

Pica and Rumination Disorder in *DSM-5*

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The major proposed change for both pica and rumination disorder in the *Diagnostic and Statistical Manual for Mental Disorders*, Fifth Edition is their relocation from their current section, titled “Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence,”¹ to the newly proposed section, “Feeding and Eating Disorders.”²

This change emphasizes that these disorders occur across the age range, including adulthood. Also, specifiers for severity and course have been suggested

for each of these disorders, in keeping with *DSM-5* format. Additional minor, but noteworthy, changes in phrasing that clarify ascertainment of diagnostic criteria are summarized in this paper.

PICA **Proposed Diagnostic** **Criteria for Pica**

The *sine qua non* of pica is the recurring ingestion of nonnutritive substances.¹ Changes to phrasing of diagnostic criteria in *DSM-5* are intended to guide clinicians in distinguishing eating

behaviors that warrant a diagnosis of pica from behaviors that are developmentally normal, culturally supported or socially normative, or that support a diagnosis of a different mental disorder.

Our recommended changes indicate that consumption of products that are regarded as foods or beverages, even if they are without nutritional value (eg, diet soda and other “zero calorie” products), would not be consistent with pica. Two years is our suggested minimum age for a pica diagnosis; at younger ages, mouthing different kinds of objects is considered developmentally normal. Consumption of substances consistent with local cultural practices or social norms would not warrant a pica diagnosis.

Lastly, we recommend that a pica diagnosis would be given in the context of another mental disorder or medical condition only if the behavior requires additional, rather than independent, clinical attention, since clinical management of pica eating and the other disorder or condition would likely be integrated.

Clinical Presentation

Individuals with pica may consume an eclectic variety of substances, including mud, pottery, clay, and laundry starch. Pica eating of numerous other substances, such as paper, tissues, wood, plastic straws, soap, cloth, carpet, hair, string, wool, paint, gum, metal, pebbles, chalk, charcoal, coal, and ash, has also been reported.

Substances consumed may vary with age or availability. Persistent consumption of food starches, such as cornstarch and uncooked pasta or rice, does not meet the diagnostic criterion for non-nutritive substances.

Likewise, persistent consumption of ice does not satisfy pica criteria since it is a food. However, if not regarded as food within local norms, consumption of freezer frost, also widely reported,

would potentially meet criteria for pica.

In addition to heterogeneity of substances consumed, pica’s associated behavioral features can differ considerably among individuals (eg, its compulsive nature and relationship to emotional arousal or need for oral stimulation). Many individuals with pica display a compulsion to eat particular substances and may describe a craving or strong urge to consume the substance due to its taste or consistency.³ In some younger patients, as well as those with neuro-

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developmental or learning disorders, some clinicians regard pica as a form of self-soothing behavior, engaged in when arousal reaches a particular level.

Prevalence of Pica

Available evidence suggests that the prevalence of pica eating varies widely across diverse social and clinical contexts and appears to be higher among select populations that include pregnant women, children,^{4,5} adults with iron deficiency,⁶ and institutionalized persons.⁷ However, the prevalence of pica, the disorder, in these special populations is largely unknown since published studies generally omit key data essential for ascertaining the diagnosis, such as the behavior’s persistence, duration, and relativity to local social norms.

Available data suggest that pica eating — and by extension, pica — is rare in healthy children older than 2 years in the US.⁸ However, a study reported that 33.9% of Detroit children in treatment for sickle cell anemia had pica eating.⁹

Pica eating has also been reported as prevalent in children elsewhere, including in some school-age populations in Africa (as high as 77%).^{5,10-12}

Likewise, the prevalence of pica eating in populations of pregnant women outside of the United States and Europe (mostly in Africa) is variable and often high, with prevalence of geophagy ranging from 5% to 56%.^{13,14}

Pica, the disorder, is especially difficult to ascertain in these populations, given some ambiguity of whether pica eating is regarded as within social norms. For example, in Kenya, there is no clear consensus on the broad social acceptability of this behavior, but it appears within norms for pregnant women there.¹⁵ The prevalence of pica among pregnant women in the US is unknown, but pica eating may be prevalent (as high as 8.2%).¹⁶ In contrast, the prevalence of pica eating is extremely low among pregnant women in Denmark.¹⁷ Cravings during pregnancy are common and normal, and generally do not warrant a diagnosis of pica.

We were unable to identify any published large community-based studies reporting the prevalence of pica in a general population. Pica risk factors, onset, and course also remain insufficiently understood. What can be gleaned from existing studies is that pica eating ranges from rare to prevalent and warrants further inquiry to understand both its social context and health impacts.

Psychiatric Comorbidity

Pica eating may be comorbid with a number of mental disorders, which are more likely to come to clinical attention than pica, the disorder, including intellectual development disorder,¹⁸ autism spectrum disorder,¹⁹ schizophrenia,²⁰ and obsessive-compulsive disorder.²¹ In addition, pica eating can co-occur with hair pulling disorder and skin picking disorder when hair or skin

is ingested.²² When non-nutritive substances are ingested to suppress appetite in the setting of anorexia nervosa, a pica diagnosis is not warranted.

Differential Diagnosis

Some individuals with avoidant/restrictive food intake disorder (ARFID), particularly those whose selective or restricted intake is based on sensory aspects of food, may also present with comorbid pica. Such individuals tend to be very sensitive to texture and might actively seek out non-nutritive substances with a preferred texture. Lastly, pica eating can occur with factitious disorder or nonsuicidal self-harm in cases in which foreign objects are swallowed.²³

Triggers for pica eating may differ in the setting of these comorbidities (eg, a desire to cause self-harm or a delusion).²⁰ In the setting of comorbid disorders, a pica diagnosis is only made if pica eating has features or consequences that warrant additional clinical attention.

Medical Complications

There are manifold medical complications that can be associated with pica eating, depending on the substances consumed and severity of the behavior. Of most concern is the potential for heavy metal toxicities that pose risks to a child, adult, or developing fetus. Reported associated toxicities include lead, mercury (from paper), zinc, copper, and fluorosis. Other reported medical complications affect the gastrointestinal tract and include bezoar formation.²⁴

RUMINATION DISORDER

Proposed Diagnostic Criteria

Relatively minor changes have been recommended to the *DSM-5* phrasing of diagnostic criteria for rumination disorder.² These are intended to improve clinical utility by ensuring applicability across the age range and removing some ambiguity inherent in the *DSM-IV* phrasing.

The central feature of rumination disorder is the repeated regurgitation of food. It is recommended that the *DSM-IV* requirement that the individual should both regurgitate and re-chew food for a rumination disorder diagnosis be eliminated, as it is known that some individuals regurgitate and then either spit out or re-swallow the

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regurgitated food rather than re-chew it.²⁵ It is recommended that different patterns and combinations of spitting, chewing, and swallowing behaviors be included in the definition, given their variation among individuals. The *DSM-IV* requirement that regurgitation should follow a period of normal functioning has also been removed, as it was broad, ambiguous, and difficult to ascertain. A diagnosis of rumination disorder can be made in the setting of an associated medical condition, but only if the medical condition does not wholly explain the repeated regurgitation. Some individuals with other feeding and eating disorders, for example, anorexia nervosa or bulimia nervosa, may engage in regurgitation.²⁶ However, when the regurgitation is part of another feeding or eating disorder, it does not warrant a separate diagnosis.

The one exception to this is pica, which can be diagnosed concurrently with rumination disorder. As in pica, diagnosis of rumination disorder should be given in the context of another mental disorder only if the symptoms require additional clinical attention.

Clinical Presentation

Individuals with rumination disorder regurgitate part-digested food apparently with minimal effort, at times seeming to derive pleasure from the activity.²⁷ The term regurgitation implies that the behavior is volitional, distinguishing it from vomiting or gastroesophageal reflux. The regurgitation is not associated with nausea and is not explained by an illness or medical condition. Individuals may cough, engage in tongue or abdominal muscle contractions or movements, or place fingers in the mouth to facilitate food being brought back up.

In infants, a classic arching of the back with repetitive movements may be observed.²⁸ The boundary between regurgitation and self-induced vomiting can be hard to define. However, an additional rumination disorder diagnosis would not be warranted for individuals with anorexia nervosa or bulimia nervosa engaging in self-induced vomiting as a weight-control strategy.

As with pica, associated behavioral features vary among individuals with rumination disorder. Some individuals, particularly infants or people with mental disability, appear to engage in regurgitation as a self-soothing or self-stimulating behavior. In others, regurgitation appears associated with anxiety. Many patients describe the regurgitation as habitual and find it difficult to reduce the behavior. In some cases, food intake will be restricted in response to awareness of social unacceptability of regurgitation.

Prevalence of Rumination Disorder

The prevalence of rumination disorder is unknown. In part, this is due to significant variability in use of diagnostic terms (eg, regurgitation disorder,²⁹ rumination syndrome³⁰) and classification schemes³¹ to describe essentially similar presentations. Additionally, a clear distinction is not always made between rumination or regurgitation as

“behaviors,” and rumination disorder.

A further hindrance is the fact that regurgitation and rumination often occur in secret. Many clinicians fail to inquire about it; thus, its true incidence across the age range is unknown. We have been unable to identify any published studies establishing the prevalence of rumination disorder in the general population.

Psychiatric Comorbidity, Differential Diagnoses, and Medical Complications

Regurgitation and associated rumination may occur in the context of another mental disorder, for example, intellectual developmental disorder or generalized anxiety disorder. A diagnosis of rumination disorder is only made if the regurgitation and associated behaviors have features or consequences that warrant additional clinical attention. Medical complications may include malnutrition, dehydration, esophageal ulceration, bad breath, tooth decay and, in rare cases, death,³² depending on the severity of the behavior. Social functioning may be significantly impaired due to the recognized social undesirability of the behavior.

ASSESSMENT AND MANAGEMENT OF BOTH DISORDERS

Clinicians should be aware that pica eating and rumination can occur in both children and adults, appear to be more prevalent in some populations, and yet are frequently not disclosed or detected.^{6,33} Clinical assessment to evaluate the presence of pica is advised when physical symptoms or abnormalities raise the possibility that consumption of nonfood substances may be a contributing factor (eg, when a bezoar or elevated blood lead level is detected), or when other clinical factors raise concern.

The structured Diagnostic Interview Schedule for Children (DISC)³⁴ can

be used to assess pica in children. No validated assessments are available for adults, and while questions regarding rumination and the ingestion of nonnutritive substances can be posed to older children, adolescents, and adults in a clinical interview, the yield from interviewing via straightforward questions is unknown.

Assessment of young children usually will be based on parental report, which may also yield incomplete information. We suggest clinicians consider using an empathic, nonjudgmental tone to avoid exacerbating shame or unwillingness to disclose rumination or pica eating,⁶ and providing psychoeducation that includes information about their potential medical consequences.

When substances ingested in the context of pica impose medical risks or consequences, appropriate medical management should be instituted. Whereas enhanced supervision of young children and individuals with mental disability, and appropriate adjustments to the residential environment to reduce pica eating are warranted, there are no specific empirically supported behavioral management interventions for pica. We have been unable to identify any published randomized controlled trials (RCTs) of rumination disorder. Our literature search identified only two published RCTs evaluating a treatment intervention for pica eating; neither found a significant impact of iron or multi-micronutrient supplementation in reducing pica eating in children.^{10,35}

CONCLUSION

Given the absence of community-based prevalence studies of pica or rumination disorder in the general population, their prevalence — and by extension their associated health and social impact — is unknown. Both can be associated with serious medical sequelae, thus requiring appropriate behavioral and medical intervention.

Available information on risk factors, onset, and course is lacking and no published RCTs provide empirical support for any specific treatment for either of these disorders.

Relocation of these disorders to a section on “Feeding and Eating Disorders” in *DSM-5* will emphasize their occurrence in adults as well as in children. Minor amendments to diagnostic criteria in *DSM-5* for both disorders have been recommended to enhance their clinical utility.

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