

# Diet, Nutrition, and Substance Use Disorder

HEALTH EXTENSION  
Advocacy. Research. Teaching.

JULY 2020

*Mateja R. Savoie-Roskos, Ph.D., M.P.H., R.D.*  
*Ashley C. Yaughner, Ph.D., Alise Williams Condie, Intern, Gabriela Murza, M.S.*  
*Maren Wright Voss, Sc.D., and Kandice Atismé, M.P.H., M.H.A., C.P.H.*

Consuming a healthy diet can benefit everyone—especially individuals with substance use disorder (SUD), a disorder that occurs when frequent use of drugs or alcohol causes impairment, health issues, and difficulties with managing daily responsibilities (Substance Abuse and Mental Health Services Administration [SAMHSA], 2020). Although often overlooked, nutrition can play a key role in the treatment and recovery process for individuals with SUD, and should be included as part of a holistic approach toward recovery. In this fact sheet we will review how diet and nutrition are impacted during an active addiction, and the influence nutrition can have on treatment and recovery. This fact sheet also includes tips to use when advocating for integrating nutrition interventions into SUD treatment and recovery.

## Nutrition and SUD Physiology

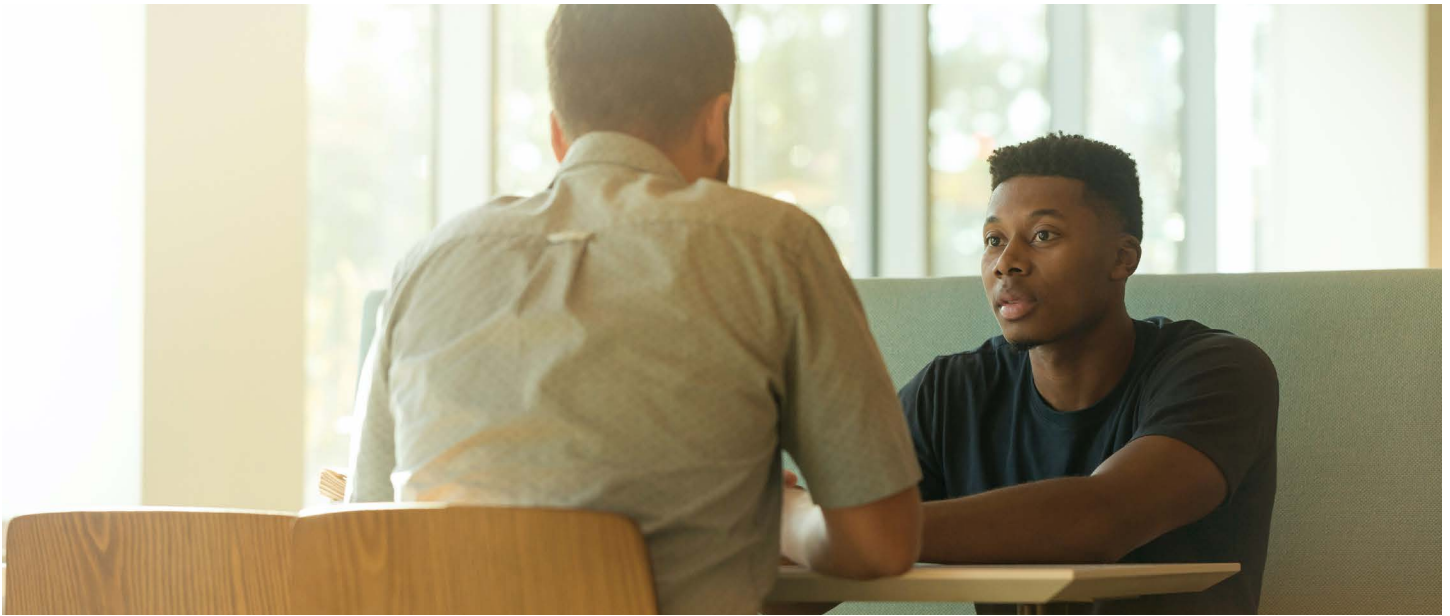
Substances, such as opioids, can substantially influence how a body functions and metabolizes food. For example, constipation and weight loss often occur with opioid use disorder (Chavez & Rigg, 2020), and damage to the stomach lining often occurs with chronic alcohol use (Egerer, et al., 2005). Additionally, decades of research link malnutrition with alcohol misuse (Lieber, 1975). Heroin use has been shown to decrease appetite and can change a person's taste for food (Neale, et al., 2012). The metabolic and nutritional changes seen with SUDs often result in inadequate food



intake and poor absorption of nutrients. As a result, the majority of participants receiving SUD treatment show signs of nutritional deficiency (Ross, et al., 2012; Jeynes & Gibson, 2017). Research from Jeynes and Gibson (2017) provides evidence that:

- Malnutrition is prevalent among individuals with SUD diagnoses.
- Addiction and appetite impact the brain in similar ways to motivate behavior.
- Malnutrition can increase drug-seeking behavior.
- Treatment is more effective when nutritional support is incorporated.

Nutrition influences the body at a gut level, regulating metabolism, reducing inflammation, reducing cell death, and promoting brain growth (Mörkl, et al., 2020). Adequate nutrition can help reverse some of the damage caused by



chronic exposure to stress hormones (Du, et al., 2016). Offering adequate nutrition tools in the recovery process has been shown to support behavior change during the recovery process (Cowan & Devine, 2012; Jeynes & Gibson, 2017).

### **Nutrition as a Part of Treatment**

Food is an important part of a holistic treatment environment both to treat nutritional deficiencies and to teach healthy lifestyle management. We know that weight gain is common during recovery, potentially because appetite can be suppressed during the addictive cycle, but appetite returns during recovery (Gottfredson & Sokol, 2019). However, nutrition as a pathway to support recovery is underutilized. Less than 7% of treatment centers report using a nutritionist as part of their services and only half of residential treatment centers offer nutrition education (Wiss, et al., 2019; Reid, 2014).

The opportunities to heal and support recovery through nutrition are immense; unfortunately, many individuals are unaware of nutrition benefits in recovery and in improving withdrawal symptoms. As such, introducing healthy eating practices is often not considered until after withdrawal symptoms have passed (Chavez & Rigg, 2020). Group-based nutrition classes and incorporating these concepts into recovery plans are effective ways for individuals in recovery to learn about proper nutrition (Grant et al., 2004).

Since the benefits of a healthy, nutritious diet can make a profound difference in someone's recovery, it is important to advocate for nutrition education and healthy nutrition practices during treatment. Talk with a doctor or a registered dietitian if you are interested in learning more about nutrition during the treatment and recovery process.

### **Recovery and Nutrition**

Food provides "fuel" for the body and mind, with different nutrients impacting mood and overall health in various ways (Jensen, et al., 2019). Increasing consumption of healthy "fuel," such as fatty acids, B vitamins, zinc, and antioxidants can increase neurotransmitter signaling in the brain (Du et al., 2014). Depressed neurotransmitter signaling is associated with depression and suicidal thoughts that sometimes occur with SUD, so increasing the consumption of these healthy nutrients can reverse these negative symptoms (Du et al., 2014). Furthermore, with adequate nutrition to power the brain, a person in SUD recovery may experience fewer cravings and prolonged abstinence (Jeynes & Gibson, 2017; Martinotti et al., 2010). The benefits of adequate nutrition can be key during recovery and treatment, so learning about improving nutrition can aid a person's recovery journey. Table 1 provides a list of common nutritional concerns among individuals with SUD and corresponding recommendations.

**Table 1.**  
***Common Nutritional Concerns and Recommendations***

Nutritional Concerns	Reason(s)	Recommendations
Loss of appetite	<ul style="list-style-type: none"> <li>• Increased levels of dopamine result in a decreased appetite.</li> <li>• Certain medications for opioid use disorder treatment can also cause decreased appetite.</li> </ul>	<ul style="list-style-type: none"> <li>• Assess for co-occurring nutritional disorders.</li> <li>• Slowly introduce healthy snacks and whole food options on a consistent basis.</li> </ul>
Nutritional deficiencies	<ul style="list-style-type: none"> <li>• Certain nutrients are not absorbed as well in the body during substance use, such as vitamin D, B vitamins, iron, and amino acids.</li> <li>• Consumption of foods rich in these nutrients are typically limited during substance use.</li> <li>• Certain medications for SUD can also result in the deficiency of certain nutrients, such as magnesium.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure meals contain foods from all five food groups—proteins, grains, dairy, fruits, and vegetables to get a wide variety of macro- and micro-nutrients, including carbohydrates, fats, proteins, vitamins, and minerals.</li> </ul>
Low intake of nutritious foods/high intake of processed foods	<ul style="list-style-type: none"> <li>• Processed foods are often less expensive, easy to access, and convenient. Sweets, especially, are preferred over other more nutritious foods among individuals with SUDs.</li> <li>• Foods like fruits and vegetables can take additional preparation, have a short shelf life, and may cost more.</li> </ul>	<ul style="list-style-type: none"> <li>• Set small, realistic goals, such as trying a new vegetable each day or replacing an unhealthy drink choice with a healthy drink choice.</li> <li>• Have more options accessible that require less preparation such as microwavable and low- or no-sodium vegetables, and pre-sliced fresh fruit or fruit cups packed in water or fruit juice.</li> </ul>
Weight loss or weight gain	<ul style="list-style-type: none"> <li>• Opioids can cause changes to the metabolic system resulting in weight loss. Weight loss can also occur due to a decreased consumption of food when taking opioids.</li> <li>• Certain SUD medications can impact hormones responsible for signaling the brain about hunger and fullness. As a result, individuals taking these medications can experience rapid weight gain.</li> <li>• Preference for and consumption of sweet foods can contribute to weight gain.</li> </ul>	<ul style="list-style-type: none"> <li>• Attend educational classes to learn about healthy eating and meal preparation.</li> <li>• Meet with a dietitian or nutrition expert to develop an eating plan and set realistic goals for healthy food consumption.</li> <li>• Monitor food intake and cravings.</li> <li>• Have more healthy food and drink options on hand than processed foods and sweets.</li> </ul>



Constipation	<ul style="list-style-type: none"> <li>• Constipation often occurs from diets that are low in fluids and fiber.</li> <li>• Lack of exercise and certain medications (i.e., prescription pain medication) can worsen constipation.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase water intake and include foods rich in fiber, including fruits with edible peels, vegetables, and whole grain products.</li> <li>• Exercising regularly; even simple movement like walking can help.</li> </ul>
Dehydration	<ul style="list-style-type: none"> <li>• Withdrawals can cause vomiting, diarrhea, sweating, and fever, which can quickly result in dehydration.</li> <li>• Consumption of large amounts of caffeine can also result in dehydration.</li> </ul>	<ul style="list-style-type: none"> <li>• Ensure adequate intake of water and fluids that contain electrolytes, such as oral hydration solutions.</li> <li>• Limit intake of caffeinated drinks.</li> </ul>
Poor oral health	<ul style="list-style-type: none"> <li>• Opioid use can cause reductions in saliva, which is important for preventing gum infections and tooth decay.</li> <li>• Oral health issues such as infections and missing teeth can make chewing difficult, oftentimes resulting in a greater consumption of soft processed foods.</li> </ul>	<ul style="list-style-type: none"> <li>• Drink fluids to maintain hydration, practice proper oral hygiene, and include healthy foods in a softened form if necessary.</li> <li>• Determine if properly fitted dentures are needed.</li> </ul>
Cravings	<ul style="list-style-type: none"> <li>• While hunger cues are often ignored by individuals in active addiction, they often return in recovery. This can result in cravings, typically for sweet foods.</li> </ul>	<ul style="list-style-type: none"> <li>• Have nutritious snacks readily available that contain protein and complex carbohydrates (whole wheat or whole grain products), fruits, and vegetables.</li> </ul>

Note. Sources include Chavez & Rigg, 2020; Cowan and Devine, 2012; Grant et. al, 2004.

## Nutrition Interventions During Treatment

With these common nutritional concerns and recommendations in mind, nutrition education and healthy nutrition practices can be a helpful addition to a treatment plan. Advocating for healthy nutrition practices may be a good way to begin incorporating these recommendations into your treatment and healthy lifestyle. Below is a list of ways you can begin advocating for positive nutrition interventions during treatment:

1. Learn about the benefits of improved nutrition during SUD treatment and recovery (e.g., improved mood, lasting recovery).
2. Ask your treatment provider about nutrition, and your options during treatment to consult with a dietitian.
3. Speak up about your desire to include nutrition as part of your recovery plan.



4. Talk with your treatment provider about your current nutrition plan and what skills you would like to learn.
5. Join a cooking class to expand your skills and build better nutrition into your daily life.
6. Find what works for you; recovery and nutrition are not “one-size-fits-all,” and it is important to base any changes or nutrition plans on your individual needs.

## Conclusion

While nutrition interventions are not regularly utilized in treatment and recovery resources, they have been shown to produce positive impacts on various aspects of recovery. People with a SUD should consider reviewing the role that proper nutrition can play in SUD treatment, and advocate for its inclusion in their own recovery journey.

## References

- Chavez, M. N., & Rigg, K. K. (2020). Nutritional implications of opioid use disorder: A guide for drug treatment providers. *Psychology of Addictive Behaviors*. doi: 10.1037/adb0000575
- Cowan, J., & Devine, C. (2012). Process evaluation of an environmental and educational nutrition intervention in residential drug-treatment facilities. *Public Health Nutrition*, 15(7), 1159–1167. doi:10.1017/s1368980012000572
- Du, J., Zhu, M., Bao, H., Li, B., Dong, Y., Xiao, C., ... Vitiello, B. (2014). The role of nutrients in protecting mitochondrial function and neurotransmitter signaling: Implications for the treatment of depression, PTSD, and suicidal behaviors. *Critical Reviews in Food Science and Nutrition*, 56(15), 2560–2578. doi: 10.1080/10408398.2013.876960
- Egerer, E., Stikel, F.I., Seitz, H.K. (2005). Alcohol and the gastrointestinal tract. In Preedy, V.R., & Watson, R.R. (Eds.), *Comprehensive Handbook of Alcohol Related Pathology* (pp. 557–570). Oxford: Elsevier Ltd.
- Gottfredson, N., & Sokol, R. (2019). Explaining excessive weight gain during early recovery from addiction. *Substance Use Misuse*, 54(5), 769–778. doi:10.1080/10826084.2018.1536722
- Grant, L., Haughton, B., & Sachan, D. (2004). Nutrition education is positively associated with substance abuse treatment program outcomes. *Journal of the American Dietetic Association*, 104(4), 604–610. doi: 10.1016/j.jada.2004.01.008.
- Jensen, M., Savoie Roskos, M., Yaughner, A., Sulzer, S. (2019). Anxiety and depression: Can diet help? *All Current Publications*, Paper 1978, Utah State University Extension. [https://digitalcommons.usu.edu/extension\\_curall/1978](https://digitalcommons.usu.edu/extension_curall/1978)
- Jeynes, K. D., & Gibson, E. L. (2017). The importance of nutrition in aiding recovery from substance use disorders: A review. *Drug and Alcohol Dependence*, 179, 229–239. doi: 10.1016/j.drugalcdep.2017.07.006
- Lieber, C. S. (1975). Alcohol and malnutrition in the pathogenesis of liver disease. *Journal of the American Medical Association*, 233(10), 1077–1082.
- Martinotti, G., Reina, D., Di Nicola, M., Andreoli, S., Tedeschi, D., Ortolani, I., ...& Janiri, L. (2010). Acetyl-L-carnitine for alcohol craving and relapse prevention in anhedonic alcoholics: A randomized, double-blind, placebo-controlled pilot trial. *Alcohol & Alcoholism*, 45(5), 449–455. doi: 10.1093/alcalc/agq039.
- Mörkl, S., Wagner-Skacel, J., Lahousen, T., Lackner, S., Holasek, S. J., Bengesser, S. A., ... & Reininghaus, E. (2020). The role of nutrition and the gut-brain axis in psychiatry: A review of the literature. *Neuropsychobiology*, 79(1–2), 80–88.

- Neale, J., Nettleton, S., Pickering, L., & Fischer, J. (2012). Eating patterns among heroin users: A qualitative study with implications for nutritional interventions. *Addiction*, *107*(3), 635–641.
- Reid, B. K. (2014). Assessment of wellness and nutrition in residential alcohol and drug abuse treatment, in Heller School for Social Policy and Management, Brandeis University ProQuest Dissertations Publishing, 3611103.
- Ross, L. J., Wilson, M., Banks, M., Rezannah, F., & Daghish, M. (2012). Prevalence of malnutrition and nutritional risk factors in patients undergoing alcohol and drug treatment. *Nutrition*, *28*(7–8), 738–743. doi: 10.1016/j.nut.2011.11.003
- Substance Abuse and Mental Health Services Administration. (2020). Mental health and substance use disorders. <https://www.samhsa.gov/find-help/disorders>
- Schulte, M. T., & Hser, Y. I. (2014). Substance use and associated health conditions throughout the lifespan. *Public Health Reviews*, *35*(2).
- Wiss, D. A., Schellenberger, M., & Prelip, M. L. (2018). Rapid assessment of nutrition services in Los Angeles substance use disorder treatment centers. *Journal of Community Health*, *44*(1), 88–94. doi:10.1007/s10900-018-0557-2.

In its programs and activities, Utah State University does not discriminate based on race, color, religion, sex, national origin, age, genetic information, sexual orientation or gender identity/expression, disability, status as a protected veteran, or any other status protected by University policy or local, state, or federal law. The following individuals have been designated to handle inquiries regarding non-discrimination policies: Executive Director of the Office of Equity, Alison Adams-Perlac, [alison.adams-perlac@usu.edu](mailto:alison.adams-perlac@usu.edu), Title IX Coordinator, Hilary Renshaw, [hilary.renshaw@usu.edu](mailto:hilary.renshaw@usu.edu), Old Main Rm. 161, 435-797-1266. For further information on notice of non-discrimination: U.S. Department of Education, Office for Civil Rights, 303-844-5695, [OCR.Denver@ed.gov](mailto:OCR.Denver@ed.gov). Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Kenneth L. White, Vice President for Extension and Agriculture, Utah State University.