likely than other dimensions to directly affect uncertainty.[15] Sharing information with persons in their social network assists the individual to properly appraise symptoms, which results in lower uncertainty.[17] Children with cancer need information about their diagnosis, treatment and side effects, and care practices from health care providers.[18,19] They need information for problem solving and modifying their uncertainty.[15] Information support, according to House[20] is the perceived and provided advice, suggestions, and information for problem solving. Prior studies have revealed that information support from parents, friends, nurses, and physicians were a predicting factor of uncertainty in illness among Thai children with cancer receiving chemotherapy[16], and children with SLE.[21] However those studies did not investigate if the support from each separate source was related to uncertainty. As information support can be from various sources depending on the children's perception and preference, it is worth identifying the source. Information support from parents, peers and health care provider were proposed to have association with the children's uncertainty in this study.

Parental uncertainty regarding their child's illness is another factor that has been found to influence the uncertainty of children and adolescents with cancer.[12] Evidence has shown that parental uncertainty has a significant effect on uncertainty among children 8-18 years who were undergoing treatment for any form of cancer.[12] In addition, maternal uncertainty was a predicting factor of child uncertainty in illness among children with chronic illnesses between 8 and 12 years of age.[22]

Illness-related knowledge is another factor associated with the uncertainty of chronically-ill children. A moderate negative relationship was found between knowledge regarding the illness and illness uncertainty of children with SLE.[21] The empirical evidence on the relationship between illness-related knowledge and uncertainty in illness of children with cancer is inconsistent. Stewart's study[12] indicated that higher cancer knowledge predicted lower uncertainty in a given age of child. However, illness-related knowledge of Thai children with leukemia and lymphoma was not a predicting factor of uncertainty in illness.[10] Therefore, illness-related knowledge should be investigated for its predictability of children's uncertainty.

Research Hypothesis

Symptom pattern, information support from health care providers, information support from parents, information support from peers, parental uncertainty, and illness-related knowledge can predict uncertainty in illness among children with leukemia undergoing chemotherapy.

Methods

Design: A cross-sectional, predictive design was used.

Sample and Setting: The target population of this study was children with leukemia aged 10-15 years who were undergoing chemotherapy in tertiary hospitals and their parents. There were two groups of subjects: one was the children and the other was

parents, either the mother or father. Purposive sampling was used to select children based on the following inclusion criteria: (1) ability to understand and communicate in Thai, and (2) willingness to participate in this study. Meanwhile, the parents of those children with leukemia were recruited based on the following inclusion criteria: (1) ability to understand and communicate in Thai, (2) willingness to participate in this study, (3) cohabitation with the child, and (4) provision of care for their child at the hospital.

The sample size was determined with consideration of the representative sample to reduce type II errors using power analysis, with a significance level of .05, a power of .80, and the moderate effect size (f^2) of 0.15.[23] The final sample size was 96 children and 96 parents.

Ethical Considerations: Ethics approval was obtained from the Ethics Review Committee for Research Involving Human Research Subjects of the Faculty of Nursing, Chiang Mai University, as well as from four data collection hospitals. Each potential participant was informed about the details of the study and was assured of his or her confidentiality, anonymity, and the right to withdraw at any time without repercussion. The children had to have parental permission to participate and they were able to ask questions regarding the study and could withdraw from the study at any time without having any effect on their treatment or services provided. A signed informed consent form from the parents and a signed-assent form from the child were obtained.

Instruments: Seven questionnaires were used to collect data as follows:

The *Children's Uncertainty in Illness Scale* (CUIS) was originally developed by Mullins and Hartman[24] and translated into Thai by Kantawang.[25] It is a 23-item self-report questionnaire used to measure the child's perceived illness uncertainty about the course, prognosis and treatment of their illness, and assesses their perceived ambiguity and unpredictability about their condition and the lack of information. Participants rate items (e.g., "I have a lot of questions about my illness, I don't know what the answers are") on a 5-point scale ranging from 1 (very true) to 5 (very false). The total score is obtained by summing up the score across all items, with the higher the score, the higher the uncertainty. This score was classified into three levels including low (23 - 53), moderate (54 - 84), and high (85 - 115). The Cronbach alpha coefficient pilot-tested with 10 children with leukemia undergoing chemotherapy was .81. The reliability of the CUIS with the whole group 96 participants was .71.

The *Symptom Pattern Scale of Children with Cancer* (SPCC) is a subscale of the Stimuli Frame of Children with Cancer Scale developed by Tathong et al.[10] based on the symptom pattern concept of Mishel's uncertainty in illness theory (1988). It consists of 8 items (e.g., "My condition worsened in the first two weeks of receiving chemotherapy") with a 3-point scale rating scale (1= disagree, 2 = agree, and 3 = strongly agree). The total score is obtained by summing up the score across all items. The higher the score indicated the higher the symptom pattern. The content validity of the SPCC was not determined because this study used the original questionnaire, which has already been validated for content to measure symptom pattern of Thai children with cancer.[10] The Cronbach alpha coefficient pilot-tested with 10 participants was .80. The reliability of the SPCC with the whole group of 96 participants was .79.

The *Information Support from Health Care Provider Scale* (ISHCP) was modified from the Information Support Subscale of Social Support of Children with Cancer Scale with the permission of the owner.[10] It is used to assess the perception of children about information support from nurses and physicians. Six items of the original version were used and 6 new items were added. It consists of 12 items (e.g., "I received an explanation about the disease and the treatment from nurses or doctors")

with a 3-point rating scale, including 1 (not true), 2 (true), and 3 (very true). The total score is obtained by summing up the score across all items, with the higher the score, the higher the information support from health care providers. The scale-level content validity index (S-CVI) was 1.00 determined by 5 experts. They were three nurse instructors who had expertise in caring of children with cancer, one pediatric oncology physician, and one advanced practice nurse in pediatric oncology. The Cronbach alpha coefficient was .90 in the pilot tested and .81 for the whole group.

The *Information Support from Parent Scale* (ISPS) was modified from the Information Support Subscale of Social Support of Children with Cancer Scale with the permission of the owner.[10] It is used to assess perception of children about information support from parents. Six items of the original version were used and 3 new items were added. It consists of 9 items (e.g., "I've been receiving information about the disease and chemotherapy from parents") with a 3-point rating scale including 1 (not true), 2 (true), and 3 (very true). The total score is obtained by summing up the score across all items, with the higher the score, the higher the information support from parents. The S-CVI was 1.00 determined by 5 experts. The Cronbach alpha coefficient was .81 in the pilot tested and .61 for the whole group.

The *Information Support from Peer Scale* (ISPeerS) was modified from the Information Support Subscale of Social Support of Children with Cancer Scale with the permission of the owner.[10] It is used to assess the perception of children about information support from friends who were children with leukemia. Five items of the original version were used and 3 new items were added. It consisted of 8 items (e.g., I've been receiving information about the disease and chemotherapy from friends who are children with my illness") with a 3-point rating scale, including 1 (not true), 2 (true), and 3 (very true). The total score is obtained by summing up the score across all items, with the higher the score, the higher the information support from peers. The S-CVI was 1.00 determined by 5 experts. The Cronbach alpha coefficient was .94 in the pilot tested and .90 for the whole group.

The *Illness Knowledge Scale* (IKS) was modified from the Illness Knowledge of Children with Cancer Scale of Tathong et al[8] which got permission to use. A modified version of the instrument was used to assess the children's understanding regarding leukemia, side effects and complications of chemotherapy, and care practices. It consists of 37 true-false questions (e.g., "Children with illness will be exhausted, pale, bleeding and often have a fever"). The total score is obtained by summing up the score across all items, with the higher the score, the higher the illness-related knowledge. The S-CVI was 1.00 determined by 5 experts. The Cronbach alpha coefficient was .80 in the pilot tested and .83 for the whole group.

The *Parent Perception of Uncertainty Scale* (PPUS) was developed by Mishel and translated into Thai by Suwanna-o-sod.[26] It is used to assess parents' uncertainty about their child's illness. It has 31 items (e.g., "I don't know what's wrong with my child") using a 5-point Likert scale (strongly disagree to strongly agree). The total score is obtained by summing up the score across all items, with the higher the score, the higher the parental uncertainty. The content validity of PPUS was not determined because this study used the original Thai version questionnaire, indicating a good content validity to measure parental uncertainty of Thai parents' children with cancer.[26] The Cronbach alpha coefficient was .91 in the pilot tested and .86 for the whole group.

Data Collection

Data were collected at both pediatric oncology wards and a chemotherapy unit for outpatients by the researcher and a research assistant trained in these data-gathering processes. The children completed six questionnaires by answering each item read to them by the researcher/ a research assistant for 20

minutes, with a 5-minute intermission period. At the same time, the parents completed the PPUS by themselves.

Data Analysis

Descriptive statistics including frequency and percentage were used to provide a portrait of participants' demographics, as well as the uncertainty in illness of children with leukemia. Stepwise multiple regression analysis was used to examine the predictability of the symptom pattern, information support from health care providers, information support from parents, information support from peers, illness-related knowledge and parental uncertainty on uncertainty in illness of the children with leukemia. The assumptions of normality, linearity, homoscedasticity, and multicollinearity were met for this multiple regression analysis.

Results

Ninety-eight children participated in this study, two of whom were excluded: one was not allowed by his mother to participate, the other was too fatigued to participate. Of the 96 children with leukemia, more than half were male (54.2%) aged between 12 - 15 years (56.25%), and in primary school (55.2%). The majority of parents were mothers (76.0%) of whom 49.0% were laborers. Regarding family income, 33.3% had an income <15,000 baht/month (469 US$) and another 33.3% had an income of 15,000-30,000 baht/month (469-938 US$). Two-thirds of the children (67.7%) had been diagnosed with leukemia > 1year. More than half (58.3%) had been admitted to the hospital 10 times or less. About 66% had undergone the maintenance phase of chemotherapy. During the data collection period, most of them (91.7%) had side effects from chemotherapy and 75% had more than one symptom. Of the children, 41.7% had complications including infection, bleeding, and anemia.

The descriptive statistics of the dependent variables, uncertainty in illness and the independent variables, including symptom pattern, information support from health care providers, information support from parents, information support from peers, parental uncertainty, and illness-related knowledge, are presented in Table 1. Based on Table 1, the levels of uncertainty in illness, symptom pattern, information support from peers, parental uncertainty and illness-related knowledge were at a moderate level, while the levels of information support from health care providers and parents were at a high level.

Table 1 Descriptive Statistics for the Study Variables

Variables	Possible Range	Actual Range	$\overline{X}$	*SD*	Level
Uncertainty in illness	23-115	48 - 91	70.05	8.52	Moderate
Symptom pattern	8 - 24	8 - 24	17.63	4.04	Moderate
Information support from health care providers	12 - 36	20- 36	30.94	4.27	High
Information support from parents	9 - 27	16- 27	23.53	2.69	High
Information support from peers	8 - 24	8- 24	13.38	4.69	Moderate
Knowledge of illness	0 - 37	14- 37	28.90	5.23	Moderate
Parental uncertainty	31 - 155	51- 125	86.42	14.56	Moderate

Pearson's product moment correlation was used to examine the relationships between the dependent variable and each independent variable, and the uncertainty in illness was positively associated with symptom pattern and parental uncertainty at a low level. In addition, uncertainty in illness was negatively associated with information support from health care providers and illness-related knowledge at a moderate level, as shown in Table 2.

Table 2 Correlation Matrix of the Study Variables

	CUnc	SymP	IHCP	IPar	IPeer	Know	PUnc
CUnc	1						
SymP	.232*	1					
IHCP	-.319**	.253*	1				
IPar	-.148	.250*	.386**	1			
IPeer	.083	.089	.229*	.081	1		
Know	-.314**	.391**	.438**	.416**	.114	1	
PUnc	.216*	-.008	-.033	-.211*	.090	-.007	1

*p< .05, **p< .01

CUnc = Child uncertainty in illness
SymP = Symptom pattern
IHCP = Information support from health care providers
IPar = Information support from parents
IPeer = Information support from peers
Know = Knowledge related-illness
PUnc = Parental uncertainty

The multiple regressions revealed that symptom pattern, information support from health care providers, parental uncertainty, and illness-related knowledge were the predicting factors of uncertainty in illness among children with leukemia undergoing chemotherapy and accounted for 34.8% of the variances in uncertainty in illness, as shown in Table 3.

Table 3 Multiple Regression for Predicting the Factors of Uncertainty in Illness

Variables	R^2	R^2_{Change}	β	*p*
Constant				.000***
Information support from health care providers	.102	.102	-.262	.007**
Symptom pattern	.206	.104	.445	.000***
Knowledge-related illness	.305	.099	-.371	.000***
Parental uncertainty	.348	.043	.209	.016*

SE^{est} = 7.025 F= 12.166 *p* = .000*

Discussions

In this study, four variables out of six, including symptom pattern, information support from health care providers, illness-related knowledge and parental uncertainty were found to be the main predicting factors of uncertainty in illness, accounting for 34.8% of the variance in uncertainty in illness among children with leukemia undergoing chemotherapy.

Information support from health care providers was found to be the predicting factor of the uncertainty of children with leukemia ($\beta = -0.262$, $p < .01$). The children who reported higher information support from health care providers were less likely to have uncertainty. This might be because two-thirds of the children (67.7%) had been diagnosed with leukemia for longer than one year and 42.7% were admitted to hospitals more than 10 times. The children who experienced complex illness-related events may have gotten more information from nurses and physicians. The long duration of illness and frequent hospitalization led to a high probability of illness-related information.

Moreover, patients who develop a strong alliance with health care provider have maintained a higher level of well-being and greater perceived health care provider support.[27] The information helped those patients reduce the ambiguities and complexities, increased their understanding, reduced their unpredictability and made it simpler to clarify symptom patterns, leading to lower uncertainty.[15,19] The findings were congruent with the result of previous studies[16] that information support from health care providers can predict uncertainty in illness among children.

Symptom pattern was the predicting factor of uncertainty in illness among children with leukemia receiving chemotherapy ($\beta = 0.445$, $p < .001$). The children who perceived high symptom pattern had high uncertainty. Theoretically, when the children perceive symptoms as having consistency in frequency, intensity, and duration, their uncertainty is low. This might be because the majority of these children (66.6%) had undergone treatment in the maintenance phase, during which the children received low doses of chemotherapy. They had a long intermission period of two to three years[28] resulting in having symptoms with side effects that were sufficiently consistent that the children could perceive it as having a pattern. In general, during the maintenance phase, the children receive low doses of chemotherapy and should have fewer side effects and complications related to chemotherapy. However, most children in this study (91.7%) had side effects of chemotherapy: 75% had more than one symptom, and 41.7% had complications of chemotherapy that led them to experience complex illness-related events resulting in high uncertainty.[8] Furthermore, children with cancer within one to four years after diagnosis remained uncertain about the meaning of any pain, the unpredictability of physical distress, and the changing course of the illness.[29] Therefore, despite the fact that these children perceived a high symptom pattern in the maintenance phase, they might still have high uncertainty. Another possibility may be associated with the research instrument. The symptom pattern scale of children with cancer was developed on the basis of illness events that would occur during the induction phase. For example "I suffered from mouth sores and could not eat," or "I had to be placed in an isolated room after I received chemotherapy." Most of the questions/events in this instrument would not occur while experiencing the maintenance phase chemotherapy.

Illness-related knowledge was found to be another predictive factor of uncertainty of children with leukemia ($\beta = -0.371$, $p < .001$), in such a way that as illness-related knowledge increased, child uncertainty in illness decreased. This might be because the majority of children with leukemia had undergone the maintenance phase (66.6%) and possibly might have learned about their illness. Illness-related knowledge including leukemia, side effects and complications of chemotherapy, and care practices might assist children in interpreting their symptoms and illness-related events, resulting in low uncertainty. Similarly, uncertainty can be reduced by knowledge.[15] The findings were congruent with previous studies[12,21] in which illness-related knowledge had a negative relationship with child uncertainty.

Parental uncertainty was found to be a predictive factor of uncertainty in children with leukemia ($\beta = 0.209$ $p < .05$), in such a way that as parental uncertainty increased, child uncertainty in illness also increased. Parental uncertainty has a negative impact on interactions with their children.[30] Parents' uncertainty about their child's illness could interfere with their capacity to provide information to support their child's illness schema formation, resulting in child uncertainty. Typically, the incidence of children with cancer may strengthen the link between parent and child psychological functioning.[31] The findings were congruent with previous studies[12] that parental uncertainty was found to be a predicting factor of child uncertainty. In addition, the majority of parents were mothers (76.0%), and this was consistent with previous studies[22] which showed that maternal uncertainty was the predictive factor of child uncertainty in illness.

Information support from parents and peers did not predict the uncertainty experienced by the children with leukemia. However, these two variables had a significant positive correlation with information support from health care providers ($r = .386$, $p < .01$; $r = .229$, $p < .05$; respectively). The children receiving more information support from health care providers would also get more information support from parents and peers. A possible explanation could be that information support from parents and peers alone may not be strong enough to directly affect child uncertainty in illness. In addition to illness-related information, parents also rely on their relationship with health care providers when their children are seriously ill.[32] Parents revealed that the cancer-specific knowledge was more highly valued by health professionals.[33] However, the children might lack opportunities to meet and talk to other children in hospitals who also had cancer which would result in suffering from the side effects and complications of chemotherapy. Children mentioned a strong desire to rest allowing the fatigue resulting from the experience, whether from the disease, the chemotherapy or the hospitalization to be observed.[34] Therefore, to address uncertainty in illness, children may request information explicitly that could affect their ability to determine the meaning of their illness-related events, while the information from parents or peers may not be clear enough for understanding.

The four variables including symptom pattern, information support from health care providers, illness-related knowledge and parental uncertainty could explain 34.8% of the variance in uncertainty in illness among children with leukemia undergoing chemotherapy. Further research, using the theoretical framework of this study may be needed to examine key predictive factors associated with child uncertainty which were not addressed in this study. There might be another predictive factor of child uncertainty, which concerns emotional support. Children with cancer reported that emotional support was an area of unmet need.[35] The previous study[21] in children with SLE indicated that emotional support had a negative relationship with illness uncertainty. Thus, emotional support may influence child uncertainty.

Limitations

The majority of the participants were children with leukemia who were in the maintenance phase of chemotherapy. Thus, generalizations of the findings in other phase groups of children undergoing chemotherapy should be addressed cautiously. Therefore, further studies are needed to investigate various predictive factors in each phase of chemotherapy. This would include the induction, consolidation and maintenance phases. In addition, because of the low level of internal consistency in the Information Support from Parent Scale, further research is needed in order to refine or create more effective instrument.

Conclusions and Implications for Nursing Practice

Symptom pattern, information support from health care providers, illness-related knowledge and parental uncertainty were found to be predicting factors of uncertainty in illness among children with leukemia undergoing chemotherapy. The results can provide a better understanding of predicting factors of their uncertainty, which can be used for further exploration into the possibility of designing effective nursing interventions that can reduce the uncertainty in illness of these children through the provision of information and knowledge from nurses and through a decrease in parental uncertainty. The results can also provide information for pediatric oncology nurses in order to make them aware of predicting factors for uncertainty in illness and guide nursing intervention.

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ปัจจัยทำนายความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กป่วยโรคมะเร็งเม็ดเลือดขาวที่ได้รับเคมีบำบัด

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บทคัดย่อ: มะเร็งเม็ดเลือดขาวเป็นโรคที่คุกคามต่อชีวิตเด็ก เคมีบำบัดเป็นการรักษาที่ซับซ้อนและมีอาการข้างเคียงและภาวะแทรกซ้อนที่รุนแรง และไม่สามารถทำนายผลการรักษาได้อย่างชัดเจน ทำให้เด็กป่วยเกิดความรู้สึกไม่แน่นอนในความเจ็บป่วยขึ้น ส่งผลให้เด็กป่วยมีความทุกข์ทรมานทางจิตใจ การศึกษาเชิงพรรณนาแบบภาคตัดขวางนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยทำนายความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กป่วยโรคมะเร็งเม็ดเลือดขาวที่ได้รับเคมีบำบัด กลุ่มตัวอย่างคือเด็กป่วยโรคมะเร็งเม็ดเลือดขาวจำนวน 96 ราย ที่ได้รับเคมีบำบัดในโรงพยาบาลระดับตติยภูมิในกรุงเทพมหานคร 4 แห่ง เครื่องมือวิจัย ประกอบด้วยแบบประเมินความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กป่วย แบบประเมินแบบแผนอาการแสดงของความเจ็บป่วย แบบสอบถามการสนับสนุนด้านข้อมูลจากบุคลากรทางสุขภาพ แบบสอบถามการสนับสนุนด้านข้อมูลจากบิดามารดา แบบสอบถามการสนับสนุนด้านข้อมูลจากเพื่อน แบบประเมินความรู้สึกไม่แน่นอนของบิดามารดาในความเจ็บป่วยของบุตร และแบบประเมินความรู้เกี่ยวกับความเจ็บป่วย ผลการวิเคราะห์ข้อมูลด้วยสถิติการวิเคราะห์ถดถอยพหุคูณพบว่าแบบแผนอาการแสดงของความเจ็บป่วย การสนับสนุนด้านข้อมูลจากบุคลากรทางสุขภาพ ความรู้เกี่ยวกับความเจ็บป่วย และความรู้สึกไม่แน่นอนของบิดามารดาในความเจ็บป่วยของบุตรอธิบายความผันแปรของความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กป่วยโรคมะเร็งเม็ดเลือดขาวที่ได้รับเคมีบำบัดได้ร้อยละ 34.8 การศึกษาครั้งนี้ให้ความรู้เกี่ยวกับปัจจัยทำนายของความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กเพิ่มขึ้น ผลการศึกษาสามารถนำไปใช้ในการพัฒนาวิธีการทางการพยาบาลเพื่อลดความรู้สึกไม่แน่นอนในความเจ็บป่วยของเด็กป่วยโรคมะเร็งเม็ดเลือดขาวที่ได้รับเคมีบำบัด โดยพยาบาลช่วยให้เด็กมีความเข้าใจในแบบแผนอาการแสดงของความเจ็บป่วย ให้การสนับสนุนด้านข้อมูลและความรู้ รวมถึงลดความรู้สึกไม่แน่นอนในความเจ็บป่วยของบิดามารดาเด็กป่วย

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คำสำคัญ เคมีบำบัด เด็ก ความรู้สึกไม่แน่นอนในความเจ็บป่วย การสนับสนุนด้านข้อมูล มะเร็งเม็ดเลือดขาว ปัจจัยทำนาย ประเทศไทย

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