

# THE DEVELOPMENT OF SMARTPHONE APPS FOR ADHD KIDS WITH ATTENTION SHORTAGE HYPERACTIVITY 'ANTI-ADHD'

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## ABSTRACT

The reason for the applications being created is to improve the condition of the ADHD kids. It will discover arrangements on the best way to tackle this issue, in which author was urged to get this title of Anti-ADHD as it will profit the general public all in all to carry on with a superior life in this world. This research is entirely a new experience and to create a better future and execute the arrangement in an appropriate manner so it won't be a very late activity as a minute ago work as it won't be perfect and less possibility of being effective and probably won't most likely produce a decent task. Current accessible treatment choices are based on tending to comorbid mental, neurological, or medical conditions, as centre side effects of autism imbalance are regularly headstrong to current pharmaco-restorative choices. In this work it consists of various challenging sections to sort out such as gathering information and designing applications.

**Keywords:** ADHD, Hyperactivity, Impulsive Signs.

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## INTRODUCTION

Specialists at the National Institute of Mental Health (NIMH), National Institutes of Health (NIH), discovered the causes for ADHD. They found that ADHD is caused by two main factors and they are genes and environmental or non-genetic factors. Figure 1 shows the types of ADHD. Besides, there also few more factors such as:

- Genes
- Cigarette smoking, alcohol use, or drug use during pregnancy
- Exposure to environmental toxins, such as high levels of lead, at a young age
- Low birth weight
- Brain injuries

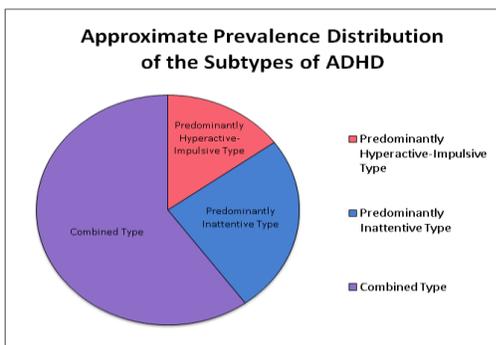


Figure 1: Types of ADHD

- Predominantly Hyperactive-Impulsive Type: Individuals with hyperactive ADHD feel the requirement for consistent development of hyperactivity and impulsivity, but not inattentiveness.

- Predominantly Inattentive Type Individuals with oblivious ADHD commit thoughtless errors since they experience issues continuing consideration, adhering to itemized guidelines, and sorting out errands and exercises.
- Combination Type: Individuals with consolidated sort ADHD show at least six side effects of obliviousness, and at least six indications of hyperactivity and impulsivity.

## SYMPTOMS OF ADHD

### Hyperactivity

The clearest sign of ADHD is hyperactivity. While numerous kids are normally very dynamic, kids with hyperactive manifestations of a lack of ability to concentrate consistently issue are continually moving. They may attempt to complete a few things on the double, skipping around starting with one movement then onto the next. Children with ADHD reacts totally weird when they are in a busy environment such as hitting people, or spinning out of control into erratic, silly, or strange behaviour [3].

### Impulsive signs

The impulsivity of kids with ADHD can cause issues with poise. Since they edit themselves not exactly different children do, they'll interfere with discussions, attack other individuals' space, pose immaterial inquiries in class, mention thoughtless objective facts, and pose excessively close to home inquiries. ADHD kids are also easily tend to get moody and overact emotionally.

### Inattentiveness signs and symptoms of ADHD

Kids with ADHD regularly jump from task to task without finishing any of them, or skirt important strides in techniques. Sorting out their schoolwork and their time is more diligently for them than it is for generally kids.

## PROBLEM STATEMENT

The primary goal is basically to help the ADHD kids as in the market there is no such application which can really support them and the ADHD kids as everybody realizes that these children are difficult to deal with by the guardians or gatekeepers. There are medications for these ADHD kids by prescription, one would dependably to ask is this method do really works, what are the side effects, the prescription while taking the medication instead of solely rely on the medicine treatment. Many parents get confused with the information in which most of it are not accurate. ADHD is not a something that can't be cured just like other diseases, it can be cured in few ways and I believe the development of this application could improve the condition of the kids. The current expectation is to help the ADHD kids as in the market there is no such application which can really support them and the ADHD kids as everybody realizes that these children are difficult to deal with by the guardians or gatekeepers. Regularly in reality ADHD is frequently misconstrued from analysis and testing to ADHD medications as like some other individuals, numerous guardians gets befuddled by the entirety of the data and a significant part of the falsehood that are accessible about ADHD are not precise. What's more, in the event that you make a stride back and take a gander at ADHD it is much the same as some other interminable youth condition, similar to asthma, diabetes, or epilepsy, at that point you will have an a lot simpler time child rearing your youngster with ADHD and finding support. In the event that this ADHD isn't dealt with while in youth and when the children are 6 years of age it will be hard to be restored when they come to the adulthood [4]. In today's reality despite the fact that there appear to be numerous ADHD medications that you could use to treat your kid with ADHD, just two sorts are prescribed by the American Academy of Pediatrics. Those two kinds which are suggested for ADHD medicines are ADHD meds, including energizers and non-energizers, and conduct therapy [5]. The AAP states that conduct treatment can incorporate "parent preparing in conduct treatment and homeroom conduct mediations," and spotlight either on the "kid's conduct issues and troubles in family connections" or on his conduct in the study hall.

To be noted despite the fact that there are medications for these ADHD kids by drug, one would consistently ought to ask is this the correct method to regard it as there is constantly a reaction appended to it after you take the prescription, the medication could fix as a large portion of the guardians would not have a lot of decision however hand-off on the medicine treatment [6]. However, one ought to likewise tolerate as a main priority that it may prompt another symptom which can be even fundamental which may impacts different pieces of the body and not just that honestly not all guardians could manage the cost of this medicine treatment which is entirely costly in the present world. Subsequent to considering every one of the advantages and disadvantages I thought of a versatile application to take care of this ADHD issue as these portable applications will actualize for the children toward the starting stage whose age between 6 to 18. In the cutting-edge advanced world these days everybody utilizes portable application for everything, without fail and all over. What's more, this Anti-ADHD is anything but difficult to download and use for android telephone. In today's world although there seem to be many ADHD treatments that you could use to treat your child with ADHD, only two types are recommended by the American Academy of Paediatrics. Those two types which are recommended for ADHD treatments are ADHD medications, including stimulants and non-stimulants, and behaviour-therapy [5]. The AAP states that behaviour therapy can include "parent training in behaviour therapy and classroom behaviour interventions," and focus either on the "child's behaviour problems and difficulties in family relationships" or on his behaviour in the classroom.

To be noted even though there are treatments for these ADHD kids by medication, one would always should ask is this the right way to treat it as there is always a side effect attached to it after you take the medication, the medicine could cure as most of the parents would not have much choice but rely on the medication treatment [6]. But one

should also bear in mind that it might lead to another side effect which can be even vital which might effects other parts of the body and not only that frankly speaking not all parents could afford this medication treatment which is pretty expensive in the current world. After considering all the pros and cons I came up with a mobile application to solve this ADHD problem as these mobile applications will be implementing for the kids at the beginning stage whose age between 6 to 18. In the modern digital world nowadays, everyone uses mobile app for everything, every time and everywhere. And this Anti-ADHD is easy to download and use for android phone.

## Objectives

- To study about ADHD and how ADHD kids' condition could be improved.
- To design a mobile application to improve ADHD kids' condition.
- To test the effect of the application used by the ADHD kids.
- To solve the issue of ADHD by creating an application.

## LITERATURE REVIEW

In recent times, our social requests are issue with important money related cost which is mostly due to unavoidable issue of ADHD which is extremely a particularly baffling issue of handicap of cerebrum fills in as the features are distractedness, hyperactivity, and impulsivity and predominant piece of the cases are went with more than one of the authentic mental comorbidities and moreover to be seen that over the span of on-going decades this issue has been in a general sense apparent and well one can't escape the every restorative issues and contaminations are reliably has a segment in the strong heritability and innate associations and this ADHD isn't disregarded either in like manner went with natural tendencies besides [4] [8]. It is a known factor through society that ADHD is unquestionable among the school-developed youths, yet we can't totally choose out that it doesn't impacts the pre-schoolers, youths which on occasion passes on to adults with far away signs and development. Furthermore, on the record a huge part of the treatment which is commonly used on suggesting stimulant medications (amphetamines) and broadly used is methylphenidate other than not neglecting the psychosocial treatment moreover has a critical impact anyway doesn't expect a perceived activity in managing the ADHD issue [5].

## Biological causes of ADHD

Some of the possibilities that children might be affected by ADHD are if children born with a low birth weight, born premature, or whose mothers had difficult pregnancies have a higher risk of having ADHD and also for the children who suffering with head injuries to the frontal lobe of the brain, the area that controls impulses and emotions might also affected by ADHD [6].

Several other causes, the very common causes in today's era is if that pregnant women who smoke or drink alcohol may have a higher risk of having a child with ADHD which is also written in studies. This disorder keeps running in families, somewhere in the range of 33% to one-portion of guardians with ADHD will have a youngster with the confusion. According to research, there are quite a number of qualities that appear to be passed down and, in the event, that a parent has ADHD, a kid has in excess of a half possibility of having it. Moreover, the chance that more seasoned kin has it, a kid has in excess of a 30% possibility.

## Psychosocial Treatment

The individuals who doesn't react to medicine at all or incompletely or who can't endure drug or for whom the remedial advantages utilizes psychosocial treatment in the greater part of the instances of ADHD kids as social methods utilize "break", the utilization of an everyday report card, and unforeseen consideration. Data about ADHD and treatment alternatives is given by psycho-instruction as it is viewed as basic in building up an exhaustive treatment plan as the best of the social method is the efficient program of concentrated possibility the

board which is led in a particular study halls with the controlled setting by profoundly prepared people and the model of summer school is much of the time organized in these research. In this program the educators are all around prepared in particular aptitudes as to help and deal with the ADHD understudy's and to be noticed that the viability of conduct preparing of the instructors is entrenched while that of parent preparing is less confirm. As we realize that all treatment has its impediments, psychosocial treatment isn't forgotten about either so as to execute this treatment to be completely compelling, these treatment should be consistency and extensiveness despite the fact that it is difficult to accomplish other than social intercessions will in general improve the focused on practices however not the center manifestations. It has been striking through investigations that preparation of guardians and educators' in conduct systems with the utilization of energizers have indicated enhancements in the manifestations of ADHD yet not as incredible similarly as with the utilization of psycho-energizers. Associations dependent on Children and Adults with ADD (CHADD) together with the National ADD Association is seen to be useful assets as right now instruction settlement for youngsters with ADHD are governmentally ordered [7].

#### **Pre-school children affected by ADHD**

ADHD pervasiveness in pre-schoolers are similarly appraised among school-matured kids to be 2-6% as these side effects are postponed to steady and prescient of proceeded with conduct troubles in 45% on those assessed (5). The ADHD subtype is the dominating one which is related with extreme debilitation while the ADD subtype is uncommon (generally 2%) as more than 70% pre-schoolers expressed to be determined to have ADHD have at any rate one other co-grim analysis as the expanded comorbidity is regularly onsets at the early age. In any event 25% of pre-schoolers with ADHD issue experiences hindered discourse or language issues which is regularly connected with huge weaknesses crosswise over most spaces of the little youngster's life including home, school, wellbeing and social working and these pre-schoolers are frequently suspended structure day-care prompting their troublesome conduct prompting scholastic impedance. Also, these youngsters may confront a high danger of mishaps, wounds or poisonings and with more ED visits (normal 18 visits in 15 months). Other than these indications prompts dangerous conduct which incorporates broken bones, blackouts, inclining out of windows, running into traffic-filled roads, turning on the stove, spilling bleach and so on., as depending totally on parental report of ADHD in pre-schoolers may result in over-ID of ADHD. Furthermore, a large portion of the issues of mindlessness are not clear as different side effects until the kid enters school as the greater part of pre-schoolers don't get sufficient assessment or treatment. Studies have been done that the NIMH preschool ADHD Treatment study has been accounted for that methylphenidate is powerful in treating the pre-schoolers despite the fact that the dose is to be begun lower and titrated more moderately than the more established youngsters and side effect decrease is corresponding to measurement and the normal "best" methylphenidate absolute day by day portion is 14 mg. Likewise parent preparing and additionally psychosocial treatment will be helpful for pre-schoolers if a parent is an ADHD persistent as treating them will be essential to the pre-schoolers who will be profiting by such treatment [8].

#### **Adhd Mobile Application**

A part of ADHD is trouble in focusing consideration, prompting useful issues, since there is a developing prominence of cell phone and prepared accessibility of uses that can aid different undertakings, we chose to audit the applications with ADHD in their subject heading so as to discover their usefulness both for the patient and clinician [10]. On exploring the writing there was a lack of academic articles managing the utilization of advanced cell applications. The created portable application in this task has primary highlights to support the children and how are determined to have ADHD. Consideration Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental issue portrayed by Hyperactivity and Inattention1. It is a condition that

starts in youth and proceeds into adulthood. The predominance in grown-ups is noted as 6% with about 10% in youngsters. This information were gotten from all-inclusive community considers. Polanczyk and others in a meta-relapse noticed a pervasiveness of 5.3% in kids. Distractibility and limited ability to focus are notable highlights of ADHD.

Henceforth those with the condition profit by prompts, help with arranging, and convenient updates. Cell phone (applications) were considered as one wellspring of such help in the present atmosphere where cell phones are progressively being used [9]. 1.2 billion Individuals overall were utilizing versatile applications toward the finish of 2012. This is just an estimate and expected to develop at 29.8 % every year, to arrive at 4.4 billion clients before the finish of 2017. In 2012, around 46 billion applications from the iTunes App store were downloaded while in 2013, this number was 82 billion, practically twofold. Whalen and others have written about the utilization of electronic journals in investigations of ADHD. Doorman and others found that PC based information section was better than paper based frameworks. Albeit such investigations have been accounted for we didn't locate any academic articles In PUBMED or Google researcher with look through utilizing catchphrases Apps and ADHD. Then again, an ongoing report featured the prevalence of cell phones and applications for their instruction and clinical work. Notwithstanding, impediments in connection to iPhone applications and the scarcity of research in connection to their advancement from a constrained overview were noted [9].

#### **COMPARISON OF THE EXISTING SYSTEM AND MY SYSTEM**

##### **Existing System**

According to a research "Design and Effectiveness of a Serious Game for Children with ADHD" by Kim C. M. Bul, the aim of the current study was to identify for whom the serious game intervention was most effective among children with ADHD [11] [16]. The serious game is an online futuristic and adventurous computer game (called "Plan It Commander"), developed by healthcare professionals, game experts, researchers, parents and children with ADHD. Below are the screenshots of their games:



**Figure 2: Screenshot of "Plan-It Commander" Game World**



**Figure 3: Screenshot of Game Social Community (Called "Space Club")**

**Table 1: Special Features of "Plant-It-Commander"**

Special feature	Description
Space ship editor	Once the player is able to access his/her space ship he/she will find the space ship editor. This is an application in the game in which the player is able to customise the ship to his/her liking. Through the game the player will find several items for his space ship, but he can also buy items in shops on the different planets.
Shops	The player will find several shops on different planets in the game. In those shops he/she is able to purchase and sell items. The player knows which items he/she can afford and will receive descriptions of the items so the player knows more about the item.
Inventory	In the game the player finds items which can be categorised into: minerals, Ico (the robot) upgrade, rocket parts and items. These items are stored in his/her inventory. The player can use these items in the shops to sell them or in the space ship editor.
Player profile	The player has a player profile within the game, which includes an avatar picture of the player, together with a list of all the missions the player has completed and the player's current space ship is also visible.

**USER REQUIREMENTS**

**Methods**

To complete this research work, a few search engines such as, obviously GOOGLE to search for articles regarding ADHD, ANDROID STUDIO to create the mobile application, YOUTUBE to learn how ANDROID STUDIO works and searched for tutorials on how to work with that.

**Questionnaire**

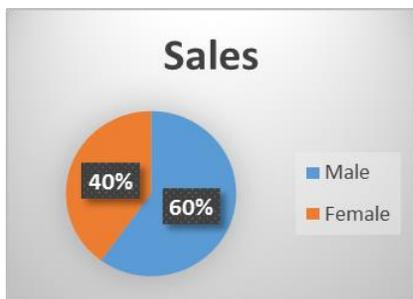
As for the questionnaire, I have decided to give the questionnaires physically within private university as well as public. My target was 50 respondents.

The motivation behind my information gathering is that it is straightforward system which is guided by standards of measurements from the snapshot of making an example, and an objective gathering of individuals able to speak to a populace, up to the hour of the review results' examination and translation. Besides, straightforward surveys about political convictions, to assessments with respect to another item versus another, the overview strategy is demonstrated to be a viable method to accumulate vital data for the headway of science and innovation [15].

**Results**

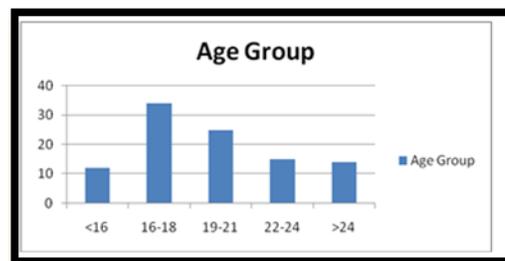
Both groups showed improvements in time management and planning/ organizing skills over time. Children in the intervention condition showed more improvement (borderline significant) in time management than those in the semi-active control group. More frequent gameplay was correlated with better learning outcomes concerning time management and behavior. The user acceptance test was conducted to gain opinion from the public about the proposed application. There were 50 respondents participated in the user testing. Initially, they have use the application then give their feedback through a face to face survey form. From the survey results, almost all the respondents think that this application is useful.

According to the chart below, it is shown that there were forty (40)% female respondents and sixty (60)% male.



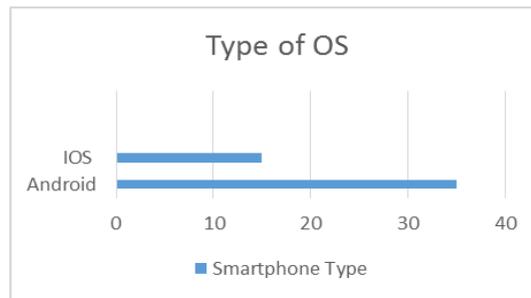
**Figure 4: Respondent's Gender**

As we can see in the Figure 4. The number of males which is 60% respondents is higher than the female respondents of 40%.



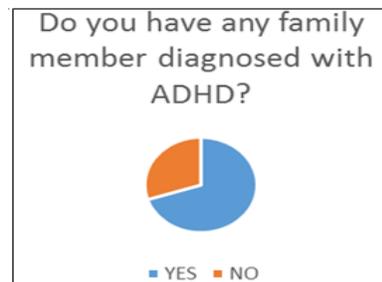
**Figure 5: Age group of Respondents**

As we can see the Figure 5, the age group from 16-18 which is 34% respondents is the highest and followed by 19-21 with 25% respondents, 22-24 with 15% respondents, >24 with 14% respondents and lastly <16 with 12% respondents.



**Figure 6: Type of OS**

Based on the Figure 6, most of the respondents are using Android with the percentage of 35% and the rest are using IOS with the percentage of 15%.



**Figure 7: Diagnosed with ADHD**

Based on Figure 7, It is definitely heart breaking to see the percentage of kids who are diagnosed with ADHD. Based on the figure above, respondents who said family member has diagnosed with ADHD is 35% whereas the no is 15%.

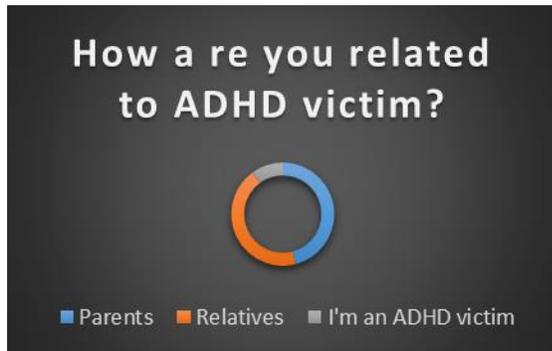


Figure 8: The Relation with the ADHD Victims

Based on the previous question which is do you have any member diagnosed with ADHD, the Figure 8 above evaluates how the members do are related to us. According to the figure above, the relation of parents has the highest percentage which is 23% and followed by relative's relation with 22% and 5% are ADHD victims.

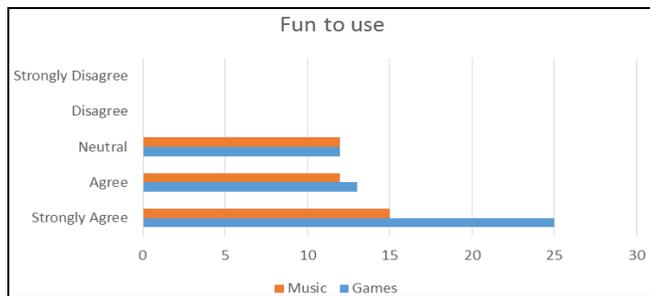


Figure 9: Fun to Use

This question is basically about which part of the app is more fun to use. Based on the Figure 9 above, games has the highest percentage in which 25% with strongly agree, 13% agree and 12% neutral, whereas for the music 15% strongly agree, 12% agree and 12% neutral which is equivalent to games [17] [18]. In this case, games interface and functions are more attractive compare to music.

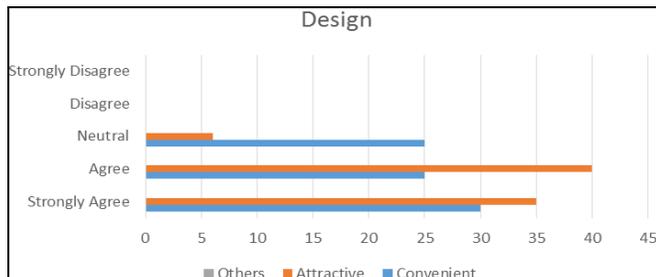


Figure 10: Design

As for the next question on design part there were (40)% who responded "Strongly Agree" for the convenient part, (25)% "Agree", (25)% "Neutral" and (10)% "Disagree" and (0)% "Strongly Disagree" and whereas for the attractive part, there are (35)% who responded "Strongly Agree", (40)% "Agree", (6)% "Neutral" and (0)% "Disagree" and (0)% "Strongly Disagree. The result shown in Figure 10.

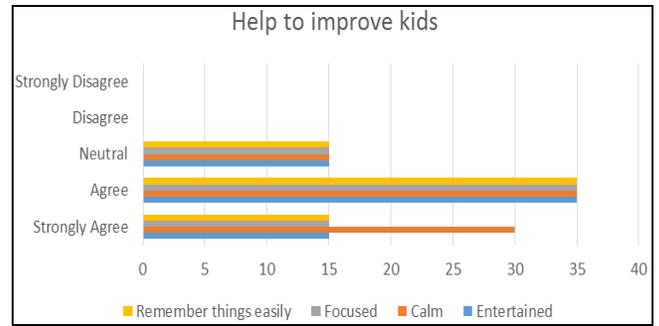


Figure 11: Kids are Able to Improve

For remembering things quick and fast there were (15)% who responded "Strongly Agree" and there are (35)% "Agree" and (15)% responded "Neutral" and (0)% "disagree" and "Strongly disagree". Make them calm were (30)% who responded "Strongly Agree", (35)% "Agree", (15)% "neutral" and (0)% who responded "disagree" and "Strongly Disagree". Next, will be entertained were (15)% who responded "Strongly Agree", (35)% "Agree", (15)% "neutral" and (0)% who responded "Disagree" and (0)% "Strongly Disagree". Lastly is stay focused, (15)% "Strongly agree", (35)% "Agree", (15)% "Neutral" and (0)% "Disagree" and "Strongly Disagree". The result is shown in the Figure 11.

**LIMITATION**

Every application has its own quality and impediment. There is no research which is flawlessly created in this world, just as this versatile application; there are a few limitations in this research as well. Such as, there is no specific login page as everybody can simply utilize it but it is secured and besides the limitation is the place this versatile application just keep running in androids so just the android client are just ready to utilize this portable applications. In order to modify the music and games, only the software developers could do it.

**CONCLUSION**

In the conclusion, Anti-ADHD is a small research and prototype which will be developed that focuses on kids, as there is no server used for managing this application and basically this app is for education and entertainment. In this case the laptop is good enough for managing the prototype and being as a server and the scope of research is in small scale which focuses on ADHD disorder kids. The Anti-ADHD will be a free mobile application which can be downloaded from the Google play for only android and so far maybe it will focused on IOS later but first it will be implemented for Android. And although the application is free, it does not mean that it is a full version, but a full version as stated actually aims part of the main intention which is to help the ADHD Disorder kids. Thus, this Anti-ADHD is full and original version which is basically considered as a service to help kids who are helpless, and most looked upon as less fortunate people by society.

**RECOMMENDATION**

The main improvement is obviously is to open the applications in IOS as well but not just in Android because there are equally large number of people use IOS as well as Android.

**Competing Interests**

The authors declare that they have no competing interests.

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