



Knowledge and Attitudes of School Nurses to Attention-Deficit Hyperactivity Disorder (ADHD)

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= Abstract =

Objective: School nurses should be knowledgeable about attention-deficit hyperactivity disorder (ADHD) and have tolerant attitudes to children with ADHD. This study was done to identify school nurses' knowledge about, and attitudes to, ADHD. **Methods:** A cross-sectional descriptive correlational study was conducted. The participants were the 245 members of a school nurse association in C province in southern part of Korea. Data were collected using a self-report questionnaire. Descriptive statistics, t-test, ANOVA, and Pearson correlation coefficients were used to analyze the data. **Results:** Of the 245 packets mailed to members, 126 (51.4%) were returned, and of these, 122 packets (49.8%) were suitable for data analysis. School nurses in this study lack knowledge about ADHD. Moreover, school nurses reported low tolerance in their attitudes toward children with ADHD. There was no significant correlation between knowledge and attitudes in the management of ADHD among school nurses. **Conclusion:** Findings from this study show that school nurses have limited knowledge about ADHD and its treatment with stimulation medication. Moreover, their attitudes toward children with ADHD were in the low tolerant range. An educational program on ADHD for school nurses need to be developed and provided to facilitate the school nurses' role in assessing and caring for children with ADHD.

Key words : ADHD, Children, School nurse, Knowledge, Attitudes

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Introduction

Attention-deficit hyperactivity disorder (ADHD) which characterized by inattention, impulsivity, and hyperactivity is the most commonly diagnosed behavioral disorders in childhood (American Academy of Pediatrics, 2000). Korean Academy of Child and Adolescence Psychiatry (2005) estimated that ADHD affects 260,000 school-age children, approximately 5% of school children, in Korea. Nearly every teacher has at least one child with ADHD in his or her classroom. However, only 5% of ADHD affected children in Korea are appropriately treated. As a consequence of ADHD, children will have to face many social, emotional, and academic problems such as school difficulties, academic underachievement, difficulties with interpersonal relationship with family, and peers, and low self-esteem (Choi, Kim, Cho, Hong, & Oh, 2002; Kendall, Hatton, Beckett, & Perrin, 2003; Kendall, Leo, Perrin, & Hatton, 2005; Oh & Park, 2007). Their behavior is often unacceptable to family members, as well as to their teachers and peers. Therefore, ADHD is also associated with maladaptive interpersonal interactions and mother-child disruption (Ghanizadeh, Bahredar, & Moeini, 2006). A Korean study (Choi et al., 2002) demonstrated that mothers with an ADHD child were likely to report more coercive parenting behavior, negative parenting –related attitudes, and depressive mood than mothers with a normal child.

Early identification, assessment, and appropriate management of ADHD are important to prevent negative outcomes of ADHD by redirecting academic and health interventions that enhance the educational, psychosocial, and emotional development of most children with ADHD (Dang, Warrington, Tung, Baker, & Pan, 2007; Kwasman, Tinsley, & Thompson, 2004). According to the American Academy of Pediatrics guidelines (American Academy of Pediatrics, 2000), school personnel play an essential role in the management of ADHD. As a health professional in the school setting, school nurses should be on the frontline in early identifying and managing students with ADHD (Dang et al., 2007; Kwasman et al., 2004). However, the ADHD has treated by the traditional medical model and the role of nursing is often overlooked in the care of children with ADHD (Betz, 2006).

Recently, the treatment of ADHD has begun to change to a more comprehensive multimodal approach including medication, behavioral management, support and counseling for children,

teacher, and parents, and environmental management. In this model, the roles and contribution of school nurses in avoiding or reversing negative impacts associated with ADHD by identifying early and managing effectively in the school and acting as a liaison among school, family, health care providers, and the community are expanded. Therefore, it is a great opportunity for school nurses to improve the management of ADHD (Dang et al., 2007; Kwasman et al., 2004; Lundholm-Brown & Dildy, 2001).

Children with ADHD experience a variety of difficulties at school. ADHD is one of the most common conditions demanding the time and knowledge of school nurses (Selekman, 2002). Few studies investigated parenting experiences or service needs of families with ADHD children (Kwasman et al., 2004; Oh & Park, 2007). Results of these studies demonstrated that ADHD children and their families have great service needs from school system. School based support programs for ADHD children and their families are needed.

Early identification and appropriate management is strongly related to school nurses' information. School nurses should also be kept informed and updated through continuing education about ADHD. With this knowledge, school nurses have the potential to facilitate a greater understanding about ADHD among teachers and other staff; offer desirable recommendations about the management of children with ADHD; promote collaboration among students, parents, teachers, and health care professionals about school child with ADHD; and assist in referring families to community support groups for ADHD (Kwasman et al., 2004). However, little is known about school nurses' understanding of the current state of school-based assessment and management of ADHD (Kwasman et al., 2004; Selekmán, 2002). A limited amount of research examined school nurses' knowledge and attitudes of ADHD (Frisch, Moster, Hawley, Johnston, & Ronereim, 2003; Kwasman et al., 2004). Findings of these studies demonstrated that most school nurses well-informed about ADHD and generally supportive of stimulant treatment for ADHD but they maintain a personal skepticism about stimulant use and safety. These studies found that nurses wanted more knowledge and skill about ADHD.

In Korea, to our knowledge, only two studies were conducted to identify preschool or elementary school teachers' knowledge and attitudes of ADHD (Keum, 2002; Kim, Choi, & Yoo, 2004), no study examined school nurses' knowledge and attitudes of ADHD. Oh and Park (2007) recommended the

study which investigate the perceptions and attitudes of ADHD for school nurses and teachers.

The purpose of this study was to investigate knowledge and attitudes of ADHD among school nurses. The specific objectives of this study were as follows: 1) to examine school nurses' knowledge of ADHD; 2) to examine school nurses' attitudes toward children with ADHD; 3) to identify the differences of knowledge and attitudes of ADHD by characteristics of school nurses; and 4) to identify the relationship between knowledge and attitudes of ADHD among school nurses. The results of this study can be used as basic data to develop school nurses' ADHD educational program.

Methods

Design

This study was a cross-sectional descriptive correlational study.

Subjects

The subjects of this study were a total of 245 members of a school nurses association in C province in southern part of Korea. Inclusion criteria of subjects were school nurses who 1) worked as a school nurse at least 6 months, 2) agreed participation.

Instruments

A survey questionnaire was developed including the followings: 1) general characteristics (age, marital status, educational level, career) 2) ADHD related characteristics (source of acquired information, educational needs) 3) knowledge of ADHD and stimulant medication, 4) attitudes of ADHD, and 5) self-efficacy of ADHD management and education. The survey items were generated from literature review and previous ADHD research.

● Knowledge about ADHD

The self report questionnaire used by Jerome and his colleagues (Jerome, Gordon, & Hustler, 1994; Jerome, Washington, Laine, & Segal, 1999) was modified for this study. It consists of 20 true/ false questions. This questionnaire

has been used in a study in Iran and has sufficient validity and reliability (Ghanizadeh et al., 2006). One item in the original questionnaire that was not applicable for Korean (ADHD occurs more in minority groups than in Caucasian groups) was deleted and replaced as another item (ADHD occurs more in low economic groups than in high economic groups). The content validity of revised questionnaire has proved by 2 psychiatrists and 2 nurses whose speciality is in child and adolescent mental health. Higher score reflects more knowledgeable.

● Knowledge about Stimulant Medication

The self report questionnaire was developed by researchers based on previous western studies and literature review. It consists of 13 true/ false questions related to stimulant medication management. The content validity has proved by 2 child and adolescent psychiatrists and 2 psychiatric nurses. Higher score reflects more knowledgeable.

● Attitudes about ADHD Children

The self report questionnaire developed by Brook, Watemberg, and Geva (2000) was used. It consists of 12 questions related to attitudes towards children with ADHD. Of them, 11 questions are yes/no answer type, and one question related IQ is 3 point scale (1= lower, 2= equal, 3= higher). It was validated by a panel comprising 4 pediatricians, one neurologist, one public health physician, four teachers, two psychologists, one social worker, and two educational advisors. Higher score reflects more understanding and tolerance.

● Self-efficacy of ADHD management and education

Self-efficacy of ADHD management and self-efficacy of ADHD education were measured by a 10 point scale, respectively. Higher score reflects higher self-efficacy.

Procedures

A packet containing a cover letter, questionnaires for ADHD, demographic information form, a small gift to compensate for participant's time and assistance, and a stamped and self-addressed return envelope was mailed to all 245 members enrolled in a school nurse association in C province. All respondents were asked to complete and return the questionnaires. Approximately 2 weeks after the packet had

been mailed, follow-up postcards were mailed to thank participants and to remind them to return the survey. The returning of a completed questionnaire was assumed to represent consent for participation in the study. Anonymity was secured by deleting participant's identity following data entry. It was emphasized that the data collected would be kept confidential and would be used only for research purposes. Data were collected from July 13, 2007 to August 27, 2007.

● Data analysis

Data were analyzed by using SPSS/PC 12.0. Descriptive statistics were used to analyze the general characteristics of the study participants and the level of knowledge and attitudes of ADHD. The t-tests or ANOVA were conducted to analyze the differences of knowledge and attitudes by the characteristics of participants. Pearson's correlation coefficient was used to analyze the relationship between knowledge and attitudes.

Results

Of the 245 packets mailed to the school nurses, 126(51.4%) were returned. Because more than 30% of the data were missing from 4 questionnaires, they were excluded from the analysis. Thus, 122 packets (49.8%) were suitable for data analysis.

General Characteristics of Subjects

The mean age of the subjects were 42.44 (SD=5.74) ranging from 32 to 61. Almost 88% of subjects were married and 63.9% of them received 4 years university education. The mean years of career as a school nurse was 17.60 (SD=5.63)

ranging from 0.5 to 35 <Table 1>.

Knowledge about ADHD

The mean score of knowledge test was 13.66 (SD=2.75), it accounts 68.3% of correct answer. The proportion of correct answer given to each question and the mean were shown in <Table 2>.

The results of this study suggested that a majority of school nurses agree that ADHD is biologically caused. For example, about 91.0% of school nurses agreed with the statement that "ADHD children are born with biological vulnerabilities toward inattention and poor self-control." Almost school nurses (90.2%) disagreed with the statement that "ADHD children could do better if they only would try harder." Moreover, 86.9% of school nurses correctly responded that "The inattention of ADHD children is not primarily a consequence of defiance, oppositionality, and an unwillingness to please others." However, many school nurses did not know that ADHD can be inherited. Only 37.7% of school nurses agreed with the statement that "ADHD can be inherited."

Encouragingly, a majority of school nurses recognized that the need of educational intervention as well as medical intervention for children with ADHD. For example, more than 90% of school nurses correctly disagreed with that the statement "ADHD is a medical disorder that can only be treated with medication." and "If medication is prescribed, educational interventions are often unnecessary." Three fourths of school nurses (75.4%) disagreed with that the statement "ADHD children always need a quiet, sterile environment in order to concentrate on tasks."

Also school nurses in this study have some misconceptions about ADHD. School nurses answered incorrectly for the

<Table 1> General characteristics of participants

(N=122)

Variable	Category	n (%)	M (SD)	Range
Age (years)	30-39	40 (32.8)	42.44 (5.74)	32-61
	40-49	65 (53.3)		
	Over 50	17 (13.9)		
Marital status	Married	107 (87.7)		
	Unmarried	11 (9.0)		
	Other (divorce, widowed, separated)	4 (3.3)		
Educational level	3 year College	20 (16.4)		
	University	78 (63.9)		
	Graduate School	24 (19.7)		
Career (years)	<10	7 (5.8)	17.60 (5.63)	0.5-35
	10-19.99	83 (68.6)		
	≥ 20	31 (25.6)		

<Table 2> Knowledge about ADHD

(N=122)

Item (answer code: T=true, F=false)	Correct answer (%)
1. ADHD can be caused by poor parenting practices (F).	58.2
2. ADHD can often be caused by sugar or food additives (F).	33.6
3. ADHD children are born with biological vulnerabilities toward inattention and poor self-control (T).	91.0
4. A child can be appropriately labeled as ADHD and not necessarily present as over-active (T).	67.2
5. ADHD children always need a quiet, sterile environment in order to concentrate on tasks (F).	75.4
6. ADHD children misbehave primarily because don't want to follow rules and complete assignments (F).	80.3
7. The inattention of ADHD children is not primarily a consequence of defiance, oppositionality, and an unwillingness to please others (T)	86.9
8. ADHD is a medical disorder that can only be treated with medication (F).	92.6
9. ADHD children could do better if they only would try harder (F).	90.2
10. Most ADHD children outgrow their disorder and are normal as adults (F).	77.0
11. ADHD can be inherited (T).	37.7
12. ADHD occurs equally as often in girls as in boys (F).	77.9
13. ADHD occurs more in low economic groups than in high economic groups (F).	71.3
14. If medication is prescribed, educational interventions are often unnecessary (F).	93.4
15. If a child can get excellent grades one day and awful grades the next, then he must not be ADHD (F).	82.0
16. Diets are usually not helpful in treating most children with ADHD (T).	9.0
17. If a child can play Nintendo for hours, he probably isn't ADHD (F).	82.8
18. ADHD children have a high risk for becoming delinquent as teenagers (T).	50.8
19. ADHD children are typically better behaved on 1-to-1 interactions than in a group (T).	58.2
20. ADHD often results from a chaotic, dysfunctional family life (F).	50.8

questions concerning diet. For example, 33.6% of school nurses incorrectly agreed with that “ADHD can often be caused by sugar or food additives.” In addition, only 9.0% agreed that “Diets are usually not helpful in treating most children with ADHD.” In other word, 91.0% of school nurses misunderstood diet as being useful in the treatment of ADHD children. Only 58.2% school nurses agreed with the fact that poor parenting did not cause of ADHD. Furthermore, about half of school

nurses (50.8%) disagreed with the fact that “ADHD often results from a chaotic, dysfunctional family life.” Moreover, almost half of school nurses disagreed that “ADHD children have a high risk for becoming delinquent as teenagers.”

Knowledge of stimulant medication

Thirteen questions addressed school nurses' knowledge about

<Table 3> Knowledge about stimulant medication

(N=122)

Item (answer code: T=true, F=false)	Correct answer (%)
1. Stimulant medication use may decrease the physical growth (i.e., height, weight) of children (T).	55.7
2. Children treated with stimulant medications will become addicted. They end up needing more and more of it (F).	47.5
3. Taking stimulant medications leads to drug abuse (F).	43.4
4. In most cases, taking stimulant medications helps improve ADHD related behaviors (T).	70.5
5. The most common side effects of stimulant medications are headache, abdominal pain, anorexia, and sleep disorder. It disappeared as time passed (T).	54.9
6. Children treated with stimulant medications should stop when they are teenagers (F).	54.1
7. Stimulant medication should take for short period because it may cause serious side effects (F).	37.7
8. If a child forgets to take Concerta, a child should not take it in the afternoon because it may cause a sleep disorder (T).	13.9
9. If a child have difficulties swallowing Concerta, a child may take it after crushing, breaking or chewing (F).	21.3
10. Periodical evaluation on anorexia or low body weight is necessary (T).	64.8
11. Stimulant medication use may produce or aggravate tics. Therefore, clinical evaluation and family history taking about tics is necessary before administration (T).	50.0
12. Everyone can benefit from taking a stimulant to improve attention, learning ability, and to stay alert (F).	55.7
13. Stimulant medication should be taken throughout the life because when a patient stops taking stimulants their symptoms return to pre-medication levels (F).	74.6

stimulant medication. The mean knowledge score was 6.44 (SD=3.49), it accounts 49.54% of correct answer. <Table 3> presents school nurses' response to the each question expressed as a percentage of correct answer. Almost seventy five percent of school nurses (74.6%) correctly disagreed that "Stimulant medication should take a lifelong because taking off stimulants make their symptoms back before stimulants mediation." About 70% (70.5%) of school nurses knew that "In most cases, taking stimulant medications helps improve ADHD related behaviors. However, for 5 items among 13 items, percents of correct answer were less than 50. Especially percents of correct answer for two items were very low: "Although you forgot to take, you should not take in the afternoon because it may cause sleep disorder." (13.9%); "If you have difficulties to swallow stimulant medication, you may take by cutting or chewing" (21.3%).

Attitudes about ADHD

In the opinion of 77.0%, ADHD children should receive mainstream education, while 23.0% favor a special education

setting. Regarding ADHD children' IQ, 73.0% of school nurses think that it is similar to non-ADHD classmates, 12.3% think it is lower, and 14.8% think that it is higher than their classmates<Table 4>. Almost all teachers (98.3%) feel ADHD children should receive psychological support, and 90.8% consider that specially trained educators should teach these children. Considering homework or examination, 33.1% think that ADHD children should receive less home work and easier examination than their classmate. Regarding punishment in class, 14.0% would apply the same discipline rules for all children and 17.2% would have any ADHD child that disturbs the class activity step out of the classroom. Almost 90% of school nurses (89.9%) think that all educators and teachers should be aware of any child with ADHD; 70.0% would inform the classmates about the peer's condition. About 88% (88.1%) think that ADHD children experience difficulties in their relations with their classmates. About three fourths of school nurses (87.5%) think that life of ADHD children will be succeed as well as their classmates, whereas 45.1% believe that these pupils will have difficulties in their family life later on.

<Table 4> Attitudes about ADHD

(N=122)

Item	n (%)	n (%)
1. Should ADHD children learn in an ordinary or a special school?	Mainstream education 94 (77.0)	Special education 28 (23.0)
2. Is the ADHD children' IQ level: higher, equal, or lower than that of their classmates?	Low / high 15 (12.3) / 18 (14.8)	Equal 89 (73.0)
3. Should ADHD children receive psychological support?	Yes 118 (98.3)	No 2 (1.7)
4. Should ADHD children receive education from specially trained teachers?	109 (90.8)	11 (9.2)
5. Should ADHD children receive less homework and easier examinations?	40 (33.1)	81 (66.9)
6. Should ADHD children apply the same discipline rules for all children?	17 (14.0)	104 (86.0)
7. Should children with ADHD be stepped out of the classroom for disturbs the class activity?	21 (17.2)	96 (82.1)
8. Should all educators and teachers aware of any children with ADHD?	107 (89.9)	12 (10.1)
9. Should all the classmates know the identity of a particular ADHD child?	84 (70.0)	36 (30.0)
10. Do you think that ADHD children experience difficulties in their relationships with their classmates?	104 (88.1)	14 (11.9)
11. Can ADHD children succeed in life as well as their classmates?	105 (87.5)	15 (12.5)
12. Do you think that ADHD children have difficulties in their family life later?	55 (45.1)	67 (54.9)

<Table 5> Self-efficacy of ADHD management and education

Variable	Category	n (%)	M (SD)	Range
Self-efficacy of ADHD management			4.45 (1.95)	1-10
Self-efficacy of ADHD education			4.08 (2.02)	1-10
Educational needs	Yes	117 (95.9)		
	No	5 (4.1)		
Willingness of participation of education	Yes	115 (94.3)		
	No	7 (5.7)		

Self-efficacy of ADHD management and education

Self-efficacy in management of children with ADHD was 4.45 (SD=1.95) and self-efficacy in education of school personnel about management of children with ADHD was 4.08 (SD=2.02) (Table 5). A majority of participants (95.9%) reported educational needs about management of children with ADHD and 94.3% of participant reported their willingness of participation if education is provided.

Differences of ADHD knowledge, attitudes, self-efficacy by the characteristics of participants

Attitudes of school nurses were significantly different by school nurses' age groups ($F=3.485$, $p=0.034$). The results of Post Hoc Test (Scheffé) identified that school nurses of age thirty was significantly tolerant and understandable than school nurses of age forty ($p=0.039$). Except this, there were no statistical significant differences on ADHD knowledge and attitudes by general characteristics of school nurses.

Moreover, self-efficacy in management of children with ADHD ($F=6.441$, $p=0.002$) and self-efficacy in education of school personnel about management of children with ADHD ($F=6.202$, $p=0.003$) were significantly different by educational level of school nurses. The results of Post Hoc Test (Scheffé) identified that school nurses who finished graduate school reported higher self-efficacy than school nurses who finished 3 year college ($p=0.011$) and university ($p=0.003$).

Relationship between knowledge, attitudes, and self-efficacy

The results of bivariate correlation indicated that there was no statistically significant relationship between school nurses' knowledge of ADHD and their attitudes of ADHD ($r= -0.086$, $p=0.384$). Only knowledge of stimulation medication was significantly correlate with self-efficacy in education of school personnel about management of children with ADHD ($r= .238$, $p = 0.008$).

Discussion

The findings of this Korean study offer insight into school

nurses' knowledge and attitudes about ADHD. The school nurses who participated in this study had less knowledge about ADHD and stimulant medication than one expect considering their pivotal role in the early identification and management of ADHD. School nurses in this study were poorly informed about ADHD, particularly in the area of stimulant mediation and in the area of common ADHD myths. Although the results of previous studies from North America also reported some knowledge gaps, school nurses or teachers were well informed about ADHD (Frisch et al., 2003; Kwasman et al., 2004). Limited knowledge of ADHD for Korean school nurses may relate to the current status of ADHD treatment approach in Korea which leans to traditional medical model. However, as Dang et al. (2007) suggested, a more comprehensive multimodal approach and proactive roles of school nurses are necessary to improve the management of ADHD in Korea. School nurses' misinformation or misconceptions about ADHD might hinder ADHD management and its outcomes. For example, if school nurses are incorrectly informed about the familial influences on the occurrence of ADHD or if they misunderstood diet as being useful in the treatment of ADHD children, they may offer inappropriate and unconstructive recommendations for the management of children with ADHD. Therefore, a continuing education program which can improve Korean school nurses' knowledge and to straighten misconceptions about ADHD is need to be developed and provided for them. Knowledge about the pharmacodynamics and known effects of recently used stimulant medication such as Concerta should be included as part of continuing education curriculum.

The weakest part in knowledge was stimulant medication. School nurses were relatively well informed about the effects of stimulant medication. However, school nurses in this study were generally poorly informed and particularly uninformed about the way taking stimulants exactly and side effects of stimulants and their coping strategies. This result is consistent with that of previous study (Snider, Busch, & Arrowood, 2001). The most commonly used stimulant medication in Korea, Concerta, should take early in the day, no later than 6:00 PM to prevent sleep problems. However, almost 85% school nurses did not know about that. Moreover, Concerta should swallow the pill as a whole. However, almost 80% of school nurses knew that it can be taken as crushed, chewed or broken. The contents of ADHD educational program for school

nurses should reflect these results and enforced the knowledge for stimulant medication.

The present study identified that school nurses in this study have some misconceptions about ADHD. It is consistent with findings from previous studies by Jerome and his colleagues (Keum, 2002; Kim et al., 2004). As studies of Jerome et al. (1994; 1999), the item which the lowest percent of correct answer (7.2%) in this study was “Diets are usually not helpful in treating most children with ADHD”. Almost one third of school nurses (31.5%) agreed that “ADHD can often be caused by sugar or food additives.” Jerome et al. (1999) suggested it may be the result of misinformation spread by the media. Moreover, less than half of school nurses recognized that ADHD children have a high risk for becoming delinquent as teenagers. Lack of knowledge of a high risk of juvenile delinquency of ADHD children may increase negative outcomes of ADHD children and their families. School nurses play active roles to break misconceptions which school personnel, parents and public have. Therefore, ADHD educational program should include contents which break school nurses’ ADHD related misconceptions.

Moreover, school nurses in this study had low tolerant attitudes toward ADHD children. School nurses expressed impatience with ADHD children. However, ADHD students need a different disciplinary approach altogether (Brook et al., 2000). ADHD students are a high risk for school failure. Brook et al. (2000) demonstrated that a tolerant, encouraging attitudes of teachers may reduce the degree of low self-esteem, isolation, and social ostracism in ADHD children. School nurses should set good example by treating these children with patience, understanding and consideration to facilitate a greater understanding about ADHD among teachers, other school personnel, and parents with ADHD children. By doing this, school nurses can create positive dynamic environment to identify as early as possible and to minimize the negative impacts of school outcomes (Snider et al., 2001).

Contrary to expectation, the relationship between knowledge and attitudes about the management of children with ADHD among school nurses was not significant. This result is consistent with results of a previous study (Jerome et al., 1999) but other previous studies demonstrated a significant relationship between knowledge and attitudes (Bekle, 2004; Ghanizadeh et al., 2006). This means that higher knowledge does not necessarily assure more patience and tolerance

towards their disabled peers. Replication studies are needed to clarify these relationships.

This study also found that school nurses’ self-efficacy in management of children with ADHD and self-efficacy in education of school personnel about management of children with ADHD are low. Moreover, they wanted more knowledge and skill about ADHD and willingness to participate educational program. The main sources of school nurses’ information on ADHD are TV or radio, newspaper, book, periodical, internet and continuing education. The Korean School Nurses Association or the educational authorities should make an effort to promote school nurses’ self-efficacy in management of children with ADHD and self-efficacy in education of school personnel about management of children with ADHD.

There are some strengths and limitations to this study. A strength of this study is that it is the first study which examined the school nurses’ knowledge and attitudes in Korea. The results of this study provided a basis to develop ADHD educational program for school nurses. However, the current study had some limitations. The sample for this study may not be representative of all school nurses in Korea because it was drawn from a province and response rate was 49.8%. Therefore, the results should be interpreted carefully. Moreover, little information was available in the literature regarding knowledge of stimulant medication, and no validated measurements could be found to address the research questions. The research team developed the survey instrument, and the measurement used was supported mainly by the face validity conferred by the team. There is the likelihood that a minority of the questions could have induced a certain response. More validated and reliable measurements are need to be developed.

Conclusion

This study identified that the school nurses in this study have limited knowledge about ADHD and its treatment with stimulation medication. Moreover, their attitudes toward ADHD children were low tolerant. Findings from this study point to a critical need about an education program related to ADHD for school nurses about ADHD considering school nurses’ pivotal role in early identification and management in school setting. School nurses could increase their reliance on research knowledge to inform and guide their decisions as a health

professional. Continuing education program to keep school nurse updated with current knowledge on ADHD is need to be developed and applied. Further studies of knowledge and attitudes of school nurses are necessary to understand ADHD and to play active role to manage of ADHD children in school setting.

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