

Effectiveness of a psychoeducational booklet on ADHD in college students

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Abstract: This study aims to evaluate the effectiveness of an online booklet on Attention Deficit/Hyperactivity Disorder (ADHD) in college students as a form of psychoeducation. Two hundred and forty-one participants with either incomplete or complete higher education took part in the study as the sample group. The level of knowledge about ADHD in the sample was assessed before and after reading a psychoeducational booklet on ADHD. Both the evaluation instruments and the booklet were available online. Data were analyzed using the Wilcoxon test. Results showed that the online booklet was effective in increasing the participants' ADHD knowledge. In addition, it was possible to identify the content of greater and lesser knowledge of the sample, as well as the content of which the booklet was more informative. The study concluded that the development of materials on ADHD can be a way to inform about the disorder and also a source of complementary information for treatment.

Keywords: Attention deficit disorder with hyperactivity; psychoeducation; college students; information; prevention.

EFETIVIDADE DE UMA CARTILHA PSICOEDUCATIVA SOBRE O TDAH EM ESTUDANTES UNIVERSITÁRIOS

Resumo: O objetivo deste estudo foi avaliar a efetividade de uma cartilha *on-line* sobre o Transtorno do Déficit de Atenção/Hiperatividade (TDAH) desenvolvida para estudantes universitários como uma forma de psicoeducação. Participaram deste estudo 241 pessoas com escolaridade superior incompleta ou completa. O nível de conhecimento sobre TDAH da amostra foi avaliado antes e após a leitura da cartilha sobre o TDAH. Tanto os instrumentos de avaliação quanto a cartilha foram disponibilizados *on-line*. Os dados foram analisados por meio do teste de Wilcoxon. Os resultados mostraram que a cartilha *on-line* foi efetiva para aumentar o conhecimento sobre o TDAH dos participantes. Além disso, foi possível identificar os conteúdos de maior e menor conhecimento da amostra, bem como aqueles nos quais a cartilha foi mais informativa. Conclui-se que a elaboração de materiais sobre o TDAH pode ser uma forma de informar sobre o transtorno e, também, uma fonte de informação complementar ao tratamento.

Palavras-chave: Transtorno de Déficit de Atenção com Hiperatividade; psicoeducação; estudantes universitários; informação; prevenção.

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EFICACIA DE UNA CARTILLA PSICOEDUCATIVA SOBRE EL TDAH EN ESTUDIANTES UNIVERSITARIOS

Resumen: El objetivo de este estudio fue evaluar la efectividad de una cartilla online sobre el trastorno del déficit de atención/hiperactividad (TDAH) en estudiantes universitarios como psicoeducación. Participaron de ese estudio 241 personas con escolaridad superior incompleta o completa. El nivel de conocimiento sobre TDAH de la muestra fue evaluado antes y después de la lectura de una cartilla psicoeducativa sobre el TDAH. Tanto los instrumentos de evaluación como la cartilla se pusieron online. Los datos se analizaron mediante la prueba de Wilcoxon. Los resultados mostraron que la cartilla fue efectiva para aumentar el conocimiento sobre el TDAH de los participantes. Fue posible identificar los contenidos de mayor y menor conocimiento de la muestra, así como aquellos que la cartilla fue más informativa. Se concluye que la elaboración de materiales sobre el TDAH puede ser una forma de informar sobre el trastorno y también una fuente de información complementaria al tratamiento.

Palabras clave: Trastorno por déficit de atención con hiperactividad; psicoeducación; estudiantes universitarios; información; prevención.

Introduction

Attention Deficit Hyperactivity Disorder (ADHD) is characterized by a persistent pattern of inattention, hyperactivity, and impulsivity. It is a chronic disorder. Symptoms usually begin before the age of 12 and tend to continue throughout life. Adults with ADHD may face difficulties such as disorganization, poor ability to concentrate, forgetfulness, difficulty completing tasks, chronic feeling of over-activity and inability to plan for the future (American Psychiatric Association [APA], 2013).

Although it is a chronic problem, it does not necessarily cause continuous harm. It is possible that the ADHD patient does not present the same level of dysfunction in all contexts of their life or in the same context all the time. Symptoms tend to worsen in situations which require constant attention or that are not attractive to the individual. On the other hand, the signs of the disorder can be minimized by the subject's rigid control, when the subject is in a new environment or when he or she is involved in activities that arouse his or her interest (APA, 2013). Many individuals with the disorder are able to enroll in higher education (DuPaul, Weyandt, O'Dell, & Varejao, 2009).

The prevalence of ADHD in university students varies from 2% to 8% (DuPaul et al., 2009). A recent systematic review of literature found that university students with ADHD clearly face more difficulties than their peers without the disorder (Oliveira & Dias, 2015). Students with ADHD tend to have lower physical and psychological well-being, difficulty concentrating and reasoning, limited abilities to establish friendships and study, as well as lower levels of professional self-efficacy (Oliveira, Hauck-Filho, & Dias, 2016; Oliveira & Dias, 2017). The difficulties of inhibiting and regulating negative emotions can generate interpersonal problems and rejection by both classmates and professors (APA, 2013; Oliveira et al., 2016). As for study habits, students with ADHD need constant vigilance to control distraction and impulsivity (Oliveira et al., 2016). In addition, the need to adapt to the university context can be especially problematic for students with ADHD since autonomy in time management is highly

necessary in higher education (Oliveira & Dias, 2015). All these difficulties combined can contribute to the students' belief that they are unable to fulfill academic and professional responsibilities (Oliveira et al., 2016).

Given the prevalence of ADHD in college students, it is possible that many of them have the disorder despite not being diagnosed, since it can be complex to establish this diagnosis in adulthood (Pitts et al., 2015). In a study conducted in the UK, 45% of the sample reported having received the diagnosis of ADHD from a doctor or another health professional after the age of 18. The diagnostic process took more than a year and only after having appointments with at least three different professionals (Pitts, Mangle, & Asherson, 2015). Failure to receive the diagnosis of ADHD may be detrimental to patients as they tend to attribute the symptoms of the disorder to irresponsibility, demotivation and lack of effort (Simmons, Jones, & Bradley, 2017). In addition, the lack of knowledge towards the disorder prevents the individual from seeking help, and by doing so, controlling the symptoms and preventing their harmful effects (Sprich & Safren, 2016).

Even when individuals are diagnosed with ADHD, nonadherence to treatment may range from 13.2% to 64.0% (McCarthy, 2014) because of factors associated with lack of knowledge about the disorder and treatment (Charach & Fernandez, 2013). Regarding the lack of knowledge of ADHD, providing information about the symptoms of the disorder can help in recognizing ADHD in one's self and in identifying the symptoms in people close to them, such as family members, students and colleagues. From the moment one suspects of ADHD, they can seek professional help in order to evaluate the case. Regarding nonadherence to ADHD treatment, it is necessary to transmit information about the available options, their benefits and limitations in order that the individual can opt for the treatment that suits him or her best. For example, the use of medication is known to reduce the neurobiological symptoms of the disorder. However, many adults with ADHD either continue to present residual symptoms even with the use of medication or do not tolerate the side effects of medication, indicating the need to combine psychological treatment such as psychotherapy along with pharmacological treatment (Sprich & Safren, 2016). Psychotherapy aims to develop in the patient organizational and planning skills to deal with procrastination, forgetfulness and delays, as well as strategies for prioritizing tasks, solving problems, managing stressful tasks, reducing the tendency to being distracted as well as adaptive thinking (Sprich & Safren, 2016).

One way of transmitting information about mental disorders is through psychoeducation. Psychoeducation is the process of communicating relevant information to the population about a particular disorder (diagnosis, etiology, functioning), its treatment, and prognosis while seeking to clarify doubts and correct distorted beliefs. A systematic review of recent literature has found that psychoeducation of ADHD has been primarily aimed at the relatives of people with the disorder, with less frequent psychoeducational interventions targeting adults with ADHD (Oliveira & Dias, 2018). These are usually conducted in a format of eight to 20 group sessions focusing on the

characteristics, diagnosis, causes and treatment of ADHD, as well as strategies for planning and problem solving (Hirvikoski, Waaler, Lindström, Bølte, & Jokinen, 2015 ; Vidal et al., 2013). Although consultations with health professionals such as those cited above are highly valued sources of information, other options, such as the Internet, are used more often due to their accessibility (Bauer et al., 2016).

This study aims to evaluate the effectiveness of an online booklet on ADHD for university students as a form of psychoeducation that links the easy access of the Internet with reliable information derived from scientific evidence. We hope this material can be useful for both university level students (who can recognize the symptoms in themselves or colleagues and seek professional help) as well as healthcare professionals who provide services to this population.

Method

Participants

Participants were 241 people (79.7% women) aged 18-64 ($M = 28.92$ years, $SD = 8.87$). The majority of the sample was from the state of Rio Grande do Sul (68.5%), while the remainder was from São Paulo (7.9%), Santa Catarina (5.0%), Rio de Janeiro (3.7%), Paraná (3.3%) and other Brazilian states (11.6%). Participants had complete or incomplete Higher Education, 58.1% and 41.5%, respectively, and 14.5% of the complete Higher Education participants were university professors.

Instruments

Questionnaire to characterize the participants and evaluation of the booklet: a questionnaire containing questions about sex, age, status, schooling, profession, and mental health (diagnosis of mental disorder, treatment enrollment) of participants was used as an evaluation method. After reading the booklet, the participants were asked to evaluate its utility as well as questioned about the suspicion of having ADHD and what they were willing to do about it.

Knowledge assessment questionnaire on ADHD: this instrument was specially constructed for this study. Its goal is to evaluate people's knowledge about ADHD and may be useful in assessing the psychoeducation for this disorder. Items were constructed based on topics generally addressed in psychoeducational interventions of ADHD and other instruments used in international research: characteristics of ADHD, etiology, course, diagnosis and treatment (Oliveira & Dias, 2018). The first version of the items was evaluated according to the pertinence and difficulty of each item by five experts in ADHD and / or assistance to university students. All items were kept due to their relevance. The experts suggested changing terms (for example, "ADHD is a motivation problem" was replaced by "ADHD is caused by lack of effort") and inclusion of new items (e.g., "ADHD treatment lasts for all life"). After the suggested changes were made, a pilot study was carried out with seven university students from different

courses (Social Communication, Dentistry, Medicine, Electrical Engineering, and Computer Science) who explained what they understood about each item to verify the clarity of the content. The wording of the items was reviewed at this stage. After these changes, we randomized the 22 items to compose the final version of the instrument. Participants should answer them according to a three-point scale that ranged from totally disagreeing to fully agreeing. The total score corresponds to the sum of the items that the participant answered correctly.

Booklet *ADHD in university students*: this booklet was created with the purpose of serving as a printed and online psychoeducation material on ADHD for college students. It contains information about what is ADHD, possible causes, symptoms, how these symptoms may be presented during the university experience, impact of the disorder on academic adaptation and where to seek professional help. We chose to include this information based on studies on psychoeducation of ADHD reviewed by Oliveira and Dias (2018). Three experts with professional experience and research in ADHD and university students evaluated the first version of the text. After we made the suggested changes (such as the inclusion of descriptions of treatment options), a designer diagrammed the text in topics and inserted visual elements to facilitate and encourage reading. A pilot study was conducted with seven university students of varied courses and semesters. They considered the language accessible, having helped them in the identification of symptoms experienced in the university context. The final version can be accessed at <<https://goo.gl/FkY2RL>>.

Procedures

The research was submitted and approved by the Research Ethics Committee of the Federal University of Santa Maria (CAAE 72074017.6.0000.5346). The study was publicized on social networks and e-mail lists. Those who agreed to participate signed an electronic Term of Free and Informed Consent. Participants answered all the instruments, read the online booklet, and then answered the ADHD knowledge assessment questionnaire again through the online Survey Monkey platform. This study is a quasi-experimental study, characterized by non-random experimental and control groups (Creswell, 2010). The sample was classified into three groups: a) health professionals trained to work with patients with ADHD, that is, psychologists, doctors and pedagogues ($n = 25$); b) people under treatment for ADHD ($n = 35$); and c) other study participants ($n = 181$). We assumed that the participants in the first group (psychologists, doctors and pedagogues) and the second (people in treatment for ADHD) had a higher level of knowledge about the disorder than the rest of the sample and, therefore, the booklet would not be effective for these groups (considered control). Data were submitted to descriptive analysis and the Wilcoxon non-parametric test, due to the non-normal distribution of data and need for comparisons of repeated measures. The analyzes were performed in the SPSS program version 19.0.

Results

The aim of this study was to evaluate the effectiveness of an online booklet on ADHD in university students as a form of psychoeducation. Table 1 presents the medians, means and standard deviations of ADHD knowledge scores before and after reading the booklet. People with ADHD were those with the highest level of knowledge about the disorder prior to reading the booklet, followed by the group of professionals. After reading the booklet, the group of professionals and group of people under treatment for ADHD presented similar and higher scores than the rest of the sample.

Table 1. Scores of knowledge about ADHD before and after reading the booklet.

	Before			After		
	Mdn	M	SD	Mdn	M	SD
Total sample (n = 241)	13.0	12.78	3.17	16.0	14.92	3.39
Psychologists, physicians and pedagogues (n = 25)	14.0	13.72	2.65	17.0	16.92	2.64
People undergoing treatment for ADHD (n = 35)	15.0	14.63	2.44	17.0	16.37	2.40
Remaining participants (n = 181)	12.0	12.30	3.22	15.0	14.36	3.47

Source: The authors.

The Wilcoxon test suggested that reading the online booklet generated a statistically significant change in the knowledge of the sample as a whole on ADHD in university students ($Z = -8,784$, $p < 0.001$), which shows higher level of knowledge after reading the booklet. When comparing the groups by means of the same test, the group of participants under treatment for ADHD presented scores statistically higher than the scores of the group composed of the remainder of the sample ($Z = 4,123$, $p < 0.001$) before reading the booklet, which was expected. After reading, the scores of the group of professionals and group of people under treatment for ADHD were higher than the scores of the rest of the sample ($Z = 4.075$, $p < 0.001$ and $Z = 3.221$, $p = 0.004$ respectively), although reading the booklet benefited all groups with regards to increasing the level of knowledge about ADHD in university students.

Table 2 shows the percentage of correct answers about ADHD before and after reading the online booklet. The item with the highest frequency of correct answers before and after reading the booklet refers to the idea that ADHD arises from a lack of effort in paying attention (item 8), while the item with lowest frequency of correct answers corresponds to the increase in number of cases of this disorder in recent decades (item 17). The greatest difference found (above 30%) in the frequency of correct responses before and after reading the booklet corresponds to the neurobiological origin of ADHD (item 11) and to the fact that ADHD subjects act without thinking (item 19). The lowest difference found (below 5%) in the frequency of correct responses corresponds to the origin of ADHD being associated with lack of effort (item 8), ADHD being a disorder

exclusive to children (item 9), the use of a list of symptoms alone is sufficient to diagnose ADHD (item 12), willpower being sufficient to extinguish the symptoms (item 13) and the increase in number of cases had in the last decades (item 17).

Table 2. Frequency (%) of correct answers about ADHD before and after reading the booklet.

Items	Before	After
8. The cause of ADHD is lack of effort to pay attention.*	94.6	94.1
9. ADHD is a disorder that happens only in childhood.*	91.7	93.8
13. Willpower is enough to extinguish the symptoms.*	89.6	92.9
22. The diagnosis of ADHD requires the evaluation of the intensity of the symptoms, their impairment and the age of onset.	83.3	90.5
5. ADHD can be controlled without medication.	83.2	77.4
20. People with ADHD struggle to keep their attention on what they are doing.	79.6	86.7
10. Medication extinguishes the symptoms of ADHD in all cases.*	79.1	85.8
21. One of the goals of treatment is to reduce the tendency to distract.	75.4	86.3
16. There are three types of ADHD: inattentive type, hyperactive type and combined type (inattentive and hyperactive).	71.3	85.4
6. Psychiatrists, psychologists or teachers can diagnose ADHD.*	70.5	64.6
12. The use of a list of symptoms alone is sufficient to diagnose ADHD.*	70.3	66.7
1. ADHD is a disorder that can last a lifetime.	66.0	75.9
2. People with ADHD tend to be disorganized (they lose things, forget deadlines etc.).	52.9	73.4
15. People with ADHD prefer activities with immediate gratification than waiting for long-term rewards.	47.1	71.0
11. ADHD has a neurobiological origin.	46.9	80.4
3. Treatment consists of developing organizational strategies.	37.8	50.2
14. People with ADHD quickly lose interest in all activities they do.*	36.4	24.2
18. ADHD treatment lasts a lifetime.	35.4	44.0
4. The symptoms of ADHD are caused by the difficulty of controlling impulsive reactions.	25.0	53.1
19. People with ADHD tend to act without thinking.	23.3	61.4
7. People with ADHD become irritated easily.	18.3	28.6
17. The number of ADHD cases has increased in recent decades.*	5.8	10.0

* Items with incorrect content, with inversed punctuation for computing scores.

Source: The authors.

After reading the booklet, participants assessed its usefulness as a source of information about ADHD. More than half of the sample evaluated the material as “very useful” (66.5%) and “useful” (30.1%), while the remainder responded “more or less useful” (2.9%) and “hardly useful” (0.4%). Participants were also asked if they suspected they could have ADHD: 48.1% of the sample answered “no”, 35.0% answered “yes”, and 16.9% “I do not know”.

Finally, the participants were asked about what they were willing to do after reading the booklet. Only 10.1% of the sample answered that they would do nothing. The other answers were codified in three categories: “seek professional help” (36.1%), “seek more information about ADHD” (34.9%) and “other answers” (18.9%). The responses of this last category (other answers) were analyzed and grouped into four themes according to the similarity of the content: a) participants who are already in treatment (33.33%), b) participants who intend to share this information with people whose behavior is similar to those described in the booklet (17.78%), c) participants who intend to adopt this booklet in clinical care (2.2%), d) participants who seek to better understand the difficulty of others (2.2%).

Discussion

This result is in line with other studies on psychoeducational interventions in ADHD, which, even assuming different formats (face-to-face meetings, handbook with content summary, group discussions), also increased knowledge of patients, family members, and elementary school teachers about the disorder (Aguiar et al., 2014; Bai et al., 2015; Hirvikoski et al., 2015). Thus, the participants seem to benefit from psychoeducation regardless of the format adopted.

The frequency of correct answers on ADHD before and after the reading of the booklet allowed us to identify the content of greater and lesser knowledge of the sample studied. Participants seem to understand that ADHD is not about lack of effort to pay attention. This result may indicate a reduction of the stigma associated to the disorder due to increased knowledge about it (Simmons et al., 2017). Participants also know ADHD may persist in adulthood, suggesting up-to-date knowledge about ADHD, since diagnostic criteria for adults have recently been included in DSM-5 (APA, 2013). However, it is still necessary to explain that the prevalence of ADHD has not increased in the last decades. The idea that there has been an increase in the number of ADHD cases in recent years may be due to increased awareness of the disorder (due to greater discussion about the disorder in the media) and access to the treatments. However, diagnosis and treatment rates do not exceed estimates of ADHD prevalence, that is, the number of people diagnosed and treated for ADHD is less than the number of cases in the population. This is due to people’s inability in identifying the disorder and seeking help (Polanczyk, Willcutt, Salum, Kieling, & Rohde, 2014).

This material seems to have successfully transmitted information about the neurobiological origin of ADHD and the fact that individuals with ADHD behave without thinking. These two statements are related, since neurobiological factors are respon-

sible for the difficulty in maintaining attention, inhibiting impulsive reactions and thinking before acting (Salum et al., 2014). On the other hand, the booklet was not clear enough regarding the insufficiency of the exclusive use of a list of symptoms to make the diagnosis. The presence of isolated symptoms is not necessarily indicative of ADHD, since this disorder is characterized by symptoms common to other clinical conditions, such as difficulties of concentration in depression, agitation in anxiety, and impulsivity in bipolarity. The diagnosis of ADHD is done by physicians or psychologists in order to be possible to carry out a differential diagnosis based on the combination of diagnostic criteria and degree of impairment in more than one environment, preferably with information provided by more than one person besides the patient himself (APA, 2013). The booklet also seems to have failed to adequately inform the readers about the stability of the prevalence of the disorder, which has not increased in recent years as discussed earlier.

Although the booklet has contributed to increasing ADHD knowledge of the overall sample of this study, the results also showed that this material appears to have been more effective in the groups that had some relation to the disorder, that is, the group of professionals whose work is related to ADHD and the group formed by patients undergoing treatment. One possible explanation for this is that people with some kind of affinity with ADHD have read the booklet more carefully than those who do not have symptoms or diagnosis or do not treat people with ADHD.

More than 90% of the study sample evaluated the booklet as “very useful” and “useful” as a source of information about ADHD. Participants reported that reading the booklet motivated them to seek professional help and further information about the disorder, share this material with others who exhibit behavior similar to those described, adopt it in the clinical services they provide, and better understand the difficulties of others. These results are compatible with some known benefits of psychoeducation about mental disorders. Psychoeducation can serve as the first source of information for individuals to recognize symptoms themselves and seek professional help (Lannin, Vogel, Brenner, Abraham, & Heath, 2016). In fact, in this study, 14.52% of the sample was under treatment for ADHD and 35.0% reported suspecting that they could have ADHD after reading the booklet. In other cases, psychoeducation may also serve as a stimulus to seek more information about the disorder or to share it with others (friends, family, and even patients) who may benefit from such knowledge, especially when it is done through written materials, including manuals, booklets, pamphlets, etc. (Bauer et al., 2016, Oliveira & Dias, 2018). Knowledge about a particular mental disorder is useful both to seek help when necessary and to better understand others’ difficulties and reduce the stigma of this clinical condition (Simmons et al., 2017).

This study has some limitations that must be considered when interpreting the results. The first one refers to the use of an instrument to evaluate ADHD knowledge that is under construction. Although procedures have been adopted to ensure the

validity of content, the internal and external validity of the questionnaire has not yet been verified. Another limitation is that information regarding whether the participants had read the entire booklet was assessed by means of only one closed question, since the collection was done via online platform.

The main contribution of this study was to test the effectiveness of a psychoeducation format based on the two main sources of information preferred by adults: health professionals (authors of the booklet) and internet (online booklet) (Bauer et al., 2016). This format combines reliable information, anonymous search and easy access. The information can be considered reliable since it is derived from current scientific research and transmitted by health professionals in a language that is accessible to the general public, in order to avoid misunderstandings by the use of technical terms. In addition, the production of this material underwent a pilot test. Lay people read the booklet and explained what they understood about the text in order for the language to be adjusted accordingly. Its online availability is responsible for the anonymous search, since the individual does not have to identify himself or herself, and it is of easy access, since it can be read from anywhere as long as one has a device with internet connection, contrary to an appointment with a health professional which requires the patient to be physically present.

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