I**ntroduction**

There has been an increase in the diagnosis of autism spectrum disorder. This necessitates a review of the treatment methods and environments that children with autism are managed. Probably, this can provide information that would inform the most effective treatment method and environment that will promote the achievement of maximum desired treatment outcomes. The CDC (2020) reports that nearly 1 in 54 children in American have autism spectrum disorder (ASD). In 2016, the CDC reported that 1 in 34 boys and 1 in 144 girls were diagnosed with the disease. The data shows that boys are approximately four times likely to be diagnosed with the disease compared to girls. According to studies, about 31% of children with autism spectrum disorder suffer intellectual disability with an intelligence quotient of less than 70. Besides, about 25% are in borderline range with IQ of between 71-85, and 44% have IQ above 85.

Various treatment methods have been used to treat autism symptoms following a diagnosis based on the child's presentation. DeFilippis, Wagner (2016) states that psychosocial therapies and pharmacological management have shown desired results in managing autism-related symptoms and preventing possible comorbidities. The majority of psychosocial interventions often target core and associated symptoms of autism spectrum disease. An example if applied behavior analyses (ABA) which based on the theories of learning and operant conditioning. This intervention exploits positive reinforcement by rewarding the child, praising them verbally, and ensuring repetitive learning trials coupled with specific intervention targets.

According to DeFilippis, Wagne (2016), ABA has achieved excellent outcomes in managing symptoms in children with autism. For instance, the study reveals that about half of the children receiving the treatment gained significant improvement in IQ points. Roane, Fisher & Carr (2016) also applauded ABA for achieving the best outcomes in managing autism symptoms. However, the three researchers reported that no one management could be appropriate for managing autism symptoms. DeFilippis, Wagner (2016) also stated that the previous research regarding the effectiveness of ABA in treating autism symptoms lacked methodological rigor. Thus, they recommended that results be replicated with randomized controlled trials to ascertain the claims regarding ABA's effectiveness.

On their part, Alves et al. (2020) supported that ABA is effective in treating ASD symptoms and is well supported and evidenced-based in managing the delays in development apparent among children with autism. The study provides that assistive technologies, including gamification, computer-based training, among others, have been effective in executing ABA techniques. These assistive technologies have significantly improved social behavior, communication, interaction, attention, and reading skills among children with autism. However, in the end, Alves et al. (2020) cite that most of the literature is used in carrying out the study did not accurately define their target audience and notable lack of compliance with the ABA's dimensions, as described by Baer, Wolf, and Risley in 1968.

DeFilippis, Wagner (2016) reveal that the length of time needed for the client to realize improvement with ABA is one of its limitations. Besides, Roane, Fisher & Carr (2016) showed that the generalizability of ABA's learned skills is questionable, and there is a significant lack of motivation often for the patient to learn the skills. ABA's cost is another limitation cited by studies which they attributed to its intensive therapies going for about 20+ hours weekly.

Pivotal Response Treatment is another psychosocial treatment method that is superior to ABA. This treatment method involves a more naturalistic behavioral method and often focuses on specific skills and offers commendable motivation, unlike in ABA. PRT works on a theory that results in widespread improvement in areas that the therapy did not directly target, for instance, joint attention. Gengoux et al. (2019) also confirmed that PRT was effective at improving children's social communication skills with autism spectrum diseases and educating parents on the best ways to care for their children with autism and implement PRT. DeFilippis, Wagner (2016) confirmed that PRT, unlike ABA, is less time intensive. PRT improved verbal expressive communication of children with autism within three months of intervention.

Moreover, Gengoux et al. (2019) reported that children with autism spectrum disease showed more significant improvement in the frequency of their functional utterance and brief observations of social communication change after 24 weeks' implementation of PRT. Also, children with autism spectrum disease showed less disruptive behavior during PRT compared to during ABA. Other psychosocial interventions, such as parent-mediated early intervention and social skill intervention, have been studied. However, parent-mediated early intervention has shown mixed results and often the majority of studies conducted to confirm its effectiveness, involve small sample, thus making it hard to rely on such (DeFilippis, Wagner, 2016).

Pharmacological treatments of autism spectrum disease involve the use of medication to manage associated symptoms such as irritability, aggression, hyper-reactivity, and attention deficit. However, the efficacy for their use in managing core symptoms of ASD has not been created. According to Lamy & Erickson (2018), psychosocial or behavioral treatments, have been effective in managing core symptoms of ASD, such as deficits in communication, social interaction, and repetitive behaviors. However, ASD is as well characterized by irritability, aggression, and hyperreactivity, which necessitate pharmacological management. However, Lamy & Erickson (2018) report that only two medications are currently confirmed by the FDA to be used in treating autism-related symptoms. These include risperidone and aripiprazole for managing irritability. Besides, the two researchers show that up to 70% of children with autism suffer comorbidities. Thus, there is a need to use pharmacological intervention to supplement psychological treatment in managing symptoms such as hyperactivity, anxiety, irritability, and other comorbidities.

Moreover, DeFilippis, Wagner (2016) unveiled that pharmacological treatments are crucial and have been proven effective in managing comorbidities, such as gastrointestinal disorders and insomnia. Nevertheless, Lamy & Erickson (2018) reported that though there are known to be effective due to evidence on the ground, there is limited evidence regarding the efficacy of psychotropic medication with as often used in managing ASD associated symptoms. This is attributed to a lack of a large place-controlled trial with children or youth having autism spectrum disorder.

As observed, little is known about the treatment of autism. Available research has inconsistent information, and some treatment methods are not vastly studied. It is unclear what treatment methods are the most effective and to what group of patients. Also, it is not apparent what adjustments need to be made on the treatment methods and environments of treatments to achieve the desired outcomes. This study will look into the treatment procedures of autism and appropriate environments that can achieve the highest effectiveness and wellbeing of people having ASD. The study will identify different treatment procedures that are considered effective for treating autism core symptoms and associated symptoms and the best environment to maximize the treatment outcome. This will inform what adjustments need to be done in treatment methods and the environments to improve the management of their symptoms and wellbeing.

**Description of Participants**

Autism majorly affect children and researching how they feel about the treating methods and the environment where such treatment happens and where they would provide real and actual information that may inform the planning and delivery of such treatment. For this study, the participants will be parents, caregivers and guardians living with children aged 18 and below with autism, family healthcare providers, and therapists. This is in agreement that sometimes, children diagnosed with autism due to their difficulty communicating and other challenges may not adequately provide accurate information concerning their treatments and favorable environmental factors that may influence their treatment and wellbeing.

The study participants will be from the Glendale community, Los Angeles, California. The researcher will with seek permission from HIPPAA and various parents, guardians and other concerned parties through the help of permitted community health providers to obtain access to the health records of children with autism in the Glendale community. The study expects 200 study participants thus will randomly select 250 participants from the available electronic health records in the Glendale community. The researcher knows that it may not be possible to select 200 participants and have all of them accept to participate. Thus, it is appropriate to target a slightly higher number than the expected participant to cater for any unexpected outcome.

Random sampling method will be employed because expected participants are uniform in terms of characteristics (the majority of symptoms and treatment methods, although there may be slight differences). Choosing randomly will likely improve representation. Most studies have used random sampling to increase the generalization of results, particularly when most of the targeted participants have similar features. With the help of healthcare providers and autism health champions, the researcher will inform the selected participants about their selection into the study and tell them when they will be reached to discuss further on the same. Home address for selected participants will be located through concerned authorities and with participants' consent. They will be contacted, educated, and requested their participation in the research.

**Materials**

The study will use interviews, questionnaires, and review of the past medical history of participants and reports about specific treatment methods and environments to obtain information relevant to the study's aims and objectives. The research will employ both the open-ended and closed-ended questions in the questionnaire. Usually, the closed-ended questions concentrate on numerical values or yes, and no answers while the open-ended give chances for expression of inner feelings and further explanations. The combination of these two types of questions is believing in providing detailed information about the treatment methods, their effectiveness, and the desirable environment that provides the desired outcome. Also, questionnaires are cheap and often timesaving. Besides, the research will use a Likert scale because it presents room for participants to provide their views and opinions regarding certain study items. Also, it is simple to use.

Interviews will be carried at the participants' (parents, guardians, and caregivers) homes. Healthcare providers will be interviewed at a convenient hospital near their location or area of work; for instance, those in Central Alves will be interviewed at Glendale Memorial Hospital and Health Center. Before the interview, the participants will be educated and given a questionnaire to fill out, which they will submit after three days through the assistants. The researcher will have printed all the questionnaires with a relevant question relating to the research topic by the time of visiting participants. Besides, the respondents will have researchers' and assistants' contact numbers to facilitate communication during the data collection period and for any clarification. Some participants may not be literate enough regarding the question; they will be informed to call through the contact that will be provided so that translators may be sent as would be necessary.

After three days, the questionnaire will be collected, and record-keeping maintained to ensure that all given questionnaires are filled and submitted and those missing accounted for. Besides, the researcher will carry and show participants a well signed and legal permit from relevant authorities to prove that the researcher is permitted to visit homes and collect data from the targeted participants. Importantly, because of the large number of the study participants, the researcher will have another research and other assistants who will be trained before being allowed to the field to help reach the study participants and collect data. Each of the assistants will have permit letters and tags to prove to the study participants that they are genuinely up to researching legal, ethical, academic, and health purpose.

Data analysis will be done using both qualitative and quantitative methods of analyzing data. Questionnaires will be coded based on every study question to promote accuracy throughout the data analysis process. Moreover, the research will use descriptive statistics such as the distribution frequency. It is expected that the majority of data will be quantitative of the nature of the study question and objective plus the size of the target population. The gathered data will be summarized and grouped in categories in the frequency distribution table. From here, charts and graphical representations will be created to give a visual representation of the participants' responses. Presentations will be done on tables, graphs, pie charts, and general charts. Moreover, the researcher will exploit the MS excel spreadsheet to perform initial tabulation, charting the responses and analysis. After that, version 7.0 of the SPSS will be used in analyzing the collected information for Likert scale questions.

**Results**

The study intends to determine the effectiveness of treatment procedures from one autism patient to another, and the effects of environmental factors on people living with the disorder. The researcher expects to find that most children with ASD who take PRT are improving faster than those taking ABA and other psychosocial treatment methods in treating the core symptoms of ASD. Besides, the majority of respondents will report that ABA is quite time-intensive and costly because they have to visit therapists for a long time. The few children who will be able to respond will report that ABA is less motivating and will prefer PRT overall in managing core symptoms. The majority will prefer PRT to any other psychosocial treatment method. However, concerning the comparison of ABA with parent-mediated early interventions, most children and parents will prefer ABA when it comes to improving communication skills.

Moreover, the researcher anticipates that most participants will report the presence of comorbidities. They will state that these significantly affected not only the children's health but also their treatment. Thus, most of them will prefer that the psychosocial treatment method be complemented with the pharmacological treatment method to manage the associated symptoms. Participants whose children have associated symptoms and using pharmacological treatment methods such as risperidone and aripiprazole complemented with the psychosocial treatment method will report effective management of both symptoms.

On the other hand, those who do use only psychosocial treatment will occasionally report symptoms such as irritability and insomnia. They will be willing to be started on the pharmacological methods. Concerning the environment, the researcher anticipates that most participants will respond that being treated in a familiar environment such as home promotes the desired outcome compared to hospitals or other environments. However, they will suggest that schools are effective places for promoting interaction among children because they see and talk to other colleges in the best ways possible and eventually improving their interaction and communication skills.

**Discussion**

Children diagnosed with autism and their families face numerous challenges. Most of these children as shown by Ucuz, Dursun & Aydin (2015) have cognitive problems including attention and concentration deficit, communication issues, neurological issues, among other problems that leave them dependent on others. Besides, according to Vallée & Vallée (2018), parents to children with autism spectrum disorder do not feel like other parents. When children are born, parents expect to take care of them up to a certain age where they can do certain things for themselves. Sadly, this is not the case for children with autism.

Treatment methods, such as psychosocial therapies, pharmacology, antipsychotics, risperidone, antidepressants, and mood stabilizers, are used for different autism patients to improve their social skills (DeFilippis & Wagner, 2016). As shown by various studies, most of these treatment methods report different effectiveness. The results from questionnaires will reveal that ABA though, was effective had some limitations. ABA is not only time-wasting, intensive but also as PRT or even social interventions. Various studies have confirmed the effectiveness of PRT. Gengoux et al. (2019) and DeFilippis, Wagner (2016) are among the researchers who applauded PRT for great achievement in improving the core symptoms of ASD. Usually, a treatment is considered effective when it effectively treats the target symptoms, favorable for the user, and is cost-effective. Unlikely, ABA, PRT employs a naturalistic behavior method that focuses on specific skills that it improves in the shortest time possible. As seen earlier, time intensiveness is one of the complaints that most participants report when using ABA.

On the other hand, PRT is praised for managing to improve most of these symptoms in the shortest time. DeFilippis, Wagner (2016) showed that PRT improved core symptoms of ASD within three months, unlike ABA, which requires almost over a year. In other research, Gengoux et al. (2019) confirmed that PRT was improved verbal expressive communication faster in children with ASD compared to ABA. This information is consistent with most of the reports that were provided by participants. Being favorable according to the available data, most participants would choose PRT over other psychosocial treatment methods.

ASD is often associated with certain symptoms of Lamy & Erickson (2018) report. The study provided that nearly 70% of children and youth with autism suffer these symptoms, which often lead to comorbidities. Unfortunately, while treatment methods such as psychosocial therapies treat core symptoms, they do not manage these associated symptoms. These symptoms require medications such as risperidone and aripiprazole. Children with autism and having these associated symptoms often report better management of ASD treatment than their counterparts who do not use them. This is why many participants whose children are using PRT and pharmacological therapies reported desired outcomes, and others who were not using medical intervention were willing to be started on the same.

Environmental factors such as supportive families and stress-free environments are recommended for people living with autism to avoid the worsening of their disorder. Stress and traumatic events are likely to cause post-traumatic stress disorder on top of the autism spectrum disorder hence further risking the wellbeing of an individual and lowering their quality of life (Lamdan et al., 2020). Autism patients living in positive environments are likely to do well in life compared to those in unsupportive, discriminative, and stressful environments.

**Strengths of the study**

The study method selected is easy as it entails asking questions from the participants. The chosen participants who are parents, caregivers, family doctors and nurses who have interacted with people living with autism are likely to provide useful information about the effectiveness of different treatment procedures intended to mitigate the symptoms of autism and improve the quality of life of those living with the condition.

**Weaknesses**

The major weakness of this study is the use of second parties to answer questions on behalf of the people under study. The study collects its information from parents, caregivers, doctors, and nurses instead of the patients. Some of the patient's experiences may not well be explained by these second parties but rather by the patients themselves.

**6-1 Discussion**

The research aimed to find what treatments are effective for treating children with ASD and the favorable environment for maximizing the outcome of these effective therapies. The expected study findings were congruent with the hypothesis for the study. The research anticipated finding the most effective treatment method for ASD and the favorable environment for the same, which was apparent as noted in the results, which was clear from the findings. PRT is the most effective psychosocial treatment. It is cost-effective, time-saving, and effective within the shortest time. Besides, it does not expose children with ASD to disruptive behavior, as seen in other psychosocial treatments. Another crucial thing that came out regards complementing psychosocial treatment with pharmacological treatment. ASD is associated with certain symptoms such as irritation, insomnia, among others, which psychosocial treatment do not treat necessitating medications prescriptions. A friendly, calm, and relaxed environment are fundamental in improving the outcome of various ASD treatments. Confidently, the results adequately answered the research question due to strict observation of reliability, consistency throughout research which is attributed to choosing the right method and tools to carry the research. Besides, participants were cooperative.

**Appendix**

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| --- | --- |
| Question | Answer |
| Last Name of Patient |  |
| Gender of Patient |  |
| Age of Patient |  |
| Medications and treatment procedures that the patient has used |  |
| What worked? What worked better? |  |
| What failed? |  |
| Please compare and contrast some of the treatment that you have used? |  |
| What activities improve the patient’s mood? |  |
| Example of negative events that had serious impacts on the patient |  |
| Has using psychological treatment method and psychosocial treatment been more desirable in terms of outcome? Please explain… |  |
| Do you prefer pharmacological treatment methods to be complemented with psychosocial methods? If so, why? |  |
| Any other comments |  |
| What can you recommend for the improvement of the quality of life of people living with autism? |  |

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