



## High Rates of Neurobehavioral Disorder Associated with Prenatal Exposure to Alcohol among African Americans Driven by the Plethora of Liquor Stores in the Community

Carl C Bell\*

Jackson Park Hospital Family Medicine Center, University of Illinois at Chicago, USA

\*Corresponding author: Carl C Bell, Professor of Psychiatry and Public Health - University of Illinois at Chicago (Ret.), Jackson Park Hospital Family Medicine Center, 1625 E. 75<sup>th</sup> Street, MOB - 1<sup>st</sup> Floor, Chicago, IL, 60649, USA, Tel: 17736335450, E-mail: [bell-carl@att.net](mailto:bell-carl@att.net)

### Abstract

This short communication highlights the need to screen for and identify the new DSM-5 proposed criteria of Neurobehavioral Disorders associated with Prenatal Alcohol Exposure (ND-PAE). Emerging research has demonstrated that there are populations that at higher risk for this disorder owing to their social circumstances, i.e. the plethora of liquor stores in their community. One point prevalence study found that one low-income African-Americans have rates of ND-PAE at 388/1,000. Over the counter nutraceuticals are proposed as a possible protective factor against some of the challenges that ND-PAE poses for the patients that are unfortunate enough to be afflicted from prenatal alcohol exposure.

### Keywords

Neurobehavioral disorders, African-Americans, Social determinants of health

### Introduction

After nearly half a century of treating low-income, African-American psychiatric patients for a variety of disorders, one single fact has repeatedly proven to be true – “risk factors are not predictive factors because of protective factors” [1]. The protective factors operating in people’s lives work to mitigate negative outcomes, such as an adolescent’s participation in violent behavior or drug use. We first learned this lesson in 1982 when our research team at the Community Mental Health Council, Inc. began to call the nation’s attention to the inordinate number of African-American children at risk for negative outcomes because of exposure to violence [2]. However, we also learned there were protective factors in these children’s lives that nullified that risk. These lessons fueled research into childhood trauma for people all over the planet.

When the Aban Aya project ran in Chicago Public Schools between 1994 and 1998, protective factors – such as rebuilding students’ “village” of social and emotional support, providing opportunities to increase connectedness and self-esteem, and teaching youth social and emotional skills – were placed into the lives of “at risk” middle school students, reducing growth in violent

behavior, school delinquency, drug use and recent sexual intercourse by at least one-third [3,4]. Findings from the research suggested risk is not just the presence of a bad, toxic influence, but also the absence of a good, protective influence. Research findings were developed into Seven Field Principles to cultivate resiliency, generate hope, and provide protective factors that can prevent negative outcomes among youth [5,6]. This short communication proposes that the Second Field Principle, providing access to modern biotechnology, has the potential to mitigate what may be one of the African American community’s biggest, yet previously unknown, health crises: an epidemic of Neurobehavioral Disorders associated with Prenatal Alcohol Exposure (ND-PAE) driven by the abundance of liquor stores in low-income neighborhoods. We propose that by providing access to therapeutic prenatal vitamin therapy, we may stem the tide of children born with ND-PAE, thereby decreasing the parallel epidemic of learning and behavior disorders, and associated negative educational outcomes, that have come to characterize “at risk,” African-American communities nationwide.

From 1976 to 1978, a clinical research project evaluated 274 patients in the Chicago Board of Education’s South Side Pupil Service Center, 246 (88.5%) displayed one or more of the following clinical syndromes: 1) Explosive behavior; 2) Mild to severe learning problems, or 3) Anxiety [7]. At the time, due to the diagnostic criteria available in the mid-1970s, these symptoms were diagnosed as various mental health diagnoses characterized by learning and behavioral disorders; attention, hyperactivity difficulties; and school failure. Forty years of clinical experience in Illinois’ Cook County’s education and juvenile justice systems, has repeatedly revealed children with the same symptoms [8]. Clinical experience reveals 75% of youth in the Illinois’ Cook County Temporary Juvenile Detention Center had difficulty with reading, math, communication, memory, explosive behavior, hyperactivity, poor attention skills and social judgment [9]. The same was true for youth in special education and behavioral disturbance classrooms. However, it was not clear there was a common etiology to all these problems, until finally, the common cause of these challenges these children face is apparent, and it has been right in front of our faces for the past half century.

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## Historical and Current Perspective

As far back as 1966, “familial retardation” or “subcultural retardation” was reported to be the largest category of what was then called “Mental Retardation”. The surveillance at the time noted this category of “Mental Retardation” incorporated “25 to 40 percent of the institutionalized retardates and 60 to 75 percent of all mentally retarded in the community”. At the time it was thought the lack of intellectual stimulation and inferior environment that being in a low-income community provided was an important reason children in the low-income strata of society had a greater prevalence of “familial retardation” or “subcultural retardation” [10]. In fact, the United States “Head Start” program was designed to remedy the lack of intellectual stimulation and inferior environment [11]. As science progressed a major cause of what was once diagnosed as “sociocultural mental retardation,” and had been assigned many other labels and diagnoses, was finally discovered to be Fetal Alcohol Spectrum Disorder (FASD) [12].

Chicago is home to more than 1000 liquor stores [13]. Research has shown liquor stores are disproportionately located in African-American communities [14-16]. This reality and the fact that more than 50% of pregnancies are unplanned [17] suggests that plethora of liquor stores in African-American communities created a social determinant of biological health making such communities at-risk to high rates of FASD - recently coined Neurobehavioral Disorder associated with Prenatal Alcohol Exposure (ND-PAE) by DSM-5 [18]. Thus, the author proposes ND-PAE has been prevalent in the African-American community for decades. However, due to lack of research and the presumption that learning and behavioral disorders among “at risk” children stemmed from the lack of intellectual stimulation and inferior environment that being in a low-income community provided, the true problem which stems from acquired biology has been hidden in plain sight.

## Prevalence of Neurobehavioral Disorders Associated with Prenatal Exposure to Alcohol (ND-PAE)

Although, not unique to low-income African-American populations in the United States [19-21], the evidence of ND-PAE as a “risk factor” in low-income African-Americans is found in several recent sources, unfortunately the methodologies and samples in these sources are all different making comparisons impossible. A chart audit randomly sampled one-third of children in several school clinics for children with behavioral problems, and found 39% had ND-PAE [9]. Using active case ascertainment methodology in Englewood’s St. Bernard Psychiatric Unit, located in one of the poorest African-American communities in Chicago, and in Jackson Park Hospital’s Family Practice Clinic revealed that 32% and 29% of patients, respectively, met the clinical criteria for Prenatal Alcohol Exposure [9]. Another study looked at youth, 50.6% of whom were African American, referred for severe behavioral disorders by the Department of Children and Family Services; 28.5% of these youth had ND-PAE, and 26.4% were previously misdiagnosed as having ADHD [22]. In contrast, the rate of ND-PAE in the general population has been found to be 3.6% [23] - Whites comprised 76% of this sample, and African Americans were only 7% of the sample (with the remaining sample encompassing four or more ethnicities, including Hispanic). These findings are far from definitive as they are replete from the methodological bias that the samples are all different, but the more than 20-point difference between the rates of ND-PAE in the predominately White, “general population” sample and the lowest previously cited rate among the significantly more African American samples, is stark and dismaying.

The prevalence of ND-PAE in African-Americans is more common than previously realized, and, like other neurodevelopmental disorders, patients do not “outgrow” them, but carry them into adulthood. Bell and Chimata [24] examined 611 predominately African-American patients in a Family Medicine Clinic on Chicago’s South Side (the clinic serves a population of 143,000, 96% of which are African-American and who had a median household income of

\$33,809). Two hundred and thirty-seven (38.8%) had clinical pictures that were consistent with ND-PAE [18]. Our clinical research reveals patients with ND-PAE from living in “food swamps” have unique newborn medical histories, educational trajectories, and difficulty with employment and we have found exploring these issues in youth and adults can provide useful clues that might suggest prenatal alcohol exposure. For example, a medical history that indicates the possibility of ND-PAE would include low-birth weight (< 5 pounds, 8 ounces/2.5 kilograms) or prematurity, heart murmurs, and/or deformities of the hands, joints and bones. Frequently, patients with prenatal alcohol exposure have a distinctive facial appearance – epicanthal folds, a flat mid-face, and indistinct philtrum, and thin upper lip - as well as evidence of subtle brain damage characterized by central nervous system dysfunction. A childhood educational trajectory might reveal developmental disabilities (intellectual disability, learning disability, attention-deficit/hyperactivity symptoms, speech and language difficulties, and/or explosive behavior). Finally, adult employment history might reveal chronic poor job performance or repeated tenure of less than 6 months [6,24].

Having outlined the risk factors for ND-PAE and highlighted the concentration of liquor stores in low-income, African-American “food swamps” where the community is, literally, flooded with alcohol, a connection has been made to the disproportionate number of African-Americans who develop ND-PAE. What then are protective factors that make being African-American not a risk factor in this context?

## Protective Factors that Possibly Prevent ND-PAE from Being Inevitable

Currently, research is ongoing to support the efficacy of giving patients choline, folate, Omega-3, and Vitamin A to mitigate alcohol’s deleterious effects both pre- and postnatally [25-27]. However, because the problem is so rampant in the community the author serves, we have been using this regimen clinically with noteworthy results. These nutraceuticals are not a cure-all, but there have been improvements in youth and adult patients with ND-PAE, often misdiagnosed with bipolar disorder, schizophrenia, depression, autism and other psychiatric disorders, whose psychotropic medications did not provide symptom relief [6]. The hope is scientific evidence emerges to support this alternative to current the standard pharmaceutical strategy (which is not very efficacious), and we can move forward on a larger scale with public policy that would bring vitamin supplement treatment to those who need it in the low-income, African American community.

Public health policy should help African-American communities realize that ND-PAE may be the tremendous current public health threat, and that it increases the risk of negative outcomes in both school and life. Public health policy should also encourage obstetricians to ask all pregnant women when they realized they were pregnant, and were they drinking before they realized they were pregnant. If the answer indicates they inadvertently exposed their unborn fetus to alcohol, the woman should increase her choline intake, as there is research that the nutrient is safe and can remediate damage done to neurodevelopment in the fetus [28]. Moreover, public health policy should help implement a policy that insists children in juvenile detention, special education, foster care and mental health care be screened for ND-PAE as the diagnosis rates have been shown to be high in these populations. Once the research is finalized and “pans out” (which the author believes it will), children should be offered the chance to benefit from a biotechnical protective factor – one of the Seven Field Principles [5,6] demonstrated to mitigate negative outcomes in youth – and receive Choline 500 mg, Folate 400 mcg, and Omega-3 500 mg twice daily, and Vitamin A 2,000 IU once daily [29]. Twice daily, and Vitamin A 2,000 IU once daily [29]. Vita IU once daily [29].

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