

Consequences of Eating Disorders

In the past several years, much research has been conducted examining the consequences of eating problems, including anorexia nervosa and bulimia nervosa. This section summarises some of these findings.

Electrolyte Disturbances

Electrolytes are salts in the body that carry electrical charges when they are dissolved in solution. They are essential for metabolic processes, as well as for the normal functioning of nerve and muscle cells, and for overall functioning of most organs including the heart, brain and kidneys. A large number of individuals with eating disorders have fluid or electrolyte abnormalities due to vomiting, laxative or diuretic abuse, or low salt intake and the resulting dehydration. Electrolyte disturbance is probably the most dangerous complication of vomiting and purgative abuse due to the depletion of the electrolytes potassium, chloride, and sodium.

Alkaline intoxication may result from the loss of sodium (hyponatremic alkalosis), chloride (hypochloremic alkalosis), or potassium (hypokalemic alkalosis). The mechanisms responsible for these changes are complex, and the medical consequences are extremely dangerous.

Electrolyte imbalance may cause weakness, tiredness, constipation and depression, and can result in cardiac arrhythmias and sudden death.

Cardiac Irregularities

Most individuals who are starved have a slowed heart rate and abnormally lowered blood pressure. There is often a temporary dizziness when moving from a sitting to a standing position which may result in blackouts. Cardiac irregularities may cause swelling of the feet and ankles, and blueness in the hands and feet, due to an excessive amount of reduced haemoglobin in the blood.

Many of the deaths in anorexia nervosa and bulimia nervosa are the consequences of cardiac abnormalities. The combined effect of starvation and electrolyte disturbances may result in serious irregularities in the heartbeat. This is particularly so during exercise and may be associated with sudden death. Irregularities are detectable by ECG (electrocardiograph, or heart monitor), and are often experienced as palpitations (rapid, and often irregular, heartbeat). Post-mortems of individuals who died with anorexia nervosa have identified a potentially fatal slowdown in the electrical impulses that signal the heart to contract and relax, known as "QT interval prolongation," which can result in a lethal form of irregular heartbeat, called malignant cardiac arrhythmias. These arrhythmias can result in sudden death if not treated within minutes.

Cardiac irregularities can also occur as a result of ingesting some purgatives, such as certain laxatives or emetics (substances which induce vomiting), including Ipecac.

Dental Problems

Many individuals who self-induce vomiting notice marked deterioration in their teeth. Tooth colour may change from white to brown or grey, and complications may require extensive dental work or even removal of the teeth.

When vomiting is induced, as well as the recently-eaten food, other gastric substances, including stomach acids, are brought into the mouth. This highly acidic substance is responsible for general dental erosion and loss of enamel (decalcification), resulting in decay and periodontal disease. Increased sensitivity to temperature is also common. The dental problems found in many individuals with eating disorders are generally not reversed with a return to normal eating.

Gastrointestinal Complications

Abdominal pain is common in individuals with eating disorder. This may be directly related to bingeing and vomiting. Individuals who binge and purge may develop hiatus hernia, with accompanying abdominal pain. Large binges may stress the pancreas and may lead to pancreatitis, which can create a medical emergency. Repeated bingeing often causes stretching of the stomach, and may result in tearing or even rupture, which is a known cause of death in eating disorders. Self-induced vomiting may lead to serious tearing of tissue in the mouth and throat. Choking on vomitus is not uncommon.

Laxative abuse can cause constipation, especially when stopping using the medication. Usually bowel functioning returns to normal with normal eating. However in rare cases permanent impairment of bowel functioning can occur due to degeneration of nerve cells in the bowel, and surgery may be required. Extensive laxative abuse may cause bloody diarrhoea.

Individuals who are starved have a general reduction in the activity of the bowel. This can cause delays in stomach emptying (and can prolong the sense of fullness after a meal) and slowing of other bowel activity. Reduced bowel activity may actually proceed to a total paralysis of the bowel. Constipation is common, as a result of reduced bowel activity and dehydration. Gastrointestinal bleeding, ulcers, and difficulty absorbing certain foods are also common.

Oedema and Dehydration

Purging (by vomiting, or abusing laxatives or diuretics) and strict dieting (by restricting food and fluid intake) often result in dehydration and to “rebound” excessive water retention. Dehydration is signalled by extreme thirst and reduced urinary output. Sometimes swelling or puffiness in the fingers, ankles, or face indicate water retention. Usually the water retention is worst after stopping using laxatives, or after vomiting, and can contribute as much as 4.5 kg of “water weight.” The wide swings between dehydration and water retention gradually reduce once the individual stops purging, and begins to eat regularly.

However, water retention can be so alarming because of the associated weight gain and puffiness, that many individuals return to vomiting or laxative abuse before their bodies have had a chance to achieve balance; this starts the cycle all over again.

Excessive water retention may also be related to low protein intake, excessive periods of time spent standing, and binging on large quantities of salty foods.

Neurological Abnormalities

Abnormal electrical discharges in the brain are common in some individuals with eating disorders. Epileptic seizures have been reported in a proportion of cases of bulimia nervosa. Muscular spasms (tetany) and tingling sensations in the extremities (peripheral paraesthesias) also occur. Some of these are due to vitamin and mineral deficiencies.

Brain scans have shown abnormalities in the size of the ventricles (fluid-filled spaces amongst the brain matter), and the structural organisation of the brain, and there is evidence that certain types of information processing may be affected in individuals with eating disorders. There is some evidence that these brain abnormalities are reversed with a return to normal eating; however further research is needed in this area.

Kidney Dysfunction

Kidney disturbances occur in some individuals with eating disorders and are probably related to chronic hypokalemia (low levels of the electrolyte, Potassium). This may result in a susceptibility to urinary tract infection. Kidney damage is rare, but has been reported in some individuals with anorexia nervosa. There is a report of one individual who developed kidney failure after 8 years of self-induced vomiting, and ultimately required a kidney transplant.

Endocrine Abnormalities

Many women with eating disorders develop menstrual irregularities, including amenorrhoea (absence of menstrual periods). This is very likely related to loss of body fat, but other factors may also play a role, including dysfunction of the hypothalamus (a small area at the base of the brain). In individuals taking oral contraceptives ("the Pill") ovulation is suppressed because of the hormones contained in the Pill, but "withdrawal bleeding" occurs. This regular bleeding is like normal menses and can mask the amenorrhoea in anorexia nervosa. Normal menstruation usually returns with regular eating, although for many, this happens only after a sustained period of normal eating.

Hypothermia or a reduced body temperature are common in individuals with low weight. The hypothalamus maintains the body's base temperature through a variety of mechanisms. Starved individuals have reduced base temperatures and are also unable to adjust to changes in temperature. These abnormalities in temperature regulation are usually reversed with weight gain.

Dermatological Changes

The skin is extremely sensitive to nutritional change. Many eating disordered individuals, especially those with low weight, have dry, cracking skin, which is probably related to dehydration and to the loss of subcutaneous fat (the layer of fat just below the skin) as well as deficiencies of certain vitamins, such as Vitamins A&E. Self-induced vomiting often causes the skin around the mouth to become red and irritated.

In starved individuals a fine, downy type of hair, known as lanugo hair, may appear on the face, neck and trunk. Scalp hair frequently becomes thin, and may be dull and lustreless.

Often fingernails and toenails will become brittle and break easily. Hands and feet may take on a bluish colour, due to an excessive amount of reduced haemoglobin in the blood.

Some individuals may show a yellowish discolouration of their skin, known as carotene pigmentation. This is related to a starvation-induced defect in liver carotene metabolism. This discolouration may persist for considerable periods (even years) after the return to normal eating and restoration of normal body-weight.

Binging and vomiting may result in broken blood vessels in the face, mouth, or eyes.

Often individuals with eating disorders experience swelling of the parotid glands (in front of or below the ears) and face. This is usually not painful, but is noticeable as “puffy cheeks.” It is not clear why this swelling occurs, although it has been speculated that it may be related to electrolyte disturbances, physical irritation of the glands through vomiting, endocrine (hormonal) dysfunction, or nutritional deficiencies. This may persist for several months after a return to normal eating.

Food and Eating Behaviour

Even though very little food is eaten, often individuals with eating disorders spend a lot of time thinking about food, and planning what they will eat. They may also spend a long time eating small amounts of food.

Mood and Personality

Starvation frequently leads to changes in the individual’s personality. Mood changes are common, with rapid shifts from depression to elation. Many individuals who are starved or semi-starved report feeling irritable and short-tempered. Obsessive thoughts (often, but not always, about food) and compulsive behaviours are not uncommon.

Cognition

Many starved individuals display impaired concentration and alertness. Often this results in feeling distractable, apathetic, and lethargic. For many individuals who induce their own starvation, the restriction represents being in control, and the starvation-induced impairment

in concentration is often so distressing that they further starve to feel more in control, thus worsening the cognitive symptoms.

Sleep and Sexual Interest

Starvation or semi-starvation frequently results in insomnia, despite feelings of tiredness and lethargy. In particular, early morning awakening is common. There is some evidence of changes in the pattern of brain waves during sleep in starved individuals. These changes are usually reversed once normal eating has resumed. Loss of libido (interest in sexual activity) is also common.