

국내 작업치료의 아동 중재 연구 동향

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국문초록

목적 : 본 연구에서는 국제기능장애 건강분류에 따른 국내 작업치료의 아동 중재 연구 실태와 동향을 파악하고자 하였다.

연구방법 : 대한감각통합학회지, 대한작업치료학회지, 지역사회작업치료학회지, 재활치료과학, 한국신경인지재활치료학회지에 2017년 1월부터 2021년 12월까지 게재된 작업치료의 아동 중재 연구 47편을 대상으로, 연구의 근거 수준, 연구 대상자, International Classification of Functioning, Disability and Health-Children & Youth Version(ICF-CY)에 따른 중재 목적과 중재 접근법을 분석하였다.

결과 : 작업치료의 아동 중재 연구를 분석한 결과, 근거 수준 IV인 연구가 53.19%로 가장 높은 비율을 차지하였다. 학령기 아동을 대상으로 한 연구가 53.7%로 가장 많았고, 대상자 진단명에서는 자폐스펙트럼 장애와 발달 지연이 각각 14.8%으로 가장 높은 비율을 차지하였다. ICF-CY에 따른 중재 목적은 활동과 참여가 48.94%로 가장 높은 비율을 차지하였고, 감각 접근법(sensory approach)을 많이 사용하였다.

결론 : 작업치료분과학회의 Korea Citation Index(KCI) 등재 학술지에 게재된 작업치료의 아동 중재 연구 분석을 통해 최근의 국내 작업치료의 아동 중재 연구 동향과 수준을 분석하였고, 앞으로 작업치료의 발전을 위해 더 질적으로 높은 연구의 형태와 다양한 중재 접근법에 관한 연구가 필요함을 알 수 있었다.

주제어 : 국제기능장애 건강분류, 연구 동향, 작업치료의 아동 중재

I. 서론

장애 아동의 인구가 점점 증가하면서 병원, 아동 센터, 연구소, 어린이집을 포함한 사회복지시설, 학교, 보건소에서 작업치료를 받는 아동과 청소년의 비율이 증가

하고, 이와 더불어 아동과 청소년 분야에서 근거기반치료(Evidence-Based Practices; EBP)의 중요성은 더욱 강조되고 있다(Ministry of Health and Welfare, 2021). 작업치료사는 아동의 가정, 학교, 지역사회에서 의미 있는 작업 참여를 주요 목표로, 신체적/정신적으로 장애를

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접수일: 2022.04.29.

|| 심사일: (1차: 2022.05.10. / 2차: 2022.05.27.)

|| 게재확정일: 2022.06.21.

동반한 아동의 발달 치료, 학교 내에서의 치료지원, 직업 전 준비기술훈련 및 부모교육에 이르기까지 다양한 중재가 이루어지고 있다(Case-Smith & O'Brien, 2010; McLaren & Rodger, 2003). 주로 사용하는 중재 방법에는 신경발달 치료(Neurodevelopmental Treatment; NDT), 감각통합(sensory integration), 작업기반 중재(occupation-based intervention), 보조공학(assistive technology) 등이 있다.

아동의 치료목표에 달성하기 위해 작업치료사는 여러 가지 중재 방법을 사용한다. 작업치료사가 임상에서 시행하는 중재는 이론과 연구를 기반으로 변화되고 발전되었다(Rodger, Brown, & Brown, 2005). 작업치료사는 중재의 최신 연구 결과를 바탕으로 전문 지식을 가지고 치료적 개입을 하고 싶은 바람이 있다. 그러나 최신 연구의 결과를 바탕으로 중재를 적용하기 위해서는 시간과 자원이 필요하며, 이로 인해 중재의 적용이 지연될 수 있다(Novak & Honan, 2019; Upton, Stephens, Williams, & Scurlock-Evans, 2014). 전문 영역 학술지를 분석하는 것을 통해 시간의 흐름에 따른 연구 주제의 변천 과정과 전문가 집단의 주요 관심사를 파악할 수 있다(Anderson, Tang, & Barney, 2006). 작업치료 학문 분야의 아동 연구 동향 분석으로 작업치료의 주요 아동 연구 분야와 작업치료의 아동 분야를 둘러싼 주변 환경의 변화 경향을 알아볼 수 있으며, 이를 통하여 작업치료 영역의 발전 방향 설정 및 대학교육의 기초자료에 대한 정보를 제공해 줄 수 있다(Jo, Park, Choi, & Bae, 2014).

미국작업치료사협회는 ICF의 건강에 대한 개념을 반영한 작업치료실행체계(OTPF; Occupational Therapy Practice Framework: Domain and Process)를 발표하였다(AOTA, 2002). 작업치료실행체계의 많은 개념이 ICF의 관점과 유사하다는 연구들이 이어져 오면서 ICF를 작업치료 임상에 적용하기 위한 연구가 계속돼 오고 있다(Hemmingsson & Jonsson, 2005; Maritz et al., 2018; Stamm, Cieza, Machold, Smolen, & Stucki, 2006). 그러나 ICF는 발달 시기에 있는 아동과 청소년의 변화를 설명하는데 제한이 있다. ICF를 기반으로, 0~18세 이하의 아동과 청소년의 건강과 건강 관련 상태를 설명하기 위한 이론의 틀과 표준화된 용어를 제시한 International Classification of Functioning, Disability and Health-Children and Youth version(ICF-CY)이

개발되었고, 아동과 청소년 분야에서는 ICF-CY의 사용이 권장되고 있다(Bendixen & Kreider, 2011; World Health Organization, 2007).

따라서, 본 연구에서는 2017년부터 현재까지의 국내 작업치료의 아동 중재 연구 분석을 통해 ICF-CY에 따라 중재의 목적을 분석하고, 이에 따라 중재 접근법과 유형, 중재에서 사용된 평가 방법과 결과를 제시하여 작업치료의 아동 중재 연구 동향을 제시하고, 이와 함께 앞으로의 방향성을 밝히고자 한다.

II. 연구 방법

1. 문헌 수집 방법

본 연구는 2022년 현시점을 기준으로 작업치료영역에서 KCI 등재지인 대한감각통합학회지, 대한작업치료학회지, 지역사회작업치료학회지, 재활치료과학, 한국신경인지재활치료학회지에 2017년 1월부터 2021년 12월까지 게재된 논문 47편을 분석하였다. 분석연구의 선정기준과 배제기준은 다음과 같다.

1) 선정기준

- (1) 만 18세 이하의 아동, 청소년 대상
- (2) 아동, 아동의 보호자에게 시행된 중재
- (3) 작업치료사가 시행한 중재
- (4) RCT, 실험논문

2) 배제기준

- (1) 성인 대상
- (2) 타 분야의 아동 관련 종사자가 시행한 중재
- (3) 평가도구만 사용된 연구
- (4) 체계적 고찰, 문헌 연구, 동향 분석연구

2. 연구의 근거 수준

본 연구에서 선정된 논문은 Arbesman, Scheer, & Lieberman (2008)이 개발한 근거수준 분석 모델을 사용하여 근거수준을 평가하였다(Table 1).

Table 1. Levels of evidence for evidence-based practice

Evidence level	Definition
I	Systematic reviews, meta-analyses, randomized controlled trials
II	Two groups non-randomized studies
III	One groups non-randomized studies
IV	Single-subject designs, surveys
V	Case reports, narrative literature reviews, qualitative research

3. 연구 대상자

연구 대상자의 기준을 18세 미만의 아동과 청소년으로 하였다. 0~1세는 영아기(infant), 1~2세는 유아기(early childhood), 3~6세는 학령전기(children of preschool

age), 7~12세는 학령기(children of school age), 12세 이상은 청소년기(adolescence)로 분류하였다. 연구 대상자의 진단명은 각 논문에서 기술된 문장 그대로 인용하여 뇌성마비, 자폐스펙트럼장애, 지적장애, 주의력결핍과잉 행동장애 등으로 분류하여 제시하였다(Table 2).

Table 2. Study participants

		Divisions	N(%)
Ages of study participants (multiple responses)		Infant(0-1)	0(0)
		Early childhood(1-2)	0(0)
		Children of preschool age(3-6)	23(42.6)
		Children of school age(7-12)	29(53.7)
		Adolescence(13-18)	2(3.7)
		Total	54(100.0)
Classification of diagnosis of study participants (multiple responses)	Diagnosis	Normal	5(9.25)
		Asperger's syndrome	1(1.85)
		Attention deficit/hyperactivity disorder	6(11.1)
		Autism spectrum disorders	8(14.8)
		Borderline intellectual functioning	1(1.85)
		Cerebral palsy	2(3.7)
		Children with autistic features	2(3.7)
		Children with ADHD tendency accompanied by learning delays	1(1.85)
		Children with cochlear implants	1(1.85)
		Child with praxis problems	1(1.85)
		Developmental coordination disorder	1(1.85)
		Developmental delay	8(14.8)
		Developmental disorder	2(3.7)
		Digeorge syndrome	1(1.85)
		High functioning autism spectrum disorder	4(7.4)
		Intellectual disabilities	5(9.25)
		Language disorder	1(1.8)
		Learning disability	2(3.7)
		Obstetric brachial plexus injury	1(1.85)
		Sensory modulation disorder	1(1.85)
	Total	54(100.0)	

4. 중재 접근법

중재 접근법은 Kreider, Bendixen, Huang, & Lim (2014) 연구에서 제시된 분류를 참고로 하여, 신경운동(Neuromotor), 감각(Sensory), 습득발달(acquisition-developmental), 생체역학(biomechanical), 인지-심리사회(cognitive-psychosocial), 시지각(visual-perceptual) 중재 접근법으로 제시하였고, 두 가지 이상의 중재 접근법이 사용된 연구의 경우 다중(multiple)로 분류하였다.

5. 중재의 목적

중재의 목적은 ICF-CY에 따라 신체기능, 신체 구조, 활동과 참여, 환경으로 나누어 제시하였으며, 중복을 허용하였다.

6. 평가 방법

중재의 효과를 평가하기 위한 평가도구 및 측정 방법을 제시하였다(Table 3).

7. 중재의 효과

아동에게 시행한 중재의 효과는 연구 수준에 따라 제시하였다. 근거 수준 II, III은 통계적 유의 정도(p -value)를 표시하였고, 근거 수준 IV, V에 관해서는 서술로 제시하였다. 단일사례 연구에서 유의성 검증을 위해 2 표준편차 범위를 적용하여 경향성을 분석하였으

면 유의도로 언급하였다(Table 3).

III. 연구 결과

1. 연구의 근거 수준 동향

작업치료의 아동 중재 연구가 2018년도에 가장 많이 이루어졌다. 연도별 연구 근거 수준을 살펴보면, 근거 수준 II인 연구는 2017년도에는 한편도 없었고, 2018년도에는 4편(25%), 2019년에는 1편(14.29%), 2020년도에는 2편(25%), 2021년도에는 2편(25%)이 게재되었다(Figure 1).

2. 선정된 연구의 연구 대상자

선정된 연구의 연구 대상자 연령군을 집계한 결과, 학령기 아동의 빈도가 가장 높게 나타났으며(53.7%), 그 뒤로 학령전기 아동(42.6%), 청소년(3.7%) 순으로 나타났다. 영아, 유아를 대상으로 한 연구는 없었다(Table 2). 연구 대상자의 가장 높은 빈도를 차지하는 질환은 자폐스펙트럼 장애와 발달 지연이 각각 8(14.8%)개로 나타났다(Table 2).

3. ICF-CY에 따른 중재 목적

전체적으로 신체기능(Body Function) 31.91%, 신체

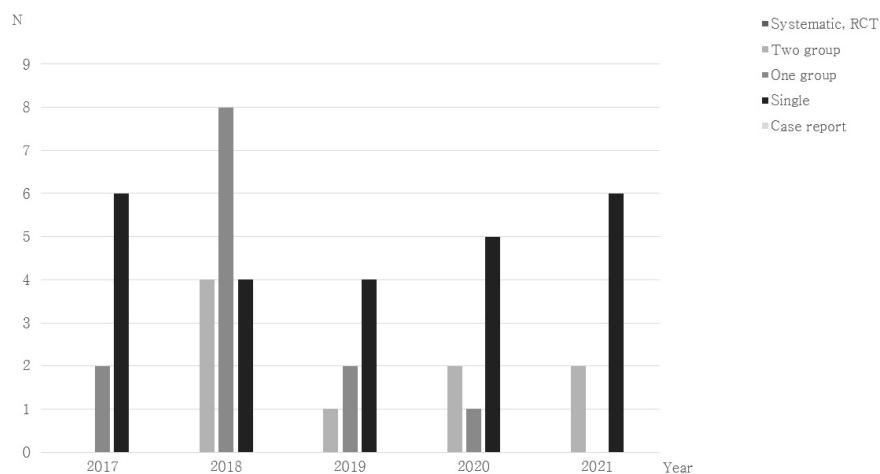


Figure 1. Hierarchy of levels of evidence for evidence-based practice

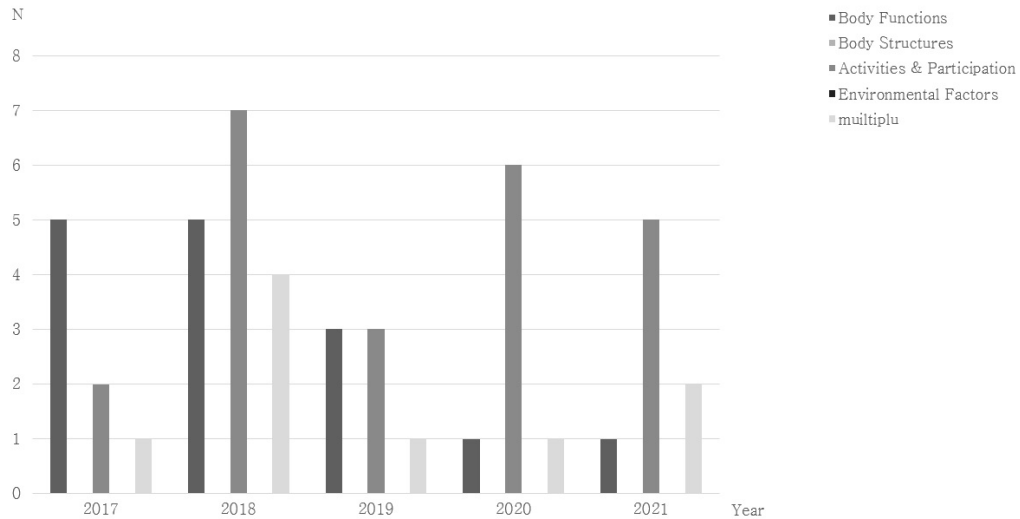


Figure 2. International Classification of Functioning, Disability and Health-Children & Youth version (ICF-CY)

구조(Body Structure) 0%, 활동과 참여(Activities & Participation) 48.94%, 환경(Environmental) 0%, 다중(Multiple) 19.15%로 나타났다. 다중에는 신체기능과 활동과 참여 향상을 목적으로 중재한 연구들이 포함되었다. 연도별 추이는 다음과 같다(Figure 2). 신체기능을

목적으로 한 연구는 2017년 62.5%, 2018년 31.25%, 2019년 42.86%, 2020년 12.5%, 2021년 12.5%로 감소하는 추세를 보인 반면 활동과 참여를 목적으로 한 연구는 2017년 25%, 2018년 43.75%, 2019년 42.86%, 2020년 75%, 2021년 62.5%로 증가하는 추세를 보였다.

Table 3. Intervention approach to improve body function

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Sensory	Ayres Sensory Integration® intervention	2	SSP, PDMS-2	<ul style="list-style-type: none"> In the ASI Intervention group, the sensory processing ability showed statistically significant difference in total score, movement sensitivity, auditory filtering and low energy/weak compared to the control group without ASI intervention ($p < .05$) In the ASI Intervention group, the motor development showed statistically significant difference in GMQ, FMQ, & TMQ compared to the control group without ASI intervention ($p < .05$) 	Park & Kim (2019)
	IM training program	3	IM, K-ARS, BOT-2	<ul style="list-style-type: none"> After intervention, hyperactivity/impulsivity was statistically significant decreased ($p < .05$) After intervention, Timing, Hand coordination & body coordination was a statistically significant improvement ($p < .05$) 	Gu, Kang, Lee, & Kim (2017)
	IM training program	4	LFA, SCRS, find character, sudoku	<ul style="list-style-type: none"> The participation showed an increase in attention and controlled in impulsivity After the intervention, self-control & impulsivity of SCRS decreased, and find character & sudoku correct answers rate increased 	Kang (2017)
	Perceptual motor program	4	K-DTVP-2; copying, rope jumping	<ul style="list-style-type: none"> The motor skill & visual motor integration skill was increased in the intervention phase, but slightly decreased in the follow-up phase 	Kim, Gu, & Kim (2017)

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Sensory	SI intervention combined with auditory perception training	4	SP, -DTVP-2, Maintenance time of attention	<ul style="list-style-type: none"> After intervention, the visual perception function and sensory processing scores increased Attention of participant A enhanced significantly while that of participant B and C did not improve significantly 	Park, Lim, & Kim (2017)
	IM training program	4	Frequency of inattention, Number of consonants and vowels	<ul style="list-style-type: none"> Compared to baseline, the subject's inattention decreased in the IM training mediation period, and the performance of activities requiring attention also improved 	Cho & Ju (2018)
	IM training program	4	IM-SFA; tasks 1 and 2	<ul style="list-style-type: none"> In SFA tasks 1 and 2, the accuracy of the participant's timing increased during the B period compared to the A period 	Song & Hong (2020)
Acquisition -developmental	Video self-modeling	4	Motor skill performance, COPM	<ul style="list-style-type: none"> After the video self-modeling intervention sessions, motor performance time decreased, while performance quality, and total COPM score increased 	Jo, Yoo, Jung, & Park (2017)
	Task-oriented intervention	4	K-DTVP-3 ;drawing of oval, COMPS; finger-nose touching	<ul style="list-style-type: none"> After task-oriented intervention, visuomotor coordination and fine motor coordination abilities were significantly improved 	Song & Hong (2021)
Biomechanical	Short thumb opponens splint	4	BBT, Nine-hole pegboard test, Mallet scale, Active movement scale	<ul style="list-style-type: none"> After intervention with a short thumb opponens splint, the participant showed significant improvement in hand and upper extremity functions and demonstrated improvement 	Jung, Kim, & Kim (2019)
Cognitive -psychosocia	Goal management training	2	COPM, BOT-2, DTVP-2	<ul style="list-style-type: none"> Goal management training between two groups did not show a statistically significant difference in terms of the performance status of COPM The motor skill & eye-hand coordination was a statistically significant difference between the autism spectrum disorder group and normal group ($p < .05$) 	Ahn (2018)
	Group cooking program	3	AMPS, CCTT STOOPS color and word test	<ul style="list-style-type: none"> Cognitive inhibition, executive function and performance, and executive function were statistically significant ($p < .05$) 	Lee et al. (2018)
	COMCOG	3	K-DTVP 2	<ul style="list-style-type: none"> After the program, motor reduced visual perception and motor reduced visual perception was a statistically significant effect ($p < .05$) 	Chung (2018)
	Cognitive exercise therapy	4	K-DTVP-2, star cancellation test, BBT	<ul style="list-style-type: none"> After intervention, it positively affected visual attention and motor ability 	Lee, Kim & Oh (2018)
	Neurocognitive-rehabilitation Therapy	4	K-MASA, SOMA	<ul style="list-style-type: none"> After intervention, coordination, modulation, drooling, lip closing, tongue movement, tongue muscular strength, tongue coordination, and oral preparatory phase showed improvements After intervention, "solid" and "liquid bottle" categories improved from "abnormal" to "normal" classification 	Woo & Ahn (2019)

ASI: Ayres Sensory Integration®, BBT: Box and Block Test, BOT-2: The Bruininks-Oseretsky Test of Motor Proficiency-2, CCTT: Children's Color Trails Test, COMPS: Clinical Observation of Motor and Postural Skills, COPM: Canadian Occupational Performance Measure, FMQ: Fine Motor Quotient, GMQ: Gross Motor Quotient, K-DTVP-2: Korean Developmental Test of Visual Perception-2, IM: Interactive Metronome, K-ARS: Korean-ADHD Rating Scale, K-MASA: Mann Assessment of Swallowing Ability, LFA: Long Form Assessment, PDMS-2: Peabody Developmental Motor Scale-2, SCRS: Self-Control Rating Scale, SFA: Short Form Assessment, SOMA: Schedule for Oral-Motor Assessment, SP: Sensory Profile, SSP: Short Sensory Profile, TMQ: Total Motor Quotient

4. 중재 목적에 따른 중재 접근법

중재 목적이 신체기능(Body Function), 활동과 참여(Activities & Participation), 다중(Multiple)인 연구를 중재 접근법에 따라 Table 3, 4, 5로 나타내었다. 신체기능 향상이 목적인 연구에서는 감각 접근법, 습득-발달 접근법, 생체역학 접근법, 인지-심리사회 접근법이 사

용되었고, 감각 접근법이 가장 많이 사용되었다(Table 3). 활동과 참여 향상이 목적인 연구에서는 감각 접근법과 습득-발달 접근법, 인지-심리사회 접근법, 시지각 접근법이 사용되었다(Table 4). 신체기능 향상과 함께 활동과 참여 향상을 목적으로 한 연구에서는 감각 접근법과 습득-발달 접근법, 다중 접근법이 사용되었다(Table 5).

Table 4. Intervention approach to improve activities & participation (continue)

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Sensory	Therapeutic listening	2	COPM, FAPC, CAST	<ul style="list-style-type: none"> The participants' auditory behavioral problems significantly improved in the experimental group, but no significant difference was found between the two groups There was no significant difference in attention between the two groups, but there was a significant difference between the two groups in the "adaptability" and "emotion" domains ($p < .05$) 	Park, Kim, Cha, & Kim (2020)
	Family-centered coaching based on sensory integration	2	COPM, GAS	<ul style="list-style-type: none"> Statistically significant differences were found in the scores of COPM performance and satisfaction, and the GAS scores between the experimental group and the control group ($p < .05$) Statistically significant differences were found in score changes in COPM and GAS, between the two groups ($p < .05$) 	Kim, Kim, Chang, & Hong (2021)
	Sensory integration group therapy	3	SSP, PIPPS, COPM	<ul style="list-style-type: none"> After intervention, sensory processing significantly improved ($p < .05$), were maintained in the 4 weeks follow-up test After intervention, Play interaction significant improved ($p < .01$), and play disruption, and play disconnection significantly decreased ($p < .01$, $p < .05$) 	Choi, Kim, Lee, & Yoo (2018)
	Task-oriented multi-sensory movement program	3	KNISE-BAAT writing test, self-efficacy test	<ul style="list-style-type: none"> After intervention, there was a significant improvement in self-efficacy (school, society), and writing ability (command of vocabulary and sentence) ($p < .05$) 	Roh & Kwag (2018)
	Oral sensory stimulation home program	4	Tooth-brushing; rejection behavior & allocated time, COPM, SP	<ul style="list-style-type: none"> All children decrease rejection behaviors and increased time on tooth-brushing The parents reported increased performance and satisfaction on COPM for the tooth-brushing of their children The oral sensory sensitivity decreased in intervention period and the improvement in oral activity performance can be maintained after the intervention 	Shin, Yoo, Lee, & Jung (2017)
	The Listening Program [®]	4	SSP, developmental profile - 3	<ul style="list-style-type: none"> Functional improvement of sensory processing function, auditory filtering, and development profile were shown during intervention rather than baseline 	Chung (2017)
Sensory	Oral activity with SI intervention	4	GAS - eating favorite foods, eating hated foods	<ul style="list-style-type: none"> The GAS score of voluntary eating of favorite foods and disliking foods was increased to on the intervention phase (1.9/1.7) 	Kim, Son, & Kim (2018)

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Sensory	Paired-group SI therapy	4	SSP, PIPPS, KPPS-R	<ul style="list-style-type: none"> After intervention, all subjects showed improved sensory processing and play development. The frequency of negative interactions decreased 	Park, Park, & Kim (2021)
	Vestibular sensory integration	4	SP, FAPC, problem behavior rate	<ul style="list-style-type: none"> The sensory processing and auditory behavior improved after the vestibular-focused sensory integration, and diverse problem behaviors showed decreasing during the interventions 	Park & Kim (2021)
	IM training program	4	BASA: R	<ul style="list-style-type: none"> After intervention, there was a significant improvement in reading fluency 	Gim, Shin, Jeong, & Jeon (2021)
	Environmental enrichment therapy	4	SP, Task performance; bars in the box, puzzle making	<ul style="list-style-type: none"> After intervention, task performance improved from an average of 200% to a maximum of 354% compared to the baseline period Tactile processing, emotional response, and activity level were improved to the normal category 	Jo, Park, Choi, & Sin (2021)
Acquisition -developmental	Occupation-based intervention as a group program	3	PQRS, COPM, satisfaction of occupation-based program	<ul style="list-style-type: none"> The quality of occupational performance was higher than before intervention ($p < .01$) The performance level and satisfaction level of COPM increased ($p < .01$) High scores were found in program satisfaction through parental interview 	Ra, Kong, & Chang (2018)
	Picture book reading training protocol using electronic media	3	KNISE-BAAT	<ul style="list-style-type: none"> There was a significant improvement in reading ability – understanding words ($p < .05$), completion sentence ($p < .01$), vocabulary selection ($p < .05$), vocabulary arrangement ($p < .01$), understanding short text ($p < .05$) There was no significant difference in oral reading 	Son, Kwag, & Jeon (2018)
	Task-oriented training	4	Cognitive task, gross motor task, fine motor task, BSID III, SMS, BOT-2	<ul style="list-style-type: none"> The average number of correct responses in the cognitive and gross motor increased during the intervention period compared to the baseline After intervention, scores increased in all areas of pervasive developmental level and social maturity. 	Kwon & Ahn (2019)
Cognitive -psychosocial	Performance-basic executive function group program	2	AMPS, sun & moon task, the eight boxes task, CCTT-2	<ul style="list-style-type: none"> The treatment group showed significantly more improved executive function scores than the control group ($p < .05$) The treatment group showed higher posttest than pretest scores in the AMPS process skills (attends, initiates, terminates, organizes, adjusts) ($p < .05$) 	Moon & Kim (2018)
	Learning tree cognitive model program	2	C-TRF, PBSYC	<ul style="list-style-type: none"> After intervention, it was effective in reducing emotional behavior problems of children participating in research and promoting prosocial behavior with peers ($p < .05$) 	Lee & Chung (2020)
	DIRFloortime [®] therapy	3	K - WISC-IV	<ul style="list-style-type: none"> After initiating the program, the language comprehension indicators and the information processing indicators showed statistically significant effect ($p < .001$) 	Chung (2018)
	DIRFloortime [®] therapy	3	SSP, NDRC, HKRM & DECA item reconstruction & supplementary scale	<ul style="list-style-type: none"> After intervention, there was a statistically significant difference ($p < .05$) between the self – regulation and the resilience functions After intervention, quality of social interaction and communication were clinically improved 	Chung (2019a)

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Cognitive- psychosocial	DIRFloortime® therapy	3	NDRC, CCC-2	<ul style="list-style-type: none"> • After intervention, the communication function (structural and pragmatic language abilities) showed a significant difference ($p < .05$) • After intervention, the social interaction function showed significant improvement ($p < .05$, $p < .001$) 	Chung (2019b)
Cognitive- psychosocial	CO-OP intervention	4	COPM, PQRS, BOT-2, ESI	<ul style="list-style-type: none"> • The results showed the performance and satisfaction levels of the COPM, and PQRS scores not only in trained tasks, but also in untrained tasks • After intervention, BOT-2 score (bilateral coordination) was significant improvement and ESI score improved 	Kim, Yoo, Park, & Han (2020)
	Neurocognitive rehabilitation therapy	4	EDPA, Beery VMI-6, SP; multisensory processing, fine motor/perception, praxis test	<ul style="list-style-type: none"> • After intervention, the prewriting skill score improved • After intervention, visual-motor integration and motor coordination score improved • After intervention, praxis test improved in the sequence execution 	Woo & Ahn (2021)
Visual- perceptual	Light box training	4	CARS, K-DDST-2, K-CDI, KPPS	<ul style="list-style-type: none"> • The training has a positive effect on the play and pervasive development level 	Kwon & Ahn (2021)
	Light box training	4	K-DDST-2, KPPS, SP, SMS, star cancellation test, BOT-2; filling in shapes circle & star, K-WISC-III; car	<ul style="list-style-type: none"> • The inclination of the trend line drastically increased in the attention, fine motor, and discrimination • After intervention, scores of the sensory processing and play and social maturity increased 	Kwon & Ahn (2020)

AMPS: The Assessment of Motor and Process Skills, BASA: R: Basic Academic Skills Assessment: Reading, Beery VMI-6: Beery-Buktenica Developmental Test of Visual-Motor Integration, Sixth Edition, BOT-2: The Bruininks-Oseretsky Test of Motor Proficiency-2, BSID-III: Bayley Scales of Infant and Toddler Development-Third Edition, CAST: Child Attention Scale for Teacher, CCC-2: The Children's Communication Checklist 2, CCTT-2: Children's Color Trails Test-2, CO-OP: Cognitive Orientation to daily Occupational Performance, COPM: Canadian Occupational Performance Measure, C-TRF: Caregiver-Teacher Report Form, DECA: Devereux Early Childhood Assessment, DTVP-2: Developmental Test of Visual Perception-2, EDPA: Erhardt Developmental Prehension Assessment, ESI: Evaluation of Social Interaction, FAPC: Fisher's Auditory Problems Checklist, GAS: Goal Attainment Scale, HKRM: Healthy Kids Resilience Module, K-CDI: Korean-Child Development Inventory, K-DDST-2: Korean Denver Developmental Screening Test-2, KNISE-BAAT: Korea National Institute for Special Education Basic Academic Achievement Tests, KPPS: Knox Preschool Play Scale, KPPS-R: Knox Preschool Play Scale-Revise, K-WISC: Korean - WISC Wechsler Intelligence Scale for Children, NDRC: Neuro-Developmental Disorders of Relating and Communication Functional Emotional Developmental Levels, PBSYC: Prosocial Behavior Scale for Young Children, PIPPS: Penn Interactive Peer Play Scale, PQRS: Performance Quality Rating Scale, SMS: Social Maturity Scale, SP: Sensory Profile, SSP: Short Sensory Profile

Table 5. Intervention approach to improve multiple

Intervention approach	Intervention type	Level of evidence	Measures used	Outcome	Author/Year
Sensory	Group play activities based on Ayres SI [®]	2	SSP, SSRS, Rosenberg's Self-esteem scale	<ul style="list-style-type: none"> Social skill ability, cooperation, and self-esteem differed significantly between groups after the intervention ($p>.05$) 	Lee, Chang, Lee, Kang, Yeo, & Kim (2018)
	SI intervention focused on proprioceptive – vestibular stimuli	3	Korean alphabet writing test, BOT-2: short form & fine motor	<ul style="list-style-type: none"> After intervention, there was a statistically significant difference between the total scores of consonant writing and the Korean alphabet writing assessment ($p<.05$) The response speed items showed statistically significant difference ($p<.05$) and Visual-motor control scores increased 	Hwang, Kim, & Jung (2017)
	SI group therapy	3	EDPA, PIPPS, ToP	<ul style="list-style-type: none"> After intervention, the fine motor skills of participants did not show significant increases, but social interaction and playfulness showed significant increases ($p<.05$) 	Choi & Kim (2018)
	IM training program	4	COMPS, handwriting legibility & speed	<ul style="list-style-type: none"> After intervention, the score of slow movement, finger-nose touching, and asymmetrical tonic neck reflex improved The handwriting legibility and speed also tended to increase 	Park & Kim (2018)
	ASI [®] with play-centered oral defensiveness reduction activities	4	Measuring oral sensitivity in clinical practice, K-CEBI, food Intake checklist	<ul style="list-style-type: none"> Oral sensitivity and eating behavior were improved during the treatment Food intake checklist score was not changed 	Sung, Choi, & Jung (2019)
Acquisition -developmental	Fidget spinner training	2	Jepsen-Taylor hand function test, grip strength test, LT	<ul style="list-style-type: none"> After intervention, it was significant improvement in the study group's hand function (grip strength and handwriting legibility) and a significant difference was shown between the control and study groups ($p<.05$) 	Jang, Won, Eo, Seo, & Lee (2018)
Acquisition -developmental	Group motor activity program	3	BOT-2: short form, PEGS-2	<ul style="list-style-type: none"> After intervention, the motor function and self-efficacy was statistically significantly improved ($p<.05$) 	Kim, Je, Seo, & Kim (2020)
Multiple	SI intervention combined with app-based visual perception training	2	SSP, DST, K-DTVP-2, Wee FIM	<ul style="list-style-type: none"> Significant effects within each group were verified in all areas of the experiment group and the areas other than the attention of the control group After intervention, there was a statistically significant difference in sensory processing ($p<.05$), attention ($p<.01$), visual perception ($p<.01$), daily living ability ($p<.001$) of the experiment group There were no significant differences between groups 	Kwon (2021)
	Bilateral exercise and visual perception program	4	BOT-2: dropping and catching a ball-one/both hands, upper coordination, writing speed, K-DTVP-2, TVMS-R	<ul style="list-style-type: none"> After intervention, the scores for bilateral coordination ability and writing speed improved After intervention, visual perception function and visual-motor skills improved 	Kang & Ahn (2021)

BOT-2: The Bruininks-Oseretsky Test of Motor Proficiency-2, COMPS: Clinical Observation of Motor and Postural Skills, DST: Digit Span Test, EDPA: Erhardt Developmental Prehension Assessment, K-CEBI: Korean Children's Eating Behavior Inventory, K-DTVP-2: Korean-Developmental Test of Visual Perception, Second Edition, LT: Legibility Test, PEGS-2: Perceived Efficacy and Goal Setting System, Second Edition, PIPPS: Penn Interactive Peer Play Scale, SSP: Short Sensory Profile, SSRS: Social Skills Rating System, ToP: The Test of Playfulness, TVMS-R: Test of Visual Motor Skills Revised, Wee FIM: Functional Independence Measure for children

IV. 고찰

본 연구는 2017년부터 2021년까지, 지난 5년간 작업치료의 아동 중재 연구 47편을 대상으로 연구 근거 수준, 연구 대상자, ICF-CY에 따른 중재 목적과 중재 접근법을 분석하여 이에 대한 동향을 살펴보았다. 작업치료의 아동 중재 연구의 연도별 추이를 보자면, 2018년도에 16편(34.04%)으로 가장 많았고, 2017년, 2020년, 2021년도에 각 8편(17.02%), 2019년도에 7편(14.89%)으로 비교적 적었다. 본 연구에서는 근거 수준 2인 연구가 9편(19.15%), 근거 수준 3인 연구가 13편(27.66%), 근거 수준 4인 연구가 25편(53.19%)으로, 단일사례 연구가 가장 높은 비율을 차지하였다. 단일사례연구는 임상에서 중재 효과를 증명하기 위한 연구 방법으로, 임상 환경에서 연구하는 데 적합하며, 적절하게 적용되면 재활 분야에서 치료의 효과를 과학적으로 규명하는 데 도움을 줄 수 있어 작업치료 분야에서도 꾸준히 보고되고 있다 (Zhan & Ottenbacher, 2001).

연구 대상자를 분석한 결과, 학령기(53.7%)의 비율이 가장 높았고, 그다음이 학령전기(42.6%), 청소년기(3.7%)로 나타났고, 영아기와 유아기 아동을 대상으로 한 연구는 한편도 없었다. 연구 대상자의 진단명은 자폐스펙트럼 장애와 발달 지연이 각각 14.8%로 가장 높았으며, 그다음으로 주의력결핍과잉행동장애가 11.1%, 지적 장애와 일반아동이 9.25%로 나타났으며, 다양한 진단군을 대상으로 연구가 이루어졌다. 뇌성마비의 비율이 가장 높게 나타난 Kim과 Min(2016)의 연구와 차이를 보였다. 아동 작업치료를 대상으로 설문 조사 한 Yoo, Lee, Kim, Cha와 Park(2012)의 연구에서 작업치료 서비스를 제공하는 대상자의 장애 유형 중 자폐스펙트럼 장애가 두 번째로 높은 비율을 차지하였다. 이는 임상에서의 주로 치료하고 있는 대상자가 연구의 주된 대상자가 된다고 할 수 있다. 발달 지연은 발달의 주된 영역인 운동, 인지, 언어, 정서 및 사회성 발달에서 평균 기대 연령보다 발달적 지표에 낮은 성취 수준을 보이는 것을 말한다(Park et al., 2017). 우리나라 영유아 건강검진 결과 통계 자료에 따르면, 발달 평가의 결과가 추적 검사 요망 또는 심화 평가 권고에 해당하는 아동의 수는 해마다 증가하고 있다(Ministry of Health and Welfare, 2022). 이러한 결과가 아동 작업치료 임상 현장에서 서

비스 대상자의 장애 유형 비율에 영향을 미쳤을 것이고, 연구 대상자에도 반영된 것으로 보인다.

ICF-CY에 따른 중재 목적을 분석한 결과, 활동과 참여가 48.94%로 가장 높은 비율을 차지하였고, 그다음으로 신체 구조와 기능이 31.91%, 신체기능과 활동과 참여를 목적으로 다중이 19.15%로 나타났다. ICF-CY에 의해 아동 작업치료 연구 분야를 분류한 Kim과 Min(2016)의 연구에는 신체 구조와 기능에 관한 연구가 51.2%로 가장 높은 비율을 차지하였고, 이는 본 연구 결과와는 차이를 보인다. 2017년도에는 신체기능 향상을 목적으로 한 중재 연구가 활동과 참여를 목적으로 한 중재 연구보다 더 많았지만, 2018년도에는 반대였고, 신체기능 향상을 목적으로 한 연구는 점점 감소하는 추세를 보였다. 반면 활동과 참여를 목적으로 한 중재 연구는 점점 증가하는 추세를 보였다. Park, Choi와 Hong(2019)은 발달장애 아동을 대상으로 한 작업치료 중재 연구 중 그 목적이 ICF-CY모델의 활동과 참여인 연구를 분석하였다. 이에 따르면, 자기관리, 주요 생활영역, 학습과 지식 적용, 의사소통, 이동이라는 세부 목적을 가지고 중재를 제공하고 있으며, 이는 ICF-CY의 활동과 참여 9개의 영역 중 5개의 영역에 중재를 제공하는 것으로 나타났다(Park, Choi, & Hong, 2019).

본 연구에서는 중재 목적에 따라 중재 접근법을 분석하였다. 신체기능을 목적으로 한 연구에서는 감각 접근법이 7편(46.67%)으로 가장 높은 비율을 차지하였고, 인지-심리사회 접근법 5편(33.3%), 습득-발달 접근법 2편(13.33%), 생체역학 접근법 1편(6.67%)으로 나타났다. 활동과 참여를 목적으로 한 연구에서는 감각 접근법 11편(47.83%), 인지-심리사회 접근법 7편(30.43%), 습득-발달 접근법 3편(13.04%), 시지각 접근법 2편(8.7%)으로 나타났다. 신체기능, 활동과 참여를 목적으로 한 연구에서는 감각 접근법 5편(55.56%), 습득-발달 접근법, 다중 접근법이 각 2편(22.22%)으로 나타났다. 중재 접근법 중 감각 접근법이 가장 높은 비율을 차지하였다. 감각 접근법의 절반이 감각통합 중재였다. 감각통합 중재를 중심으로 한 그룹 치료와 구강 활동, 부모교육이 이루어졌다. 감각통합 중재를 제외한 감각 접근법에는 상호작용식 메트로놈 훈련, 치료적 듣기, 환경 강화 치료가 포함되었고, 이 중 상호작용식 메트로놈 훈련에 관한 연구가 높은 비율을 차지하였다. Kreider, Bendixen, Huang와 Lim(2014) 연구의 감각 접근법 중 감각통합을 제외한

다양한 감각을 입력하거나 수정하기 위한 전략을 사용하는 중재로서 소리와 빛 조절, 치료용 공, 치료용 시트 쿠션의 사용, 무게 조끼, 기공 마사지가 포함된 것과는 차이를 보인다. 감각 접근법 다음으로 인지-심리사회 접근법이 높은 비율을 차지하였다. 인지-심리사회 접근법에서는 목표관리 훈련, 집단요리 활동 프로그램, COMCOG, 인지 운동치료, DIRFloortime® 치료, 학교 작업치료 지원 Learning Tree 인지모델프로그램, CO-OP (Cognitive Orientation to daily Occupational Performance) 중재, 신경인지 재활치료가 다양하게 이루어졌으며, 다른 접근법에 비해 근거 수준 II, III인 연구의 비율이 높게 나타났다.

본 연구는 작업치료분과학회의 KCI 등재 학술지에 게재된 작업치료의 아동 중재 연구 분석을 통해 최근의 국내 작업치료의 아동 연구 동향과 수준을 분석하였다. 작업치료를 대표할 수 있는 작업치료분과학회의 학술지에는 Swallowing Rehabilitation, 건강과 작업과학, 고령자·치매작업치료학회지, 대한감각통합치료학회지, 대한보조공학기술학회지, 대한아동학교작업치료학회지, 대한작업치료학회지, 대한지역사회작업치료학회지, 워크어빌리티학회지, 재활치료과학, 한국노인작업치료학회지, 한국신경인지재활치료학회지, 한국정신보건작업치료학회지가 있다. 이 중 2022년 3월 기준으로 KCI 등재 학술지에는 고령자·치매작업치료학회지, 대한감각통합치료학회지, 대한작업치료학회지, 대한지역사회작업치료학회지, 재활치료과학, 한국신경인지재활치료학회지가 있고, 고령자·치매작업치료학회지는 문헌 선정기준인 아동을 대상으로 한 연구를 게재하는 학술지가 아니어서 제외하였다. 또한 KCI 등재 학술지에 게재된 중재 연구의 저자의 직종을 확인하여 작업치료사가 중재하지 않은 연구는 분석 대상에서 제외하였다. 국내/국외 타 학술지에 아동을 대상으로 한 작업치료 중재 연구들이 다양하게 게재되고 있지만, 본 연구에서는 작업치료분과학회의 KCI 학술지의 연구만을 대상으로 하여 타 학술지에 실린 아동을 대상으로 한 작업치료 연구는 분석 대상에서 제외되어 모든 내용을 일반화하는데 제한이 있다. 따라서 국내/국외 타 학술지의 연구를 포함하여 분석한다면 더욱 신뢰도 높은 결과가 제공될 수 있을 것이다. 그러나 작업치료를 대표할 수 있는 작업치료분과학회의 학술지에 게재된 연구이자 작업치료사가 시행한 아동 중

재 연구로, ICF-CY 분류에 따라 중재 목적과 중재 접근법을 분석한 것은 작업치료사의 아동 중재 연구 동향을 대표할 수 있다고 생각한다. 지난 5년간의 작업치료의 아동 중재 연구는 작업과 작업참여에 중점을 긍정적으로 발전하고 있다. 앞으로의 연구에서는 임상에서 의사 결정하는데 근거로 사용할 수 있는 근거 수준이 높은 연구가 필요하다. 아동의 작업과 작업참여에 중점 둔 근거 수준이 높은 연구를 통해 작업치료의 아동 중재 분야가 더욱 성장하고 발전할 수 있을 것으로 판단된다.

V. 결론

본 연구는 대한감각통합학회지, 대한작업치료학회지, 지역사회작업치료학회지, 재활치료과학, 한국신경인지재활치료학회지에 2017년 1월부터 2021년 12월까지 게재된 작업치료의 아동 중재 연구 47편을 대상으로, 연구의 근거 수준, 연구 대상자, International Classification of Functioning, Disability and Health-Children & Youth Version(ICF-CY)에 따른 중재 목적과 중재 접근법을 분석하여 국내 작업치료의 아동 중재 연구 실태와 동향을 파악하고자 하였다. 그 결과, 연구의 근거 수준은 IV가 가장 큰 비율을 차지하였다. 대상자는 학령기 아동이 가장 많았으며, 대상자 진단명은 자폐스펙트럼 장애와 발달 지연이 많았다. ICF-CY에 따른 연구 중재 목적은 활동과 참여가 가장 높은 비율을 차지하였고, 중재 접근법은 감각 접근법이 가장 많았고, 다음으로 인지-심리사회 접근법이 많았다.

본 연구를 통해 국내 작업치료의 아동 중재 연구의 질적 수준, 대상자 및 동향을 파악할 수 있었고, 본 연구의 결과를 바탕으로 향후 작업치료의 아동 중재 연구 분야의 발전에 도움이 되길 기대한다.

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Abstract

Research Trends in Occupational Therapy Intervention for Children in Korea

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Objective : The purpose of this study was to identify the status and trends of Korean child occupational therapy intervention studies according to the International Classification of Functioning, Disability, and Health, Children and Youth Version (ICF-CY).

Methods : In this research, 47 studies on occupational therapy interventions for children that were published between January 2017 and December 2021 in the Journal of Occupational Therapy, registered in the Korea Citation Index, and analyzed the classification of the study type and evidence level to understand the trends. Moreover, intervention objectives and approaches were analyzed on the basis of the ICF-CY.

Results : The outcomes of the analysis of the articles published in the Journal of Occupational Therapy were as follows: (1) Level IV was the highest evidence level (53.19%). (2) Among the studies, most (53.7%) included school-age children as subjects. Autism spectrum disorders and developmental delays were the most common diagnoses (14.8%). (3) As for the purpose of intervention according to ICF-CY, activity and participation factors were the most common (48.94%), and a sensory approach was frequently used.

Conclusion : This study reviewed articles on occupational therapies for children that were published in the Journal of Occupational Therapy to understand the trends in occupational therapy interventions for children in South Korea. For the development of occupational therapies for children in the future, more qualitative research types and studies on various intervention approaches are needed.

Key words : ICF (International classification of functioning, disability and health), Research trends, Korea occupational therapy in the practice area of children and youth