

The Impacts of Meditation on Ensuring Better Attention among Stroke Patients or Attention Deficit Hyperactivity Disorder – A systematic Review

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Abstract

Meditation has been found to have major therapeutic benefits and therefore, it is slowly gaining a place in medical sciences. The benefits of meditation are enormous and therefore, in this research, better insights about the same in the case of ensuring better attention among stroke patients have been understood. Clear research on the impacts of the same on attention deficit hyperactivity disorder has been considered in the case of this study. The use of the secondary method of data collection, which has involved a search of various online databases like Google Scholar and PubMed has been considered. Appropriate inclusion and exclusion criteria have been set for the selection of the articles that can aid in the study. Further, an appropriate focus on the most effective keywords that can benefit the cause of the study by facilitating the best search work has been considered. Keywords like “meditation”, “benefits of meditation”, “impact of meditation on stroke patients”, “attention deficit hyperactivity disorder” and “impact of meditation on attention deficit hyperactivity disorder” are the main ones that have been employed here. The results of the research have revealed the fact that with the use of meditation, the levels of attention can be seen to rise significantly. This can be a beneficial area that can foster betterment by generating a lowering of chances of stroke or issues with attention deficit hyperactivity disorder.

Keywords: Meditation, Stroke, Attention Deficit Hyperactivity Disorder

1. Introduction

Meditation is largely acclaimed for its therapeutic properties and the ability to ensure greater attention among patients. Meditation is a practice that is gradually developed by individuals and that takes the form of practising mindfulness or focusing someone's mind on any given object. This is known to have massive impacts on the overall area of generating better attention, which can be a key area. The use of meditation is widely increasing across the globe as more people are being recommended to undertake appropriate meditative practices (Bigelow *et al.* 2021). Further, various therapeutic properties are also associated with the aspect of meditation, which is being widely acclaimed by medical experts across the globe. This can be seen as a major area that has raised the importance of meditation in the domain of healthcare, as more experts are suggesting the use of meditation to ensure a better fight against mental illnesses like stress and anxiety.

The use of appropriate standards of meditation can be a beneficial area that can help in generating betterment and can help in promoting a better level of well-being associated with any individual. It has become increasingly essential for people in the current times to ensure the appropriate usage of meditation to drive better results in mental health. The use of meditation is widely considered to fight stress and anxiety disorders. It has also been found to enhance the functioning of certain areas of the brain, which allows it to reduce certain major health issues and concerns. Among these, the major areas of stress, anxiety, chronic pain, depression, heart disease and high blood pressure are the key areas wherein, meditation is an effective weapon (Shrestha *et al.* 2020). Therefore, the use of meditation is increasingly rising in such areas and one major usage that has been noted is in fighting attention deficit hyperactivity disorder (ADHD).

Attention Deficit Hyperactivity Disorder (ADHD) is an extremely common form of neurodevelopmental disorder, which is generally noted among children. However, the disorder can also persist among adults, which can cause certain crucial issues or concerns. ADHD comes with an intrinsic issue of failing to pay attention and concentrate in various areas and this is one of the major areas that leads to impulsive behavioural patterns. As per the ideas of Santonastaso *et al.* (2020), owing to ADHD, children have often been found unable to control their impulsive behaviour and act without thinking about the consequences. Therefore, ADHD is a critical issue that must be considered as a threat to appropriate growth and development in a child and can lead to massive issues for adults as well. In this regard, the overall issue that is prevailing is largely focused on the aspect of attention.



Figure 1: Benefits of meditation(Source: Santonastaso *et al.* 2020)

It has been noticed that one of the major issues that are generally faced by individuals due to ADHD is the lack of attention among these individuals. This is the primary reason for all the associated issues that are being faced by individuals suffering from ADHD. Thus, all major interventions that must be considered in the case of ADHD must focus on ensuring better levels of attention among individuals. This can be seen as a critical area of the requirement that must be facilitated and that can allow overall betterment as well. The use of the correct strategies that can be beneficial in enhancing the levels of attention among individuals, as suggested by Zhang *et al.* (2021), can be a key strategy to ensure the treatment or management of ADHD. Thus, this is a clear area of the requirement that can be associated with the illness and the use of meditation in facilitating the same is being studied here.

The use of meditation has been known to increase the levels of attention and concentration among individuals, which suggests the fact that there is a need for better consideration of the domain of meditation in the management of ADHD. The main need, in the long run, is to engender a constant therapeutic process, which can allow betterment in this direction and constant meditation can be seen as a critical area of need that must be facilitated in the long run to generate the desired impacts. Therefore, these are essential areas that can help in generating betterment and the study here seeks to understand the same in a detailed manner.

Aim

The main aim of the study here is to understand the extent to which meditation can be beneficial in generating higher levels of attention among patients suffering from ADHD.

2. Methods

Secondary data has been collected in the case of this study, as the use of the same has allowed broader knowledge about the study has been generated. Further, the use of secondary data has also helped in understanding the various concepts associated with the topic better and in more detail. The use of secondary data over primary data has been beneficial in generating a study, with lower time and budget requirements as well. Nevertheless, the use of secondary data from only legitimate and appropriate sources has been considered in this case. The use of peer-reviewed articles and journals has been employed, which have been sourced from only authentic databases, especially Google Scholar. Besides, the appropriate use of Google Search has been employed to come up with online articles as well. Therefore, both online and offline sources have been employed for the collection of the data that has been used here.

The use of the appropriate keywords for searching has been ensured. As per Champ et al.(2021), without the use of appropriate keywords during any search, the most relevant results cannot be facilitated. This means that without the use of the most authentic keywords, it becomes impossible to land with the most relevant sources of data and therefore, this study has stressed the use of the most authentic keywords that can be employed here. The use of Google Scholar has also been considered as it is one of the largest online repositories, where, an ample number of sources are openly and freely available. This has increased the overall range of the study and has also allowed a better understanding of the key areas that can allow the drawing of a better relationship that is shared between meditation and ADHD and can help in understanding existing links.

The use of a proper sampling technique has been ensured, which has allowed the selection of the most authentic research papers and articles. This is in line with the needs of the study and has helped in extracting only recent sources of peer-reviewed and valid data. The use of purposive sampling technique has been employed in the case of this study, which has allowed better selection of the data and has also allowed betterment in terms of appropriate application of the sources that have been collected here. Therefore, the use of the purposive sampling technique has been undertaken here to ensure that the study that is being generated here is in line with the needs of the research and caters to the aims and objectives of the research work overall. It can be seen as a beneficial area that has allowed better results for the study. Besides, as Wilson et al. (2021) suggest, ethical considerations form an important part of any study. In this study as well, the following of appropriate ethical norms has been undertaken and no unethical means has been tolerated. This has helped in maintaining the quality of the source of the data that has been collected and the overall quality of the data itself.

3. Results and Analysis

Meditation and its therapeutic nature

Even though research related to the correlation between meditation and therapy is in a nascent stage, there is major evidence that has been provided in certain research work, which suggests that meditation tends to have moderate therapeutic qualities in certain areas. As Oliva et al. (2021) highlight, the use of appropriate meditation for a prolonged period can be extremely beneficial in facilitating better management of stress. Besides, anxiety and pain can also be tackled using meditation. However, the same study has also revealed the fact that it takes at least eight weeks and 3-6 months to show such results. Therefore, one area that can be problematic here as per Mitsea et al. (2022), is the fact that there is a need to develop the habit of meditation to reap its benefits and most individuals fail at the same. This can be a major issue that can be considered in the case of meditation and thus, must be considered with utmost importance when evaluating the value of meditation as a therapy.

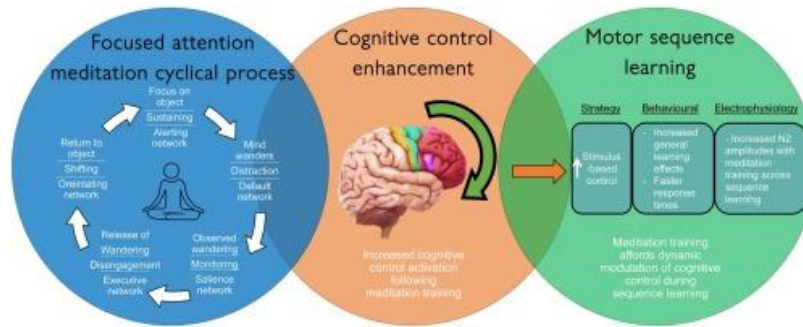


Figure 2: Meditation impacts(Source: Mitseaet al. 2022)

Another major area that is benefited from the use of appropriate meditation is the area of cessation of smoking. The craving that an individual has for smoking is largely inhibited when active meditation is used. It has been observed that 2 months after starting meditation, changes in the amygdala are noted in the case of most individuals. There is less activation observed in this area, which is a direct impact of meditation. Another noted fact that has been observed in this regard, is the fact that meditation is more effective in reducing smoking and cravings than relaxation training (Chen *et al.* 2021). This is another key area of benefit that has been noted in this case, which is an important area altogether and has a massive value of therapeutic nature as well. Therefore, all these qualities can be counted to be benefits of the overall aspect of meditation and links to therapeutic requirements.

Finally, when it comes to ADHD, the main issue that is faced in terms of lack of attention and the inability to concentrate. Studies by Sanadaet al. (2020), have revealed the fact that with the undertaking of meditation in an appropriate manner and over a given period, the ability of an individual to ensure greater attention towards all aspects is largely enhanced. Besides, it has also been suggested that the use of appropriate meditation can allow better retention of information, which is a direct consequence of the increase in the levels of attention that can be associated with these individuals. Therefore, the use of meditation can be beneficial, when it comes to the management of ADHD. Further, as per Siebelinket al. (2021), the use of meditation also tends to suppress negative emotions, which might cause stress and anxiety and can help in keeping the mind fresh. This can be a beneficial area altogether, as it can also help an individual to stay focused and ensure better levels of attention.

Use of Meditation in attention deficit hyperactivity disorder

As mentioned earlier, the very aspect of ADHD can be adequately managed and positive results can be generated by making appropriate use of meditation. In the words of Nicaastroet al. (2021), undertaking meditation for a certain period can be a beneficial aspect, as it helps in generating better brain functioning. Studies have revealed the fact that undertaking meditation for a semester or undertaking a mindfulness course for the same period can benefit an individual by generating better attention and memory associated with the individual. This also enhances the levels of learning effectiveness that can be associated with the individual and therefore, better response can be generated to the overall aspect of ADHD as it can allow better control over the mind. The use of meditation in the case of ADHD, as per the views of Heneghanet al. (2021), must focus on generating appropriate levels of attention and this is the specific area, wherein, meditation is extremely beneficial.

Further studies in this direction, have also revealed the fact that meditation can be closely linked with a reduction in negative emotions. As per Bögelset al. (2021), meditation can help in reducing negative emotion and social anxiety symptom severity as well. The use of the same in the case of ADHD can be an extremely beneficial process and can help in fostering better outcomes overall in managing the same. The massive increase in levels of attention is facilitated by meditation, which is a direct result of an increase in attention-related parietal cortex neural responses (Siffrediet al. 2021). The use of meditation, therefore, can be beneficial in driving greater attention levels and can aid in enhancing the levels of memory and retention capacities associated with these individuals. This can be a major area of benefit, which can help in generating better results

and outcomes and this can also allow betterment in terms of enhancement in the levels of focus associated with individuals.

ADHD is characterised by carelessness and forgetfulness and thus, the generation of higher levels of mindfulness and enhancing the retention capacity can be seen as a major requirement in the case of the disease. In the opinions of Cásedaset *al.* (2020), meditation can generate better functioning of the brain to ensure better retention abilities and can trigger betterment in this direction. Therefore, the use of meditation in managing a disease like ADHD can be an extremely beneficial area. Further, it can also help in driving away the issues of carelessness and forgetfulness by driving greater focus and retention levels. This can be a beneficial aspect that can help in correctly fighting ADHD using meditation. Besides, as per Greenet *al.* (2021), meditation has been found to thicken the prefrontal cortex of the brain of any individual, which is a beneficial area, as it allows betterment in terms of enhancing focus, planning and impulse control. Therefore, these being the main issues that are faced in ADHD, the use of meditation can be beneficial in treating the same.

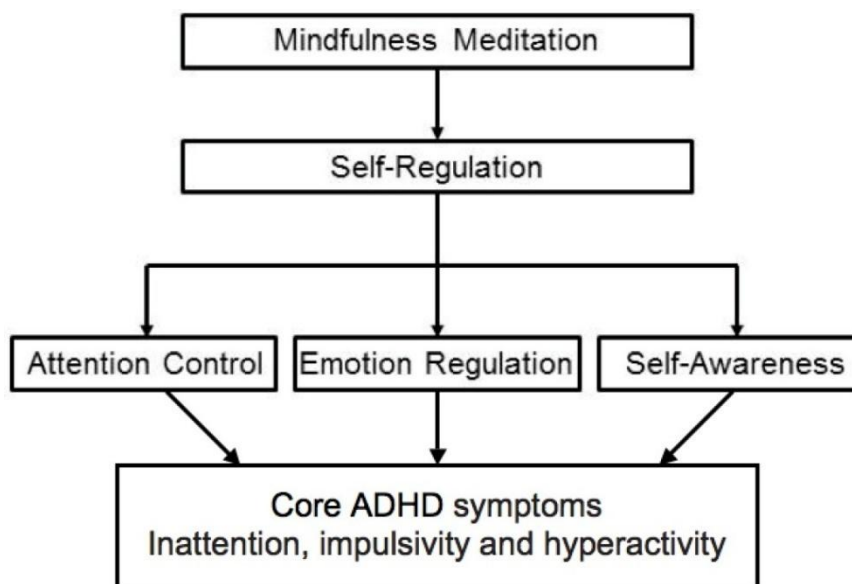


Figure 3: Impact of Meditation on ADHD(Source: Bögels *et al.* 2021)

Another major impact that meditation has on the overall domain of brain functioning is the aspect of the increase in dopamine levels that is generated by meditation. As per the views of Fuller-Thomson *et al.* (2022), dopamine levels are low when an individual suffers from ADHD. The use of meditation can be beneficial in generating betterment in this direction and this can allow betterment by generating better levels of dopamine to ensure better results. Furthermore, it has also been noted that undertaking mindfulness meditation for a prolonged period can also help in relieving the symptoms of ADHD. People undertaking the same can stay more focused and ensure better brain functioning, which triggers better focus on tasks (Samajdar & Mukherjee, 2020). Therefore, undertaking meditation can be an effective area that can generate overall betterment and this can help in ensuring the best outcomes and help in fighting ADHD.

4. Discussion

The above segment has revealed various observations in the secondary data that has been collected here and that suggests the therapeutic nature of meditation. As Prakash *et al.* (2020) suggested, the use of meditation can help in activating the essential parts of the brain, which can help in generating better results when it comes to ADHD management. The first and most important finding of this study is the fact that the overall use of meditation for a given period can allow individuals to come up with a thickening effect on the prefrontal cortex of the brain. This is one of the most important parts of the brain, which is focused on the generation of better focus, planning and impulse control. Therefore, all these areas are critically lacking in the case of individuals, who are suffering from ADHD. ADHD is a condition, wherein, an individual is unable to focus and pay attention to critical details

and shows impulsive behaviour. However, these issues can be largely managed when appropriate meditation practices and especially, mindfulness meditation is being undertaken.

Furthermore, the use of meditation has value in fighting issues like stress and anxiety as well. It has been found to relieve pain after a certain period. These aspects indicate the fact that the use of meditation can serve as a therapeutic device, which can engender maximum benefits for any individual (Green *et al.* 2021). This is a major area that is being considered in the case of this study as well. the use of meditation for the correct timespan and in the correct manner can be extremely helpful in relieving stress and can engender better developments in certain parts of the brain, which is closely linked with such activities. Therefore, when it comes to the need for appropriate management of such diseases and issues, the use of meditation is increasingly gaining popularity. Besides, as per Nicastronet al. (2021), meditation is being compared with other therapeutic processes to find the overall value that is being generated by the former. This has helped in understanding the fact that in certain areas like smoking cessation and craving cessation, the use of meditation is more impactful than a range of other interventions,

As the study revolves around the generation of an understanding of the way the use of meditation can allow better management of ADHD, the key takeaway here is the fact that brain functioning is largely enhanced using meditation. It allows better activation of certain critical brain parts, as per the suggestions of Siebelinket al. (2021), and it helps in engendering better responsiveness of the nervous system. This, in turn, helps in attaining better results when it comes to the generation of higher levels of attention and concentration and can also enhance the retention capacity of individuals. It can increase the levels of focus in an individual and can foster betterment by engendering the desired outcomes (Bögels^{et al.} 2021). Thus, the study here has identified that the use of appropriate meditation, which is undertaken appropriately and for the correct time levels can have a significant positive impact on the individuals and their overall brain functioning. This can raise the levels of attention and focus and can, therefore, help in fighting ADHD and ensure the betterment of an individual suffering from the same.

5. Limitations of the study

The study here has been conducted using secondary data only and therefore, only existing sources of data have been considered here. One major limitation here is the fact that only qualitative data is available in the case of this topic in existing works, which makes the study unquantifiable if primary data is not used. Nevertheless, the generation of the secondary data collection process has allowed the collection of more facts, which can be beneficial in generating betterment overall. Furthermore, there is a need to understand that undertaking the primary data collection method could have helped in ensuring quantitative data generation, which could have generated better statistical insights. However, the study has focused on ensuring only factual data, which is established and can engender betterment.

Besides, it has been noted that existing sources of data are subject to certain data biases, which can be another major limitation of the study. However, to fight this area, the study has undertaken a complete analysis of the sources and compared the views of various authors in one area to ensure better comparative analysis. Nevertheless, this is another limitation that can be associated with this study, which must be mitigated to generate better results overall. Therefore, most of the limitations have been considered and appropriate measures have been undertaken to ensure that the study that is generated is appropriate.

6. Conclusion

Attention deficit hyperactivity deficiency is one of the most common diseases that is noted in the case of children. This results in the lack of appropriate levels of attention associated with any individual and therefore, this is a critical aspect that can be considered. Mindfulness meditation has been noted to have a massive impact on the overall domain associated with better retention capacity enhancement and better attention generation. This is an essential requirement, which can help in fighting ADHD better and this can help in better brain activities as well. Therefore, better results in this direction are generated, which is a key requirement of this

study. Appropriate use of meditation and employing effective strategies of the same can be an extremely beneficial aspect that can help in fostering success. It can also allow betterment in terms of facilitation of the correct results, which can promote the betterment and can help in generating the desired outcomes in this regard as well.

References

1. Bigelow, H., Gottlieb, M. D., Ogrodnik, M., Graham, J. D., & Fenesi, B. (2021). The differential impact of acute exercise and mindfulness meditation on executive functioning and psycho-emotional well-being in children and youth with ADHD. *Frontiers in Psychology, 12*, 660845.
2. Shrestha, M., Lautenschleger, J., & Soares, N. (2020). Non-pharmacologic management of attention-deficit/hyperactivity disorder in children and adolescents: a review. *Translational Pediatrics, 9*(Suppl 1), S114.
3. Santonastaso, O., Zaccari, V., Crescentini, C., Fabbro, F., Capurso, V., Vicari, S., & Menghini, D. (2020). Clinical application of mindfulness-oriented meditation: a preliminary study in children with Adhd. *International journal of environmental research and public health, 17*(18), 6916.
4. Zhang, D., Lee, E. K., Mak, E. C., Ho, C. Y., & Wong, S. Y. (2021). Mindfulness-based interventions: an overall review. *British medical bulletin, 138*(1), 41-57.
5. Champ, R. E., Adamou, M., & Tolchard, B. (2021). The impact of psychological theory on the treatment of Attention Deficit Hyperactivity Disorder (ADHD) in adults: A scoping review. *Plos one, 16*(12), e0261247.
6. Wilson, N. A., Kenny, M. A., & Peña, A. S. (2021). Role of meditation to improve children's health: Time to look at other strategies. *Journal of Paediatrics and Child Health, 57*(2), 178-181.
7. Oliva, F., Malandrone, F., di Girolamo, G., Mirabella, S., Colombi, N., Carletto, S., & Ostacoli, L. (2021). The efficacy of mindfulness-based interventions in attention-deficit/hyperactivity disorder beyond core symptoms: A systematic review, meta-analysis, and meta-regression. *Journal of affective disorders, 292*, 475-486.
8. Mitsea, E., Drigas, A., & Skianis, C. (2022). Breathing, Attention & Consciousness in Sync: The role of Breathing Training, Metacognition & Virtual Reality. *Technium Soc. Sci. J., 29*, 79.
9. Chen, H., Liu, C., Cao, X., Hong, B., Huang, D. H., Liu, C. Y., & Chiou, W. K. (2021). Effects of loving-kindness meditation on doctors' mindfulness, empathy, and communication skills. *International journal of environmental research and public health, 18*(8), 4033.
10. Sanada, K., Montero-Marin, J., Barceló-Soler, A., Ikuse, D., Ota, M., Hirata, A., ... & Iwanami, A. (2020). Effects of mindfulness-based interventions on biomarkers and low-grade inflammation in patients with psychiatric disorders: a meta-analytic review. *International journal of molecular sciences, 21*(7), 2484.
11. Siebelink, N. M., Kaijadoe, S. P., van Horssen, F. M., Holtland, J. N., Bögels, S. M., Buitelaar, J. K., ... & Greven, C. U. (2021). Mindfulness for children with ADHD and mindful parenting (MindChamp): A qualitative study on feasibility and effects. *Journal of attention disorders, 25*(13), 1931-1942.
12. Nicastro, R., Jermann, F., Bluteau Blin, S., Waeber, C., & Perroud, N. (2021). Mindfulness training for adults with attention-deficit/hyperactivity disorder: implementation of mindful awareness practices in a French-speaking attention-deficit/hyperactivity disorder unit. *The Journal of Alternative and Complementary Medicine, 27*(2), 179-183.
13. Bögels, S. M., Oort, F. J., Potharst, E., van Roosmalen, R., Williams, J. M. G., & de Bruin, E. I. (2021). Family mindfulness training for childhood ADHD: Short-and long-term effects on children, fathers and mothers. *Mindfulness, 12*, 3011-3025.
14. Siffredi, V., Liverani, M. C., Smith, M. M., Meskaldji, D. E., Stuckelberger-Grobéty, F., Freitas, L. G., ... & Leuchter, R. H. V. (2021). Improving executive, behavioural and socio-emotional competences in very preterm young adolescents through a mindfulness-based intervention: study protocol and feasibility. *Early human development, 161*, 105435.
15. Siffredi, V., Liverani, M. C., Smith, M. M., Meskaldji, D. E., Stuckelberger-Grobéty, F., Freitas, L. G., ... & Leuchter, R. H. V. (2021). Improving executive, behavioural and socio-emotional competences in very

- preterm young adolescents through a mindfulness-based intervention: study protocol and feasibility. *Early human development*, 161, 105435.
16. Cásedas, L., Pirruccio, V., Vadillo, M. A., & Lupiáñez, J. (2020). Does mindfulness meditation training enhance executive control? A systematic review and meta-analysis of randomized controlled trials in adults. *Mindfulness*, 11, 411-424.
 17. Green, J., Huberty, J., Puzia, M., & Stecher, C. (2021). The effect of meditation and physical activity on the mental health impact of COVID-19-related stress and attention to news among mobile app users in the United States: cross-sectional survey. *JMIR mental health*, 8(4), e28479.
 18. Fuller-Thomson, E., Carrique, L., & MacNeil, A. (2022). Generalized anxiety disorder among adults with attention deficit hyperactivity disorder. *Journal of Affective Disorders*, 299, 707-714.
 19. Samajdar, S. S., & Mukherjee, S. (2020). Effect of Gayatri mantra chanting on attention, memory, anxiety and mental state in young athletes: a prospective study. *International Journal of Current Research in Physiology and Pharmacology*, 5-7.
 20. Prakash, R. S., Fountain-Zaragoza, S., Kramer, A. F., Samimy, S., & Wegman, J. (2020). Mindfulness and attention: Current state-of-affairs and future considerations. *Journal of Cognitive Enhancement*, 4, 340-367.