

Effects of parental drug use on child development and mental health: integrative review

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Objective: to analyze publications dealing with the impact of drug use by parents on the development and mental health of children. **Method:** comprehensive Review in the Virtual Health Library and PUBMED, using the descriptors “Child development”, “Mental health”, “Parents”, “Mothers”, “Drug users” and “Child”. **Results:** the final sample totaled 11 articles on: neonatal effects of drug use by pregnant women and consequences of drug use on the cognitive, motor and psychosocial development of children. **Conclusion:** drug use by parents jeopardizes the child’s growth and development and can lead to behavioral and mental health problems, either because of direct consequences or because of indirect effects of the child’s consumption of these substances.

Descriptors: Child Development; Mental Health; Parents; Drug Users.

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Efeitos do consumo de drogas parental no desenvolvimento e saúde mental da criança: revisão integrativa

Objetivo: analisar as publicações que abordam o impacto do consumo de drogas parental no desenvolvimento e na saúde mental das crianças. Método: revisão integrativa na Biblioteca Virtual em Saúde e no PUBMED, utilizando-se os descritores “Child development”, “Mental health”, “Parents”, “Mothers”, “Drug users” e “Child”. Resultados: a amostra final totalizou 11 artigos sobre efeitos neonatais do consumo de drogas em gestantes e consequências do uso de drogas no desenvolvimento cognitivo, motor e psicossocial das crianças. Conclusão: o consumo de drogas parental compromete o crescimento e o desenvolvimento da criança, podendo ocasionar problemas comportamentais e de saúde mental, seja pelas consequências diretas ou pelos efeitos indiretos do consumo dessas substâncias na criança.

Descritores: Desenvolvimento Infantil; Saúde Mental; Pais; Usuários de Drogas.

Efectos del consumo de drogas por los padres en el desarrollo y la salud mental de los niños: revisión integrativa

Objetivo: analizar en publicaciones el impacto del consumo de drogas por los padres en el desarrollo y la salud mental de los niños. Método: revisión integradora en la Biblioteca Virtual en Salud y la PubMed, utilizando los descriptores “Child development”, “Mental health”, “Parents”, “Mothers”, “Drug users” and “Child”. Resultados: la muestra final de 11 artículos sobre: efectos neonatales del consumo de drogas en las mujeres embarazadas y sobre las consecuencias del consumo de drogas en el desarrollo cognitivo, motor y psicosociales de los niños. Conclusión: el consumo de drogas por los padres compromete el crecimiento y desarrollo de los niños, y puede causar problemas de comportamiento y de salud mental, sea por la consecuencia directa o por efectos indirectos del consumo en la criança.

Descriptores: Desarrollo Infantil; Salud Mental; Padres; Usuarios de Drogas.

Introduction

Child development is permeated by innumerable constraints, including genetic and organic factors related to individual characteristics of the unborn human being, to broader factors such as environmental, cultural and social influences that are manifested, for example, through family, school and society⁽¹⁾.

In the available literature, there are several researches with the objective of investigating events that may influence the development and mental health of children from different approaches, such as intrinsic factors present in children⁽²⁾, influence of parental characteristics⁽³⁾ or environmental situations⁽³⁻⁴⁾.

Children and adolescents with developmental deficits can have serious impairments in their functional performance and mental health, ranging from reduced ability to perform routine daily activities in a satisfactory and proper manner of each stage of development, up to cases of bullying, violence, prejudice, among others.

Parental characteristics and environmental factors can be risk or protection factors for the development and mental health of children⁽⁵⁾, and can affect them in an independent manner.

Protection factors are those that promote conditions that allow the strengthening, coping, growth and full development of a developing human being. In turn, risk factors are variables or conditions that interfere in the

well-being, health or social performance of individuals or social groups, causing negative impacts on their development⁽⁶⁾.

Among the risk factors, parental drug use and its impact on the development and mental health of children has been extensively researched and reported in national and international journals⁽⁷⁻⁸⁾. The high prevalence and various problems associated with parental drug abuse make this theme to become a relevant public health problem and draws attention to the need for interventions in response to this reality⁽⁸⁾.

Exposure to alcohol and other drugs is one of the many negative environmental influences on child development. In many cases, parental use of substances is a substantial indicator of family dysfunction leading to predictable negative outcomes for children⁽⁷⁾. Added to this, children born from unfavorable pregnancies and coming from adverse socioeconomic situations are exposed to several risks and have a greater tendency to present delayed neuro-psychomotor development⁽⁹⁾.

A study pointed out that the use of psychoactive substances by pregnant women is related to impairments in cognitive functions of children, causing poor ability to maintain attention and impaired memory and learning, with a greater deficiency or delay in cognitive development in the case of children up to two years⁽⁷⁾.

Nevertheless, although it is not possible to define the thresholds of toxic doses and the time of use that can be considered harmful, or even determine a specific pattern of problems caused by each specific drug, drug abuse in general is associated with a greater risk of anomalies in pregnancy due to increased risk of both congenital malformations and perinatal morbidity and mortality triggered by variable deficits in anthropometric measures at birth, respiratory distress, neonatal infection, jaundice, acute pulmonary edema, congenital syphilis and suffering, for example⁽¹⁰⁻¹²⁾.

Mild to moderate transient neurobehavioral changes in childhood, long-term behavioral problems observed from childhood to adolescence, as well as possible long-term repercussions on the learning ability of children who were exposed during intrauterine life have been described⁽¹²⁾. The severity of such problems is influenced by environmental factors⁽¹¹⁾ and by the extent of the time of exposure of the fetus to the substances⁽¹⁰⁾.

Thus, this study aimed to analyze national and international publications that address the impact of parental drug use on child development and mental health.

Method

This is an integrative review that provides a synthesis of relevant knowledge that supports decision making and improvement of clinical practice, incorporating results from studies that are meaningful, and pointing gaps in the knowledge about a given subject⁽¹³⁾.

The following steps were established to carry out this study: identification of the problem and definition of the guiding question; definition of criteria for inclusion and exclusion of articles; selection of databases and search of scientific productions; choice of articles and analysis of the included studies; development of the discussion and synthesis of the review⁽¹⁴⁾.

The following guiding question was created to guide the integrative review: What are the effects of parental drug use on child development and mental health?

The selection of articles was carried out independently by two authors in March 2015. All the results were compared to verify the agreement among the data gathered.

The Virtual Health Library (VHL) was used because it included several national and some international databases, as well as the PUBMED database. Thus, we sought to broaden the scope of the research, minimizing possible bias in this stage of the process of the integrative review.

The search for articles was performed by crossing the following Health Science Descriptors in English: Child development, Mental health, Parents, Mothers, Drug users and Child, using the Boolean operators AND and OR in combinations that totaled 10 different search strategies, as shown in Table 1.

The included articles were primary studies published in the last 10 years (2005 to 2015); published in English, Portuguese and Spanish; portraying the development and/or mental health of children from zero to 12 years old whose parents and/or mothers used or abused (legal and/or illegal) drugs. Two articles that included children over 12 years of age were exceptionally kept in this review because they had been conducted with children who were in the age range established in this review. Articles were excluded when: the central goal addressed the presence of diseases such as HIV and hepatitis, which may contribute to increasing child vulnerability; full texts were not made available; the articles addressed development and/or mental health but did not include children from 0 to 12 years of age; and they were review articles.

The initial search found 188 articles in the VHL and 1310 in PUBMED. After applying the criteria of primary articles published in the last 10 years in English,

Portuguese and Spanish, this total fell to 99 articles in the VHL and 516 in PUBMED.

Then, the titles and abstracts of these articles were read and those that portrayed the development and/or mental health of children aged 0 to 12 years whose parents and/or mothers used (licit and/or illicit) drugs, were selected, totaling 20 articles in the VHL and 64 in the PUBMED.

After eliminating the articles repeated in the VHL and PUBMED, as well as in all search strategies used, a total of 21 articles were obtained for reading. Of these, one article was excluded because it was a review, six because they did not address the study's theme, one because of the full text was not available, making its analysis unfeasible, and one because it was carried out only with adults who whose mothers had been drug users. The final sample was composed of 11 articles.

Table 1 – Search strategy used. Ribeirão Preto, SP, Brazil, 2015

Search strategy	VHL	Filters	PUBMED	Filters	Selected	Repeated
Child development AND Mental health AND Parents OR Mothers AND Drug users	1	0	113	11	11	0
Child development OR Mental health AND Parents OR Mothers AND Drug users	19	3	129	11	14	7
Child development AND Mental health AND Parents AND Drug users	2	0	2	0	0	0
Child development AND Mental health AND Mothers AND Drug users	1	0	4	1	1	1
Child development AND Parents OR Mothers AND Drug users	13	5	117	16	21	20
Child development AND Parents AND Drug users	8	1	15	2	3	3
Child development AND Mothers AND Drug users	13	3	21	3	6	6
Child AND Mental health AND Parents OR Mothers AND Drug users	11	3	118	17	20	18
Child AND Mental health AND Parents AND Drug users	20	2	9	1	3	3
Child AND Mental health AND Mothers AND Drug users	11	3	8	2	5	5
TOTAL	99	20	531	64	84	63

For the analysis and synthesis of the 11 articles selected, a synoptic box was prepared, specially designed for this purpose, including: reference of the article, country of study, objective, type of study, sample, main results and main conclusions.

Results

The studies were published predominantly in the period from 2009 to 2014; only one study was published in 2005⁽¹⁵⁾ and another in 2007⁽¹⁶⁾. As to the origin and

language of the publications, ten articles were published in English; two were from the United Kingdom⁽¹⁷⁻¹⁸⁾, two from Norway⁽¹⁹⁻²⁰⁾, two from Australia⁽²¹⁻²²⁾, two from the USA^(16,23), one from Thailand⁽¹⁵⁾ and one from Canada⁽²⁴⁾, and there was a single article published in Spanish from Spain⁽²⁵⁾.

Regarding the type of study, quantitative surveys predominated. Among these, there were seven retrospective cohort studies^(15,18,20-22,24-25), retrieving information about children from birth to discharge; one prospective cohort study⁽¹⁷⁾, following-up the development of children up to 12 months of age; two

longitudinal comparative studies, one with follow-up of children from birth to 2 years of age⁽²³⁾ and another from birth to 13 years of age⁽¹⁹⁾; and one cross-sectional

study that included children and adolescents aged 12 to 17 years⁽¹⁶⁾. The results of the synthesis of the selected articles are presented in Figure 1.

Author (Year)	Country	Objective	Type of study	Sample	Main results
Singer et al. (2012) ⁽¹⁷⁾ .	U.K.	To present the results of a 12-month follow-up of a cohort of children exposed to ecstasy before birth.	Prospective Cohort	96 women (28 users of ecstasy during pregnancy and 68 non-users) and 79 children up to 1 year of age.	The monitoring of children for 12 months showed that the use of ecstasy during pregnancy impacted negatively on the cognitive and motor outcomes of children, especially in the latter.
Gomes et al. (2011) ⁽²⁵⁾ .	Spain	To know the current prevalence, the characteristics of pregnancy and childbirth and the characteristics of newborns of mothers who are drug users.	Retrospective cohort	157 newborns from mothers who were drug users (cocaine, heroin, cannabis, benzodiazepines and amphetamines, methadone).	Drug use by mothers was associated with prematurity, presence of drug abstinence syndrome, alteration in suction, tremor, irritability, and hyperreflexia in newborns.
Hjerkin et al. (2013) ⁽¹⁹⁾ .	Norway	To investigate the behavior of children of mothers who are drug users and relate it to their caregivers (biological mothers or step parents), and correlate the results of the behavioral tests of the children with those of a neuropsychological evaluation.	Quasi-experimental, longitudinal	38 newborns of mothers who were users of psychoactive substances (cannabis and methamphetamines) during pregnancy, compared with 80 children of mothers who did not use these substances.	Children of substance abusers had more academic problems, needed more corrective care at school, were more often diagnosed with attention deficit/ hyperactivity disorder, depression, anxiety disorder or somatic disorder.
Hjerkin et al. (2009) ⁽²⁰⁾ .	Norway	To compare the neonatal outcomes of children of mothers who abused drugs assisted at a wellness clinic with children of mothers who were not drug addicts.	Retrospective cohort	62 newborns from 59 mothers using amphetamines and opiates compared to children of non-users.	The group of children of mothers using drugs had a higher rate of prematurity, low birth weight and lower head circumference at birth, when compared to the group of children of mothers not using drugs. The offspring of mothers who stop using drugs early in pregnancy tended to have birth outcomes similar to those of mothers without substance abuse.

Figure 1 continues on next page...

Author (Year)	Country	Objective	Type of study	Sample	Main results
Richardson et al. (2011) ⁽²³⁾ .	USA	To examine the relationship between prenatal cocaine use and physical, cognitive and behavioral child development.	Comparative, longitudinal	243 mothers users of cocaine and/or crack and their children (examined at birth, and then at 1, 3 and 7 years of age).	Children exposed to cocaine during pregnancy had more behavioral problems assessed by mothers and teachers.
Blandthorn et al. (2011) ⁽²¹⁾ .	Australia	To describe the characteristics of mothers, pregnancy and neonatal outcomes in a group of pregnant women who used psychoactive substances in pharmacological replacement treatment with buprenorphine or methadone.	Descriptive retrospective	98 newborns and their mothers, who were users of tobacco, cannabis, heroin, benzodiazepines, alcohol, amphetamines and/or morphine on treatment with methadone or buprenorphine.	A significant proportion of premature births and low birth weight were observed. Some children born at less than 33 weeks of gestation received medication for treatment of neonatal abstinence syndrome.
Dryden et al. (2009) ⁽¹⁸⁾ .	U.K.	To investigate the factors associated with the development of neonatal abstinence syndrome and assess the implications in children born to women abusing drugs for health resources.	Retrospective cohort	437 newborns and 440 mothers using psychoactive substances (benzodiazepine, Heroin, cannabis, cocaine, amphetamine, alcohol and/or tobacco) during gestation and on methadone treatment.	A considerable proportion of preterm infants with respiratory problems, low weight and head circumference lower than average were observed. Maternal use of benzodiazepines in addition to methadone treatment significantly increased the likelihood of neonatal abstinence syndrome and the need for pharmacological treatment.
Pong et al. (2010) ⁽²²⁾ .	Australia	To determine whether exposure to drugs and perinatal outcomes are affected by changes in the availability of drugs on the streets.	Retrospective cohort	293 mothers who were drug addicts (methadone, heroin, benzodiazepines, cocaine, amphetamines, cigarettes, alcohol and cannabis) and 297 infants.	Children who were exposed to various types of intrauterine drugs remained hospitalized longer compared to children exposed to a single class of drugs. A significant portion of newborns required medications to treat neonatal abstinence syndrome.
Thaithumyano et al. (2005) ⁽¹⁵⁾ .	Thailand	To determine the perinatal impacts of heroin and amphetamine in mothers and infants.	Comparative, retrospective	211 mothers who were drug users (amphetamines or heroin) and 211 newborns.	The incidence of prematurity, low birth weight and microcephaly was not statistically different between the two groups of children (exposed to amphetamine and exposed to heroin). A significant proportion of infants exposed to heroin developed neonatal abstinence symptoms.

Figure 1 continues on next page...

Author (Year)	Country	Objective	Type of study	Sample	Main results
Kelly et al. (2011) ⁽²⁴⁾ .	Canada	To document the incidence of neonatal abstinence syndrome and the rate of narcotic use during pregnancy in northwestern Ontario.	Descriptive retrospective	61 mothers who were users of narcotics (oxycodone) and 61 newborns.	Children of mothers using drugs had higher rates of prematurity, some had symptoms of neonatal abstinence syndrome, and the mother's daily use of drugs was an aggravating factor in the onset of the syndrome.
Lam et al. (2007) ⁽¹⁶⁾ .	USA	To analyze the relationships between parental behaviors, quality of bond, and age-moderating effects on substance use by young people in a sample of an African-American community of mothers users of cocaine and crack and their 12-17 year old children.	Cross-sectional	208 mothers who were users of crack, cocaine, alcohol and cannabis and 208 children and adolescents aged 12 to 17 years.	The effect of family conflicts on substance use, in children and adolescents varied with age. Among older people, those who perceived a high level of family conflict were more likely to use substances compared to those who perceived a lower level of family conflict. Among young adults, maternal disapproval was a protection against substance use.

Figure 1 – Overview of selected articles. Ribeirão Preto, SP, Brazil, 2015

Most of the articles were focused on studying the neonatal effects of drug use in pregnant women^(15,18,20-22,24-25), correlating the use of these substances with changes in physical development, such as low birth weight and lower cephalic circumference^(20,23), prematurity^(20,24), low Apgar⁽²⁴⁻²⁵⁾, small size for gestational age⁽²¹⁾, and special care needs due to respiratory distress syndrome⁽²¹⁾, jaundice requiring phototherapy⁽²¹⁾, neonatal abstinence syndrome^(15,18,21-22), congenital malformations and death⁽¹⁵⁾. These studies provided information about the gestational period, such as the number of prenatal consultations, considering as insufficient the attendance to < 4⁽²⁵⁾ and <5⁽²²⁾ consultations, type of delivery, complications in pregnancy, such as premature rupture of membranes and placental abruption⁽²⁵⁾ and use of substances during pregnancy.

A smaller number of studies^(16-17,19,23) assessed the consequences of the mother's use of drugs on children's cognitive, motor and psychosocial development, revealing its association with academic problems, the need for greater support or reinforcement in school, and a more frequent diagnosis of Attention Deficit Hyperactivity Disorder (ADHD), depression or anxiety disorder or somatic disorders⁽¹⁹⁾. Drug use was associated with parental variables such as family conflict, bond between

mother and child, and maternal disapproval of substance use by the child according to age and the perception of these variables by the child⁽¹⁶⁾; negative effects on cognitive and motor outcomes in the child, such as neurobehavioral changes⁽²⁵⁾, suggesting significant risk of development in the more heavily exposed children, including delays in standing and walking, and lower levels of orientation and engagement⁽¹⁷⁾.

Regarding the terms used to define the type of consumption by the mothers, four articles used the term "drug use"^(16-17,22,25), one article used the term "frequent use"⁽²³⁾, five used the term "drug abuse"^(18-21,24) and one article used "addicts"⁽¹⁵⁾, taking into account the mother's self-report, her medical history, the detection of toxic substances in the mother's urine or the newborn's urine, or the inclusion of the mother in treatment programs.

Data were mostly obtained from records of clinics or hospitals that provide care to pregnant women who use drugs, from records on informed drug use, demographic characteristics of pregnant women; data on gestation; number of prenatal consultations; number of deliveries and births; pediatric outpatient records and outcomes related to length of hospital stay and discharge of the baby^(15,18,21-22,24-25). In one study the parents received a questionnaire at the school or clinic meeting where

they were to respond to questions on pregnancy, childbirth, child development and evolution, substance abuse, maternal and child health, living conditions, and educational level⁽²⁰⁾.

A smaller number of studies interviewed mothers to investigate the use of psychoactive substances^(17,24). To evaluate children's behavior, scales and interviews with mothers/fathers, teachers and children were used^(16-17,19,23). The Child Behavior Checklist (CBCL) was used in one study⁽¹⁹⁾. For neuropsychological evaluation of children, a study used the third version of Wechsler Intelligence Scale for Children (WISC-III), NEPSY, Halstead-Reitan and Raven's Progressive Matrices⁽¹⁹⁾.

It was the concern of all studies to describe to a greater or lesser extent the socioeconomic and demographic characteristics of the mothers, such as age, income/employability, education level, region of residence, and marital status or presence of a partner. In studies where it was possible to identify the age range of the mothers, the mean age ranged from 28^(18,25) to 36.8 years⁽¹⁶⁾. In four studies, most of the mothers had work^(16-17,23,25); in the other cases most of them received social benefits^(18,20,22). The educational level presented a great variation, ranging from little or no school education⁽²⁰⁾, to mothers with university education⁽¹⁷⁾. With the exception of one study⁽¹⁷⁾, unmarried single mothers prevailed in all the studies.

Two studies identified the presence of violence against women. In one, about 10% of the interviewees had been victims of domestic violence⁽²²⁾, and in another, 37.7% of the mothers were in the custody of protection services⁽¹⁶⁾.

Regarding the use/abuse substances, the studies presented a large variation of illicit drugs, including ecstasy, marijuana and cocaine⁽¹⁷⁾; heroin, methadone, cocaine, cannabis, benzodiazepines and amphetamines⁽²⁵⁾; cannabis and/or amphetamines or opioids⁽¹⁹⁻²⁰⁾; crack or cocaine⁽²³⁾; opioids (heroin, methadone, buprenorphine, tramadol, codeine, pethidine), stimulants (cocaine, amphetamines and their derivatives) and depressants (benzodiazepines and alcohol)⁽²²⁾; heroin and amphetamine⁽¹⁵⁾; opioids⁽²⁴⁾, tending to consumption of multiple drugs and without ruling out the concomitant use of alcohol and tobacco. Two studies explored the effects of buprenorphine or methadone in infants from pregnant women with drug addiction and their relationship with neonatal abstinence syndrome^(18,21).

Studies also found that children exposed to multiple drug use by mothers during pregnancy required a longer treatment due to clinical problems, and were hospitalized for a longer time than children exposed to a single class of drugs^(18,22).

The number of abortions and neonatal deaths presented in the studies of this review was very significant considering all the studies. One study pointed out that 7.7% of the children needed resuscitation at birth due to low Apgar⁽²⁵⁾; in one study, of the 126 interviewees, 4 had spontaneous abortion and could not participate in the study⁽¹⁷⁾; in another, of the 102 pregnant women, 13 aborted⁽²⁰⁾; in other study, 5 children died⁽²³⁾; one baby was born dead and five babies were extremely premature⁽²¹⁾; one baby died of sudden infant death syndrome 6 weeks after discharge, one baby was accidentally asphyxiated by the mother in the postnatal ward, another drowned in the bathtub at home at the age of 18 months and 2 died of complications of extreme prematurity⁽²²⁾; in one study, there was one stillborn child and two neonatal deaths⁽¹⁵⁾. Of an initial sample of 450 dyads, 6 infants were stillborn infants, and from the final sample of this study (437), two infants died soon after delivery, one infant died at 7 days due to complications of prematurity and another infant with multiple anomalies died of renal insufficiency. One full-term child died suddenly at home at 25 days of life. In the latter study, the fetal death rate of 1.3% was almost twice that of the hospital as a whole⁽¹⁸⁾.

In addition to neonatal deaths, in a study with an initial sample of 293 mothers, three of them died, one due to generalized infection still in the hospital and two due to an overdose after discharge, at home⁽²²⁾. It was also found that women who used drugs presented a history of poor obstetric prenatal care^(15,21).

In this review, the number of mothers who lost custody of their children and the number of children left in orphanages or in the custody of relatives was a finding that called attention^(15,20,23).

Issues related to breastfeeding were discussed in three studies that adopted opposing views on breastfeeding by women who used drugs. In two of them, mothers were encouraged and supported to breastfeed regardless of whether or not they continued using drugs^(15,22), while another study was against this advice, arguing that breastfeeding should be discouraged from the start if mothers abuse of the drugs, and breastfeeding should occur only if no drug is detected in the urine and consumption was sporadic in early pregnancy⁽²⁵⁾.

Discussion

The development of a human being is a process resulting from a tangle of complex situations involving reciprocal interactions between its cognition, emotion, physiology, perception of the world and neurobiology. The recognition of the importance of such interactions

for human development is the fundamental principle of models that aim to guide research in the perspective of development science, such as the bio-ecological model of human development that highlights the importance of researching the processes of interaction between the person and the environment, characteristics of the person, characteristics relating to historical, cultural and social time, and finally, characteristics of the context - physical, social and cultural environment of a person to understand his development⁽²⁶⁾.

Taking the look through this lens as a starting point, it is possible to perceive that the effects of parental drug consumption on the development and mental health of the children come from multiple factors, many of them predating their conception, such as the environment and lifestyle adopted by their parents.

Thus, risk assessment when gestation is exposed to drugs is difficult because the outcomes may be confounded by the concomitant consumption of other toxins or by the presence of other unfavorable socioeconomic factors⁽¹²⁾. We should also have in mind that although the use of psychoactive substances poses potential for short- or long-term harms, the most significant adverse effects (chronic health effects, biological effects, serious social problems and chronic social problems) for users, result from the accumulated amount of the psychoactive substance, the pattern of use or the way or medium by which the drug is used⁽²⁷⁾.

Thus, the high prevalence of psychoactive substance abuse in the population of pregnant women exposing the fetus to toxic substances during this period of greatest vulnerability, particularly with regard to neurological development and organogenesis, is a serious public health problem⁽²⁸⁾. The importance of this problem was also evidenced in this study, since 81% of the articles selected were made based on the mother-child binomial, focusing mainly on the gestational and puerperium periods.

From the biological point of view, the studies included in this review revealed the serious consequences for newborns resulting from the use of psychoactive substances during gestation. As most of the drugs used by mothers cross the placental and blood-brain barrier without previous metabolism, they act during the embryonic period, development phase and formation of fetal organs, causing cognitive deficits, malformations, withdrawal syndromes, among others⁽²⁹⁾, such as prematurity, low birth weight and reduced head circumference, considered to be high risk factors for developmental, learning and psychosocial adaptation problems of the child, as well as behavioral problems suggestive of psychological care at a later age⁽¹⁰⁾.

The results of one of the studies also suggested that even children of women who discontinued the use are at greater risk for developmental delays at higher levels of exposure⁽¹⁷⁾. In another study, exposure to cocaine during the first trimester reduced weight and height at the age of 7 years, and it was possible to compensate for the effects of drug exposure only after this age possibly due to the plasticity in the development of children in this age group⁽²³⁾. In both studies the effects on children result from the exposure to drugs in early pregnancy, reinforcing the strong influence of biological factors throughout the development of the individual.

The results presented herein are in line with researches carried out in several Brazilian states^(27,29-30), revealing that this problem is not exclusive of developed countries. However, it is important to highlight the influence of social factors on child development. In this perspective, the effects of drug abuse on the fetus can be easily confused, influenced or triggered by social deprivation, maternal health and lifestyle⁽¹⁸⁾ adopted by a large number of women who consume drugs, as evidenced here.

As the studies showed, there is still a large number of pregnant women who are drug users receiving precarious care or no care at all, and there is also a large number of abortions and neonatal deaths among them. Research that studied the effect of prenatal care on perinatal, neonatal, and infant mortality indicates that absent or inadequate prenatal care is a important risk factor for neonatal mortality as conditions socioeconomic disadvantages of mothers, reinforcing the need to add quality prenatal and postpartum care to the implementation of improvements in quality of life, especially for pregnant women in worse socioeconomic conditions⁽³¹⁾.

An important interrelationship between the biological, social and cultural aspects of human development evidenced in this study was related to breastfeeding. As proof of this, although one study was against the continuity of breastfeeding by women using drugs⁽²⁵⁾ because these substances are passed to the infant through breast milk according to the dose and pattern of use of the drug⁽²⁴⁾, continuity of breastfeeding and encouragement of breastfeeding were mentioned in two studies because the act of breastfeeding not only comfort the babies^(18,22), but also contributes to the need for less hospital care when they manifest the syndrome of neonatal abstinence⁽¹⁸⁾.

Parental drug use and effects on child behavior and mental health were investigated by a smaller number of studies^(16-17,19,23). Among them, only two included biological father and/or mother or substitutes and teachers^(19,23).

Associations between behavioral problems and variables in the family environment were of interest to several studies, with negative life events in the family being particularly harmful to child development and a predisposing factor to mental health and behavioral problems throughout their growth and development cycle, especially when the children experience some type of violence, whether physical, psychological or sexual, and negligence⁽³²⁾.

Thus, the events evidenced in this review, such as maternal death, loss of children custody^(15,20,23) and violence suffered by mothers^(16,22) due to causes related to the use of psychoactive substances are adversities that may contribute to different effects on psychopathology in childhood besides having an effect on substance use disorders at later ages⁽³³⁻³⁴⁾.

Studies on exposure to domestic violence during childhood (being a witness, victim or both) have shown that children exposed to such adversities were more at risk in the full range of behavioral problems, presenting higher scores for delinquency and depression at later ages⁽³⁵⁾.

The results of one of the studies analyzed in the present research showed that children who were sent to orphanages had fewer behavioral problems than children living with their biological mothers who continued to use drugs after the child was born⁽¹⁹⁾. This can be explained by the fact that poorly functioning families may not be able to provide support, safety or monitoring essential for the healthy development of the child because with these characteristics, a deregulated family environment in which exposure to stressful adversities is more likely is also an environment in which the effects of such stressors may be less recognized or effectively managed⁽³⁶⁾.

Children exposed to drugs during intrauterine life and after birth had greater problems such as increased inattention, impulsivity and problems with peers, and more significant behavioral problems, such as attention deficit, low school performance, aggressivity, anxiety and depression compared with non-exposed children^(19,23).

Among the social determinants, lower social support, low maternal schooling, poor quality of the care environment and urban violence evidenced in most of the studies presented here also represented risk factors that negatively impacted child development and mental health, taking into account that the families in the studies lived mostly in urban centers characterized by extreme poverty, low schooling index and high index of drug consumption.

Therefore, the importance of early detection of risk factors related to the use of parental drugs, especially by pregnant women, is emphasized through humanized

and quality prenatal consultation, allowing the correct targeting of the necessary measures to improve the quality of pregnancy for both mother and fetus. This would contribute to reduce the complications in newborns⁽³²⁾, as well as the provision of social support so that these families feel cared for and safe in order to offer the best care for their children.

Conclusions

Parental abuse of drugs influences, in various aspects, the growth and development of children and can cause mental health and behavioral problems, either by the direct consequences of the consumption of psychoactive substances or by the indirect effects that such consumption generates, including abandon and neglect, lack of care and attention, child maltreatment, among others.

Furthermore, the negative results of parental drug use identified in this study included those triggered by intrauterine exposure of children to the drug that result in changes immediately noticeable at birth, such as those affecting anthropometric measures (height, birth weight, head circumference); those directly impacting the health condition of the child, such as cases of congenital malformations, respiratory distress syndrome or neonatal abstinence syndrome; and those that affect the cognitive, motor and psychological development of the child, such as those related to complex cognitive abilities that can only be observed during the development of the child, that is, during school age and in later years.

However, although parental drug use plays a role as an important risk factor for child mental health and development in the studies presented, this cannot be considered the unanimous determinant of the problems presented because human development is a fruit of a process involving factors such as personal, environmental and social characteristics of the individuals.

We hope to contribute with the knowledge on the theme, fomenting more discussions on the consequences of the parental drug use on the development and mental health of children, as well as show the consequences that this consumption generates in the children, emphasizing the importance of educative campaigns for fathers and mothers aiming at prevention, reduction and/or interruption of this act.

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