

Recreational Participation of Children with Autism Spectrum Disorder (ASD)

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ABSTRACT

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Nature recreation is the recreation which require engagement with natural environment and settings. Previous research proven that recreation is important for people including the disabilities, towards achieving the quality of life. However, little is known about the development of recreation for People with Autism Spectrum Disorder (ASD). Thus, this research aimed to determine the effectiveness of nature recreation for children with ASD in a family with the objectives were to compare the changes in development of children with ASD in a family before and after participating in the nature recreation, and to identify the most preferable nature recreation activity for children with ASD in a family. A set of questionnaire surveys were distributed to a focus group called 'Autism Malaysia'. This study showed, nature recreation can benefit children with ASD (aged from 0 to 12 years) and it is important for children development (social, intellectual, emotional and also physical). The children with ASD have positive changes in terms of communication and sociability components. However, for the physical behaviour, it showed the opposite findings; more risk and sign of ASD after participating in nature recreation. The result for each child may vary depending on the factors and nature recreation may not help to cure the ASD children completely. However, this study may help the family and caretaker of the children with ASD to use the nature recreation as the early intervention for their growth development. This research may help the planning development process in line with the Sustainable Development Goal which is social inclusion.

Keywords: *nature recreation, active recreation, passive recreation, Autism Spectrum Disorder (ASD), SDG 10-2, social inclusion*

INTRODUCTION

Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder which defined by the persistent deficits in the social communication and social interaction over multiple of contexts and restricted, repetitive patterns of behaviour and also interest. Diagnosing ASD can be difficult as there are no medical or blood test that can be taken except to base on the behavioural symptoms including the absence of delays in typical developmental milestones and presence of unusual behaviours. The prevalence of ASD in Malaysia was approximately 1.6 in 1,000 based on the feasibility study on the use of Modified Checklist for Autism in Toddlers (M-CHAT) among the children between 18 to 36 months in the child health clinics by the Ministry of Health Malaysia in 2006. The prevalence data is important in order to form a basis planning and also in establishing an intervention and choice of education for the children with ASD (Ramachandran, 2019).

The intervention of ASD on children may be in the form of leisure and recreation. Leisure is the time which an individual has free form of work or duties which may utilized for the purpose of relaxation, diversion, social achievement or personal development (Gist & Fava, 1964). Recreation consists any activity that were chosen voluntarily by the participant for an immediate satisfaction.

Recreation carried in leisure time with no work connotations. Outdoor recreation is one of the outdoor extensions, which defined as wholesome recreation that is done without confines of building. The outdoor activity act as a therapeutic tool which was previously described in relation to various disabilities in young people which may help in enhanced self-concept and self-esteem, personal growth, increased in social adjustment, positive behavioural changes and also growth in interpersonal relationship (Zachor et al., 2016). Thus, leisure and recreation may help in improving the social participants and behavioural of children. It is the form of activity which children enjoy the most, thus it may encourage the ASD children to participate in leisure and recreation activity while improving their wellbeing.

This study has the high possibility in determining the contribution of nature and recreation in helping children with ASD. It showed that being in a natural environment can have a lot of positive outcomes towards the physical health and also the psychological well-being specifically for children diagnosed with ASD. According to Hadder Abd El-Razak et al. (2018), being involve in nature environment is important for the children with ASD in improving the cognitive, mental health, physical health, social and also emotional benefits.

Studies have stated that the number of individuals with disabilities is increasing and there is no exception with ASD. The World Health Organization (WHO) estimated that, 1 in 160 children has being diagnosed with autism and its prevalence appears to be increasing globally, while the United States' Centres for Disease Control and Prevention's Autism and Developmental Disabilities Monitoring network has a higher figure with 1 in 59 children. According to Felina S.Y. Muhammad Feisol (2019), the chairman of the National Autism Society of Malaysia (NASOM), around 8,000 to 9,000 that were born yearly may have autism, based on the national gross birth per rate per year analysis. Unfortunately, there is no any official number of individuals diagnosed with autism. An early intervention for children with ASD is needed for the preparation of schooling and has led to higher demand on the early intervention centres. However, there is less option provided not only from government but also from the non-governmental organization (NGO) including the NASOM. The government has provided a pre-school option for the special needs students however, the number or the pre-school options are limited. On the other hand, the NGO were struggling with either funding or logical issues while tried to meet the need by opening the early intervention centres nationwide. The other option provides by a private centre can be pricey where the charges may be around RM150 per hour for specialized therapy session, or up to thousands ringgit monthly (Dina Murad, 2019). Therefore, it is important to find the alternative methods to help those children with ASD. One way is through recreation. The recreation may effectively be used to improving the social and behavioural changes and also wellbeing of children including the children with ASD.

Due to less interaction with others, the ASD children have difficulties to express the feeling to others and it may be difficult for others including the family member to understand the true feeling of the ASD children. Thus, it will be difficult for the family member to understand the true feeling that the ASD children express during participating in an activity. The family member will only be providing information based on an observation, not from the ASD children perspective. Other than that, there is no official registry number of individuals that were diagnosed with autism in Malaysia. There is no specific data which shown the number of ASD children categorized in different groups such as age, gender and the locality of the of the ASD children. The objectives of the study were to compare the changes in development of children with ASD in a family before and after participating in the nature recreation, and to identify the most preferable nature recreation activity for children with ASD in a family.

LITERATURE REVIEW

What is Autism Spectrum Disorder (ASD)?

According to Autism Navigator (2015) and the American Psychiatric Association's Diagnostic and Statistical Manual, Fifth Edition (DSM-5), Autism Spectrum Disorder (ASD) is a neurodevelopmental disorder defined by persistent deficits in social communication and social interaction across the various context and restricted, repetitive patterns of behaviour, interests or activities. It is a new category in DSM-5 which replaced the pervasive developmental disorders (PDDs). ASD includes the former autistic disorder, Asperger's syndrome, and also PDD, while Rett's syndrome and childhood disintegrative disorder have been removed from the ASD category.

The sign usually can be found in early childhoods and with appropriate early intervention, the individuals with ASD can be productive, inclusive and have a fulfilling life. The sign of ASD usually found in both social and behavioural of the children who are diagnosed with ASD. In social sign, the children usually have difficulty in maintaining a conversation, have an inappropriate respond to others, avoid any eye contact, facial expression does not match on the communication context, difficult to understand except in their own perspectives and also only like to discuss their interest which is in great detail. In behavioural sign, the children have an inability to cope with changes to their routine and environment, distancing themselves with other people, developing a high skill in certain area and will have an obsessive interest, have a repetitive behaviour such as saying the same things repeatedly or rocking from side to side, and being either more or less sensitive on the sensory stimulation, for example a loud noise. According to Aaron Kandola (2019), some of the children with ASD may have balance, coordination and also motor problems.

There are three level of ASD which were based on the severity of the two main signs shown by the children with ASD. Level one is the least severe of autism diagnosis and requires some support. Without supports, the deficits in the social communication may cause a noticeable impairment. The person with ASD usually has difficulties in making friends. Level two requiring a substantial support and even with support, the people diagnosed with Level two ASD may have a struggle to communicate coherently and likely to respond inappropriately to others. They are more likely to only discuss in a specific topic based on their interest or only speak a few words. Usually, people with Level two ASD did not cope well with changes which may results a significant distress. Level three is the most severe in the autism diagnosis which usually have significant impairment in verbal and nonverbal impairment. Have a minimal response to social interactions and often avoid others. However, the ASD people may interact in a limited way. The behaviours are highly inflexible and repetitive, and also extremely difficult in coping with any changes. The individuals may show a highly distressed if requires to changes the task which they were focus on.

Diagnosing ASD would be difficult and challenging because it is a spectrum disorder where a symptoms of a spectrum disorders may be range from mild to severe. Some have mild symptoms which make it difficult to diagnose the ASD. The most obvious sign of Autism can be detectable usually by two to three years old, despite it is possible to show any symptoms at the older or younger age (Aaron Kandola, 2019). The diagnosis can be involved in two-stage process which are screening and comprehensive evaluation. In screening, it usually done by doctors using validated screening checklist that parents need to fill out. The screening from the parents provides early information about the children which led to further discussion on the child's behaviour, development and also family medical history. In the second stage which is the comprehensive diagnostic evaluation, usually conducted by a multidisciplinary team which gathers information from interview and also observation (Autism navigator, 2015). There are two common evaluation forms that can be used by the caretaker in order to identify the early signs of ASD which are the Autism Treatment Evaluation Checklist (ATEC) and the Modified Checklist for Autism in Toddlers (M-CHAT-R)

The number of children diagnosed with ASD has widely increase and many studies have underlined the importance of the early identification and intervention programs for the individuals with ASD, thus the needs for a trained clinics and early intervention centres and school has also grow each year.

Recreation in Nature Setting

Recreation can be described as a voluntarily participation in any activity during free time to achieve benefits on the participation. Outdoor recreation is one of the extensions to recreation and it can be defined as a voluntary participation in free time that occurs in the outdoors and embraces the interaction of people with the natural environment (Plummer, 2009). According to Walsh (1986), recreation involves the consumer participation in distinguish the characteristics of the activity, whether it is passive or active activity. Passive activity refers to recreational activities which do not require intensive physical participation while active recreation involve more vigorous physical participation. One of the objectives of an outdoor recreation is to appreciate the nature because it can develop a learning process in understanding the nature which may lead to develop an environmental awareness. Nature also has been proclaiming as a healer to human wellbeing where a study shown that lacking of natural surrounding exposure may have been cause of the modern illness including depression and also anxiety attacks.

Spending time outdoors in nature area has benefits for all. A study shown that specific group of people such as children with deficits disorder gains attention from being outdoors in natural environment, it is a therapeutic tool which may help people with various disabilities in young people and adults. Nature recreation is important for the children with ASD because the children will experience in improving balance, agility and coordination in physical health. However, there is no study that compared directly the behaviour of children with ASD in natural environment (Mollie r. M., 2011). Figure 1 below show the hypothetical model of nature recreation effectiveness developed based on the earlier researches.

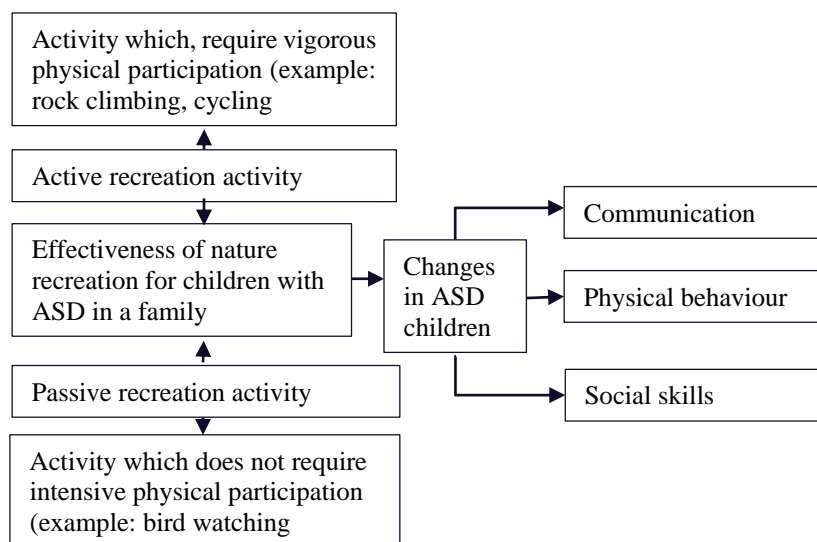


Fig. 1: Nature recreation effectiveness hypothetical model

Referring to Figure 1 above, it shows the effectiveness of the nature recreation hypothetical model, where the nature recreation activity was divided into two categories which are passive recreation activity and active recreation activity. After the children went through the recreation activities, the changes of the development of children with ASD were monitored based on three aspects: i) communication, ii) social skills and iii) physical behaviour.

ANALYSIS AND FINDINGS

Demographic background

Table 1 showed the demographic characteristics of the children with ASD. A total of 108 respondents volunteered to fill up the questionnaire provided in the Facebook group. The total number and percentage of the respondents were shown in the table for easy analysing of the data.

Table 1: Demographic background of the ASD children

Demographic categories		Frequency	Percentage %
Gender	Male	76	70.4
	Female	32	29.6
Total		108	100
Age	0-1	6	5.6
	2-3	22	20.4
	4-6	41	38
	7-12	39	36.1
Total		108	100
Race	Malay	88	81.5
	Chinese	8	7.4
	Indian	6	5.6
	Others	6	5.5
Total		108	100
Family income	Below than RM 1,000	5	4.6
	RM 1,001 – RM 2,000	18	16.7
	RM 2,001 – RM 3,000	16	14.8
	RM 3,001 – RM 4,000	18	16.7
	RM 4,001 – RM 5,000	19	17.6
	More than RM 5,0001	32	29.6
Total		108	100

Based on the Table 1 above, the total percentage of male children with ASD were higher with 70.4% compared to female with 29.6%. According to Werling (2016), males are about four times more likely to be diagnosed with ASD compared to females which was characterized by strong sexual dimorphism. Several theories also have shown that the number of males diagnosed with ASD were increasing each year. Thus, the results have supported the theories that male were most likely to be diagnosed with ASD compared to female.

The children with ASD were classified into four groups of age which are: i) infant - range from 0 years (newborn) to one-year-old, ii) toddlers range from 2 years to 3 years old, iii) early childhood range from 4 years to 6 years and lastly, iv) middle childhood range from 7 years to 12 years. The result showed that most of the respondents' children aged between 4 years to 6 years old with the percentage of 38%, followed by children aged from 7 years to 12 years old with 36.1% and the lowest aged was 0 year to 1-year-old with 5.6%. Based on a statistic of children in Malaysia 2019, the number of children went to kindergarten was 10.6% more compared to children who went to the primary school. (Department of Statistics Malaysia (DOSM) (2018).

Table 1 also showed that 88% of the children are Malay, 8% is Chinese, and the minority of the respondents are from other races in Malaysia which included Indian and ethnics groups for example Kadazan, Dayak and Bajau. Majority of the respondents' family income was more than RM 5, 001 a month with 29.6%, followed by family who earned between RM 4,001 to RM 5,000 with 17.6% and the respondents with family income between RM 3,001 to RM 4,000 and RM 1,001 to RM 2,000 shared the same percentages which were 16.7%. Meanwhile, respondents with family income below than RM 1,000 were recorded as the lowest from the group with only 4.6%. The result ties well with the Malaysia Household Income and Basic Amenities Survey Report 2019. According to the DOSM, the mean

income in Malaysia was RM 7,901 and median income recorded was RM 5,873 in 2019 and the income grew by 3.9% per year.

Changes before and after recreation

The changes in development of the children with ASD were divided into three categories which were speech or communication, sociability, and physical or behavior. These three categories were chosen as it was the main symptoms or sign of the ASD. The changes were based on the children’s parents or caretaker perspectives. Table 2 below showed the comparison of the changes before and after the children involved in the recreation activities.

Table 2: Comparing the changes in ASD children before and after involved in recreation activities

Statement	Answer	Frequency	Percentage %
Before recreation			
Have I ever wondered my child might have hearing problem	Yes	46	46.2
	No	62	57.4
My child responds well when calling his/her name	Yes	61	56.5
	No	47	43.5
My child understands when being told something	Yes	50	46.3
	No	58	53.7
After recreation			
Have I ever wondered my child might have hearing problem	Yes	34	31.5
	No	74	68.5
My child responds well when calling his/her name	Yes	76	70.4
	No	32	29.6
My child understands when being told something	Yes	62	57.4
	No	46	42.6

Based on the Table 2, for the first statement, 42.6% of the respondents have wondered that their children may have a hearing problem. However, the percentage has dropped to 31.5% after the children had participating in several recreation activities. For the second statement, 56.5% of the respondents stated that their children responded when their name was being called and the percentage has increased whereby 70.4% of the children respond when being called after participating in recreation activities. Responding in calling their name did not mean that the children need to answer the called, but looking back to the person who called them also count as a respond. For the last statement, majority of the children with ASD with 53.7% did not understand when being tell something however, after participating in recreation activity, 57.4% can understand what others people trying to tell them.

Children with ASD may have the difficulty in developing a language skill and also understanding what others were saying. According to an international team of researchers, giving an opportunity for them to choose their own activities can help boosting the enjoyment and improving the communication and social skill. After participating in nature recreation activities, the children with ASD showed positive changes in the speech or communication skills. They have learnt to acknowledge their own name by responding when being called by the caretaker. The have also learnt to follow some simple commands from the parents or caretaker and also know how to explain what they want. Children with ASD have the difficulties in expressing their feeling and sharing their thought. Thus, after participating in the nature recreation, they have shown slight changes towards the positive side. Table 3 below showed the findings with regards to the sociability dimension.

Table 3: Comparing the changes in ASD children 'before and after' involved in socialized activities

Statement	Answer	Frequency	Percentage %
Before recreation			
My child interested to socialize with other children	Yes	34	31.5
	No	74	68.5
My child tried to get me to watch his/her	Yes	42	38.9
	No	66	61.1
When something happened, my child looks into my face to see how I felt	Yes	62	57.4
	No	46	42.6
After recreation			
My child interested to socialize with other children	Yes	52	48.1
	No	56	51.9
My child tried to get me to watch his/her	Yes	66	61.1
	No	42	38.9
When something happened, my child looks into my face to see how I felt	Yes	86	79.6
	No	22	20.4

Based on Table 3, for the first statement, majority of the children with ASD with 68.5% and 74 respondents did not interested with other children. Despite the children attended school with a lot of others children, they tend to stay alone as they did not perform any interest with other children. Although the majority of the children still do not interest with other children, the percentage has dropped to 51.9%. This showed that the children may have learned on how to interact with other children while participating in the same recreation activity. For the second statement, 61.1% of the children did not try to get their parents attention by watching their action. Understandably, children with ASD preferred to live in their own world. Thus, this may be the reason why the children did not try to get people attention. Surprisingly, after they had participating in recreation, 61.1% of the children tried to get their parents attention when they try to do something. For the last statement, 57.4% of the children tried to look at their parents when something happens, to know what others feel. The percentage increased to 76.9% whereby the children showed the same reaction after participating in recreation. This showed that the children with ASD also wanted to engage with other people's emotion when something happened to them. Reduced in social interaction is one of the core features that people with ASD needed to face. Not all of them faced the same social problems; some may talk normally but cannot socialize with others. By participating in nature recreation, they showed positive changes towards their sociability and their social skill has increase. The children have learnt on how to interact with other children while participating in the nature recreation activity. Figure 4 below showed the findings with regards to the physical behavior.

Table 4: Comparing the changes of ASD children in physical behaviour

Statement	Answer	Frequency	Percentage %
Before recreation			
My child plays 'pretend or make-believe'	Yes	55	50.9
	No	53	49.1
My child likes to climbs on thing	Yes	45	41.7
	No	63	58.3
My child tries to copy me	Yes	49	45.4
	No	59	54.6
My child likes movement activities	Yes	68	63
	No	40	37
After recreation			
My child plays 'pretend or make-believe'	Yes	57	52.8
	No	51	47.2
My child likes to climbs on thing	Yes	68	63
	No	40	37
My child tries to copy me	Yes	60	55.6
	No	48	44.4
My child likes movement activities	Yes	95	88
	No	13	12

Similar to the communication or speech and sociability, the physical or behavioral have shown positive changes too. Based on Table 4, for the first statement, 50.9% of the children with ASD used to play pretend or make-believe with different object such as drinking in an empty cup or pretending to be on phone. The number has increase with the percentage of 52.8% of the children have the same behavior after participating in recreation activity. This is a good sign in the children behavior whereby their imaginative skills have improved. For the second statement, before participating in the recreation activity, 58.3% of the children with ASD do not like to climb on things and the number changes after participating in recreation activities where 63% of the children like to climbs on things. One of the good developments of children are when they like to climb on things such as furniture at home, this may be because they started to have a better control on their body movements. For the third statement, 54.6% of the children with ASD did not try to copy or imitate their parents while 60% of the children try to copy their parents after participating in recreation activities. It is a good improvement for the children with ASD because they try to learn by imitating their parents. In the last statement, the children who like the movement activities have increased from 63% to 88 percent after engaging in the recreation activity.

The children with ASD become more hyperactive and talkative after participating in nature recreation activity. This has proven why the children preferred the active recreation compared to the passive recreation. Hyperactive and talkative is one of the major signs of ASD in children. Nature recreation may help in improving several skills of the children with ASD, however, they also need help from the expert for the better changes in their growth development mentally and physically.

Most preferable recreation activity

Recreation activity provided for the children with ASD were categorized into two which are active recreation and passive recreation. There are five activity listed for each of the category which were nature walks, hiking or trekking, swimming, cycling and rock climbing for active recreation and picnic, cloud gazing, horse riding, camping and bird watching for the passive recreation. The children that participated in the recreation activity were aged range from 0 years to 12 years old.

Active recreation needs more vigorous physical participation and nature walks has the highest participation with total of 53 children with ASD while only 7 children with ASD participated in rock climbing. Nature walk was considered as an active recreation because walking also used a lot of energy and walking in a nature area usually take a lot of time compared to the normal environmental setting. Although hiking or trekking used more energy, but nature walk is fun and less pressure especially for the children. Thus, the children with ASD enjoyed the time more during the nature walks activity.

Passive recreation does not require intensive physical participation and the children with ASD have enjoyed picnic with a total of 49 participants. Picnic was an activity where a family gathered together in nature environment and having for example, a meal together. This activity is not only helping in strengthen the bonding between the family members, but it also gives a lot of benefits towards the needs of the children wellbeing. While picnic has been chosen as the most participated activity in the passive recreation, camping has been chosen as the least participated activity with a total of 9 participants only. Figure 5 showed the findings of the comparison between active and passive recreation preferred by the children with ASD.

Table 5: The comparison of participation in active and passive recreation

Variables (age)		Frequency	Percentage %
Active recreation	0-1 year old	3	2.0
	2-3 years old	24	15.8
	4-6 years old	61	40.1
	7-12 years old	64	42.1
Total		152	100
Passive recreation	0-1 year old	7	6.0
	2-3 years old	22	19.0
	4-6 years old	49	42.2
	7-12 years old	38	32.8
Total		116	100

Referring to Table 5, a total of 152 children with ASD were recorded has participated in various active recreation compared to 116 children with ASD who participated in passive recreation, with 13.4% different between the two activities. The children aged from 0 year to 12 years old were categorized into four groups which were children aged from 0 year to 1-year-old, 2 years to 3 years old, 4 years to 6 years old. And 7 years to 12 years old. The children aged from 7 years to 12 years old enjoyed the active recreation activity the most while the children aged from 4 years to 6 years old enjoyed more on the passive recreation activity. Although many children with ASD remained the same symptoms, but the symptoms in children may be seen less severe as the children grow older. This showed the reason why some of the children enjoy more on the active recreation because it is the nature of the children to have a lot of fun exploring things without getting bored. Figure 6 below showed the findings of the satisfaction of children with ASD in nature recreation.

Table 6: The satisfaction of ASD children in nature recreation

Questions	Answer	Frequency	Percentage %
Does your child with ASD volunteer herself/himself to participate in recreation activities?	Yes	64	59.3
	No	44	40.7
Total		108	100
Does your child with ASD enjoy participating in recreation activities?	Yes	92	86.1
	No	15	13.9
Total		108	100

Based on Table 6, 59.3% of the respondents agreed that the children with ASD volunteered themselves to participate in any recreation activities, although 40.7% of them did not volunteer themselves to participate in the recreation activities. However, the number of children with ASD enjoying themselves while participating in the recreation activities were higher with 86.1% of the respondents comparing to children with ASD who did not enjoy recreation activities. Children with ASD usually tend to have less recreation interest, however if they were given a choice to engage in any activity, they may show interest later on. Thus, it is important to identify recreation activities that the children with ASD may enjoy most.

CONCLUSION

The ASD is a type of disorder which cannot be cure using a drugs or medicine. It is a neurodevelopmental disorder which is a group of conditions with onset in the developmental period typically occur in the early development and are characterized by developmental deficits that produces impairments. It has the disabilities in the functioning of the brain that effect a child’s behaviour, memory or the ability to learn. Although the ASD cannot be cure completely, but the severity of the symptoms of ASD can be changed. Nature recreation can be one of the early intervention processes that can help the caretaker of the children with ASD to improve the social and behavioural of the children with ASD. This study showed that the children with ASD have positive changes in speech or communication and also in sociability. The signs of the ASD in both aspects have shown less severe compared to before participating in the nature recreation. However, the physical behaviour of the children with ASD has shown more severity on the sign of ASD. The children with ASD became more hyperactive and

talkative compared to before participating in the nature recreation. It is suggested that the children with ASD may require a psychological support from the experts should the hyperactivity become the main problem.

From the research, most of the children with ASD participated in the active recreations compared to the passive recreations with nature walks as the first choice for the children. Although some of them were forced to participate in the nature recreation, but 86.1% of the ASD children which were more than half of the number of the children with ASD participated in this study enjoyed the nature recreation activities. The parents or caretaker of the children with ASD need to identify what activities that the children like the most thus they may enjoy and participate in the nature recreation voluntary.

As an overall conclusion which strongly related to promoting social inclusion with regards to the Sustainable Development Goal – SDG Target 10-2, this study revealed five themes that support meaningful aspects of social inclusion from participants' perspectives: (a) creating opportunities for children to communicate their interests and desires; (b) providing opportunities to choose self-directed activities; (c) strategically selecting and placing objects to support interactions among children; (d) directly encouraging interactions between children. This contributes to the children's sensory-motor, emotional, and social benefits. Although some benefits of nature exposure were recognized as having unfavorable consequences by the same or different participants. Nature offered attractions and elements for children to engage with. Natural elements captivated children's interests and held their attention for extended periods of time. In nature, children learned to tolerate and process information from multiple sensory modalities, such as visual, auditory, and tactile stimuli.

Children with ASD often experience negative emotions such as stress and anxiety but nature visits helped children relax, promoted positive emotions, or reduced negative ones. Children were happier, more energetic, and lively. Whether there was an actual increase in interaction with others seemed to be contingent on the child's own level of acceptance of social interaction. However, nature provided opportunities for the children with ASD to be close to other children, the extent to which children took advantage of these opportunities and interacted with other children varied (Li et al., 2019; Edward et al., 2019). It is due to the level of the ASD that the children had.

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