

# A SOCIAL ECOLOGICAL ANALYSIS OF FETAL ALCOHOL SPECTRUM DISORDERS PREVENTION PROGRAMMING

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## ABSTRACT

### **Background**

Approximately 12% of pregnant women in the United States consume alcohol during pregnancy even though a majority of medical and governmental organizations recommend abstinence during pregnancy.

### **Objective**

The objective of this paper is to review the potential that comprehensive prevention programming based on the social ecological model could have on reducing FASD through primary prevention strategies.

### **Conclusion**

Funders, policy makers, practitioners and researchers should further implement and test social ecological approaches to help prevent FASD.

Alcohol use during pregnancy continues to be a significant public health threat despite many prevention efforts over the past 20 years. The Centers for Disease Control and Prevention (CDC), Morbidity and Mortality Weekly Report in April of 2002, estimated that 12.8% of pregnant women report any use of alcohol during pregnancy. This is down from 16.5% in 1995.

However, the rate of binge drinking (consuming more than four drinks on one occasion) and frequent drinking (more than seven drinks in a week) remained elevated (2.7% binge, 3.3% frequent).<sup>1</sup> It was estimated that in 1999 more than 130,000 women drank at these levels, thus increasing the chance of more babies being born with alcohol-related damage.<sup>2</sup> Heavy use of alcohol (14 or more drinks per week) during pregnancy has been linked to Fetal Alcohol Syndrome (FAS), whereas light (1 to 6 drinks per week) to moderate (7 to 13 drinks per week) alcohol consumption during pregnancy has been linked to Alcohol-Related Neurodevelopmental Disorders (ARND) or Alcohol-Related Birth Defects (ARBD).<sup>3</sup>

On April 15, 2004, Canadian and U. S. fetal alcohol syndrome experts signed into agreement the use of Fetal Alcohol Spectrum Disorders (FASD) as the official terminology used to describe the range of effects caused by consuming

alcohol during pregnancy.<sup>4</sup> The purpose of this article is to review the potential of the social ecological model as a comprehensive approach to preventing FASD through primary prevention strategies.

## FAS BACKGROUND

FAS was first identified in 1973 as a set of birth defects, defined as a combination of mental, physical and behavioral abnormalities.<sup>5</sup> The National Organization on Fetal Alcohol Syndrome (NOFAS) estimated that 12,000 babies are born each year with FAS and three times as many are born with ARBD.<sup>4</sup> The CDC reported that .2 to 1.5 per 1,000 live births is born with FAS and three times as many are born with ARND/ARBD.<sup>6</sup> Substance Abuse Mental Health Services Administration (SAMHSA) reported that one in every 100 births could be affected by FASD.<sup>7</sup> FASD is the leading cause of mental retardation and birth defects in the United States and Canada.<sup>7</sup>

It is 100% preventable if a mother does not consume alcohol during pregnancy. However, because more than half of all pregnancies are unintended and most women do not know their pregnancy status until 6 – 8 weeks into gestation, many women are unaware that they place the fetus at elevated risk for birth defects.<sup>8</sup>

The CDC, NOFAS, and the March of Dimes

strongly recommend that all women of childbearing age be screened for alcohol use and counseled on the negative effects of alcohol use during pregnancy.<sup>1</sup> The American Academy of Pediatrics recommends abstinence before and during pregnancy as well as high quality educational programs for the community and additional training for health care providers to raise their awareness of the prevalence of FAS in communities.<sup>9</sup> The National Institute on Alcohol Abuse and Alcoholism,<sup>10</sup> FASWorld,<sup>11</sup> and the Motherisk<sup>12</sup> program also recommend abstinence from alcohol during pregnancy. The Motherisk program is a service that provides information on chemical, radiation or infection exposure to pregnant women.<sup>12</sup>

These international organizations' call for action has helped shape the Healthy People 2010 agenda in the U.S. with a specific objective regarding maternal and child health. The objective strives to "improve the health and well-being of women, infants, children and families" through objective 16-17a that reads as follows: "Increase abstinence from alcohol, cigarettes, and illicit drugs among pregnant women".<sup>13</sup> Thus, the need to develop, implement and evaluate effective public health interventions that will increase the chances of achieving Healthy People objective 16-17a is needed.

Moreover, Health Canada has identified best practices for the prevention, identification and intervention of FASD focusing on primary, secondary and tertiary interventions.<sup>14</sup> According to Health Canada, primary prevention efforts are those that focus on the individual, systems and environmental behavior change through population health promotion, alcohol control measures, public awareness approaches, multi component awareness strategies, and other measures including workplace education. May discussed similar strategies emphasizing the individual woman and her identity as the center of a comprehensive plan to prevent FASD.<sup>15</sup> In addition to the individual woman he also identified the internal containment of a person, which consists of their knowledge, attitudes and beliefs and how this guides a person's thoughts and behaviors. May also described the external containment or the social structure of a person which includes the societal rules and elements of social control such as the police, courts, norms,

laws, religious cannon, family rules and sub-cultural expectations as an influence for women and how they think and behave. According to May, FASD can be prevented at the primary level through abstinence.

This is supported through public education, and electronic and print media, as well as positive social and psychological associations. Primary prevention should focus on the males and their positive influence in supporting a healthy pregnancy, as well as positive parenting and pregnancy practices. In addition, primary prevention should focus on monitoring advertisements, bottle labeling, promotion of nonalcoholic beverages, increasing taxes, and emphasizing changes in the larger environment, such as the norms and practices.<sup>15</sup>

Secondary and tertiary prevention efforts are discussed in greater detail by Health Canada and May, but are beyond the scope of this article which focuses on the potential of the social ecological model as a comprehensive approach to preventing FASD through primary prevention strategies.

A promising approach to public health interventions is the social ecological model.<sup>16</sup> This model adopts a comprehensive perspective to prevention programming that could be an excellent fit for FASD prevention. This paper will review the social ecological model and each of its components and describe an FASD prevention program that encompasses three of the five components of the model. The goal of this paper is to review the potential that comprehensive prevention programming based on the social ecological model could have on reducing FASD through primary prevention strategies. The social ecological model has been successfully implemented with a variety of other public health issues.<sup>17,18,19</sup>

## **SOCIAL ECOLOGICAL MODEL**

The social ecological model provides a set of conceptual and methodological principles, drawn largely from systems theory, for organizing comprehensive, community-based health promotion initiatives.<sup>16</sup> Ecological models specific to health promotion are multifaceted, targeting environmental, behavioral, and social policy changes that help individuals make health choices

in their daily lives. Ecological models are unique in that they take into account the physical environment and its relationship to people at intrapersonal, interpersonal, organizational, community, and public policy levels. This perspective is based on the major philosophical construct of the social ecological model – behavior does not occur in a vacuum.<sup>16</sup> Research suggests that social ecological models offer promising results in preventing many public health problems, such as obesity and tobacco use and additional research should be directed to applying this model to other public health problems.<sup>17,18,19</sup>

The intrapersonal level of the social ecological model takes into account an individual's knowledge, attitudes, values, skills behavior, self-concept, and self-esteem. Strategies to intervene at this level include mass media campaigns, social marketing, and skills development.<sup>20,21</sup> The interpersonal level includes an individual's social networks, social supports, families, work groups, peers, and neighbors. Intervention strategies at this level include enhancement of social supports and social networks, changing group norms, and increasing access.<sup>20,21</sup> The organizational level includes norms, incentives, organizational culture, management styles, organizational structure, and communication networks. Strategies to intervene at this level include incentive programs, process consultation, coalition development, and agency linkage.<sup>20,21</sup>

The community level includes community resources, neighborhood organizations, social and health services, organizational relationships, folk practices, governmental structures, and informal and formal leadership practices. Intervention strategies at this level include community development, community coalitions, empowerment, conflict resolution, and mass media campaigns.<sup>20,21</sup> The public policy level includes legislation, policies, taxes, and regulatory agencies. Strategies to intervene at this level include mass media campaigns, policy analysis, political change and lobbying.<sup>20,21</sup>

Social ecology initiatives do not target individuals who are making specific health-significant decisions. Instead, to promote healthy behaviors, the social ecological model engages the social processes and agencies that have a major

influence on these behaviors. The goal is to establish a health-promoting environment within the social space in which individuals make health-significant.<sup>22,23,24</sup>

A major tenet of the social ecological model is reciprocal-determinism – the interaction between behavior and environment. Reciprocal-determinism is a concept originally identified by Bandura<sup>25</sup> in Social Cognitive Theory. Initially, the environment largely controls behavior. Over time, changing environmental variables lead to modification of behavior.<sup>26</sup>

Ecological models address multiple layers of influence on behavior. This provides a comprehensive approach for health promotion initiatives. Many of the predominant theories and models of behavior focus on one dimension of health promotion, such as knowledge, attitudes or skills. Ecological models link health promotion strategies that target individual behaviors and environmental influences to behavior. They also have been used with success in worksite health promotion initiatives, food labeling requirements, roadway improvement campaigns, and smoking and alcohol prevention strategies.<sup>26</sup>

## **APPLYING THE SOCIAL ECOLOGICAL MODEL TO FASD PREVENTION**

To date, much of the research and interventions that have been conducted on FASD focus primarily on individual change using brief motivational interviews<sup>27,28,29,30</sup> and not community, organizational or public policy change. At the community level, in both the U. S. and Canada there are task forces and committees designated to address this issue as well as mass media campaigns,<sup>6,14</sup> with moderate evidence of their effectiveness.

At the organizational level, both the U. S. and Canada are continuing to fund efforts to monitor and track FASD.<sup>6,14</sup> Additionally, a major policy change that has occurred is the warning labels on alcoholic beverages,<sup>31</sup> but much more could be done to determine the most effective methods of preventing FASD using the social ecological model. The CDC, SAMHSA, NIAAA and Health Canada<sup>6,7,11,14</sup> are currently conducting studies to determine the most effective method of FASD prevention with results pending.

A comprehensive FASD prevention program

should include multiple and overlapping levels that include strategies that focus on the individual skills of the mother, both intrapersonal and interpersonal, the community, organizations and public policies. One such intervention is the Tuba City project in Arizona. The Tuba City Service Unit of the Navajo Area of the Indian Health Service provides services to over 20,000 Navajo Indians and nearly 1,000 Hopi Indians. In 1982 a baseline screening of FAS reported the prevalence rate to be 1.3 per 1,000 among children less than 15 years of age and 2.7 per 1,000 among children birth to 4. FAS and FAE combined were reported to be 3.7 per 1,000. The Tuba City FAS project, funded by the Indian Health Service in 1988, implemented a systems approach to FAS prevention on three levels. The prevention approach consisted of using community, family and individual techniques through primary, secondary and tertiary prevention.<sup>32</sup>

By distributing posters and pamphlets, training school personnel, WIC participants, alcohol counselors, social service, child development and Indian Health Service workers and conducting presentations the researchers were meeting the goal for primary prevention to increase knowledge and awareness among community members. Secondary efforts screened patients at prenatal clinics for alcohol use and provided them with information and education about FAS. Tertiary prevention involved the use of case managers and a system of offering support to the clients.<sup>32</sup>

At the primary and secondary levels, 147 employees were trained in FAS recognition, over 2,000 community members attended the presentations and approximately 30,000 people were exposed to the media campaign. The tertiary piece worked with 39 women who were considered to be at risk for having a child born with FAS, between the ages of 16 and 41. Of the 39 women, 9 already had at least one child with FAS/FAE, 2 were suspected of having FAS/FAE children, and 8 were pregnant at some point during the program.

After 18 months the researchers took a snapshot of the drinking status of the 39 women participating in the program. Approximately 33.3% of the 39 women had attended residential treatment for alcoholism, 17.9% moved out of the service area, 56.3% of the 32 women still living in

the area were abstinent, 12.5% were drinking less, 31.2% were still drinking as heavily as they were before the program. According to the authors, effectiveness of the program involves the collaboration and support of multiple organizations throughout the community, not just the results gained by conducting the study.<sup>32</sup>

Some may see this program as unsuccessful because 31.2% of the women were still drinking at the end of the program, however, because of the comprehensive approach directed toward the community and family 30,000 people were exposed to the media campaign, 2,000 community members attended presentations on FAS and 147 employees were trained FAS recognition.<sup>32</sup>

## **CONCLUSION**

No single intervention is likely to eliminate FASD, but it is expected that a comprehensive, multi-level prevention approach to FASD would be most effective. Comprehensive FASD prevention programs, using the social ecological model should include the types of strategies used by Tuba City, AZ as well as strategies that will impact policy and organizational change.

Many women still continue to drink during pregnancy and finding effective prevention programs remains a challenge. However, because of the success social ecological models have had in other public health interventions<sup>17,18,19</sup> it is an approach that funders, policy makers, practitioners and researchers should further implement and test to help prevent FASD.

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