ALCOHOL CONSUMPTION DURING PREGNANCY: INTERVENTION GUIDANCE FOR THE PREVENTION OF FETAL ALCOHOL SPECTRUM DISORDERS

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ABSTRACT

Fetal Alcohol Spectrum Disorders (FASD) is a term used to describe the broad spectrum of pathologies and disorders caused by alcohol exposure in utero. Since alcohol is able to directly cross the placental barrier, alcohol intake during pregnancy causes a broad range of symptoms whose severity can greatly vary in degree. It is already well established that Ethanol exhibits teratogenic effects resulting in growth delays, physical and specific facial anomalies, neurological defects including intellectual disabilities and behavioral problems. Since it is not possible yet to establish a safe threshold of consumption, the only feasible recommendation is the total abstention from alcohol during pregnancy. This work firstly presents an overview on FASD and reviews specific methodologies to overcome difficulties related to the investigation of alcohol behavior in pregnant women. Subsequently, different protocols of intervention are proposed according to different styles of alcohol consumption. The final goal is to provide clinicians with a range of methods in order to prevent damage to the newborns. Scr Sci Med. 2017;49(4):9-21

Keywords: alcohol, pregnancy, fetal alcohol spectrum disorders, FASD, prevention

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INTRODUCTION

References to the effects of alcohol on newborns prenatally exposed to alcohol can be traced in ancient time in Aristotle and even in the Bible but was only in 1968 that they were described in a scientific paper titled “Anomalies in 121 children of alcoholics” by Lemoine et al. (1). Onward, Jones et al. (2,3) published several papers where a clear association between alcohol consumption in pregnancy and a specific syndrome in exposed newborns was de-
fined. Since then, over 3500 papers have been published in this issue (4) and nowadays alcohol is a very well-known and recognized teratogen for the fetus. Lifelong consequences of this pathology include brain damage and cognitive impairments with high costs for individuals and society (5,6). A review of the international guidelines on alcohol consumption during pregnancy shows that many countries all over the world officially released recommendations on the safest drinking behavior during pregnancy, from total abstinence to no more than 1 or 2 drinks (standard drink=14 grams of alcohol; i.e. 330 ml of beer or 125 ml of wine) once or twice a week (i.e. United Kingdom - http://www.iard.org/Policy/Policy-Resources/Policy-Tables-by-Country/Drinking-Guidelines-for-Pregnancy-and-Breastfeeding). Some countries made health warning labels on alcoholic beverages mandatory: the US enacted such a law in 1989, China in 2005, France in 2006, Russian Federation and South Africa in 2007 (http://www.iard.org/Policy/Policy-Resources/Policy-Tables-by-Country/Health-Warning-Labeling-Requirements) But still, a percentage of women drinks during pregnancy and professionals in prenatal care suggest avoiding alcohol not as much as needed (7).

As the suspension of alcohol consumption during pre-conception time and pregnancy is able to prevent 100% of fetal alcohol effects, professionals’ recommendations and early identification of at-risk women could be crucial.

**FETAL ALCOHOL SPECTRUM DISORDERS (FASD)**

Even if differences may exist in the main description of the syndrome, children prenatally exposed to alcohol share the following features: (i) specific facial anomalies, (ii) growth delay, and (iii) central nervous system (CNS) impairment, intellectual disabilities and behavioral problems.

The diagnosis of alcohol-related damages is mainly based on the use of four codes: the Institute of Medicine (IOM) criteria (8), the Canadian guidelines (9), the Four Digit Code (10) and the Center for Disease Control National Task force code (11). According to these codes the main altered facial features include: smooth philtrum, thin upper lip and short palpebral fissures; generally growth deficiencies are manifested in prenatal or postnatal birth weight or height below the tenth percentile, CNS dysfunctions include small head circumference (below the tenth percentile), brain structural anomalies, and a pervasive neurological deficit. Potentially, children affected may experience difficulties in memory, visual-spatial abilities, attention, logic and math abilities, verbal learning, information processing, executive functions as well as in other domains (12-15).

Fetal Alcohol Spectrum Disorders is a nondiagnostic term recently introduced (11, 16) to comprehend the whole range of possible alcohol-related damage in children exposed, including Fetal Alcohol Syndrome (FAS) or full syndrome, Partial FAS (PIAS), Alcohol-Related Birth Defects (ARBD), Alcohol-Related Neurodevelopmental Defects (ARND) (17). Alcohol consumption causes cognitive and behavioral impairments that affect individuals all their lifelong. Cognitive and behavioral main involved domains include global functioning, executive functioning, memory, visual-spatial ability, emotional functioning, motor functioning, attention and arousal levels, scholastic proficiency, verbal learning, language, mathematic, adaptive skills (18,19). As a consequence, individuals exposed may develop a number of secondary disabilities, including mental health problems (90%), low school proficiency and dropout (60%), trouble with the law (60%), inappropriate sexual behavior (49%), alcohol and drug problems (33%) (20). It should be noted that a complex interplay of genetic and epigenetic factors underlies the onset of FASD. Indeed, several studies have suggested a significant epigenetic FASD etiology and supporting evidence for such a mechanism is accumulating. Gene expression impairments can be caused by changes in DNA methylation, molecular modification of histones and through RNA interference. These mechanisms work together to elicit a unique, and reversible epigenetic signature regulating gene expression through chromatin remodelling. A mechanism of alcohol teratogenesis seems to be also DNA methylation (21,22).

**FETAL ALCOHOL SPECTRUM DISORDERS PREVALENCE**

Most of the prevalence studies, mainly registry or clinic-based, were performed in the United States. Registry-based studies consist in reviewing existing registries, including clinical records, disabilities registries and at birth diagnosis records (23). Thus far near-
ly 15 studies of this kind have been carried out, producing a mean FAS prevalence of 0.85 per 1,000 (median 0.27) while no data on FASD are provided (24).

Clinic studies consist in following women during pregnancy, collecting data on their alcohol consumption and then evaluating the newborns, very often in the form of prospective studies (24). More than 50 clinical studies reported in the literature indicates a mean prevalence rate of 1.8 for FAS (median – 1.9) and of 6 per 1000 for FASD (median – 5).

A minority of studies were conducted on non-clinical population, based on an active case ascertainment methodology, in which researchers actively evaluate a population in the field to individuate cases. These early studies have been carried out among native population in the US and Canada (25-27). This population, with low socio-economic status, may be considered at risk for alcohol consumption during gestation with elevated percentages of binge drinkers: therefore, the prevalence obtained was high and not easily generalizable. May (24) summarizes prevalence rates obtained from such a kind of studies: mean rate of FAS prevalence = 38.0 per 1000 (median = 9.0) and mean rate of FASD prevalence = 16.9 per 1000 (median = 19.0). A recent meta-analysis of active case ascertainment studies among children in child-care setting indicated a prevalence of 6.0% for FAS and 16.9% for FASD (28). The active case ascertainment method has been utilized also to highlight prevalence in the correctional system, leading to an estimate of the prevalence of 1.04% for FAS, 10% for PFAS and 4.1 to 8.7% for ARND (29). But in this case, as well results are not generalizable because of the at-risk condition of the selected settings.

This limit can be partially overcome by a particular kind of active strategy: the in-school active case ascertainment studies, where a general population of children attending school (usually 6-7 years old) is screened. The process of evaluation goes from the first screening for height, weight and head circumference, to an evaluation of behavioral problems and pre-learning skills, to the final dysmorphic exam and neuropsychological testing. An accurate interview of maternal drinking patterns and health conditions is performed as well (24). Most of these studies have been performed in South Africa: due to low socioeconomic conditions and high rates of alcohol consumption, they showed very high percentages of FASD occurrence (30-33). But recently active ascertainment in schools in the Western world revealed prevalence higher than what was expected. Table 1 resumes the prevalence rates found in in-school studies from around the world. Furthermore, a recent meta-analysis of in school studies (29), targeting general population of children enrolled in school and not including studies performed in South Africa, resumed prevalence rates as follows: FAS = 3.6 per 1000; PFAS 29 per 1000; ARND=2.3 per 1000 (Table 1).

<table>
<thead>
<tr>
<th>Countries</th>
<th>FAS Rate per 1000</th>
<th>FASD Rate per 1000</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Africa²⁰-³³</td>
<td>50.0</td>
<td>72.3</td>
</tr>
<tr>
<td>Washington, US³⁶</td>
<td>3.1</td>
<td></td>
</tr>
<tr>
<td>US⁹</td>
<td>4.3</td>
<td></td>
</tr>
<tr>
<td>Italy, Europe ⁴³-⁴⁶</td>
<td>4.0-8.2</td>
<td>23.1-47.1</td>
</tr>
<tr>
<td>US city 1 ²⁴</td>
<td>1.4-2.5</td>
<td>9.5-17.4</td>
</tr>
<tr>
<td>US city 2 ²⁴</td>
<td>6.4-11.3</td>
<td>14.1-24.8</td>
</tr>
<tr>
<td>Plains Head Start School (US)²⁴</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Croatia, Europe¹⁰⁰</td>
<td>10.2</td>
<td>20.3</td>
</tr>
<tr>
<td>Taiwan, ¹⁰¹</td>
<td>6.4</td>
<td>40.7</td>
</tr>
<tr>
<td>Korea, General school, Institutions for intellectual disabilities¹⁰²</td>
<td>1.83</td>
<td>5.76</td>
</tr>
<tr>
<td>Croatia, Europe rural¹⁰³</td>
<td>16.9</td>
<td>66.7</td>
</tr>
</tbody>
</table>

Table 1. FAS/FASD rate per 1000 in different countries. Re-elaborated from (24)
**RISK FACTORS**

The full syndrome was estimated to occur in nearly 40% of heavily exposed pregnancies (34). The range and the severity of damage in children exposed are wide, depending on different variables, such as dose and timing of exposition, the nutritional status of the mother and genetic factors. An important risk factor for FASD is represented by the amount of alcohol consumed. Even if a safe threshold of consumption has not been established yet, an average consumption of more than 1 drink per day (14 grams of alcohol) may be considered at risk (35). However, very high-risk behavior is represented by the exposure to great quantities in short time, since the damage on the fetus is directly related to the level of blood alcohol concentration (BAC) (31). This behavior is commonly referred to as “binge drinking”, defined by the U.S. National Institute on Alcohol Abuse and Alcoholism (NIAAA) as the consumption causing a BAC level of 0.08 grams per liter or more. An adult woman reaches this level after the consumption of 4 or more drinks in two hours (36). Pointing at what can be considered a binge episode in pregnancy, a number of studies showed that the consumption of three or more drinks per single occasion is highly related to morphological and behavioral damage in exposed children (31).

Based on the well-demonstrated association between heavy episodic drinking or chronic drinking and negative outcomes in the offspring (37-40), research aiming at the evaluation of the effects of light consumption gave opposite results over the years, but evidence exists that even small amount of alcohol ingestion can affect the fetus, i.e. 0.5 alcohol units (nearly half of a standard drink) (41). The number of alcoholic beverages assumed is also correlated with heavier consumptions and could, therefore, be used as an indicator of at-risk drinking (42).

Epidemiological active-case ascertainment studies executed in Italy (43-45) demonstrated that in a retrospective interview, mothers of FASD children consumed a higher number of drinks per week, at current, compared to controls (FASD Mean=10.37, standard deviation 18.92; Controls, Mean=1.52, standard deviation=2.80, p<0.001). It was suggested that current drinking could represent a more reliable measure of drinking because less susceptible to social stigma. Similar effects can be observed for self-report of drinking out of pregnancy.

Another aspect that should be taken into consideration is the kind of alcoholic beverage consumed. Studies on animal models (46-49) investigated damage differences due to gestational exposure to wine versus other alcoholic beverage, comparing mice prenatally exposed to 11% ethanol or to the same concentration of red wine. Data showed that administration in utero of ethanol-induced long-lasting changes in offspring behavior, brain areas, endocrine tissues and liver, while in mice exposed to red wine the peripheral tissues but not brain structures were affected. These differences in toxicity could be explained by the presence in red wine of polyphenol compounds showing neuroprotective and antioxidant effects (50-54). Moreover, mother’s age, nutritional status, body size, parity, socioeconomic status and other drugs use, as well as genetic and epigenetic factors, are other factors affecting the offspring (55-58).

Animal model and human studies showed that paternal alcohol exposure (PAE) only may also elicit changes in the newborns comparable to those observed with gestational ethanol exposure (59-61). Indeed, contrary to the large attention given to the roles that maternal factors have on the outcome of pregnancy, little is currently known about the possible function played by paternal factors, especially about the influence of PAE on the developmental and neurobehavioral characteristics of offspring (68). It has been suggested that about 75 percent of children affected by FAS have heavy drinkers or alcoholic biological fathers (61). These findings indicate that the anomalies in the newborns attributed to the influence of the teratogenic effects of maternal drinking are also the consequence of the PAE, suggesting that the anomalies could be due to or are exacerbated by paternal drinking. The occurring of alcohol problems in the family environment also should be taken into consideration as a risk factor. As was shown in an Italian active case ascertainment study (45) the occurrence of alcohol problems in the child’s family was the most significant risk factor for FASD. Furthermore, sequential multiple regression analysis of the neuropsychological performance of tested children identified the occurrence of alcohol problems in mothers’ family as the only significant risk variable related to mothers.
ALCOHOLIC ANAMNESIS AND DETECTION OF AT-RISK WOMEN

A recent meta-analysis by Popova et al. (62) describes prevalence estimates of alcohol consumption in pregnancy throughout the World in general population: world-wide prevalence was 9.8%, the highest prevalence was found in Europe (25.2%), the lowest in Eastern Mediterranean Region (0.2%) and the prevalence in the Region of the Americas was 11.2%.

In Italy, a multicenter analysis found different levels of fetal exposure to ethanol in different cities (0% to 29.4%) through the objective measurement of meconium biomarkers (63). In a Spanish study, the 45% of the meconium samples exceeded the cut-off limit (>2 nmol/g) (64). These data indicate that gestational ethanol exposure is widespread, at least in parts of Europe. Thus, the identification of women still drinking during pregnancy has main implications for prevention.

Inaccurate self-reports of drinking very often derive from the perception of social stigma especially as regards alcohol consumption during pregnancy. Embarrassment in giving honest answers determines underestimation of the personal consumption (65). Several instruments can be used to gather realistic information about alcohol consumption. One of this is the quantity/frequency/variability method that evaluates mean amounts consumed per day, their frequency and whether peaks of consumption occur (66). According to this method, questions may be: on a typical day when you drink, how many drinks do you have? On average, how many days per week do you drink alcohol? What is the maximum number of drinks you had on any given occasion during the last month?

The Timeline Follow-Back is another commonly used method (67), where questions are made anchoring them to important events in the past such as holidays and parties, to facilitate recollection of personal drinking behavior. Questions can be asked also referring to the last week. This method may increase the chances of a more accurate personal consumption recalling but it lacks to evaluate consumption in less regular drinkers, especially during pregnancy (68).

In general, to avoid social stigma it is recommended to imibe questions about drinking in the context of a diet diary (69). Moreover, people usually can not exactly evaluate amounts of their drinking due to the several different sizes of existing glasses. A visual aid, such as pictures depicting standard drinks and glass sizes of different kind of alcoholic beverages, can be showed in order to correctly identifying quantities (70) so that women can understand the exact meaning of the word “drink”, when asked about their alcohol consumption.

Many screening tests have been developed to identify at-risk consumption in the general population but they often fail when used to identify pregnant women drinking (71) because they target men’s patterns of consumption more than women and because they are aimed at identifying addiction, that is not a very common situation in prenatal care. However, specific screening instruments for pregnant women have been developed. A review (72) compared 7 different screening tests and of them showed more sensitivity and higher specificity: the TWEAK (73), the AUDIT-C (74) and the T-ACE (75) (Table 2). In particular, the AUDIT-C showed the highest sensitivity in identifying pathologic abuse. Chang (71) compared the T-ACE with three widely used screening tests: the AUDIT (76), the SMAST (77) and medical records of patients. The T-ACE resulted the most sensitive in the detection of current alcohol consumption, risky drinking, and diagnoses of alcohol problems according to DSM-III-R during a lifetime. A recent study, however, found a marked underestimation of gestational alcohol consumption if measured with 4 alcohol screening questionnaires (TWEAK, AUDIT-C, T-ACE, food diary) and compared with ethyl glucuronide in the urine of the pregnant women, a direct biomarker of ethanol consumption (78).

Pregnant women drinking alcohol and children exposed can also be identified by the use of other biomarkers, as fatty acid ethyl esters (FAEEs) traced in the meconium. These markers of alcohol consumption can be measured during the second and the third trimester of pregnancy, as this non-oxidative metabolite accumulates in the meconium when alcohol is metabolized (79). As already mentioned, in Spain, the 45% of the meconium samples exceeded the cut-off limit (>2 nmol/g) (64) while in the above mentioned Italian multicentric study different rates of alcohol exposition were found, ranging from 0% to 29.4% (65). This method, even if it does not allow prenatal identification, could be considered useful to
identify high-risk children. To overcome this limitation, FAEEs can be traced also in maternal hair (80). At present, other biomarkers are studied such as micro-RNA and potential proteomic and metabolic markers (81) (see Table 2).

Table 2. TWEAK, AUDIT-C and T-ACE description

<table>
<thead>
<tr>
<th>TWEAK 73</th>
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<tbody>
<tr>
<td>T</td>
</tr>
<tr>
<td>W</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>K</td>
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</tbody>
</table>

**Total score of 2 or more indicates at risk drinking**

<table>
<thead>
<tr>
<th>AUDIT-C 74</th>
</tr>
</thead>
<tbody>
<tr>
<td>How often do you have a drink containing alcohol?</td>
</tr>
<tr>
<td>Never (0)</td>
</tr>
<tr>
<td>Monthly or less (1)</td>
</tr>
<tr>
<td>Two to four times a month (2)</td>
</tr>
<tr>
<td>Two to three times a week (3)</td>
</tr>
<tr>
<td>Four or more times a week (4)</td>
</tr>
</tbody>
</table>

How many units of alcohol do you drink on a typical day when you are drinking?

| None, I do not drink (0) |
| 1 or 2 (0) |
| 3 or 4 (1) |
| 5 or 6 (2) |
| 7 to 9 (3) |
| 10 or more (4) |

How often have you had 6 or more units if female, or 8 or more if male, on a single occasion in the last year?

| Never (0) |
| Less than monthly (1) |
| Monthly (2) |
| Weekly (3) |
| Daily or almost daily (4) |

**In men a total score of 4 or more indicates at risk drinking**

**In women a total score of 3 or more indicates at risk drinking**

<table>
<thead>
<tr>
<th>T-ACE 75</th>
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<tbody>
<tr>
<td>T</td>
</tr>
<tr>
<td>A</td>
</tr>
<tr>
<td>C</td>
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<tr>
<td>E</td>
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</tbody>
</table>

**Total score of 2 or more indicates at risk drinking**

**INTERVENTION PROTOCOLS**

Total abstention from drinking during pregnancy seems to be the best practice, according to official statements by governmental agencies and medical boards. The American College of Obstetricians informing, counselling and referring women at risk for an alcohol-exposed pregnancy (82).

In order to target women of childbearing age, prevention efforts should start before pre-concep-
tional period. All childbearing-aged women should be screened for alcohol use, as recommended by the Clinical Working Group of the Select Panel on Preconception Care from American Center for Disease Control and Prevention (CDC) in 2008 (83) and WHO’s Guidelines for the identification and management of substance use and substance use disorders in pregnancy (84). A recent review of 29 studies aimed at testing a preventive intervention targeting pregnant and non-pregnant women shows promising results of preventive efforts, even if not conclusive yet (85).

Undergoing a screening for alcohol consumption can itself induce a reduction in alcohol use (86). Giving information on the consequences of alcohol use during pregnancy is also strongly recommended by CDC. It can be speculated that pregnant women previously informed about the risks related to alcohol exposure in pregnancy could drink less or quit drinking during gestation than those not correctly advised about prenatal alcohol consumption. Indeed, good results were obtained with women who had been exposed to preventive leaflets compared to those not exposed (42). Pregnancy, in fact, is believed to be a moment in which women are very motivated to protect baby’s and their own health (87). However, in heavier drinkers, the information on alcohol-related consequences alone may not be effective. Handmaker et al. (88) demonstrated that mailing a letter or delivering a motivational session were both effective in reducing alcohol use in a group of pregnant women, while only the motivational session was effective in reducing consumption in heavy drinkers. Similar results were obtained by Chang et al. (89), Tzlos et al. (90) and Osterman et al. (91).

Motivational sessions (92) and brief interventions (92-93) have proved to be effective in reducing alcohol use in pregnant women. These techniques can be used by professionals not specialized in alcohol abuse treatment and are low-cost not time-consuming interventions (82). The Acronym FRAMES is used to resume key elements in effective interventions: feedback on personal risk; advise for a change; a menu of strategies to cut on drinking; personal responsibility, empathic communication style; focus on self-efficacy (94).

Women consuming both alcohol and drugs and those who have already delivered a FASD child are the most at-risk women. Chances to have another affected child may be as high as 75% (95-96). Treatment of these cases is complex and includes intensive case management and deep collaboration among several agencies and health services. Also, women abusing alcohol need effective contraceptive counselling and should be referred to an addiction treatment program in specialized units (11, 82). Based on these considerations, to prevent alcohol-exposed pregnancies, standardized protocols of intervention are required (97).

First, universal preventive actions to prevent alcohol-exposed pregnancies targeting all the women of childbearing age have to be undertaken: questions inquiring alcohol drinking should be routinely included in patient’s anamnesis. Alcohol anamnesis should be performed in the context of a general investigation into eating habits. All the women, drinking or not, should be informed about consequences of alcohol consumption in pregnancy and, in case, be suggested to suspend consumption if planning a pregnancy. Second, when targeting pregnant women, detection of alcohol use and screening tests are needed. In the context of alcohol anamnesis, questions about alcohol habits before pregnancies should be asked as well, in order to identify heavy drinkers. The above mentioned AUDIT-C questionnaire can be used to investigate before pregnancy alcohol consumption and identify heavy drinkers. Also, questions about the occurring of alcohol abuse in partner or family can be useful to inform the clinician if the woman lives in an at-risk environment. After the alcohol anamnesis, pregnant patients can be grouped into four categories, each requiring specific interventions.

1. Not at-risk women: women who do not drink during pregnancy. It can be useful reaffirming the importance of total abstinence to reinforce behavior and to have women spreading the health message in their personal environment.

2. Mild risk women: pregnant women drinking alcohol occasionally or less than one drink per day and not binging. As a safe threshold has not been established yet, all women consuming alcohol in pregnancy are considered potentially at risk and should be informed about the risks for the babies; total abstention from alcohol must be recommended. In this case, a single brief counselling session could be enough to ensure a safe pregnancy.
3. At-risk women: pregnant women, presenting one or more among risk factors. The following risk factors could be considered: consumption of more than one drink per day or three or more in a single occasion; variety of beverages consumed; positive answer to the T-ACE question about tolerance (two drinks or more needed to experience some alcohol effects), presence of heavy drinking before pregnancy (e.g. ascertained through the AUDIT-C), partner’s problematic alcohol consumption and alcohol problems in family environment. These women may need more structured counselling sessions or sessions following the FRAMES model cited above, to enhance chances of a behavioral change.

4. High-risk women: when there is clear evidence of abuse and addiction or a patient has already had a heavy alcohol-exposed pregnancy or has already delivered an affected child, it is strongly recommended to refer the patient to a proper alcohol treatment unit, and work together to maximize chances of a safe pregnancy.

Early detection of alcohol consumption during pregnancy is essential both for its preventive and therapeutic implications. While a simple suggestion by professionals can persuade mild drinkers to give up consumption, when damage has not occurred yet, the knowledge that a pregnancy is at risk for alcohol drinking allows particular interventions also through nutritional supplementation. Indeed, optimal maternal nutritional status is of utmost value for proper fetal development frequently altered with alcohol exposure. Several investigations in animal models and humans addressed the role of prenatal nutrition as possible interventions for FASD throughout several nutrients supplementation (vitamin A, docosahexaenoic acid, folic acid, zinc, choline, vitamin E, and selenium) that may prevent or counteract the development of FASD (reviewed in 98).

**CONCLUSION**

The burden of lifelong disabilities caused by alcohol consumption during pregnancy is extreme at individual, familial and societal level. In recent years the implementation of active case ascertainment methods for establishing prevalence in general population revealed higher rates than those estimated through passive surveillance methods or clinic studies. Public agencies all over the world underline the crucial importance of the enactment of laws on labelling alcoholic beverages and the release of health statements recommending total abstinence from alcohol during pregnancy as an important way of prevention. As far as a safe consumption behavior cannot be established, for the extremely individual conditions of susceptibility to alcohol, risk factors should be screened and addressed in women at child bearing age. Obstetrics and gynaecologists are in the first line to face the issue and can do a lot in preventing FASD by routinely performing an alcohol anamnesis during prenatal care and before it. Gaining a realistic estimation of patient’s alcohol intake is possible if validated instruments and methods are adopted. Professionals dealing with women health can be trained to perform accurate alcohol anamnesis, screening and brief counselling interventions. Fostering these skills will permit them to adopt protocols matching risky conditions with proper interventions to maximize the possibility of a healthy pregnancy.

**Authors Disclosure Statement**

All the authors state that no competing financial interests exist.

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