

EFFECTIVENESS OF HIPPO THERAPY FOR COMMUNICATION DEVELOPMENT OF STUDENTS WITH AUTISM SPECTRUM DISORDER: A CASE STUDY IN THE MALAYSIAN CONTEXT

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Hippotherapy may be considered as an alternative form of treatment strategy for students with Autism Spectrum Disorder (ASD). The purpose of the study is to investigate how the participants of this study perceive the effectiveness of Hippotherapy in aiding students with ASD with their communication development. Case study is employed as the research design to provide an in-depth understanding of the effectiveness of hippotherapy for communication development of students with ASD. Interviews, observation and document analysis are the data collection methods. The four participants interviewed were experienced, senior instructors that manage the Hippotherapy sessions for many years at the only two hippotherapy centres in Malaysia. They have given a lot of insightful thoughts and ideas on how they perceive the effectiveness of Hippotherapy in aiding students with ASD with their communication development. This study found three main themes that influence one another in the context of communication development; Motivation to communicate, Spontaneous verbal and non-verbal communication and Instructor incorporating games and activities in a relaxed environment for communication. The recommendation of this study is for hippotherapy to be used as a therapy for communication development of students with ASD.

Keywords: Autism Spectrum Disorder, hippotherapy, communication development

INTRODUCTION

Hippotherapy refers to the evidence-based practices of integrating occupational, physical, as well as speech-language therapy into the treatment plan of students with Autism Spectrum Disorder (ASD), with the help of purposeful horse movement as a key therapy tool to engage the sensory, neuromotor, and cognitive system to achieve the objectives and functional outcomes (O’Haire, 2017). Incorporating purposeful horse movement in hippotherapy is utilised to aim for developmental vaulting among students with ASD, as well as helping each of them individually in improving their communication through strengthening their inner skills by fostering interaction with other people and animals. The use of a specially trained therapy horse may act as a key treatment tool in engaging the sensory, neuro-motor and cognitive system of students with ASD; this acts as a positive complement to traditional language therapy as it offers a more dynamic situation for interventions (O’Haire, 2017).

Hippotherapy has been widely accepted as a medical treatment in Europe and Canada in the 1960s and 1970s respectively (Zulkifli et al., 2016). However, hippotherapy has been recently introduced to the Malaysian community, where Illiza Ikbal and paediatrician Dr Ali Azman established 'Green Apple Hippotherapy' programme for students with ASD (Koshy, 2019). This is due to the anticipation of an early intervention programme for the growing number of students with ASD in Malaysia that have been increasing immensely in the last few years (Ramachandram, 2019). The National Autism Society recorded a 30% increase in the organisation's intake of individuals with Autism in the past 3 years (Neik et al., 2014), whereas the Ministry of Health has managed to conduct a smaller scale study on children between the age of 18 to 26 months, in which an approximate ratio of 1 in 625 individuals are diagnosed with ASD (Menon Lim, 2015).

Hence hippotherapy may be considered as an alternative form of treatment strategy for students with ASD. This is because the enrolment process for students interested in undergoing this treatment will be administered thoroughly by customising their treatment plans and identifying the unique challenges of their condition while maintaining all the standards required as a medical therapy ("Horses as healers", 2020). However, this unprecedented treatment strategy is not widely adopted just yet in the community because of the lack of awareness of its potential benefits on how it can provide an effective form of treatment for students with ASD and their challenges with communication development. Malaysia also lacks experienced specialists or experts in this area of discussion, as can be seen in the absence of training sessions for those interested to be part of the programme (Zulkifli et al., 2016).

LITERATURE REVIEW

The classic features of ASD are lack of social awareness and communication, deficits in sensory integration, and the inability to initiate direct instructions (Bass et al., 2009). The neurodevelopmental disorder among students with ASD affects multiple subsystems including social communication, behavioural, cognitive and perceptuomotor domains. Students with ASD often experience a lack of social communication because of their poor reciprocity during the interactions, which was largely influenced by their behavioural and emotional comorbidities demonstrated (Srinivasan et al., 2018). These comorbidities also affect their sensory-motor performance which largely correlate with and influence the social-communication performance of students with ASD. Therefore, the readings suggest that limited movement exploration and motor clumsiness are the main barriers to social-communication development.

As studies supported that early diagnosis of ASD followed by early intervention programmes especially in behaviour modification will help to increase the child's cognitive levels, there is no consensus to date as to which treatment modality is most effective (Bass et al., 2009). However, it is possible that animal-assisted activities provide a multi-sensory environment that will prove beneficial to students with ASD. The Hippotherapy programme uses a specially trained therapy horse as a treatment tool to engage the sensory, neuro-motor, and cognitive system of an individual into their treatment plans. Horses are used to provide a rhythmic movement which stimulates the anterior and posterior movement of an individual, and encourages the rider to achieve a proper balance and posture, as well as acting as a large spectrum of sensory and motor input altogether (Koca & Ataseven, 2016). The slow, rhythmic movement of the horse's body has therapeutic values that will provide physical and sensory feedback to the rider, which tends to improve balance and muscle control of the rider. A preliminary study has also revealed that the

horse's stride and repetitive movement may also have an effect on the rider's Vestibular Cerebellar system (VCS), as this is predominantly related to the individual's proprioception, balance, coordination, spatial orientation, attention, auditory reception, and sensory integration (Jackson-Maldonado, 2019). In short, this suggests that the repetitive movement of the horse itself acts as a support for the cerebral organisation, particularly bilateral coordination and neural connectivity between cerebral hemispheres which are essential for communication skill development.

Although very limited number of studies have shown the effects of hippotherapy in communicative abilities, a systematic study shows that there is a stronger increment in language abilities for those children with receiving the additional treatment of hippotherapy as opposed to only traditional therapy (Dismuke, 1984). The result shows that language abilities developed faster and at a greater rate than after receiving only traditional language therapy. This shows that hippotherapy acts as a positive complement to traditional language therapy as it offers a more dynamic situation for interventions. This is because the constant movement of the horse offers a re-iterating concept as the activities within the hippotherapy sessions promote functional and meaningful contexts for learning (Pohl et al., 2018). For example, the conversational topics encourage talking about the actions and add vocabulary within the new environment. As such, constructing sentences about the actions the child is involved in and learning new nouns and verbs directly related to the activities while mounted on the horse may be an additional aid for the intervention goals.

Although hippotherapy programmes have been practised in many countries in the fields of physical and mental disabilities, several issues arise when incorporating this alternative treatment strategy into the system in the Malaysian context (Zulkifli et al., 2016). Awareness and knowledge of hippotherapy and existence of such treatment in the country and how it can provide an effective form of treatment for students with ASD is lacking in Malaysia (Ali Azman, 2016). Likewise, the country lacks experienced specialists or expert personnel in this area as can be seen through the absence of training sessions for those interested to be part of the programme. Most predominantly, many families have limited resources to obtain these services for their children as health insurance in Malaysia does not cover hippotherapy treatment. This is why hippotherapy is regarded as one of the areas with the least amount of evidence within the rehabilitation professional.

Lack of awareness on hippotherapy treatment also exists in South Africa (Govender et al., 2016). Hippotherapy is mainly offered on a limited basis by a few skilled instructors or riding instructors, thus contributing to the limited public awareness and environment. As such, hippotherapy is often not clearly understood by individuals who are unfamiliar with this therapy, leading to misunderstanding and misinterpretation of this alternative treatment strategy. Interestingly, many are also unaware that the instructors play a huge role in continuously analysing the child's responses to the horse's gait, as they help in adjusting the child's seat, balance and posture accordingly making the session therapeutic. Various research report outcomes have shown an improvement in multiple areas of functioning related to core features of ASD, such as greater improvement in social interactions and decreased problem behaviours. The promising outcomes of hippotherapy for students with ASD include improved interactions and communication among students (O'Haire, 2017). This is why equine-assisted activities; Hippotherapy, have been found to be an innovative approach emerging in treatment of symptoms and difficulties associated with ASD.

Existing research has found that animal-assisted interventions (AAI), whereby animals are incorporated into the therapeutic process had yielded promising results. Interventions for students with ASD are important to target in improving communication and interpersonal skills among them, as these difficulties can have a long-term impact in areas of relationships, employment and independent living (Howlin et al., 2004). Cognitive difficulties and differences may negatively impact the ASD population's psychosocial functioning as they broadly encompass domains including psychosocial well-being, social skills, interpersonal relationship and, basic self-care and communication skills (Ro & Clark, 2013). Similarly, due to their deficits in social skills, and differences with behavioural and emotional regulation, many students with ASD experience lower social acceptance and greater social isolation and loneliness (Tan & Simmonds, 2019). Therefore, the need to emphasise for psychological intervention through animal-assisted activities should be highly encouraged in Malaysia to provide an alternative treatment strategy for students with ASD with communication difficulties.

PURPOSE OF THE STUDY

The purpose of the study is to investigate how the participants of this study perceive the effectiveness of hippotherapy in aiding students with ASD with their communication development. The ideology of dynamic situation for interventions have further propelled this study to look at the two main research questions, which are:

1. How do the instructors perceive the effectiveness of hippotherapy in aiding the communication development of students with ASD?
2. How does hippotherapy promote communication development of students with ASD?

METHODOLOGY

Research Design

Qualitative research design in the form of a case study has been employed to focus on the understanding and explanation of the dynamics of social relations within the participants in this particular study. Observation, interviews and document analysis have been conducted with the only two hippotherapy centres in Malaysia, making this a holistic case study research.

Sample

The four participants interviewed are experienced, senior instructors who manage the hippotherapy sessions for many years at two hippotherapy centres in Malaysia. They have given insightful thoughts and ideas on how they individually perceive the effectiveness of hippotherapy in aiding the development of students with ASD. The list of participants is shown in Table 1.

Table 1

Participants of the Study

Participant	Hippotherapy Centre	Years of experience giving hippotherapy
A	1	10
B	1	16
C	2	2
D	2	15

Sampling Method

To allow for maximum opportunities for thematic analysis, this study employs convenience sampling in recruiting participants for the interview. Four instructors from two different centres have been interviewed; two interviews were conducted face to face and two were conducted via Zoom because of the current COVID-19 pandemic.

Instrumentation

Semi-structured interview is the primary form of data collection for this study; six main questions along with eleven prompt, open-ended questions were used to gauge and engage participant's focus into the conversation. The interview questions were adopted from a study on qualitative exploration of a multi-modal intervention that incorporates horse-back riding (Pohl et al., 2018), where the questions' pronouns were further adapted to suit the study's objectives. Observations of hippotherapy by the researcher who volunteers at the hippotherapy centre were also conducted before the COVID-19 pandemic. An observation tool is used to observe the communication development of students with ASD. Document analysis consists of progress reports and records of hippotherapy sessions involving students with ASD.

Procedure

Each participant engaged in an hour-long interview with the researcher. The four participants in the study have enabled the ease in data collection for confirmability of the effectiveness of hippotherapy across the instructor's perspectives. The interviews consisting of broad, open-ended questions are designed to investigate and collect the instructors' perspectives on how they perceive the effectiveness of hippotherapy in aiding students with ASD with their development. All interviews were audio-taped, recorded, transcribed, and analysed to probe the unfolding themes, and emerging key-findings from the interviews. Observations were conducted by the researcher for 2 sessions in the only two hippotherapy centres in Malaysia. Documents related to the students' development through hippotherapy sessions were analysed.

Data Analysis

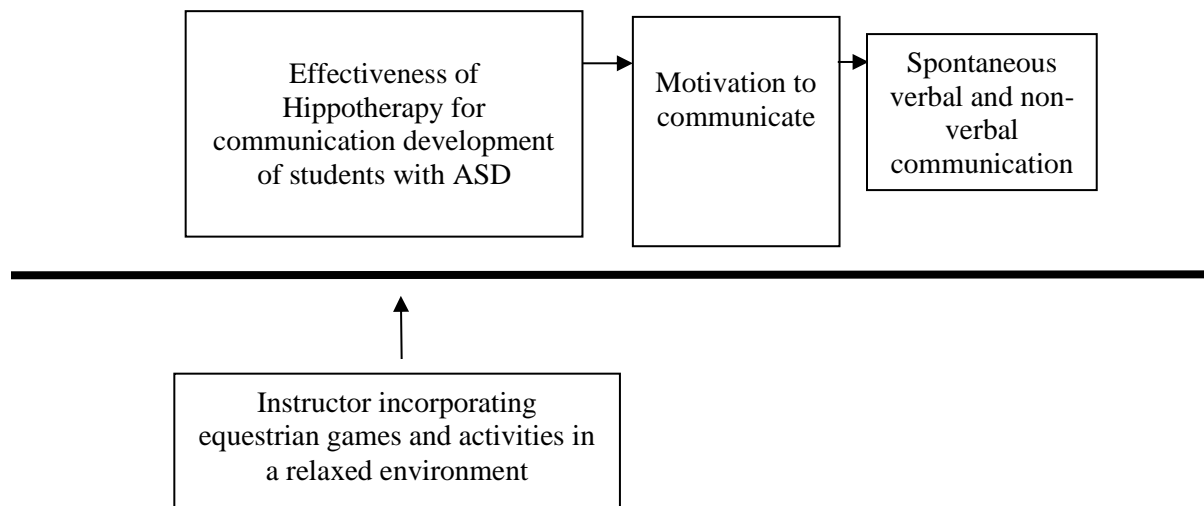
The interviews were transcribed through Otter.ai; a qualitative data management software program, to organise the data of this study. Through cross-checking the coding of the main themes of the study, it promotes “thoroughness for interrogating the data” which helps in broadening and enhancing personal understanding and insights of the study (Creswell & Creswell, 2018). The software shows that *Participation* is the most repetitive word from the interviews, and appears to be the most inclusive that influences the overall effectiveness of hippotherapy in aiding students with ASD with their communication development. Triangulation as a way to approach data was done with multiple perspectives and hypotheses in mind (Creswell & Creswell, 2018). In this study, corroboration has been achieved when all four instructors, who were interviewed separately, provided the interviewer with the same answers and perspectives on how they perceive the effectiveness of hippotherapy in aiding students with ASD with their communication development. These findings were also triangulated with observation and evidence of each instructor’s documentation of work experience has been studied to confirm participant’s awareness, knowledge and experience of working with the hippotherapy programme.

RESULTS

This study revealed three main themes on the effectiveness of hippotherapy for communication development of students with ASD. A graphic representation of the findings is presented in Figure 1.

Figure 1

Effectiveness of Hippotherapy for Communication Development of Students with Autism Spectrum Disorders (ASD)



Motivation to Communicate

Hippotherapy aids in communication development by enhancing motivation to communicate through active involvement in horse-riding activities and conversation exchanges. Hippotherapy is perceived to be effective for communication development because students with ASD developed motivation to communicate during hippotherapy sessions. Instructor C shares, “*Students with ASD develop motivation and participates in activities as the student develops trust in horse and instructor*”. Motivation refers to the affective state of students who are actively involved in both the communication and activities during the hippotherapy sessions. Students with ASD who are interested in a particular topic or activity or object will be motivated to learn or communicate. Instructor A explained,

“Students tend to only participate confidently in conversations and activities when he is familiar with the surroundings; as in using the same horse, and the same side-walker (the volunteer). Based on his reluctance-ness, it shows how sensitive he is to the surroundings as he was very much uncomfortable and barely had the will to participate and engage in conversations, activities, and eye-contacts”

Hippotherapy effectiveness for communication development began with motivation and interest. All four instructors have given similar examples of their students’ motivation during hippotherapy sessions. Hippotherapy sessions that instructors considered to be effective for communication development were novel, interactive and engaging. The interview data also state that instructors follow the child’s lead and it may take 3-5 weeks for students to develop self-confidence and motivation to participate and engage in conversations, activities, as well as eye-contact with the instructors, volunteers, and other riders.

“It may take up around 3-5 weeks until the students develop self-confidence, as it is a character that every student acquires individually at their own pace”

(Instructor B)

This shows that these students tend to decode and perceive information selectively based on their favour, moods, and needs during the sessions. Observational data also indicate that students with ASD demonstrate motivation to communicate with their instructor during hippotherapy sessions. Document analysis indicate that students with ASD show progress in ‘*responding to instructors during conversations*’.

Spontaneous Verbal and Non-Verbal Communication

One of the primary findings emerging from the data was that hippotherapy develops spontaneous verbal and non-verbal communication. Language and gestures are commonly used and practised to transmit messages between the instructors and students. Students began to make eye contact in reciprocal social communication which is a vital aspect for communication development. Hippotherapy aids in developing receptive and expressive language skills including spontaneous verbal and non-verbal communication gestures such as facial expressions, eye contact, body positions and hand movements during hippotherapy sessions. Instructor A emphasised that,

“I’d say eye-contact is the most crucial, and basis to every communication. As an instructor, you will know the student is listening to you when he or she is engaged through eye-contacts”. This is reiterated by Instructor C, “When there is no eye-contact, the communication process is only referred to as one-way communication. In order for two-way communication to occur, there must at least be a reciprocal eye-contact with desirable spirit”.

The essential process of communication development during hippotherapy sessions involved conversational topics and constructing sentences about the actions by the student during the session; this promotes reciprocal social communication that involves both speech and thoughts. Student with ASD develops a sense of trust with the horse and therapist, leading to vocalisations, speech, utterances, requesting behaviour for communication development. As the sense of trust develops, the students with ASD demonstrate confidence in expressing themselves verbally and non-verbally. Students with ASD also develop turn-taking skills in conversations.

The term *Communication* is defined as the process of transmitting information from one person to another with one common understanding (Keyton, 2011). However, in the context of hippotherapy, it is known as the basic interaction of transmitting information between two or more people by developing and sharing ideas through the use of verbal and nonverbal gestures during the sessions. The observation data show that the most common non-verbal gestures used during the sessions are; facial expressions, eye-contact, body positions, and hand movements to transmit messages between the instructors, volunteers, and the students. Observation data show that conversational topics and constructing sentences about the actions the student is doing during the session promotes social-reciprocal communication that involves both speech and thoughts. Document and observation data also affirms that the hippotherapy sessions had produced the desired result and outcome for communication development of students with ASD meeting the intended objectives of the therapy. Hippotherapy helps in improving the child's bilateral coordination and neural connectivity particularly between cerebral hemispheres, which then helps them to ‘*express their thoughts*’ through speech and emotions confidently.

Instructor Incorporating Games and Activities in a Relaxed Environment for Communication

Another theme that emerged from the data concerning the effectiveness of hippotherapy for communication development was that hippotherapy was provided in a relaxed environment, that incorporated games and activities between the therapist and the student with ASD. This was most beneficial in eliciting spontaneous verbal and non-verbal communication. Instructors perceive that communication development during hippotherapy sessions involves the incorporation of equestrian games and activities by the instructor, prompting students’ with ASD to answer questions, and playing a role in creating a calm and relaxed environment during hippotherapy sessions. Hippotherapy aids in communication development as trust is established between student with ASD and the horse and instructor through games and activities that foster development of vocalisations, speech, utterances and requesting behaviour. When asked how the instructors individually encourage communication development among their students with ASD, the four instructors have given various feedback and answers on this subject:

“I usually incorporate games and activities that are familiar to them as they tend to be more comfortable and aware of the activity’s objectives. It may sound boring but to them, it is a great way to refresh their memory and encourage them to participate and communicate more confidently” (Instructor A)

“I always give them the same horse that they are comfortable with. This is because when they are not comfortable and have the lack of trust with the horse, it hinders their level of participation as they tend to focus a lot more on the horse rather than the activities and communication happening” (Instructor B)

Instructors use prompting to develop communication of the students with ASD. Instructor C spoke of:

“Prompting is one of my strategies. I always prompt easy questions to the student such as ‘Is the colour red or blue?’ to gauge their attention and encourage participation from the answers”.

Another instructor reveals,

“I don’t follow a specific strategy to expect participation among students with autism. However, I always try to make the session’s environment calm, relaxed and fun to make the students comfortable through uplifting their moods”

(Instructor D)

Observational data also found that the constant movement of the horse offers a reiterating concept as the activities themselves encourage student-instructor participation and communication. Analysis of the documentary data indicates that games and activities are planned and implemented during the hippotherapy sessions. Data analysis of various sources also suggests that hippotherapy and its incorporation of purposeful horse movement enhances communication development of every student with ASD. Data analysis also suggests that the incorporation of horses into the treatment plans acts as an innovative approach for alternative form of treatment, as the repetitive movement of a horse supports the communication development in students with ASD.

DISCUSSION

This study suggests that hippotherapy aids in communication development of students with ASD by enhancing motivation to communicate through active involvement in horse-riding activities and conversation exchanges. Previous research has indicated that motivation is developed through active involvement in activities which spark the interest of students with ASD (Macauley & Gutierrez, 2004; Neik et al., 2014; O’Brien & Williams, 2010). Hippotherapy refers to incorporating movement of a horse, the activities, and conversational topic as a whole in aiding students with autism with their communication development through the help of motor and sensory stimulation (Koca & Atasevan, 2016). Hippotherapy offers an effective means of addressing developmental deficits among students with ASD by facilitation of their physiological systems that support communication developmental functions (Engel, 2007; Ro & Clark, 2013). Motivation is important for communication development of students with ASD who have deficits

in reciprocal social interaction (Lunenberg, 2010; Macauley & Gutierrez, 2004). The equestrian environment and the horse provide challenges that force children to continually adjust themselves and stay focused during hippotherapy sessions, while also providing excitement and novel experiences (Lunenberg, 2010). This finding is supported by past studies showing that students with ASD are motivated to attend to tasks as motor responses become more automatic for functional engagement with improved postural responses (Brown & Dunn, 2010; O'Brien & Williams, 2010).

Hippotherapy aids in spontaneous verbal and non-verbal communication. Receptive and expressive language skills are utilised during every session that encourage the children to stay actively involved in interacting with the horse and the environment (Engel, 2007; Latella & Langford, 2008). The findings of this study are consistent with existing literature that the social opportunities provided in the hippotherapy setting could enhance receptive and expressive communication, because students practised attending, comprehending, and completing instructions provided by their therapists during turn taking, planning, and sequencing activities (Ajzenman et al., 2013; Macauley & Gutierrez, 2004). Expressive skills, particularly speaking, vocalisations, have been aided by hippotherapy (Dziuk et al, 2007; King, 2007). The abilities of students with ASD are developed, particularly in sensory, neuromusculoskeletal, movement related, and speech functions through hippotherapy (Latella & Langford, 2008; Tan & Simmonds, 2019). Students with ASD have improvements in receptive communication, listening and following instructions as a result of integrative connection between improved postural control and social interactions (Ajzenman et al., 2013; O'Brien & Williams, 2010).

The hippotherapy sessions that instructors in the current study identified as aiding communication development of students with ASD involved the incorporation of games and activities by the instructor. Instructors also were playing a role in creating a calm and relaxed environment during hippotherapy sessions. This strategy involves movement of horse that creates reiterative concept and child-centred activities. This is consistent with best practices reported by several researchers (Engel, 2007; Shurtleff et al., 2009; Srinivasan et al., 2018; Pohl et al., 2018). Numerous studies in the existing literature offer effective therapy practices using hippotherapy to facilitate communication development for children with ASD (Brown & Dunn, 2010; O'Haire, 2017; Tan & Simmonds, 2019). The four mechanisms of hippotherapy action are: core connections, sensory connections, communication connections, and neural-connections with the help of gait from an average horse of 120 steps per minute, which here allows 120 chances for a variable, repetitive and rhythmic movement to the student (Shurtleff et al., 2009). This shows that the repetitive movement supports the cerebral organisation of a rider particularly bilateral coordination and neural connectivity between cerebral hemispheres which are undeniably essential for development (Baranek, 2002; Govender et al., 2016; Jackson-Maldonado, 2019). However, it is important to note from the key-findings that hippotherapy is effective although it is clear that the horse is not a stand-alone tool in achieving a promising developmental outcome (O'Brien & Williams, 2010; Schriber et al., 2014). An effort in other form of factors such as the incorporation of games and activities and interaction between instructor and student is needed to achieve the developmental goals.

CONCLUSION

This study suggests that hippotherapy can be considered as an alternative treatment strategy for students with ASD with communication difficulties, and potentially benefit a larger ASD community in Malaysia. The recommendation of this study is for hippotherapy to be used as a therapy for students with ASD. Treatment with hippotherapy leads to motivation to communicate, spontaneous verbal and non-verbal communication as instructors incorporate games and activities in a relaxed environment for communication. This case study has provided insight into the effectiveness of hippotherapy for communication development of students with ASD and how hippotherapy facilitates communication development in students with ASD in the only two hippotherapy centres in Malaysia. Further study may consider a survey of the parents of children with ASD to obtain parents' perspectives.

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