



Connecting Eating Disorders and Sensory Processing Disorder: A Sensory Eating Disorder Hypothesis



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Abstract

Eating disorders are pathological conditions characterized by disturbed eating behaviors that affect mental and physical health. Among them, some Avoidant-Restrictive Food Intake Disorder (ARFID), Pica and Anorexia Nervosa (AN) studies have shown, at least in part, a sensory-related etiology. Sensory Processing Disorder (SPD) is a neurological condition that exists when the brain has an altered processing of sensory signals, resulting in non-adaptive motor and/or behavioral responses. Some of the SPD phenotypes include hyper or hypo-reactivity to one or more sensory channels, including tactile, olfactory, visual and oral that might have connections with the aforementioned eating disorders, like atypical responses from determined food colors, textures or smells which eventually lead to unhealthy eating behaviors, weight imbalance, malnutrition and psychosocial impairment. We have gathered and discussed some of the most relevant studies about the connection between eating disorders and SPD, proposing a general term called sensory eating disorder to define peculiar SPD cases that might evolve to an established eating disorder.

Keywords: Sensory processing disorder; Eating disorders; Sensory eating disorder; Avoidant-restrictive; Food intake disorder; Pica; Anorexia nervosa; Autism

Abbreviations : ARFID: Avoidant-Restrictive Food Intake Disorder; AN: Anorexia Nervosa; SPD: Sensory Processing Disorder

Introduction

Eating disorders are characterized by disturbed eating behavior associated with concerns about weight and shape or by disinterest in food, phobic avoidance or avoidance due to sensory aspects of food [1]. Sensory issues have been reported especially in Avoidant-Restrictive Food Intake Disorder (ARFID), Pica and Anorexia Nervosa (AN) cases. ARFID has been included as a new eating disorder in the DSM-V manual [2]. ARFID patients exhibit restrictive or avoidant eating behaviors that result in significant weight loss, growth compromise, a reliance on nutritional supplements to meet daily energy requirements, nutritional deficiency (like iron deficiency anemia) or marked interference with the patient's psychosocial functioning [3]. Pica, another eating disorder, is defined by the compulsive eating of non-nutritive substances such as soap, cloth, talcum powder, paint or dirt that may result in poisoning, gastrointestinal problems and infections [4] and has been related to developmental and intellectual disabilities [5]. Finally, AN is caused by extreme weight loss due to alteration on eating behavior that leads to self-starvation with devastating physical and emotional effects [6].

SPD is a diagnostic entity in both Diagnostic classification of mental health and developmental disorders of infancy and early childhood-revised [7] and Interdisciplinary council on developmental and early disorders [8] manuals, and represent a frequent feature in Autism Spectrum Disorder (ASD) that has been included in DSM-V [9]. SPD is characterized by impaired motor and/or behavioral responses due to altered neurological sensory integration process (sensory input registration, modulation, discrimination and response), affecting participation and daily life activities [10], being a risk factor of psychopathology [11]. Depending on the type, origin, the number of affected sensory channels and intensity, SPD can be sub-classified in different categories [10,12,13].

Regarding eating behavior, it can be considered a multisensory experience where tactile, olfactory, visual and oral channels play a relevant role in terms of transmitted sensory information to brain [14]; as such, in some SPD cases, sensory processing of those channels can be impaired either independently or in a combined way, disturbing the perception of specific textures, smells, colors and tastes, giving rise to a

peculiar SPD profile, characterized by hyper or hypo-reactivity to certain type of foods. This kind of SPD profile, similar to that of some eating disorders like ARFID, Pica or AN, could be named “sensory eating disorders”.

Discussion

Both ARFID and Pica might have connections with SPD and the proposed sensory eating disorder subtype by sharing some aspects, like atypical reactivity (hyper or hypo) from determined food colors, textures or smells which eventually lead to unhealthy eating behaviors, weight imbalance, malnutrition and psychosocial impairment. For example, in ASD, where SPD is known to be present in 90% of cases [15, 16], ARFID and Pica eating disorders have been widely reported [17,18]. In the case of AN, published results are contradictory; it has been suggested that sensory hyper-reactivity may represent a trait related to AN above and beyond the influence of malnutrition [19] and that sensory sensitivity has been associated with body image disturbance [20], while other studies report that there is no systematic sensory-perceptual deficit in AN patients [6]. Most likely, these contradictory results may be due to the complexity and multi-factorial etiology of AN where some cases might have a clear sensory-related component while others not.

Conclusion

In conclusion, some eating disorders, especially sensory-related ARFID and Pica, may have a connection with SPD, especially with those profiles where important sensory systems for a complete eating multi-sensorial experience are needed, such as tactile, olfactory, visual and oral ones. Mentioned SPD profiles are proposed to be sub-classified as a sensory eating disorder, due to its similarities to sensory-related ARFID and Pica. However, more research is needed in order to better define whether both diagnoses can exist individually or are essentially the same. Non-published results from our research team suggest that proposed sensory eating disorders may be a kind of pre-ARFID/Pica. If so, its diagnosis might have an impact on preventing the development of the eating disorder, further allowing earlier treatments.

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