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### Congress: 6th International Congress on Child and Adolescent Psychiatry

**Title:** Distinguishing ADHD from the BMD Patients by Classifying Their Visual Evoke Potential Features

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**Abstract:** Introduction: Attention deficit hyperactivity disorder (ADHD) and bipolar-mood disorder (BMD) are two mental diseases that have high prevalence through the societies. The problem with diagnosis of these two diseases is that they shared a lot of signs and symptoms and accurate diagnosis of these patients in the first interview is a hard task.

Objectives: Since the accurate diagnosis of BMD and ADHD patients, especially in their childhood, is a hard task based on the qualitative criteria, the main focus of this paper is to quantitatively classify the ADHD and BMD patients using their elicited features of their visual evoke potential (VEP) features.

**Material and Methods:** In this study, 24 subjects were participated including, 12 patients with ADHD and 12 ones with BMD. Participants ages were ranged from 10 to 22 years old. The ADHD and BMD patients were referred from psychiatry department of Hafez hospital in Shiraz. The accurate diagnosis of patients was performed by a professional psychiatrist according to DSM_IV criterion. Their scalp electroencephalogram (EEG) signals in presence of visual stimulus were recorded using 22 silver electrodes located according to the 10-20 international recording protocol. To extract their visual evoke potentials (VEP), first a preprocessing step was executed to remove the power line and movement artifacts. Afterward, the wavelet denoising and synchronous averaging were applied to the preprocessed trials in order to elicit the P100 component. To obtain interpretable features from the evoked patterns, amplitude and latency were extracted and applied to a nearest neighbor (NN) classifier due to locally decision property of the elicited features.

**Results:** The evaluation was performed according to leave-one(subject)-out method and the experimental results demonstrate 92.85% classification accuracy which is a fairly promising achievement to distinguish BMD from ADHD patients.

**Conclusion:** From the physiological point of view this result point out the existence of significant difference in the visual pathways of ADHD and BMD patients in response to an optical stimulus.

ADHD; BMD; EEG; visual evoked potential (VEP)

**Presentation:** Poster