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Original Article

Risk classification of alcohol consumption in pregnant women in the last 12 months and during pregnancy*

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Objective: to classify the risk of alcohol consumption in pregnant women in the last 12 months (low risk, harmful and likely addiction) and during pregnancy (negative or positive). **Method:** this is an observational, cross-sectional and descriptive study developed with 118 pregnant UHS users from two municipalities. For data collection, the AUDIT and TACE tests were applied by means of interview. **Results:** it was observed that 94.9% of the women interviewed made frequent use of alcohol before pregnancy and 34.7% made use without being aware of the current pregnancy. Regarding the pattern of use during pregnancy, most pregnant women (86.4%) reported not to use or use within "low risk" limits, however, associations were verified between the previous consumption of alcohol by women and the consumption during the pregnancy, as well as associations between the consumption of alcohol in the last 12 months before pregnancy and the scores that represent the consumption during the pregnancy. **Conclusion:** understanding the consumption of alcohol by pregnant women allows contributing to early diagnosis of vulnerability and planning of interventions to establish a safe and healthy pregnancy.

Descriptors: Gestation; Consumption of Alcoholic Beverages; Social Characteristics; Risk Factors.

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Classificação do risco de consumo de álcool de gestantes nos últimos 12 meses e durante a gravidez

Objetivo: classificar o risco de consumo de álcool de gestantes nos últimos 12 meses (baixo risco, risco, nocivo e provável dependência) e durante a gravidez (negativo ou positivo). **Método:** trata-se de um estudo observacional, transversal e descritivo desenvolvido com 118 gestantes usuárias do SUS de dois municípios. Para a coleta de dados, aplicaram-se os testes AUDIT e TACE por meio de entrevista. **Resultados:** observou-se que 94,9% das entrevistadas faziam uso frequente do álcool antes da gravidez e 34,7% fizeram seu uso sem ter conhecimento da gravidez vigente. Quanto ao padrão de uso durante a gestação, a maioria das gestantes (86,4%) referiu não utilizar ou utilizar dentro de limites de "baixo risco", no entanto, foram verificadas associações entre o consumo pregresso de álcool das mulheres e o consumo durante o período gravídico, bem como associações entre o consumo de álcool nos últimos 12 meses antes da gestação e os escores que representam o consumo durante o período gravídico. **Conclusão:** compreender o consumo de álcool por gestantes permite contribuir com diagnósticos precoces de vulnerabilidade e com o planejamento de intervenções para estabelecer uma gestação segura e saudável.

Descritores: Gestação; Consumo de Bebidas Alcoólicas; Características Sociais; Fatores de Risco.

Clasificación de riesgo del consumo de alcohol de mujeres embarazadas en los últimos 12 meses y durante el embarazo

Objetivo: clasificar el riesgo de consumo de alcohol de la gestante en los últimos 12 meses (riesgo bajo, riesgo, dependencia dañina y probable) y durante el embarazo (negativo o positivo). **Método:** se trata de un estudio observacional, transversal y descriptivo desarrollado con 118 gestantes que utilizan el SUS en dos municipios. Para la recolección de datos se aplicaron las pruebas AUDIT y TACE, a través de entrevistas. **Resultados:** se observó que el 94,9% de las entrevistadas consumía alcohol con frecuencia antes del embarazo y el 34,7% lo consumía sin tener conocimiento del embarazo actual. En cuanto al patrón de consumo durante el embarazo, la mayoría de las mujeres (86,4%) informó no consumir o consumir dentro de los límites de "bajo riesgo", sin embargo, se encontraron asociaciones entre el consumo previo de alcohol de las mujeres y el consumo durante el período de embarazo, así como las asociaciones entre el consumo de alcohol en los últimos 12 meses antes del embarazo y las puntuaciones que representan el consumo durante el período de embarazo. **Conclusión:** comprender el consumo de alcohol por parte de la gestante permite contribuir a diagnósticos tempranos de vulnerabilidad y planificar intervenciones para establecer un embarazo seguro y saludable.

Descriptores: Gestación; Consumo de Bebidas Alcohólicas; Características sociales; Factores de Riesgo.

Introduction

The use of psychoactive substances is a serious public health problem worldwide. According to the United Nations Office on Drugs and Crime (UNODC), in 2016, approximately 275 million people (5.6% of the global population between 15 and 64 years old) were using some type of drug. The consequences of the abuse of these substances are multiple, and can reach the personal, family, school, occupational and social lives of users, making them vulnerable to risk situations, revealing that the harmful consumption of alcohol corresponds to 5.9% of total deaths each year[1–3].

The use of alcohol and its consequences, previously quite associated to the male sex, reach, nowadays and in an equal way, women, who had their consumption of alcoholic beverages increased since the 80's, suggesting that this should be a target public for the reduction of the impact of its harmful effects[4]. Although women can typically start using substances later than men, once they start using, they tend to increase the rate of alcohol consumption more quickly, as well as rapidly develop the disorders resulting from drug use[5].

Scientific studies show concern with the aforementioned increase in the consumption of alcohol by the female population. In general, women who consume alcohol moderately present a greater chance of stopping or reducing their consumption during pregnancy, however, among the most frequent consumers, two thirds decrease and one third continue to abuse alcohol during pregnancy[6], which is a serious problem, considering that their fetuses are exposed to variable doses of this agent.

Among the consequences related to alcohol use during pregnancy are higher rates of hospitalizations and emergency hospital care, premature labor, fetal death and neonatal mortality[7-8]. In addition, it is known that one third of the children of alcohol-dependent mothers, who have abused alcoholic beverages during the gestational period, may present neuropsychiatric impairment during their development, the most serious consequence within a spectrum being Fetal Alcohol Syndrome (FAS)[9-10].

In the context presented, focusing on the use of alcohol during pregnancy is pertinent not only because of its repercussions (some still little explored), but also because there is no known safe consumption quantity[11-12].

Although there is already a framework of knowledge that allows us to recognize as true the hypothesis that the previous abusive consumption of alcohol before pregnancy predisposes to consumption during the gravitational period, the deepening of the gaze about local realities allows the understanding of more specific patterns, which can cooperate for the planning of actions and the making of regionalized decisions.

In this context, the research questions focused on a local scenario were the following: what is the pattern of alcohol consumption of women in prenatal care in the last 12 months before pregnancy? Was the alcohol consumption maintained during pregnancy? In view of the above, the objective of this study was to classify the risk associated with the consumption of alcohol by women in the last 12 months before pregnancy and to verify the association with the use of this substance during the pregnancy period.

Method

This is an observational, cross-sectional and descriptive study developed in four Primary Health Care Units and a Women's Health Reference Center in São Carlos and Ibaté, municipalities of the State of São Paulo, which integrate the Central Administrative Region of the State of São Paulo. The criteria for choosing the data collection fields were due to the higher number of pregnant women. A non-probabilistic sample of n=118 was composed, being pregnant women registered in the services during the period of December 2017 to June 2019.

There were included in the study pregnant women of all age groups who were performing prenatal care. The exclusion criteria were: not responding fully to the instruments and demonstrating not understanding the questions asked during the application interview of the instruments. Participants were approached in the health units, while waiting for the prenatal consultation, in a reserved place. Three instruments were used for data collection: (I) the questionnaire consisting of socio-demographic and obstetric data; (II) the Alcohol Use Problem Identification Test (AUDIT); (III) the Tolerance, Annoyed, Cut down, Eye opener (T-ACE). The first one corresponds to a questionnaire with 19 questions about age, schooling, religion, occupation, marital status, housing situation, family income, if the pregnant woman has any chronic disease and if she uses any illicit drug or sleeping medicine. Regarding obstetric characteristics, the questionnaire contained questions such as: number of pregnancies, births, abortions and living children; whether the current pregnancy was planned or not; gestational age; prenatal care; intercurrences in the current pregnancy, among others.

The second instrument, AUDIT, is validated for several countries, including Brazil, and is useful for tracking alcohol use. This instrument is made up of ten questions, which are associated with scores. The final score can vary from zero to 40 points, and the higher the score, the higher the indication of addiction to alcohol. It is a test that has low cost and easy application. According to this test, it is possible to identify four patterns of alcohol use or risk zones, i.e., low risk use (zero to seven points), risk use (eight to 15 points), harmful use (16 to 19 points) and probable addiction (20 or more points)[13].

The third instrument applied corresponds to T-ACE (Tolerance, Annoyed, Cut down, Eye opener) whose objective was to evaluate the risk of alcohol consumption for the development of the fetus and to make possible the identification of pregnant women who make alcoholic use at risk. The instrument has four questions, which seek to raise information on: tolerance (Tolerance - T); the existence of annoyance in relation to criticism from family members and third parties about the way the pregnant woman drinks (Annoyed - A); the perception of the need to reduce consumption (Cut down - C); the persistence of consumption and dependence through strong desire and compulsion to drink in the morning (Eye-opener - E) (Table 3). Each of the four questions has a score ranging from zero to two points for the first question, and from zero to one point from the second to the fourth question. Who, by answering the questionnaire, achieves a score ≥ 2 is considered a positive case, i.e., is identified as an alcohol consumer. The application of the instrument is of quick duration and it is validated for Brazil[14].

In this study, any use of alcohol during pregnancy was considered as harmful use, therefore, with any score other than zero.

All stages of the research were conducted in accordance with the guidelines of the resolutions of the National Health Council No. 466 of 12/12/2012. Therefore, all women consented to participate by signing the Term of Free and Informed Consent, in two copies, one delivered to the pregnant woman and the other to the researchers. The study was approved by the Committee of Ethics in Research with Human Beings of the Federal University of São Carlos under the Opinion nº 3.067.576.

The SPSS program, version 22, was used as a resource for tabulation, organization and data analysis. Descriptive statistics (frequency distribution) were calculated and the Chi-square Test was applied to check the associations between the nominal variables.

Results

118 pregnant women were interviewed, with an average age of 26 years (Dp±6.4 years), the minimum being 15 and the maximum 41 years. The socio-demographic data were complemented, presented in Table 1, informing that the majority do not have their own house (50.8%), as well as 43.2% were married, 41.5% were considered evangelical and 55.9% did not work outside. As for studies, most stated that they had at least completed elementary and high school (Table 1), as well as 94.1% stated that they did not interrupt them due to pregnancy.

Table 1 - Sociodemographic information of pregnant women (n=118) in prenatal care at the Primary Health Care Units in the city of São Carlos and the Women's Health Reference Center. Ibaté, SP, Brazil, 2019

Variables	N	%
Marital status		
Married	51	43.2
Stable union	45	38.1
Single	20	16.9
Divorced/Separated	2	1.7
Education		
Elementary school	35	29.7
Highschool	66	64.4
Higher education	7	5.9
Religion		
Evangelical	49	41.5
Catholic	39	33.1
Non-practitioner	18	15.3
Other	12	10.1
Family income		
Less than 1 minimum wage	6	5.1
Between 1 and 3 minimum wages	94	79.7
More than 3 minimum wages	11	9.3
Does not know	7	5.9
Number of children		
None	47	39.8
1 or 2	54	45.8
3 or 4	13	11
4 or more	3	3.4

Regarding the obstetric data, it was observed that for most of the women interviewed (64.5%), the current pregnancy was not the first (64.5%). This data is relevant, since it allows us to point out the pattern of consumption of alcoholic beverages by women before and during pregnancies (Table 2).

Table 2 - Obstetric information on pregnant women (n=118) in prenatal care at the Primary Health Care Units in the city of São Carlos and the Women's Health Reference Center. Ibaté, SP, Brazil, 2019

Variables	N	%
Number of pregnancies		
1 pregnancy	42	35.6
2 or 3	56	47.5
4 to 6	18	15.3
7 or more	2	1.7
Number of abortions		
0	101	85.6

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Variables	N	%
1	13	11.0
2	4	3.4
Current trimester of pregnancy		
Second	73	61.9
First	29	24.6
Beginning of prenatal care		
First trimester	106	89.8
Second trimester	12	10.2
Intercurrences during pregnancy		
No	76	64.4
Yes	42	35.6

Regarding the habit of using alcohol before pregnancy, 112 (94.9%) interviewees reported using it frequently and six (5.1%) denied it. When asked about the use of this same substance without having knowledge of the current pregnancy, 77 (65.3%) denied and 41 (34.7%) answered affirmatively.

It is observed that most pregnant women reported not using or using alcohol within low risk limits in the last 12 months before pregnancy, however, associations ($p<0.05$) between women's previous alcohol consumption and consumption during the pregnancy period were verified (Table 3).

Table 3 - Classification of alcohol use in the last 12 months and use or non-use of pregnant women (n=118) in prenatal care at the Primary Health Care Units in the city of São Carlos and at the Women's Health Reference Center. Ibaté, SP, Brazil, 2019

AUDIT Classification*		Classification T-ACE†Crosstabulation		Total
		Classification T-ACE†		
		T-ACE† negative Do not use	T-ACE† positive Use	
AUDIT Classification*	Low risc	92	10	102
		78.0%	8.5%	86,4%
	Risk	11	1	12
		9.3%	0.8%	10,2%
	Harmful	1	1	2
		0.8%	0.8%	1,7%
	Probable dependence	0	2	2
		0.0%	1.7%	1,7%
Total		104	14	118
		88,1%	11.9%	100.0%

*AUDIT = Test for Identification of Problems Related to Alcohol Use; †T-ACE = Tolerance, Annoyed, Cut down, Eye opener

There were also associations ($p<0.05$) between alcohol consumption in the last 12 months before pregnancy and the T-ACE score during the pregnancy period (Table 4).

Table 4 - Risk classification of alcohol use in the last 12 months and scores in the T-ACE of pregnant women (n=118) in prenatal care at the Primary Health Care Units in the city of São Carlos, SP and at the Women's Health Reference Center. Ibaté, SP, Brazil, 2019

Risk classification		Total of T-ACE*					Total
		0	1	2	3	4	
AUDIT Classification†	Low risk	66.9%	11.0%	5.9%	1.7%	0.8%	86,4%
	Risk	3.4%	5.9%	0.8%			10,2%
	Harmful	0.8%			0.8%		1,7%
	Probable dependence			0.8%		0.8%	1,7%
Total		71,2%	16.9%	7.6%	2.5%	1.7%	100.0%

*T-ACE = Tolerance, Annoyed, Cut down, Eye opener; †AUDIT = Test for Identification of Problems Related to Alcohol Use

Discussion

The predominance of the age group of the interviewees with an average of 26 years old was identified, since it is similar to other studies conducted in Brazil, such as one conducted in Rio de Janeiro. This study showed that the age of women varied from 12 to 48 years old, with an average of 27 years old, highlighting that women seem to start and abuse the consumption of alcohol early in adolescence, due to a combination of individual vulnerability factors[15]. Another research verified the predominance of pregnant women between 20 and 29 years old. It is concluded that there is a possible association between the frequency of alcohol consumption and the age group, and that, due to the greater presence of women in the social spaces, the ingesta pattern also changes, in view of changes in habits and behavior[16].

Sociodemographic variables, such as schooling level, religious belief and family income, have also been relevant when associated with the alcohol consumption habits of these women, in addition to age, the unfavorable socioeconomic situation, unemployment and underemployment, as well as inadequate housing conditions and low schooling, which contribute to increased vulnerability to drug consumption, which directly influences the population's health condition[17]. It was observed that there is a great demand for prenatal care by young women with lower education and family income, factors that are evidenced in other studies[18]. The environment is the result of the interaction of historical, social, individual and environmental situations that provide manifestations in the health-disease process of individuals. It is known that drug consumption is a behavior adopted by all age groups and is part of socialization rituals and recreational activities in different spheres of social life, having its beginning earlier and earlier. That is why it is important that health professionals, who perform the follow-up, investigate the socioeconomic conditions and carry out guidelines that cover the reality of these women[17-18].

The results obtained by AUDIT and T-ACE instruments showed the maintenance of alcohol consumption during pregnancy, even though there was a reduction in the doses consumed. Thus, most pregnant women could be classified as "low risk" (86.4%), an area that indicates non-use or little use of the substance. This indicates that, generally, women consume alcohol more frequently at the beginning of pregnancy (first trimester), this being the period in which pregnancy has probably not yet been identified[14]. However, the scenario becomes relatively alarming due to the fact that 13.6% of the women interviewed are classified in the zones of "risk", "harmful" and "probable dependence" use, scoring positively for T-ACE, which evidences the interruption of alcohol consumption throughout pregnancy and which requires the attention of the professionals who perform the prenatal care.

The maintenance of consumption may have some variables such as unplanned pregnancy, the fact that the consequences of alcohol use during pregnancy are still underestimated by many women, sometimes due to previous experiences that took place without major consequences for the pregnant woman or the baby or experiences of nearby women and even through social coexistence and sporadic consumption[19-21]. It is possible to perceive that there is a lack of information that is passed on and conveyed to women about the risks of such a habit[15].

In other developed countries, investigations show prevalence of 6.0% in Sweden, 10.8% in Canada, 40.0% in Australia, 56.0% in New Zealand and 75.0% in England for the use of alcohol in pregnant women. Such estimates, in developing countries such as Brazil, are scarce[22] and, although the national researches do not specifically consider the use of alcohol among pregnant women, some studies have shown an alarming scenario. A research conducted in 2009 in Santa Catarina with 243 pregnant women identified that 36.9% of them had already used alcoholic beverages during pregnancy[23]. Another study found in Maranhão, in 2010, identified that the use of alcoholic beverages in pregnancy was made by 22.32% of women[24].

Studies show that most women understand the main risks of consuming alcoholic beverages while pregnant, causing harmful outcomes for them, for the advancement of pregnancy and for fetal development, therefore, they tend to reduce or cease consumption[15]. However, little is said about the issues of mental suffering to which women may be susceptible, especially about depression and the risk of suicide[25]. In such cases, there is a greater difficulty in understanding the pictures as a consequence of the use of alcohol, which can favor the maintenance of the habit during pregnancy.

Still during the gestational period, women present alterations of different orders (physical, psychological, hormonal and social), therefore, they are more susceptible to various diseases. When associated with drug involvement, the context of vulnerability of these women is amplified, having a direct impact on the gestational period and on the experience of motherhood[17]. Another relevant point would be the fact that pregnant women with chemical dependence have less adherence to prenatal care, making them more vulnerable to obstetric and fetal intercurrences[20].

In the same sense, another study pointed out that there is a greater association between the consumption of alcohol by women who have recently given birth both in the three months prior to pregnancy and in the first

and second quarters. The maintenance of consumption in the first months favors greater consequences for the development of pregnancy and fetus, such as abortions, premature births and neonatal deaths, remembering that there is not a minimum recommended dose for pregnancy[7,15]. Thus, it is important that health professionals have knowledge of screening instruments, as well as promote general guidelines and also about alcohol consumption in the gestational period, right from the first consultation, providing access to knowledge about the risks in fetal development, allowing positive outcomes and a healthy pregnancy.

The mechanisms by which alcohol affects the embryo are not yet completely clarified, however, it is known that when ingested by the pregnant woman, the substance crosses the placental barrier and allows the fetus to receive the same concentrations of the substance as the mother. However, the fetal exposure can be considered larger, because its metabolism and elimination are slower, causing high concentrations of alcohol in the amniotic fluid[26].

The best known consequence is Fetal Alcohol Syndrome (FAS), which affects 33% of children born to mothers who have used more than 150g of ethanol *per* day[15], which consists of characteristic facial changes, pre and/or postnatal growth restriction, cognitive changes and structural and/or functional abnormalities of the Central Nervous System (CNS)[27-28]. In Brazil, annually 1,500 to 3,000 new cases of FAS can arise[28].

Besides the FAS, children exposed to alcohol in the fetal period have greater chances of developing mental disorders (behavioral disorder related to the use of psychoactive substances and depression) and behavioral disorders (antisocial personality and hyperactivity) in adolescence and adult life. One study identified that excessive alcohol consumption at any time during pregnancy or moderate alcohol consumption in all trimesters of pregnancy can be associated with five times more chances of infantile ADHD[8].

A study conducted with 394 pregnant women, in follow-up in the 25 Basic Health Units in the city of Maringá, Paraná, showed the participation of women in pregnancy groups as a protective fact for the maintenance of the pattern of consumption of alcoholic beverages during pregnancy, but this was not observed in other studies[20]. The existence of such groups provides an environment in which women can have space to share and obtain information, especially regarding the consumption of alcoholic beverages. Thus, more concrete intervention actions are needed during prenatal care, besides the creation of groups of pregnant women, but also home visits and follow-up, as well as the use of strategies such as brief interventions, pointed out in the literature with positive and highly effective results, or other preventive tools that can raise the quality of life and allow a healthy pregnancy[18,29].

In the area of Primary Care, the role of Nursing is extremely important for the performance and/or follow-up of pregnant women during prenatal care, as well as it is necessary that the professionals who perform the prenatal care are able to detect the use of these substances and know how to adequately assist these pregnant women. This is a risky pregnancy not only because of the risks to fetal development, as well as the social and emotional risk of these women[20].

In the context presented, taking into consideration that there is no safe level of alcohol use at any stage of pregnancy pointed out by the literature, that it is an extremely difficult subject to be addressed, which may cause discomfort and, finally, due to the repercussions of alcohol use during pregnancy still uncertain, it is suggested to track the pattern of alcohol consumption among women of fertile age as a routine in women's health, family and prenatal planning, as well as the monitoring of factors that modify or not the behavior of the pregnant woman in relation to the consumption of harmful substances and their motivation to stop the consumption of substances with the objective of verifying the epidemiological situation and outline measures that can be implemented by health professionals[10,12,22].

Conclusion

This study identifies that, although with a reduction in doses, women still maintain the consumption of alcohol during pregnancy in accordance with other studies. According to other literature productions, there are no safe values when considering the amount of alcohol ingested by pregnant women, even when classifying pregnant women as low risk. Therefore, total abstinence from licit alcoholic substances is recommended. Thus, the chances of obstetric intercurrence and possible damage to fetal development are reduced, considering that there are organic differences that vary from individual to individual and from pregnancy to gestation.

Sociodemographic and economic factors influence the behavior of women in relation to the use of harmful substances during pregnancy, constituting elements that directly and indirectly impact the social damage or harm and the development of pregnancy. Therefore, understanding the social context and the involvement of pregnant women with alcohol allows contributing to the early diagnosis of vulnerability and to the planning of interventions for the establishment of a safe and healthy pregnancy.

In this sense, the contribution of this study is mainly in the tracking of the pattern of consumption of alcohol by pregnant women and in the identification of the change in their pattern of consumption through the confirmation of

pregnancy. In addition, primary health care and prenatal care services are considered to have an essential role in accompanying these women, including screening all registered pregnant women for consumption, health education actions, guidance on the risks of alcohol use in pregnancy and its consequences, as well as referrals to specialized services when necessary.

Despite the problems mentioned above in Brazil, it is evident that the scenario is alarming and still little studied. It is necessary that more investigations are carried out in this field to fill the gap on the epidemiology of alcohol use during pregnancy, besides data that can subsidize actions of prevention and control of alcohol consumption in pregnant women.

In this context, Nursing is a categorical professional essential in primary care and in the development of actions and monitoring of pregnant women during prenatal care. Thus, it is essential that such professionals are able to detect the use of these substances, familiarized with instruments, tools and strategies to assist and guide these pregnant women properly, acting in the promotion of family health, especially those composed of women of reproductive age, strengthening health education, prevention of obstetric complications, possible fetal neuromorphological dysfunctions and development, seeking to promote a safe pregnancy, healthy and also quality of life for families.

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