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ASSOCIATION OF CONTROLLED MEDICATIONS IN CHILDREN: IMPACTS ON THE PSYCHE DEVELOPMENT

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ABSTRACT

The article aimed to quantify the number of children enrolled in the first cycle of elementary school in a municipality in the interior of the state of Paraná who use two or more controlled drugs, to identify the therapeutic classes to which they belong, their possible consequences and impacts for the development of the child psyche. The research is based on Historical-Cultural Psychology. This is a field research. Data collection was carried out through a census and a questionnaire filled out by the person responsible for registration was used at enrollment. The results show that 812 children consume controlled medications and 87 children (10.7%) use two or more controlled medications in combination. It is concluded that the drug will not promote psychic development and its use in associations may cause harm. It is noteworthy that teaching can promote typically human functions, such as mastering self-conduct and voluntary attention.

Keywords: medicalization; education; historical-cultural psychology

Asociación de medicamentos controlados en niños: impactos al desarrollo del psiquismo

RESUMEN

En el texto se tuvo como objetivo cuantificar el número de niños matriculadas en el primer ciclo de la Enseñanza básica de un municipio del interior del estado de Paraná que hicieron uso de dos o más medicamentos controlados, identificar las clases terapéuticas las cuales pertenecen, sus posibles consecuencias y los impactos al desarrollo del psiquismo infantil. La investigación tiene como referencial la Psicología Histórico-Cultural. Se trata de una investigación de campo. La recopilación de datos fue realizada por intermedio de censo y se utilizó un cuestionario rellenado por el responsable en el acto de matrícula. Los resultados apuntan que 812 niños utilizaban medicamentos de uso controlado y 87 niños (el 10,7%) hacían uso de dos o más medicamentos controlados en asociación. Se concluye que el medicamento no irá promover el desarrollo psíquico y el uso en asociaciones podrá provocar daños. Se destaca que enseñanza podrá promover funciones típicamente humanas, tales como dominio de la auto conducta y atención voluntaria.

Palabras clave: medicalización; educación; psicología histórico-cultural

Associação de medicamentos controlados em crianças: impactos para o desenvolvimento do psiquismo

RESUMO

O artigo teve como objetivo quantificar o número de crianças matriculadas no primeiro ciclo do Ensino Fundamental de um município do interior do estado do Paraná que fazem uso de dois ou mais medicamentos controlados, identificar as classes terapêuticas as quais pertencem, suas possíveis consequências e os impactos para o desenvolvimento do psiquismo infantil. A pesquisa tem como referencial a Psicologia Histórico-Cultural. Trata-se de uma pesquisa de campo. A coleta de dados foi realizada por meio de censo e utilizou-se de um questionário preenchido pelo responsável no ato de matrícula. Os resultados apontam que 812 crianças consomem medicamentos de uso controlado e 87 crianças (10,7%) fazem uso de dois ou mais medicamentos controlados em associação. Conclui-se que o medicamento não irá promover o desenvolvimento psíquico e o uso em associações poderá provocar danos. Destaca-se que o ensino poderá promover as funções tipicamente humanas, tais como domínio da autoconduta e atenção voluntária.

Palavras-chave: medicalização; educação; psicologia histórico-cultural

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INTRODUCTION

In order to understand the issues about the schooling process of children who do not appropriate knowledge requires thinking about the teaching and learning process. Voluntary attention is central to learning and will be developed through activities organized for that purpose. However, despite the need to think about the multideterminations of this phenomenon, the number of children referred to psychiatrists and neuropediatricians due to the finding of a school deficit has grown substantially, as verified by the increase in the consumption of methylphenidate, the main drug used for treatment of Attention Deficit Hyperactivity Disorder (ADHD). The consumption of methylphenidate went from about 40,000 UFD in 2009 to approximately 80,000 UFD in 2010, and in 2011 the average consumption reached close to 120,000 UFD (National Health Surveillance Agency [Anvisa], 2012). Almost all children who were referred to health centers, according to the medical diagnosis, had a neurological disorder as the main cause, and therefore, were identified as having some type of disorder (Meira, 2012).

Given this scenario, this article aims to quantify the number of children enrolled in the first stage of elementary school in a medium-sized municipality in the Paraná state who use two or more controlled medications. And also to identify the therapeutic classes to which they belong, to present the possible consequences and side effects of these associations for the organism. Finally, in light of the assumptions of Historical-Cultural Psychology, reflect about the possible impacts of these substances on the development of child psyche and possibilities for overcoming them.

The study of chemical substances and their mode of action in the body is a competence of pharmacology, a science whose purpose is to employ the therapeutic use of substances. In order to improve their knowledge, the pharmacological science was founded from the nineteenth century, through scientific methods and experimentation. However, it was in the 20th century that there was the possibility of its expansion with the development of synthetic substances. From that moment on, several diseases, notably infectious diseases, which in the past almost exterminated the world population, had their cure discovered (Rang, Dale, Ritter, & Moore, 2011).

According to Whitaker (2017), all scientific advances in pharmacology pointed to a promising future in terms of curing diseases. Thus, in the 1940s, when the number of mentally ill people increased, they began to believe that, similar to the cure for infectious diseases, medications could also be the solution for mental illnesses in the long run. In short, it was in this way that the possible mental illnesses started to have a strictly biological cause, and, therefore, could be treated only with the use of chemical substances. This scenario led to the psychopharmacological revolution that began in the following decade.

The so-called first-generation drugs used for the treatment of depression, such as selective serotonin reuptake inhibitors (SSRI), in the short term brought benefits to patients, however, in the long term it was observed "[...] **deterioration of memory, difficulties in solving problems, loss of creativity and deficiencies in learning**" (Whitaker, 2017, p. 180, emphasis added). Animal tests showed worrying results, in which "[...] rats that received high doses of SSRI for four days ended up with **swollen and twisted neurons like corkscrews**" (Whitaker, 2017, p. 180, emphasis added).

Another fundamental issue, directly related to the use of controlled medications, is the need for diagnosis. The search for standardization of behaviors is not something new and throughout history those considered inadequate or different from the current norm should be eliminated in favor of established social norms. According to the authors Moysés and Collares (2011), this same process occurred in the school environment, where children who had learning and behavior problems started to be diagnosed with some type of disorder or neurological disorder.

These diagnoses made in children were based on hypotheses that supposed the existence of a brain lesion, which were not scientifically proven. However, the hypothesis about the existence of an organic problem was accepted as true by science, thus providing the necessary subsidies for the expansion of diagnoses and pharmacological treatments for the treatment of diseases supposedly of organic origin (Moysés & Collares, 2011). For Gotzsche (2016), the pharmacological treatments used for supposedly organic diseases, instead of bringing a cure, caused the development of chronic diseases, whose consequence was the use of more substances to treat the diseases created by the use of medication.

Thus, as there was a change in the diagnostic parameters of pathologies and in the understanding of the use of medications, social problems, specifically schooling problems, came to be considered organic diseases that needed to be treated with medication. Thus, it was within this scenario that the diagnosis of ADHD and the justification for the use of medication for its treatment were born (Whitaker, 2017).

On the other hand, it was in the 1980s, with the Diagnostic and Statistical Manual of Mental Disorders, the DSM III, that the diagnosis of Attention Deficit Disorder gained legitimacy and the number of diagnoses gained alarming proportions. Over time, these diagnosed children, who were using methylphenidate, the main medication for the treatment of ADHD, began

to be diagnosed with other disorders or even diseases identified as comorbidities of the first, causing the association of medications, justified for the treatment of supposed "mental illnesses" in children and their comorbidities (Gotzsche, 2016; Whitaker, 2017).

Structuring of Psychism for Historical-Cultural Psychology

According to Vigotski (1995/1931) the child's cultural development is promoted along two lines, the biological and the cultural. These two planes intertwine during the child development process, forming a complex system through dialectical intercommunications and intercorrelations. Still for Vigotski (1995/1931), the child's cultural development obeys the General Genetics Law of development, in which the same function appears twice in the child, first in the social plane and later in an intrapsychic way. Thus, it is through this process that the development of the FPS occurs, a fact that will enable the child to master their self-conduct.

Corroborating the discussions carried out by Vygotski (1995/1931), Eidt, Tuleski and Franco (2014) assert that superior psychic functions such as voluntary attention, memory, logical reasoning, among others, have a social origin, that is, external to individual, that through the social relationships that are established throughout the child's life, these will be internalized, acquiring a new, more complex configuration and structuring the child's personality.

Thus, from the above, it can be said that the more complex the child's social and cultural practice, provided by appropriate mediations, the greater the possibilities for developing higher psychological functions.

For Leontiev (2004), natural or biological and cultural or social development cannot be understood and seen separately. Therefore, it would not be appropriate to evaluate a child solely on the basis of its apparent biological condition. After all, human *status* does not result only from biological development, humanization is a process that goes beyond organic borders, we humanize ourselves through the social relationships we establish with our fellow men throughout life, a process that depends on mediators. The function of school education is highlighted, since the school has a fundamental role in being the mediator of signs (oral, written, mathematical, artistic) and cultural instruments (social objects elaborated through human work) that will present the world to the child (Franco & Marins, 2021).

METHOD

The research is multicentric – researchers from the State University of Maringá (UEM), State University of Londrina (UEL), State University of Ponta Grossa (UEPG), State University of Western Paraná (Unioeste), State University of Paraná (Unespar) participate. Campo Mourão campus). The project team is made up of members of the municipal education secretariats of the municipalities that have formally joined the project, in addition to undergraduate and graduate students from various Higher Education Institutions. Through the research studies, it seeks to provide situations for the implementation of actions aimed at equipping professionals from different areas who work with children diagnosed with learning disorders in 36 regional teaching centers in the state of Paraná, due to the limit and purpose of the text, these issues will not be deepened. The project has the approval of the ethics committee (CAE number 06875112.0.0000.0104).

The data survey was carried out at the end of the 2012 school year, when enrollment for the year 2013 was being carried out. Early Childhood Education, 16,570 parents or guardians completed the survey questionnaire. Data collection was carried out through the census. We used a questionnaire filled out by parents or guardians upon registration. Subsequently, the data were digitized by researchers, technicians or fellows and incorporated into the online research database. Questionnaires with incomplete or inconsistent data were discarded.

The questionnaire has questions to check whether the child is being medicated, and if so, what is the diagnosis, the drug(s) used, what dosage(s), when the psychotropic treatment started, which specialist diagnosed/prescribed the drug and if there is any other form of follow-up being performed by other professionals. The collected data were organized according to the Business Intelligence system (Business Intelligence or BI), which allows the integration and aggregation of data, intelligent exploration and multidimensional analysis of detailed and summarized information from various data sources.

RESULTS

From the data collected, we have a total of 893 medicated children, of which 812 are enrolled in the first cycle of elementary school, equivalent to 4.9% of the total number of children in the municipal network.

Of these 812 children in the first cycle of elementary school, 87 children (10.7%) use two or more controlled medications in combination. Among children undergoing polypharmacological therapy, 79[1] use a combination of 2 medications, 6 children use a combination of 3 medications and 2 children take 5 associated medications. No child, within the filters established for this research, takes a combination of 4 medications.

The tables below show the number of children who use a combination of controlled medications, by number of associations.

[1] The total number of children using two associated drugs is 83, but only 79 children were analyzed because the name of the drug used in combination was not specified.

Table 1. *Types of Associations of Two Active Principles and Number of Children Using Each Combination.*

Association of 2 active principles		
Active Principle 1	**Active Principle 2**	Nº
Chlorpromazine hydrochloride (antipsychotic)	Carbamazepine (antiepileptic)	1
Imipramine hydrochloride (antidepressant)	Imiaprine hydrochloride(antidepressant)[1]	1
Methylphenidate hydrochloride (stimulant)	Clonazepam (anxiolytic)	3
Methylphenidate hydrochloride (stimulant)	Carbamazepine (anticonvulsant/antiepileptic)	3
Methylphenidate hydrochloride (stimulant)	Sodium divalproate (anticonvulsant/antiepileptic)	7
Methylphenidate hydrochloride (stimulant)	Oxcarbazepine (anticonvulsant/antiepileptic)	3
Methylphenidate hydrochloride (stimulant)	Topiramate (anticonvulsant/antiepileptic)	1
Methylphenidate hydrochloride (stimulant)	Sodium valproate (anticonvulsant/antiepileptic)	3
Methylphenidate hydrochloride (stimulant)	Sodium valproate + valproic acid (anticonvulsant/antiepileptic)	1
Methylphenidate hydrochloride (stimulant)	Imipramine hydrochloride (antidepressant)	3
Methylphenidate hydrochloride (stimulant)	Sertraline hydrochloride (antidepressant)	1
Methylphenidate hydrochloride (stimulant)	Escitalopram oxalate (antidepressant)	1
Methylphenidate hydrochloride (stimulant)	Venlafaxine hydrochloride (antidepressant)	1
Methylphenidate hydrochloride (stimulant)	Periciazine (antipsychotic)	1
Methylphenidate hydrochloride (stimulant)	Risperidone (antipsychotic)	38
Methylphenidate hydrochloride (stimulant)	Methylphenidate hydrochloride (stimulant)[2]	1
Lisdexamphetamine dimesylate (stimulant)	Carbamazepine (anticonvulsant/antiepileptic)	1
Lisdexamphetamine dimesylate (stimulant)	Risperidone (antipsychotic)	1
Sodium divalproate (anticonvulsant)	Sodium valproate (anticonvulsant/antiepileptic)[3]	1
Risperidone (antipsychotic)	Carbamazepine (anticonvulsant/antiepileptic)	4
Risperidone (antipsychotic)	Sodium divalproate (anticonvulsant/antiepileptic)	1
Risperidone (antipsychotic)	Sodium valproate (anticonvulsant/antiepileptic)	1
Risperidone (antipsychotic)	Imipramine hydrochloride (antidepressant)	1
Total		**79**

[1] There is a prescription for imipramine hydrochloride in association with Tofranil®, but whose active ingredient of the latter is the same as the former.

[2] The medical prescription is for Ritalin® and Concerta®.

[3] Prescription drugs with the following trade names respectively: Depakene® and Depakote®

Source: Project Database (2017).

The data presented showed that the main type of association of two medications is a stimulant (methylphenidate) with an antipsychotic (risperidone), of which 38 children use this type of association. As for children who take a combination of three medications, of the 6 children who use it, 5 use a stimulant (methylphenidate), an antipsychotic (risperidone, with the exception of only one child who uses chlorpromazine) and an antidepressant. In the combination of 5 medications, the two children also use 2 antipsychotics and 1 anxiolytic, and in one of them the combination continues with 2 anticonvulsants and in the other uses a combination with a stimulant and an anticonvulsant.

From the data, the associations found will be presented at first, and then the interactions with their possible effects.

Therapeutic classes, Pharmacological Associations and their consequences

From the data extracted in the research, it was possible to identify the therapeutic classes of drugs prescribed in association for children in the first stage of elementary school in the municipal education system in the city. Among them are anticonvulsants, antipsychotics, stimulants, anxiolytics and antidepressants. A brief description of each of these therapeutic classes will be made.

Among the classes found, stimulants were the most prescribed for the studied children. In this group stand out amphetamines, substances that act on the Central Nervous System (CNS). Methylphenidate was the most prescribed drug due to its action in improving wakefulness and alertness for a longer period of time. According to Campos and Sant'ana (2019), the

Table 2. *Types of Associations of Three Active Principles and Number of Children Using[1] Each Combination.*

Association of 3 active principles			
Active Principle 1	**Active Principle 2**	**Active principle 3**	**Nº**
Methylphenidate (stimulant)	Risperidone (antipsychotic)	Imipramine (antidepressant)	3
Methylphenidate (stimulant)	Risperidone (antipsychotic)	Methylphenidate[2] (stimulant)	1
Methylphenidate (stimulant)	Clorpromazina (antipsicótico)	Clomipramine (antidepressant)	1
Methylphenidate (stimulant)	Risperidone (antipsychotic)	Sertraline (antidepressant)	1
Total			**6**

[1] The name hydrochloride of the active principles methylphenidate, imipramine, chlorpromazine and clomipramine was deleted due to lack of space in the table.

[5] Prescription of the drug under the trade name Concerta®.

Source: Project Database (2017).w

Table 3. *Types of Associations of Five Active Principles and Number of Children Using[1] Each Combination.*

Association of 5 active principles					
Active Principle 1	**Active Principle 2**	**Active Principle 3**	**Active Principle 4**	**Active Principle 5**	**Nº**
Risperidone (antipsychotic)	Periciazine (antipsychotic)	Clonazepam (anxiolytic)	Sodium Valproate (Anticonvulsant)	Sodium divalproate (anticonvulsant)	1
Risperidone (antipsychotic)	Periciazine (antipsychotic)	Clonazepam (anxiolytic)	Methylphenidate (stimulant)[2]	Sodium divalproate (anticonvulsant)	1
Total					**2**

[1] The name hydrochloride of the active principles methylphenidate, imipramine, Chlorpromazine and Clomipramine was deleted due to lack of space in the table.

[2] Medicine prescribed by the trade name Concerta®.

Source: Project Database (2017).

mechanism of action of this drug, as well as other stimulants (including cocaine), uses dopaminergic synaptic changes, which leads to the assertion by groups of researchers that there is a potential risk of prolonged use of this drug cause the substitution of legal drugs for illegal ones with similar mechanisms. We don't have these answers and we need long-term studies to prove them.

In addition, methylphenidate has side effects such as insomnia, abdominal pain, headache and nausea. Associated with these side effects, the drug is likely to cause growth suppression, a fact that justifies the suspension of its use on weekends and during school holidays. This fact should be highlighted, as if a drug were really capable of promoting development, it should not be discontinued (Kaplan, Sadock, & Grebb, 1997).

The study by Campos and Sant'Ana (2019) about the composition and effects of methylphenidate highlights that there are few studies that assess the safety of its long-term use and, therefore, the prolonged use of the drug needs to be systematically monitored by doctors through clinical and laboratory examinations.

It should also be noted that Anvisa points out methylphenidate as one of the five main drugs that should receive attention from scientific research and discussion today, as it is a drug subject to multiple controversies and interpretations about its real efficacy, in addition to having widespread in Brazil (ANVISA, 2012).

Another therapeutic class used by the researched children are the anticonvulsants or antiepileptics, medications used for the treatment of epilepsy, which presents the crisis as a characteristic, described by Rang et al. (2011), as an episodic high-frequency discharge of impulses from a group of brain neurons.

Carbamazepine was the most prescribed drug among antiepileptics for children, its side effects are: water retention, sedation, hypersensitivity reactions, ataxia, leukopenia, blurred vision and the rarest of liver failure. Valproate, marketed as Depakote (Sodium Divalproate) and Depakene (Sodium Valproate) also pose risks due to their undesirable effects of weight gain, nausea, hair loss and fetal malformations (Rang et al., 2011).

A class that also deserves to be highlighted is the psychotropic drugs, substances that have the function of modifying mental processes, which can determine physical or psychological dependence, they are divided into four groups: anxiolytics, antidepressants, antipsychotics and hallucinogens.

Clonazepam was the most prescribed substance among the anxiolytics of the benzodiazepine category,

used to treat anxiety in its various spectrums such as obsessive thoughts, panic attacks, phobias, compulsive urges or generalized anxiety (Rang et al., 2011).

Antidepressants have the function of markedly modifying the mood, slower motor and mental action. In addition to causing discouragement, feelings of guilt, apprehension, disinterest, emotional restlessness, conditions that can lead to suicidal ideation. Among the antidepressants prescribed to children in the first phase of elementary school are imipramine and clomipramine, two inhibitors of monoamine capture, and sertraline and escitalopram, two selective inhibitors of serotonin (5-HTP) capture. It is also important to mention the prescription of venlafaxine, which belongs to various antidepressants (Rang et al., 2011).

More potent antipsychotics, neuroleptics or tranquilizers are used to treat schizophrenia. Typical antipsychotics have extrapyramidal effects, such as motor disorders, acute dystonia and tardive dyskinesia, and among these drugs are chlorpromazine and periciazine that were prescribed for these children.

A highly prescribed antipsychotic, second only to methylphenidate, is risperidone, an atypical antipsychotic, it does not have extrapyramidal effects (Rang et al., 2011). These data raise the discussion about the gradual increase in the use of the drug in populations for which prescriptions are contraindicated in the product's package insert. In the Anvisa document (2012) there is no recommendation for the use of this type of active ingredient for this age group.

From the information mentioned above about the therapeutic classes, it can be seen that the monotherapeutic use of drugs already has side effects or undesirable effects, even if their pharmacological effects have been proven, there are children who are using drug combinations.

The use of associated medications in children is a necessary discussion, as the association of drugs is a practice that generates drug interactions. These interactions give rise to serious problems, ranging from the non-action of the drug leading to the absence of the expected effect in its treatment, or even the development of unwanted problems for the development of the child psyche (Rang et al., 2011).

Drug interactions can occur between the drug and food, drugs and herbal medicines, but the focus of interest of the interactions are those related to pharmacodynamics and pharmacokinetics. Pharmacodynamics is related to the "[...] mechanisms of action of drugs and the relationship between their concentration and their effect" (Ross & Kenakin, 2003, p. 25). On the other hand, "[...] pharmacokinetics is for the dynamics of drug absorption, distribution and elimination within the body" (Wilkinson, 2003, p. 3).

From the data presented, it appears that of the 87 children who use a combination of medications, 4 of them are using a combination, which, according to the literature, causes drug interactions. This information is shown in the table below.

According to Miranda-Scippa and Oliveira (2009), the combination of tricyclic antidepressants (ADTs) with stimulants (methylphenidate), the latter causes an increase in the level of ADT in the blood, which can lead to intoxication due to the excess of available tricyclic, being one of the toxic effects of its accumulation is 'cardiac toxicity'. Thus, it is observed that there are three children using the combination of two medications that are potentially generating serious organic problems, disregarding all the other side effects that each one of the drugs, alone, can cause in the body.

Another possible drug interaction between the prescribed psychotropic drugs was between the antidepressant in association with an atypical antipsychotic. This combination is not recommended, because the antidepressant reduces the action of the antipsychotic on cognition (Miranda-Scippa & Oliveira, 2009).

It was also observed that one of the children uses the combination of the same active ingredient, in this case methylphenidate, which was prescribed as Ritalin® and Concerta®. The association of the same active ingredient also occurs with another child who

Table 4. *Drug Interactions in Psychopharmaceutical Associations for Children in the First Cycle of Elementary School of a Municipality in the Interior of Paraná.*

Drug interaction	Drugs in combination	Nº children	Effect
ADT + Stimulant	Imipramine + methylphenidate	1	Cardiac toxicity
ADT + Stimulant	Clomipramine + methylphenidate + Chlorpromazine	1	Cardiac toxicity
	Imipramine + methylphenidate + risperidone	1	Cardiac toxicity
Antidepressant + atypical antipsychotic	Sertraline + risperidone + methylphenidate	1	Reduction of the antipsychotic effect

Source: Prepared by the author (2017).

takes Sodium Valproate and Sodium Divalproate. The medications were prescribed by their trade names, respectively Depakote® and Depakene®. The last two substances are converted in the body into the same substance, the valproate anion, so once again you have the same active ingredient prescribed in a dosage above that recommended for a child.

In this sense, it is highlighted that children are subjects in the process of development, vulnerable to the use of chemical substances and influences from the environment in which they are inserted, and it is up to society to build ethical and technical precepts that guide humanizing practices.

DISCUSSION

The result of the survey showed that of the total number of children who use medication in the initial grades of elementary school, 812 children, 87 (10.7%) of them, use two or more medications in combination for the treatment. Among these, 79 use a combination of two substances, 6 children use 3 medications and 2 children use a combination of 5 medications. Through the filters established for this research, no child uses 4 associated drugs.

Of the 79 children who use two medications combined, 38 use the association between a stimulant (methylphenidate) and an antidepressant (risperidone). Among those using three medications combined, 5 children use the combination of a stimulant with an antipsychotic and an antidepressant. The two children who are taking five medications, use in common, antipsychotic (duplicate), anticonvulsant and anxiolytic; for one of these two children the fifth substance is a stimulant and for the other it is another anticonvulsant.

The data presented above suggest the hypothesis that is in line with the one discussed by Whitaker (2017) and Gozstche (2016) that multiple diagnoses are created due to the use of medication, which was initially to treat only a "supposed diagnosed disorder", in most cases it is ADHD, the initial diagnosis and then, with the prolonged use of the drug (methylphenidate) it leads to the development of other symptoms such as depression and bipolar affective disorder, requiring the use of other drugs to treat the comorbidities created by the consumption of the drug itself. This fact would possibly explain the reasons for using drug combinations to treat the initial diagnosis and new pathologies developed, however, we emphasize that the above hypothesis needs further investigation.

The survey data showed that in the first cycle of Elementary School, of the 87 children who use drug combinations, 4 of them are at serious risk of suffering the effects of drug interactions caused by drug combinations, not to mention the side and unwanted effects, of which the chemical, physical and psychological dependence of these substances can be underlined. Thus, it is highlighted the fact that having medication as the only treatment resource does not promote psychic development and much less learning.

FINAL CONSIDERATIONS

The text aimed to quantify the number of children enrolled in the first cycle of elementary school in a municipality in the interior of the state of Paraná who use two or more controlled drugs, to identify the therapeutic classes to which they belong, their possible consequences and impacts for the development of the child psyche. The results show that 812 children consume controlled medications and 87 children (10.7%) use two or more controlled medications in combination. We seek to alert here that the indication of the use of drug combinations by such young children presents a risk of drug interactions that could create deep marks throughout the adult life of these individuals.

Thinking about child development means thinking directly about the child-society relationship. The importance of the historical-cultural character of the development process is highlighted, as it takes place within a historical moment, which at the same time is dialectically related to the concrete material conditions, the system of relationships established by the child and the place he or she occupies in that system, and their living and educational conditions.

The use of medications does not promote psychic development; the development is made possible through the educational process of a socio-cultural character. Properly organized teaching will be able to promote the functions so desired by teachers, namely, domain of self-conduct and voluntary attention.

Finally, providing the child with conditions for the appropriation of social and symbolic tools, effectively mediated by the teaching practice, as well as the full training of the teacher, so that they can promote with their teaching the psychic development of children are considerations that the data presented provoke us.

REFERENCES

Agência Nacional de Vigilância Sanitária [Anvisa]. (2012). Prescrição e consumo de metilfenidato no Brasil: identificando riscos para o monitoramento e controle sanitário. *Boletim de Farmacoepidemiologia do SNGPC*, *2*(2). Recuperado de: https://www.anvisa.gov.br/sngpc/boletins/2012/boletim_sngpc_2_2012_corrigido_2.pdf

Campos, C. B. H. F.; Sant´Ana, D. de M. G. (2019). De que é feita a Ritalina e o Concerta? Conhecendo o metilfenidato, sua ação, riscos e benefícios. In: S. C. Tuleski; A. F. Franco (Eds.), *O lado sombrio da medicalização da infância e as possibilidades de enfrentamento* (pp. 69-92). Rio de Janeiro: NAU.

Eidt, N. M.; Tuleski, S. C; Franco, A. F. (2014). Atenção não nasce pronta: o desenvolvimento da atenção voluntária como alternativa à medicalização. *Nuances: Estudos sobre*

Educação, *25*(1), 78-96.

Franco, A. F.; Martins, L. M. (2021). *Palavra escrita: vida registrada em letras a alfabetização para além da Política Nacional de Alfabetização (PNA)* (1ª ed.). Goiânia: Phillos Academy.

Gozstche, P. C. (2016). *Medicamentos mortais e crime organizado: como a indústria farmacêutica corrompeu a assistência médica*. Porto Alegre: Bookman.

Kaplan, H. I.; Sadock, B. J.; Grebb, J. A. (1997). O transtorno de déficit de atenção. In: H.I. Kaplan; B. J. Sadock; J. A. Grebb (Eds.), *Compêndio de psiquiatria: ciências do comportamento e psiquiatria clínica* (7ª ed., pp. 989-994). Porto Alegre: Artes Médicas.

Leontiev, A. N. (2004). *O desenvolvimento do psiquismo* (2ª ed., R. E. Faria, Trad.). São Paulo: Centauro. (Traduzido do original Le développment du psychisme)

Meira, M. E. M. (2012). Para uma crítica da medicalização na educação. *Revista Semestral da Associação Brasileira de Psicologia Escolar e Educacional, 16*(1), 135-142.

Miranda-Scippa, A. M. A.; Oliveira, I. R. (2009). *Interações medicamentosas dos psicotrópicos* (2ª ed.). São Paulo: Leitura Médica.

Moysés, M. A. A.; Collares, C. A. L. (2011). Dislexia e TDAH: uma análise a partir da ciência médica. In: Conselho Regional de Psicologia de São Paulo (Ed.), *Medicalização de crianças e adolescentes: conflitos silenciados pela redução de questões sociais a doenças de indivíduos* (pp. 71-110). São Paulo: Casa do Psicólogo.

Rang, H. P.; Dale, M. M.; Ritter, J. M.; Moore, P. K. (2011). *Farmacologia*. Rio de Janeiro: Elsevier.

Ross, E. M.; Kenatkin, T. P. (2003). Farmacodinâmica. In: A. Goodman (Ed.), *As bases farmacológicas da terapêutica* (10ª ed., pp. 25-34). Rio de Janeiro: McGraw-Hill.

Vygotski, L. S. (1995). Historia del desarrollo de las funciones psíquicas superiores. In: L. S. Vygotski. *Obras escogidas* (Tomo III). Madri: Visor y Ministério de Educación y Ciencia. Trabalho original publicado em 1931.

Wilkinson, G. R. (2003). Farmacocinética. In: A. Goodman (Ed.), *As bases farmacológicas da terapêutica* (10ª Ed., pp. 3-23). Rio de Janeiro: McGraw-Hill.

Whitaker, R. (2017). *Anatomia de uma epidemia: pílulas mágicas, drogas psiquiátricas e o aumento assombroso da doença mental*. Rio de Janeiro: Editora Fiocruz.

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