

## นิเวศวิทยาครอบครัว: ปัจจัยที่มีอิทธิพลต่อพัฒนาการเด็กวัยเตาะแตะ

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### บทคัดย่อ

วัยเด็กตอนต้นเป็นโอกาสทองของการส่งเสริมพัฒนาการ แต่เด็กวัยนี้ส่วนใหญ่ยังไม่ได้รับการพัฒนาเต็มตามศักยภาพ การศึกษาความสัมพันธ์ที่ซับซ้อนของปัจจัยที่มีอิทธิพลต่อพัฒนาการเด็กในวัยนี้จึงเป็นเรื่องสำคัญ การวิจัยในครั้งนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีอิทธิพลต่อพัฒนาการเด็กวัยเตาะแตะ ได้แก่ การดื่มสุราของบิดา การศึกษาของมารดา รายได้ครอบครัว การมีส่วนร่วมของบิดา ความรู้เกี่ยวกับพัฒนาการเด็ก การสนับสนุนทางสังคม ความเครียดของการเป็นมารดา สิ่งแวดล้อมของบ้าน ความมั่นคงทางด้านอาหาร และพัฒนาการเด็ก โดยใช้กรอบแนวคิดนิเวศวิทยาของพัฒนาการมนุษย์ (Bronfenbrenner, 2005) และจากการทบทวนวรรณกรรม กลุ่มตัวอย่าง ได้แก่ บิดามารดาและเด็ก ช่วงอายุ 18-36 เดือนได้มาจากการสุ่มหลายขั้นตอนจำนวน 12 ตำบลในจังหวัดสระบุรี เครื่องมือที่ใช้ในการเก็บรวบรวมข้อมูลเป็นแบบสอบถามข้อมูลส่วนบุคคลของบิดามารดาและครอบครัว การมีส่วนร่วมของบิดา ความรู้เกี่ยวกับพัฒนาการเด็ก แบบคัดกรองการดื่มสุรา การสนับสนุนทางสังคม ความเครียดในการเป็นมารดา ความมั่นคงด้านอาหาร การสังเกตสิ่งแวดล้อมของบ้าน และการประเมินพัฒนาการของ Bayley Scale of Infant and Toddler Development วิเคราะห์ข้อมูลโดยใช้สถิติเชิงพรรณนาและใช้โปรแกรม AMOS สำหรับการวิเคราะห์เส้นทาง

ผลการวิจัย พบว่า โมเดลเส้นทางปัจจัยที่ส่งผลต่อพัฒนาการเด็กมีความสอดคล้องกับข้อมูลเชิงประจักษ์ ( $\chi^2 / d=2.729$ , GFI = 0.96, NFI = 0.97, CFI = 0.97, RMSEA.079) โดยพัฒนาการเด็กได้รับอิทธิพลสูงสุดโดยตรงจากปัจจัยสิ่งแวดล้อมของบ้าน (0.34) และเส้นทางอิทธิพลทางอ้อมจากเส้นทางการมีส่วนร่วมของบิดา (0.74) โดยส่งผ่านสิ่งแวดล้อมของบ้าน ตัวแปรทั้งหมดอธิบายความแปรปรวนของพัฒนาการเด็กได้ร้อยละ 12% ผลจากการศึกษาครั้งนี้เป็นข้อมูลเพื่อใช้เป็นแนวทางในการจัดโปรแกรมเพื่อเพิ่มพัฒนาการเด็กต่อไป

**คำสำคัญ:** พัฒนาการเด็ก, นิเวศวิทยาครอบครัว, การวิเคราะห์เส้นทาง

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## Ecology of the Family: Factors Influencing Child Development in Toddler

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### Abstract

Early childhood development period is a “golden opportunity” for optimally developing a child's life. However, most children do not fulfill their developmental potential. Therefore, a study of the complex relationships between these factors and their combined impact on child development is needed. This study aimed to examine the predictive power of the correlations between paternal alcohol use, maternal education, family income, paternal involvement, maternal knowledge about childhood development, social support, maternal stress, home environment, food security and child development. The conceptual framework used to guide this study was derived from the bio-ecological perspective with Bronfenbrenner aspects of human development and literature review. A sample of 230 parent-child pairs with toddlers aged 18-36 months were recruited from 12 sub-districts in Saraburi Province. The instruments used for data collection were composed of a demographic questionnaire, a paternal involvement scale, a caregiver knowledge of childhood development inventory, the Alcohol Use Disorders Identification Test (AUDIT) with a revised multidimensional scale of perceived social support, a parenting stress index short form, the Thai-translated HOME, the Thai Household Food Security Scale and the Bayley Scale of Infant and Toddler Development. The data was analyzed by descriptive statistics and Analysis of Moment Structure (AMOS) for path analysis.

The findings indicated that the model fit with the empirical data at  $\chi^2/d = 2.729$ , GFI = .96, NFI = .97, CFI = .97, RMSEA.079. The analysis demonstrated that paternal involvement and home environment had a strong and positive effect on childhood development ( $\beta = .34$   $p < .001$ ). Paternal alcohol use, paternal involvement, maternal knowledge of childhood development and parenting stress had a indirect effect on child development mediated by the home environment. The variables in the model accounted for 12% of the variance in the child development. The results provide information and can guide the development of an intervention program for better outcomes in childhood development.

## Statements and significance of the problems

Childhood development is an outcome of the interplay of biological characteristics of the person and the environment. Development is a multidimensional interdependence including social, emotional, cognitive, and motor performance, as well as patterns of behavior and health and nutrition status. Early childhood development is a critical foundation for later development, development occurs in all dimensions and the brain develops rapidly (Shonkoff, 2003). It is a "golden opportunity" to optimally develop a child's life.

Unfortunately, most children do not fulfill their developmental potential. The prevalence of 1-3 years of children with suspected slow development has increased in the past 5 years, from 19.7 in 2004 to 25.1 in 2007 and 28.6 in 2010. The study shows developmental delays during 1999-2010 at an average of 30.18 percent (Department of Health, 2010). They are exposed to multiple risks including poverty, malnutrition, poor health, and an unstimulating home environment, which detrimentally affects their development. Over 7 million children currently live in homes where one parent is an alcoholic. In 2007, the National Statistical Office of Thailand found 29.3 % of the adult population drank alcohol and 70 % of households had at least one member who drank (National Statistical Office [NSO], 2008). Psychological distress is the consequence of alcoholism. Female spouses living with a male lifetime at-risk drinker were found to have a high level of psychological

distress than the general population (Tempier, Boyer, Lambert, Mosier, & Duncan, 2006). The research literature on children of an alcoholic parent clearly suggests that they are at higher risk. The family warmth index has consistently declined in the past 5 years, from 66.09 in 2002 to 62.42 in 2006 (National Statistical Office [NSO], 2007).

Several studies have found that a child's development is shaped by a dynamic and continuous interaction between biology and experience (Belsky, 1984; Bronfenbrenner, 2001; Phillip & Shonkoff, 2000). Research has consistently demonstrated the maternal knowledge of a child's development plays an important role in parenting and childhood development (Tamis-LeMonda, Bornstein, & Bramwell, 2001). According to Bornstein (2005), in contrast, mothers who had less knowledge about childhood development had a limited effective interaction or parenting strategies affect to parent stress. Thus, parental knowledge correlates with a mother's education, parenting stress, and the home environment are independently and positively predictive of children's development. However, the importance of paternal involvement during early childhood has been supported by numerous studies which have demonstrated relationships between paternal involvement behaviors and children's social and academic outcomes. Moreover, the studies have shown that parental social support is important irrespective of parenting stress levels (McConnell, Breitreuz, & Savage, 2011). Slykerman et al. (2005) found that the child's

mothers showing good social support reduced the negative effects of parenting stress on promoting the child's development. Parenting stress and lack of social support appeared to be associated with lower intelligence test scores of preschool children. Parenting quality and social support as independent resource variables for young people's competence were also found (MacMillan & Violato, 2008).

Most of the intervention studies focused on the family as the individual person. Some focused on parent or child but not both, some focused on only a special group, some specify the model in failing to include factors from all three ecological domains simultaneously (i.e., parent characteristics, child characteristics, and contextual factors), which are the significant effects on childhood development and meaningful to practitioners in evolving appropriate interventions. The ecology of the family, as the relationship between family contexts and child, can affect a child's development both directly and indirectly. The ecological perspective of Bronfenbrenner (2005) was a formulated relevance of biological, genetic, and environmental aspects of human development, the ecological perspective enhances a holistic view to the understanding of the developmental outcome or person's behavior can be competence resulting from the proximal process functions that can be reduced in specific contexts or environment. The outcome of the proximal process function is that the results from the interaction between people and the multi-

level ecological context arouse child development. Moreover, the complex model as the entirety of the social, psychological and physiological organism enlarges an appreciation of the creative and adaptive potentialities, not only within the people but also within the environment in which they function. Therefore, the predictors of childhood development should include parent characteristics, child characteristics, and context.

Not only stimulation and caretaker emotional responsiveness to a child's growth and brain development but good nutrition plays a key role. Moreover, many studies have revealed that the child's environment such family income, food security, social support, and home environment. Family income included a variety of mechanisms that reveals a link between income and mothers education to childhood development (Wacharasin, Barnard, & Spieker, 2003). Poverty status is related to a number of other economic risk factors such as food insecurity. In addition, the evidence also suggests that socioeconomic status is linked to maternal knowledge and behaviors of the parents (Bornstein, Cote, Haynes, Hahn, & Park, 2010). However, studies done in Thailand have not clearly reported any findings related to the positive or negative influence on the family characteristics on child development.

Despite widespread consensus that both parents characteristics, child characteristics and context or environment effect children's development, few studies have investigated them together,

The complex relationships between these factors and their combined impact on a child's developmental needs, which are the significant effects on childhood development and meaningful to practitioners in evolving appropriate interventions. Especially in the toddler period of human development between ages 18-36 months when the child has an opportunity to develop from environment learning and affected by of external factors, parents and society on childhood development (Erikson, 1982). Furthermore, the dynamic nature of parenting behaviors and contemporary social change are rarely examined. Little is known about the effects of earlier experiences on current and later child outcomes in these families.

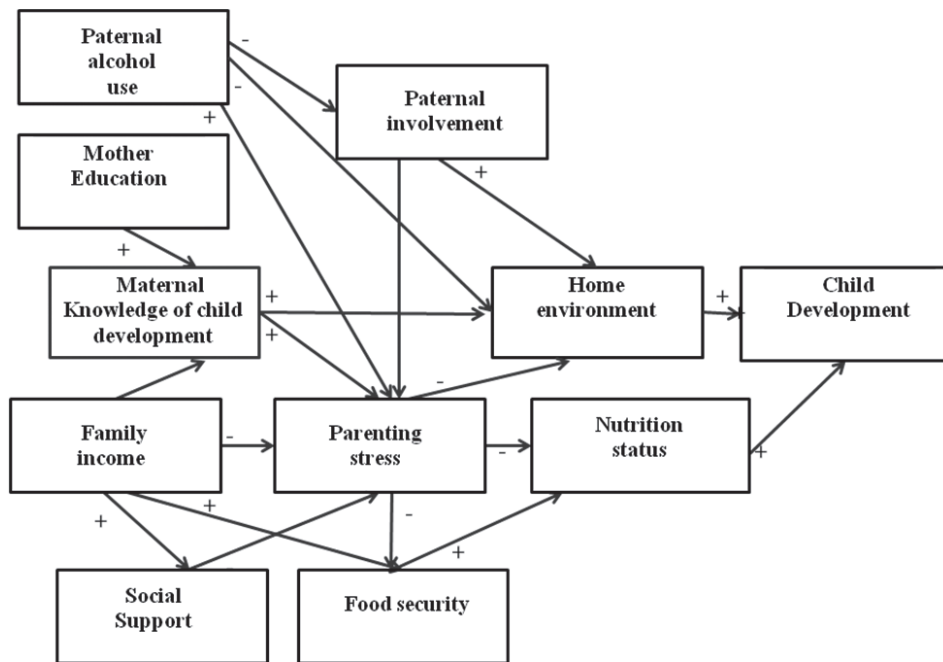
Therefore, the purpose of this study was to test a hypothesized model by examining the predicted relationship between family income, mother education, food security, social support, paternal alcohol use, paternal involvement, parenting stress, maternal knowledge of childhood development, home environment, nutrition status and child development. Testing a model on the predictors of a child's development is important for guiding interventions and the provision of holistic care. Understanding the state of the science of ecological of family that influence child development by using nursing research will help build a foundation that is valuable for guidance in the prevent of risk factors and to enhance positive parenting and childhood development.

## Objectives

1. To describe the level of child development at 18-36 months
2. To test the hypothesized model which examines the predicted relationships among father's alcohol use, mother education, family income, paternal involvement, maternal knowledge of child development, social support, parenting stress, home environment, food security, nutrition status and child development.

## A conceptual framework

The hypothesized model used the bio-ecological of human development as a theoretical framework (Bronfenbrenner, 2005) and based on research evidence. The framework states participation in a progressively more complex, reciprocal interaction with a person's objects and symbols in the individual's immediate environment, and to be effectively, the interaction must occur on a regular basis over an extended period of time. The model is composed of four principal components and the dynamic, interactive relationships among them named as process-person-context-time (PPCT) model, The model explains the interaction process (process) between the personal (person) and environment (context) basic passage of time over which development occurs, which results in the childhood development period through a chronosystem of timing (time) as a toddler ages.



**Figure 1** The hypothesized model of factors influencing child development during toddler.

**Research methodology**

**Research design:** A model-testing design was used in this study.

**Population and sample:** The sample consisted of mothers, fathers and their children aged 18-36 months old that lived in urban and rural areas in Saraburi province, Thailand. Included in the criteria the mother and father aged 20 years old and above and who had no developmental, physical or mental disability or chronic illnesses. The children were healthy. The first child had no diagnosed illnesses that affected their development, and who had parents living at home with them. In addition, mothers and fathers were able to read and write in the Thai language and were willing to participate in the study.

**Setting of the study:** Data was collected from samples in 8 child care centers and 8 Tambon Health Promoting Hospital at Saraburi province, located 100 km north of Bangkok, in the central region of Thailand.

**Sample size and sampling technique:** To estimate the number of subjects, 20 subjects-to-variables ratio was to be used (Polit & Beck, 2004). The study has 10 predictor variables, thus, the estimated sample size was 220. The researcher adds 10 percent of the participants, the estimated sample size in this study will be 242 subjects. Finally, the sample included 230 parent-child dyad. There were four steps in multi-stage sampling to select the participants and the number of participants in this study.

### **Ethical considerations**

After the proposal was approved and permission was granted by the Research Ethics Committees of the Faculty of Nursing, Burapha University the data was collected. Objectives, the procedures for data collection, potential benefit and risks of participants, and the duration of this study was given to eligible subjects. The participants were asked to sign the consent form before the study began. The participants could decline to answer questions at any time if they felt uncomfortable. All data is strictly confidential, and reported as a group. Codes were used instead of the names and addresses of participants. After finishing the data analysis, the data was going to be destroyed.

### **Research instruments**

Ten instruments were used in this study are described as the following:

1. The demographic questions: Family and child characteristic record forms were used to obtain personal information related to demographic information.

2. The parenting stress index-short form (PSI/ SF) Thai version was used to measure maternal stress. There has been a report of internal consistency reliability (Cronbach alpha) of the components as .95, .82 and .85, for part 2, 3 and 5, respectively. Test-retest reliability for part 4 (after 2 weeks) indicated high reliability ( $r = .70$ ). The higher score indicates higher stress.

3. The multidimensional scale of perceived social support, MSPSS was used to measure social support. It has a good internal consistency reliability and test-retest reliability, and robust factorial validity. Cronbach's alpha was .87- .91. After a four-week retest for reliability, the intra-class correlation coefficient (ICC) was .84 (Wongpakaran et al., 2011). Higher total score of MSPSS indicated higher perceived social support.

4. The Thai household food security scale was used to measure the degree of food insecurity and hunger as experienced per household. The Thai version had been translated and back-translated into the original English version by Piaseu and Mitchell (2004). The Scale consists of 18 items, including six major components. Pearson correlation coefficient for test-retest reliability of the food security questionnaire was .89. Higher total food security scores indicate more food security status.

5. The knowledge of child development inventory was used to measure maternal knowledge of childhood development. It assesses parental knowledge related to developmental processes, and infant norms. Content validity was confirmed by a level of agreement with content validity for scale [CVI] 0.96. Reliability.89. Higher total knowledge of child development scores indicated more knowledge of childhood development.

7. The paternal involvement scale was created by the researcher to measure the paternal involvement reported by mothers. Higher scores represent higher father involvement. The instrument



had been validated by experts in the field. Content validity was confirmed by a level of agreement with content validity for scale [CVI] .94. Test reliability of the scale was .89. Higher total paternal involvement scores indicated more paternal involvement.

8. The alcohol use disorders identification test [AUDIT] was used to measure father's alcoholic use. There are 10 items in AUDIT focused on the intake of alcohol beverages during this past year. The questionnaires were translated into Thai by Assanangkornchai et al. (2000), independently back-translated to English and the meaning verified to ensure accuracy of translation. The higher AUDIT score indicates a higher problem drinker.

9. The Thai-translated HOME (infant/toddler) scale (Chaimonghol & Flick, 2006) was used to measure the home environment and had an internal consistency reliability of a Cronbach's alpha coefficient of .71. Inter observer reliability was .87. The content validity index [CVI] was .91.

10. The Bayley scale of infant and toddler development-Third edition is an individually administered instrument (Bayley, 2005) used measure of infant or child development. Evidence for internal consistency was obtained using the split-half method with the normative sample the average reliability coefficients for the subtests were calculated: cognitive .91, receptive communication .87, expressive communication .91. Test-retest reliability was determined and correlations ranged from .67 to .94.

### **Data collection procedure**

Data collection was started after the IRB faculty of nursing approved the research proposal, the data collection was processed as follows: 1) As part of the data collection team, 3 research assistants were trained on how to use all research instruments then the inter-observer consistency was tested. 2) The researcher contacted directors of the selected tambon health promoting hospitals and the directors of the selected child care centers and explained the goals of the study, sample characteristic, data collection procedure and the protection of human subject. The hospital staff and the child care center staff were used in locating the homes of the children. 3) The eligible parents who indicated an interest in the study they were invited to participate. The goals of the study were explained to them along with the data collecting procedure. Data collection was started after the participants had signed their consent forms. 4) The eligible mothers, fathers and children were visited in their homes; the parents completed the questionnaires by 3 trained research assistants completion of the questionnaires. Home visits consisted of a 60 min of the mother interview and a 2-4 minute interview of the fathers; at the end of each visit, the research assistants also completed a checklist of the HOME inventory on their observations of the home environment and then the child's development is assessed with the Bayley scale of infant and toddler development at the child care development center or their home after the parent had signed the consent forms. Administration time for children is about 50 minutes for children.



## Data analysis

Amos was used to test the research hypotheses to answer the research questions regarding relationships among paternal alcohol use, mother education, family income, paternal involvement, maternal knowledge of child development, social support, parenting stress, home environment, food security, nutrition status and child development. In addition, the following data analyses were performed and the accuracy of the data entry was

examined. The researcher tested the assumptions of the study were as follows: 1) univariate outlier, multivariate outlier 2) normality 3) linearity 4) homoscedasticity and 5) multicollinearity were tested before data analysis. The demographic characteristics of the sample and the major variables of the study were described. Psychometric analyses to examine internal consistency reliability of all measurement tools used in the study.

## Results

**Table 1** Score of Bayley scale on cognitive development and Language development

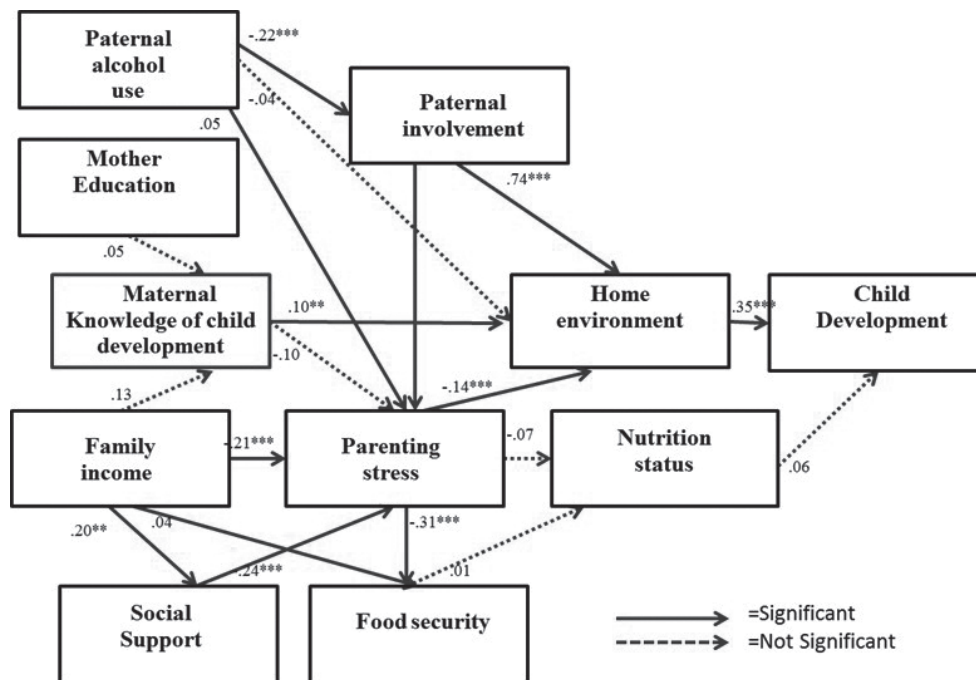
Classification	Cognitive development				Language development			
	18-24 m.		25-36 m.		18-24 m.		25-36m.	
	N	Percent	N	Percent	N	Percent	N	Percent
Low average	15	17.05	14	9.86	14	15.91	8	5.63
Average	31	35.28	44	30.99	69	78.41	131	92.25
High average	42	47.73	84	59.15	5	5.68	3	2.1
Total	88	100	142	100	88	100	142	100

The cognitive development of children aged 18-24 months had a high average level (47.73 %), average level (35.28 %) and low average level (17.05 %). The cognitive development scale of children aged 25-36 months showed that most of them had a high average level (59.15), average level (30.99 %) and low average level (9.86 %). As the data shows the level of cognitive development of children both groups was at a high average level. Data in this study revealed that the child's brain develops rapidly during the first five years of life (Phillips & Shonkoff, 2000). In this study most of

the children aged 25-36 months were attending early childhood development services and children aged 18-24 months were not attending. According to the Thailand multiple indicator cluster survey (MICS) conducted by the National Statistical Office [NSO] in 2012 with support from the United Nations Children's Fund [UNICEF] found that children attended an early childhood development programme had higher rankings in the early childhood development index compared to those who were not attending, at 94 % versus 77 % (NSO, 2013). However, there are difficult to compared

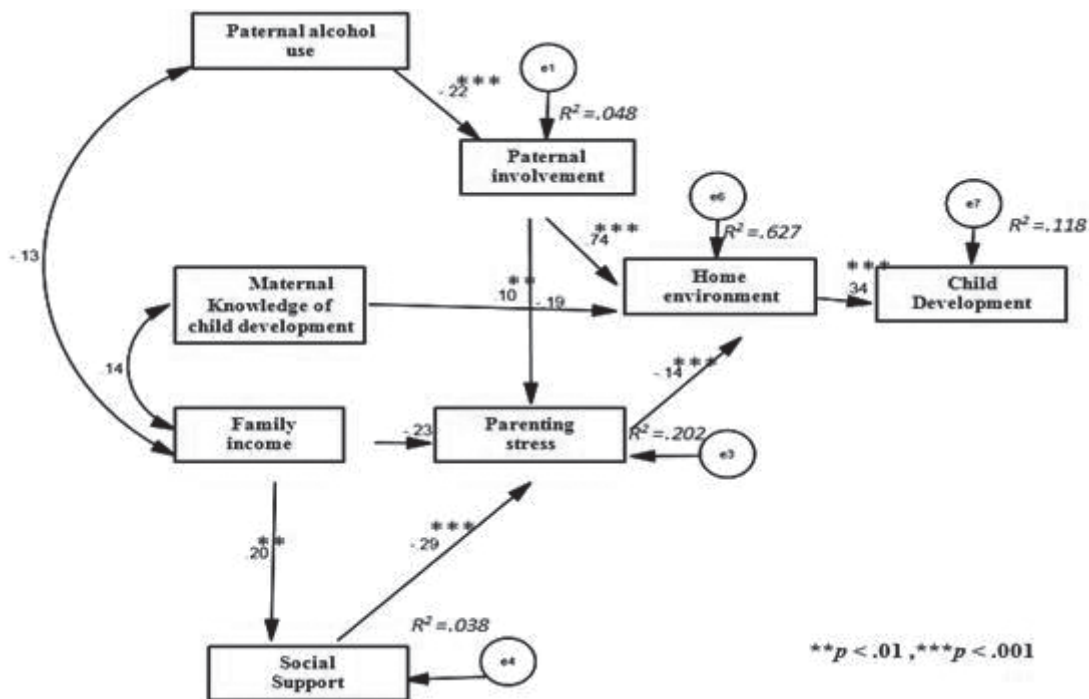
the score child development in different the studies. Because, in several studies using the Denver development screening test [DDST] or Denver II composes of dimensions of language, fine motor-adaptive and personal-social domains. This study measured childhood development with the Bayley scale of infant and toddler development-Third edition. The MICS surveys composed of literacy numeracy, physical, social-emotional, and learning domains. In addition, the language development of children aged 18-24 months showed that most of them had a high average level (78.41 %), average level (15.91

%) and low average level (5.68 %). As the data shows the language development scale of children aged 25-36 month had high average (2.1 %). Most of them had average level (92.25 %) and low average (5.63 %) of the scale. Only 5.68 % of aged 18-24 months and 5.63 % of age 25-36 month had a low average on the scale. The possible explanation of this finding might be the children in this study are healthy with no diagnosed illnesses that affect their development and who had parents living at home with them.



\*P<.05, \*\*p <.01, \*\*\*p<.001

**Figure 2** A hypothesized model of factors influencing child development during toddler



**Figure 3** The modified model of factors influencing child development during toddler

## Discussions

### Factors influencing on child development

The complex pathways between paternal alcohol use, mother's education, family income, paternal involvement, maternal knowledge about child development, social support, parenting stress, home environment, food security and child development were examined. As expected, the analysis demonstrated that the home environment had a positive direct effect on childhood development. HOME was intended to measure the quality and quantity of stimulation and cognitive support available to a child in the home environment. Its focus is on the experience of the child in the home environment, the child as an active recipient of input from objects, events and transactions occurring

in connection with the family surroundings. This finding confirmed the theoretical framework that home as the process, dynamic interaction between some aspect of the context or some aspect of the individual and an outcome of interest (Bronfenbrenner, 2001; 2005).

However, there were many factors as predictors of home environment. In this study direct linkages between paternal involvement, maternal knowledge of child development, parenting stress and home environment were examined. As expected, paternal involvement predicted home environment. It could be explained that that the father was able to have frequent physical contact with his child yet provides warm, stimulating, and positive contact when possible, (Hawkins, Brad-

ford, Palkovitz, Christiansen, Day, & Call, 2002). Paternal involvement was positively correlated with the quality of the parent-child relationship to overall life satisfaction, less depression (Allen & Daly, 2007), and less emotional distress of the mother. This might lead to good home environment. Most of the mothers in this study reported high scores of paternal involvement. This might suggest that the mothers had support from other family members, which might help them support their children. From the demographic data, most of the children in this study stayed with more than three family members. There was evidence suggesting that the fathers influence on the child pays dividends on their child's mental health as it grew older.

It is surprising, paternal alcohol use had no significant effect on the home environment. It could be explained that although several studies revealed that existing evidence of the adverse effects of alcohol consumption led to a higher risk for a negative outcome. However, the effect of paternal alcohol use related to alcohol was linked to the pattern of drinking and the amount of consumed. Although the study showed that 57.80 % of the fathers consume alcohol, most of them reported a low score of the level of alcohol use. Therefore a link between paternal alcohol use and the home environment was not found.

Paternal involvement had a negative direct effect on parenting stress. Parenting stress arises when a parent's lack of support and the subjectively experienced demands are not compatible. The

demands might be identified as antecedents of parent stress such as poor paternal involvement, lack of support either from the marital relationship or the social network. In addition, stress always happens when traumatic life events take place in families, having a difficult child also cause stress. Parenting stress had a negative direct effect on the home environment. As the analysis demonstrated, it could be explained that parenting stresses as the context which effect to person's behavior. Studies have reported maternal stress as a parent responds to the situational demands regarding their parenting role, personal function, and interaction with her child including worries about her child's ability and their own parenting competence (Abidin, 1995). Home environments have been shown to be a major factor that influences the overall development of children. Within the home, children also have their early interactions with their mother. Thus maternal stress would have a negative direct effect on the home environment. Parenting stress effect to parenting behaviors (McConnell et al., 2011).

Paternal alcohol use had a negative direct effect on paternal involvement. It could be explained that the adverse effect of alcohol consumption and its abuse contributed to a higher risk of negative outcomes. As the analysis demonstrated, this finding was congruent with several studies. Studies have reported that paternal alcohol use was associated with lower warmth and sensitivity within the parent-infant relationships (Eiden et al., 2009). Moreover, Eiden and Leonard (2000)

reported the longitudinal study about the impact of a father's alcoholism on parenting and infant development. Results indicated that the fathers' alcoholism was associated with higher levels of paternal and maternal antisocial behavior and depression, and partner aggression. Alcoholic fathers reported higher aggravation toward their infants and perceived their infants as being more difficult. Furthermore, the fathers' alcoholism was associated with more problematic parenting behaviors during free play, with alcoholic fathers showing less sensitivity, higher negative effect, lower positive engagement, and lower amount and quality of verbalization. In addition mothers with alcoholic partners also have a lower quality and frequency of verbalization toward their infants. Furthermore, the fathers' alcoholism was associated with two high-risk patterns of mother-child and father-child attachment. In summary, paternal alcohol use may have an impact on parenting. Thus, empirical evidence supported by a hypothesis that paternal alcohol use had a direct negative effect on paternal involvement and the home environment but had a direct positive effect on parenting stress. Moreover, parenting stress was predicted by family income and social support. The findings show family income had a direct negative effect on parenting stress. It might be explained that the heavy demands on parents' capacity to manage everyday pressures under severe financial strain may affect the parenting role and interaction with their child with worries about her child ability and

their own parenting competence. According to Belsky's model stated multiply determined and sources of contextual stress and support can directly affect parenting or indirectly affect parenting by first influencing individual psychological well-being (Belsky, 1984). Findings of an indirect effect between family income and parenting stress mediated by social support could be explained by a mother with a high family income having a strong social support allowing her to be better able to cope with major life events. The most influential perspective on social support hypothesizes that support reduces the effects of a stressful life event as a stress buffer though either the supportive actions of others or the belief that support is available. Supportive actions are thought to enhance coping performance, while perception variable support can provide as less stressful (Lazarus & Folkman, 1984). This study found that parents perceived that they had received support from three source family, friends, and significant others. It might be explain that mothers in families in which the father's involvement is high may have a more positive perceived support than do mothers in families with low father involvement.

Maternal education was not significant on maternal knowledge of childhood development. Nevertheless, there was no evidence that more educated mothers have less knowledge of childhood development but maternal employment may be detrimental for child outcomes if it leads to reduced (quality) time with children. In this study the average

number of years the mother was educated was 8.34 and worked mainly as an employee for a job. Only 7.9 % were unemployed. However, educated mothers also spend longer periods outside the home working which caused consequences due to the spending of time away from the children and a lesser understanding or less understands of parental practices, developmental processes and milestones.

For the findings regarding maternal knowledge of childhood development, they had a direct effect on the home environment. It could be explained that knowledge about childhood development may help mothers understand normal childhood development, child demands, and child rearing. This understanding may enhance mothers to improve themselves when they interact with their children. Therefore, knowledgeable mothers are more likely to have created more appropriate learning environments and to interact with their children a more stimulating surrounding for a child's development and provide a good environment for their child, an environment that is appropriate to their children's development and/or more likely to interact with their children in more sensitive ways, which in turn will support their children's social and cognitive development. According to MacPhee (1983) it was found that maternal knowledge and expectations about developmental competencies influenced the type of environment that mothers provide for their infants. In addition mothers who had a more accurate estimate of child developmental milestones are more likely to talk, tell stories, and read to their children.

## **Implications for nursing practice**

1. Nurses or other health care providers working with families and their children should be aware of their family contexts such paternal alcohol use, maternal knowledge of child development, family income, paternal involvement, maternal stress, social support and home environment. Intervention programstor promote childhood development during the toddler years would be developed based on the findings of this study.

2. The components of the intervention programs should consist of paternal involvement, encouragement of knowledge about childhood development and promote a healthy home environment, strategies for reducing maternal stress, paternal alcohol use and enhancing maternal knowledge, and supplementary programs that will promote childhood development and provide a stimulating environment for the child. The intervention program must involve both the mother and father for their children. Nurse's should develop interventions such home visits, to assess the context of the child's development, such as the home environment, paternal alcohol use and to continue to promote childhood development.

3. These findings suggested that fathers make important contributions to their home environment that effect childhood development. This encourages fathers to spend time with their children and promote positive fathering and involvement through parenting courses if necessary.

### **Implications for nursing education**

The knowledge from this study is applicable for the nursing education by enhancing a better understanding among nursing educators. Nursing educators would be able to apply this result of the study in their teaching. Moreover, the nursing educators could be able to extended knowledge from significant baseline data in order to develop a program aimed at promoting childhood development.

### **Implications for nursing research**

To extend new knowledge, an experimental as the intervention programs to longitudinal study for promoting child development. A longitudinal research design should be examined using the ecological model factors influencing childhood development as a continuous process or dynamic change. This study was conducted using children randomly selected in Saraburi province only, for more heterogeneity of geographic and socio-economic backgrounds.

### **Strengths and limitations of the study**

1. Strength of this study was use of path analysis to test a causal model of factors influencing childhood development during the toddler years. Despite widespread consensus that both parent characteristics, child characteristics and the context or environment effect children's development, few studies have investigated them together, this study shows the complex relationships impacting

on childhood development. The study can explain the causal relationship of the study variables in the model. Moreover, testing a model on the predictors of childhood development in the study is important for guiding interventions and the provision of holistic care.

2. A limitation of this study, in this study was cross-sectional design, which involves collecting data at one point of time. Child development is a continuous process with a predictable sequence. The design is appropriate for describing relationships among phenomena and for inferring temporal sequencing; however, cross-sectional design does not allow the reference of change over time.



**Table 2** Direct (DE), Indirect (IE), and Total Effect (TE) of causal variables in the modified model of factors influencing child development during toddler.

Causal variables	Affected variables														
	Father involvement			Social support			Maternal stress			HOME			Child development		
	DE	IE	TE	DE	IE	TE	DE	IE	TE	DE	IE	TE	DE	IE	TE
Family income	-	-	.20	.20	-.23*	-.06*	-.28*	-.04*	.04*	-.01*	.01*	.01*	-	-.01*	.01*
Father alcohol use	-.22*	-	-.22*	-	-	.04*	.04*	-.17*	-.17*	-	-.58*	-.58*	-	-.58*	-.58*
Knowledge of child development	-	-	-	-	-	-	.10*	-	.10*	-	.04*	.04*	-	.04*	.04*
Father involvement	-	-	-	-.19*	-	-.19*	.74*	.03*	.77*	-	.26*	.26*	-	.26*	.26*
Social support	-	-	-	-.29*	-	-.29*	-	0.4*	0.41*	-	0.14*	0.14*	-	0.14*	0.14*
Maternal stress	-	-	-	-	-	-	-.14*	-	-.14*	-	-.05*	-.05*	-	-.05*	-.05*
Home environment	-	-	-	-	-	-	-	-	-	-	.34*	.34*	-	.34*	.34*
Structure	$R^2 = .05$			$R^2 = .04$			$R^2 = .20$			$R^2 = .63$			$R^2 = .12$		
Equation fit															

Note: \* $p < .05$

**Table 3** The comparison of significant statistics between the hypothesized model and the modified model

Model	Goodness of fit indices					Interpretation
	$\chi^2/df$	CFI	GFI	NFI	RMSA	
	Good fit index values					
	$0 \leq \chi^2/df \leq 2$	$.97 \leq CFI \leq 1.00$	$.95 \leq GFI \leq 1.00$	$.95 \leq NFI \leq 1.00$	$.05 < RMSEA \leq .08$	good fit
Hypothesized model	4.454	.848	.923	.818	.123	Poor fit
Modified model	2.729	.971	.955	.974	.079	Acceptable fit

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