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REMEDIES FOR THE SIDE EFFECTS OF NARCOTIC DRUGS

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Abstract:
Narcotic drugs, or opioids, are widely used for their potent analgesic effects, particularly in the management of severe pain. However, their use is frequently accompanied by a range of side effects that can impact patient quality of life and complicate treatment. These side effects include constipation, nausea, drowsiness, confusion, respiratory depression, itching, and urinary retention. Addressing these adverse effects is crucial for improving patient outcomes and adherence to opioid therapy.
This review explores various remedies and treatments available for managing the side effects of narcotic drugs. For constipation, options include polyethylene glycol, lactulose, docusate sodium, methylnaltrexone, and naloxegol, which help alleviate bowel irregularity. Nausea and vomiting can be managed with medications such as ondansetron, promethazine, and metoclopramide. Drowsiness and sedation may be mitigated with stimulants like modafinil and methylphenidate, while confusion and mental cloudiness might be addressed with donepezil. Respiratory depression, a potentially severe side effect, can be countered with naloxone. Itching and rash are often treated with diphenhydramine and topical corticosteroids, and urinary retention may be managed with tamsulosin.
Additionally, this review examines complementary approaches, including herbal remedies and lifestyle modifications, that may offer supportive benefits in alleviating these side effects. The integration of these remedies with conventional treatments provides a holistic approach to managing opioid therapy-related complications, ultimately aiming to enhance patient comfort and adherence to pain management regimens.

Keywords: Narcotic drugs, opioids, side effects, constipation, nausea, drowsiness, respiratory depression, itching, urinary retention, treatment remedies.

Introduction to Narcotic Drugs:

Narcotic drugs, commonly known as opioids, are a class of medications primarily used for their powerful pain-relieving properties. They play a critical role in medical practice, especially in managing severe pain that cannot be controlled by non-opioid analgesics. These drugs work by altering the way the brain and nervous system respond to pain, providing significant relief for

individuals experiencing intense or chronic pain due to injury, surgery, or medical conditions such as cancer. [1]

Definition and Classification:

Narcotic drugs encompass a range of substances that act on the opioid receptors in the brain and spinal cord. They can be classified into three main categories:

- **Natural Opioids:** Derived directly from the opium poppy plant, such as morphine and codeine.
- **Semi-Synthetic Opioids:** Chemically modified versions of natural opioids, including oxycodone and hydrocodone.
- **Synthetic Opioids:** Fully synthetic drugs that are not derived from opium, such as fentanyl and methadone. [2]

Examples of narcotic drugs:

- Clonazepam
- Lorazepam
- Zolpidem
- Morphine
- Methadone
- Codeine
- Lysergic Acid Diethylamide
- Barbiturates
- Methaqualone [3]

Pharmacology of Narcotic drugs: -

Narcotic drugs, or opioids, act primarily on the central nervous system (CNS) to relieve pain. Here's a brief overview of their pharmacology:

1. **Mechanism of Action**:
   - **Opioid Receptors**: Narcotics exert their effects by binding to specific receptors in the brain and spinal cord known as opioid receptors. These receptors are classified into three main types:
     - **Mu (μ) Receptors**: Mediate most of the analgesic effects and also contribute to euphoria, respiratory depression, and dependence.
     - **Kappa (κ) Receptors**: Involved in analgesia, dysphoria, and hallucinations.
     - **Delta (δ) Receptors**: Play a role in modulating mood and emotional responses.
   - **Endogenous Ligands**: The body's natural opioids, like endorphins and enkephalins, also bind to these receptors to regulate pain and stress. [4]
2. **Pharmacokinetics**:
   - **Absorption**: Opioids can be administered orally, intravenously, intramuscularly, subcutaneously, or transdermally. Oral opioids are absorbed through the gastrointestinal tract, though they undergo first-pass metabolism in the liver, which can reduce their bioavailability.
   - **Distribution**: After absorption, opioids are distributed throughout the body and cross the blood-brain barrier to exert central effects. They also accumulate in various tissues, including the liver and kidneys.
   - **Metabolism**: Most opioids are metabolized in the liver by enzymes, primarily cytochrome P450 enzymes, and their metabolites are often active and contribute to the overall effect.
   - **Excretion**: Opioids and their metabolites are primarily excreted via the kidneys in the urine. [5]

Side Effects of Narcotic Drugs: -

Narcotic drugs, also known as opioids, can have a range of side effects. These effects vary depending on the specific drug, dosage, and individual response, but common side effects include:

1. **Drowsiness**: Opioids can cause significant sedation, leading to drowsiness or difficulty staying awake. [6]
2. **Constipation**: This is one of the most common side effects and can be quite severe. [7]

3. **Nausea and Vomiting**: Opioids can cause gastrointestinal upset, including nausea and vomiting. [8]
4. **Respiratory Depression**: Opioids can slow down breathing, which can be dangerous, especially in high doses or when combined with other depressants. [9]
5. **Addiction and Dependence**: Long-term use can lead to physical dependence and addiction, characterized by cravings and withdrawal symptoms when the drug is not taken. [10]
6. **Tolerance**: Over time, the body may become tolerant to the drug, requiring higher doses to achieve the same effect. [11]
7. **Dry Mouth**: Opioids can reduce saliva production, leading to dry mouth and associated problems. [12]
8. **Itching or Rash**: Some users may experience itching or skin rashes. [13]
9. **Urinary Retention**: Difficulty urinating can occur as a side effect. [14]

Medicines used in the treatment of the side effects of the Narcotic Drugs: -

Here are the medications used to treat side effects of narcotic drugs:

Constipation:

- Polyethylene glycol
- Lactulose
- Docusate sodium
- Methylnaltrexone
- Naloxegol

Nausea and Vomiting:

- Ondansetron
- Promethazine
- Metoclopramide

Drowsiness and Sedation:

- Modafinil
- Methylphenidate

Confusion and Mental Cloudiness:

- Donepezil

Respiratory Depression:

- Naloxone

Itching or Rash:

- Diphenhydramine
- Topical corticosteroids

Urinary Retention:

- Tamsulosin

So, these are some examples of medicines which were used in the treatment of the side effects of the narcotic drugs. [15]

To eliminate excessive intake of medicine and to minimize the side effects of the Narcotic Drugs.

While traditional medical approaches to these side effects are well-documented, many people are turning to holistic remedies for additional relief.

Herbal remedies, known for their natural healing properties, offer promising options for alleviating the discomfort caused by narcotic drugs.

Now,

What Are Herbal Remedies?

Herbal remedies refer to treatments made from plants or plant extracts that are used to address various health issues or enhance overall well-being. These remedies have been used in

traditional medicine systems around the world for centuries and are gaining popularity in modern complementary and alternative medicine. [16]

Here are some examples of the herbal ingredients used in minimizing the Side effects of Narcotic Drugs as given below:

- **Ashwagandha**
- **Chia seeds**
- **Kawa Kawa**
- **Ginseng**
- **Valarian Root**
- **Goat weed**
- **Hawthorn**
- **Dandelion root**
- **Peppermint**
- **Milk thistle**
- **Chamomile**
- **Passionflower**
- **Turmeric**
- **Ginger**

Using these herbal ingredients as part of a holistic approach may help manage some side effects of narcotic drugs, but they should complement, not replace, conventional treatments and medical advice. [17]

- **Ashwagandha:**

Ashwagandha, an adaptogenic herb commonly used in traditional medicine, may offer some benefits in managing the side effects of narcotic drugs, though it is not a primary treatment. Here's how it might help:

1. **Drowsiness and Sedation**:
   - Potential Benefit: Ashwagandha may help alleviate fatigue and improve energy levels due to its adaptogenic properties. It may support overall vitality and reduce feelings of drowsiness or sedation. However, its effects are not as direct or potent as stimulant medications. [18]
2. **Anxiety and Stress**:
   - Potential Benefit: Ashwagandha is known for its potential to reduce stress and anxiety. It might help manage the emotional or psychological impact of narcotic use, which could indirectly improve cognitive function and reduce feelings of confusion or mental cloudiness. [19]
3. **General Well-being**:
   - Potential Benefit: As an adaptogen, ashwagandha may help support overall health and balance, potentially mitigating some of the systemic impacts of narcotic drugs on the body. [20]

Figure 1: Ashwagandha Plant

Figure 2: Ashwagandha Powder

Chia seeds:

Chia seeds may offer some benefits for managing certain side effects of narcotic drugs due to their nutritional content and health-promoting properties. Here's how they might help:

1. **Constipation:**
   - Benefit: Chia seeds are high in dietary fiber, which can help improve bowel regularity and alleviate constipation. They absorb water and form a gel-like substance in the digestive tract, which can help move stool through the intestines. [21]
2. **Nausea and Digestive Health:**
   - Benefit: The fiber in chia seeds can also support overall digestive health, potentially reducing the risk of nausea and promoting a healthy digestive system. [22]
3. **General Well-being and Energy:**
   - Benefit: Chia seeds are rich in omega-3 fatty acids, protein, and essential nutrients like calcium and magnesium, which can support overall energy levels and general well-being. This may help counteract some fatigue or malaise associated with narcotic use. [23]
4. **Other Benefits:**
   - Benefit: Chia seed components are helpful in cardiovascular disease (CVD) by reducing blood pressure, platelet aggregation, cholesterol, and oxidation. In GI-tract-related diseases like diabetes and constipation, chia fiber reduces the blood glucose level and provides bulk to stool. However, antioxidants and polyphenols are protected beta cells of the pancreas from inflammation. These components are protected from the cell damage of the different body parts, which can provide help in different types of cancer including breast, colorectal, liver, and pancreatic. Conclusively, some previous studies approved that chia seed components are played important role in chronic diseases.

Figure 3: Chia Seeds

- **Kawa Kawa:**

Kawa (Piper methysticum) is a plant traditionally used for its sedative and anxiolytic properties. It may help address some side effects of narcotic drugs, though its use should be approached with caution. Here's how kava might be used:

1. **Anxiety and Stress**:
   - Benefit: Kawa is known for its anxiety-reducing effects. It may help manage anxiety or stress that can arise as a side effect of narcotic use, potentially providing some relief for emotional discomfort. [25]
2. **Sleep Issues**:
   - Benefit: Kawa has sedative properties that might aid in improving sleep quality. If narcotic use causes sleep disturbances or contributes to insomnia, kava could potentially help in promoting better sleep. [26]
3. **Neurological Benefits**:
   - Benefit: Its key phytochemicals have anti-inflammatory and anticancer effects, in addition to the well-documented neurological benefits. While its beneficial effects are widely recognized, rare hepatotoxicity had been associated with use of certain kava preparations, but there are no validations nor consistent mechanisms. [27]

Figure 4: Kawa Kawa

- **Ginseng:**

Ginseng, particularly Panax ginseng and Panax quinquefolius (American ginseng), is known for its adaptogenic properties and potential health benefits. Here's how ginseng might be used to address some side effects of narcotic drugs:

1. **Fatigue and Drowsiness:**
   - Benefit: Ginseng is often used to improve energy levels and reduce fatigue. It might help counteract drowsiness or general fatigue associated with narcotic use by supporting overall vitality and mental alertness. [28]
2. **Cognitive Function:**
   - Benefit: Ginseng may help enhance cognitive function, including memory and concentration. This could be beneficial for managing confusion or mental cloudiness that can occur as a side effect of narcotic drugs. [29]
3. **Mood and Stress:**
   - Benefit: Ginseng has adaptogenic properties that may help improve mood and reduce stress. If narcotic drugs lead to emotional or psychological distress, ginseng might help mitigate these effects by promoting emotional balance and well-being. [30]
4. **Immune Support:**
   - Benefit: Ginseng is known to support immune function. This can be helpful if narcotic use affects overall health or if the body's resilience is compromised. [31]

Figure 5: Ginseng leaves

Figure 6: Ginseng rhizomes

- **Valerian root:**

Valerian root (Valeriana officinalis) is an herb commonly used for its calming and sleep-promoting effects. It may help manage some side effects of narcotic drugs as follows:

1. **Sleep Disturbances**:
   - Benefit: Valerian root is known for its sedative properties and is often used to improve sleep quality. If narcotic drugs cause sleep disturbances or insomnia, valerian root may help promote better sleep and relaxation. [32]
2. **Anxiety and Stress**:
   - Benefit: Valerian root can have anxiolytic effects, which may help reduce anxiety and stress. This can be beneficial if narcotic use leads to emotional or psychological discomfort. [33]
3. **Muscle Relaxation**:
   - Benefit: Valerian root has muscle-relaxing properties, which might help with muscle tension or discomfort associated with narcotic use. [34]

Figure 7: Valerian root

Figure 8: Valerian root plant and powder

Figure 9: Valerian root powder

- **Hawthorn:**

Hawthorn (*Crataegus* spp.) is an herb traditionally used for its cardiovascular benefits. Here's how it might help manage some side effects of narcotic drugs:

1. **Cardiovascular Health:**
   - Benefit: Narcotic drugs can sometimes affect cardiovascular function. Hawthorn is known for its potential to improve heart health by enhancing circulation and reducing symptoms of heart failure. It might help manage cardiovascular side effects by supporting overall heart function and reducing blood pressure. [35]
2. **Fatigue:**
   - Benefit: By improving cardiovascular health, hawthorn may help alleviate fatigue. Effective circulation can support overall energy levels, which may be beneficial if narcotic use leads to feelings of tiredness. [36]

3. **Anxiety and Stress:**
   - Benefit: Some studies suggest hawthorn may have mild anxiolytic effects. If narcotic use contributes to anxiety or stress, hawthorn might help improve mood and reduce stress levels. [37]

Figure 10: Hawthorn flower

Figure 11: Hawthorn fruit

Figure 12: Hawthorn berries

- **Reference: -**

1. Shweta Sharma, Kapil Kumar, Gyanendra Singh, "An Overview on Narcotic Drugs and Psychotropic Substances Act, 1985" *J Forensic Sci & Criminal Inves*, **2017,** 4(3), 1- 4.
2. Richard H. Blum, Lauraine Ikaunstein, "Mind-Altering Drugs and Dangerous Behavior: Narcotics*" Narcotics and Drug Abuse,* **1976,** 8, 49.
3. Dimitri Gerostamolus, Jennifer Schumann, "Drug-Impaired Driving Encyclopedia of Forensic Sciences, Third Edition", **2023,** 2, 176 - 185.
4. Matthew J. Matava, "Ethical Considerations for Analgesic Use in Sports Medicine" *Clinics in Sports Medicine,* **2016**, 35(2), 227 – 243.
5. Kenneth C. Jackson II, Mellar P. Davis, Columba Quigley, "Opioid Pharmacokinetics" *Opioids in Cancer Pain*, **2009,** 2, 29 – 38.
6. S Young-McCaughan, C Miaskowski, "Definition of and mechanism for opioid-induced sedation" *Pain Manag Nurs.*, **2001,** 2(3) , 84 – 97.
7. Adil E Bharucha, Arnold Wald, "Chronic Constipation" *Mayo Clin Proc.*, **2019**, 94(11), 2340 - 2357.
8. J I Gómez-Arnau, J L Aguilar, P Bovaira, F Bustos, J De Andrés, J C de la Pinta, J García-Fernández, S López-Alvarez, L López-Olaondo, F Neira, A Planas, J Pueyo, P Vila, L M Torres, "Postoperative nausea and vomiting and opioid-induced nausea and vomiting: guidelines for prevention and treatment" *Res Eep Anestesiol Reanim*, **2010**, 57(8), 508 – 524.
9. Eladio Fernández-Liz, Maria Estrella Barceló-Colomer, Laura Gómez-Ganda, Carlota Varon-Galcera, Pilar Lalueza-Broto, Francisco Javier Medel-Rebollo, Maria Angeles Hortelano-García, Elisabeth Martín-Gracia, "Prevalence of Gabapentinoids and Central Nervous System Depressant Drugs, and Their Association with Risk Factors for Respiratory Depression in Primary Care Patients" *Clin Drug Investig.*, **2022**, 42(5), 417- 426.
10. F Boureau, M Luu, A S Koskas-Sergent, J F Doubrere, "Need of risk re-evaluation in morphine dependence in pain patients" *Therapie.,* **1992**; 47(6), 513 - 518.

11. Meiling Deng, Wangyuan Zou, "Noncoding RNAs: Novel Targets for Opioid Tolerance" *Curr Neuropharmacol.,* **2023**, 21(5), 1202-1213.
12. M Fazzi, P Vescovi, A Savi, M Manfredi, M Peracchia, "The effects of drugs on the oral cavity" *Minarva Stomatol.,* **1999**, 48(10), 485 - 492.
13. A D Rosenberger, R Treudler, U Blume-Peytavi, C C Zouboulis, W Schaffartzik, C E Orfanos, "Allergies and pseudo allergic reactions to anesthetics. The clinical symptoms, risk factors and the diagnostic possibilities" *Hautarzt.,* **1997**, 48(11), 791 – 799.
14. Chang Yong Lee, Chul Sung Kim, Won Jin Cho, "Characteristics of urinary retention in female inpatients managed with medical treatments" *Korean J Urol.,* **2015**, 56(12), 817 - 822.
15. Christoph Stein, "New concepts in opioid analgesia" *Expert Opin Investig Drugs.,* **2018**, 27(10), 765 - 775.
16. Cathryn M Corns, "Herbal remedies and clinical biochemistry" *Annals of Clinical Biochemistry*, **2003**, 40(5), 489 – 507.
17. Martins Ekor, "The growing use of herbal medicines: issues relating to adverse reactions and challenges in monitoring safety" *Front Pharmacol.,* **2013**, 4, 177.
18. Diego A Bonilla, Yurany Moreno, Camila Gho, Jorge L Petro, Adrián Odriozola-Martínez, Richard B Kreider, "Effects of Ashwagandha (*Withania somnifera*) on Physical Performance: Systematic Review and Bayesian Meta-Analysis" *Funct Morohol kinesiol.,* **2021** ,6(1), 20.
19. Salve J, Pate S, Debnath K, Langade D., "Adaptogenic and Anxiolytic Effects of Ashwagandha Root Extract in Healthy Adults: A Double-blind, Randomized, Placebo-controlled Clinical Study" *Cureus.,* **2019**, 11(12), e6466.
20. Singh N, Bhalla M, de Jager P, Gilca M., "An overview on ashwagandha: a Rasayana (rejuvenator) of Ayurveda.", *Afr J Tradit Complement Altern Med.*, **2011**, 8(5), 208 - 213.
21. Filippone A, Ardizzone A, Bova V, Lanza M, Casili G, Cuzzocrea S, Esposito E, Campolo M, Paterniti I., "A Combination of Xyloglucan, Pea Protein and Chia Seed Ameliorates Intestinal Barrier Integrity and Mucosa Functionality in a Rat Model of Constipation-Predominant Irritable Bowel Syndrome", *J Clin Med.,* **2022**, 11(23), 7073.
22. Calvo-Lerma J, Paz-Yépez C, Asensio-Grau A, Heredia A, Andrés A., "Impact of Processing and Intestinal Conditions on in Vitro Digestion of Chia (*Salvia hispanica*) Seeds and Derivatives.", *Foods.* **2020**, 9(3), 290.
23. Knez Hrnčič M, Ivanovski M, Cör D, Knez Ž., "Chia Seeds (*Salvia hispanica* L.): An Overview-Phytochemical Profile, Isolation Methods, and Application.", *Molecules.*, **2019,** 25(1), 11.
24. Khalid W, Arshad MS, Aziz A, Rahim MA, Qaisrani TB, Afzal F, Ali A, Ranjha MMAN, Khalid MZ, Anjum FM., "Chia seeds (*Salvia hispanica* L.): A therapeutic weapon in metabolic disorders.", *Food Sci Nutr.,* **2022**, 11(1), 3 – 16.
25. Savage K, Sarris J, Hughes M, Bousman CA, Rossell S, Scholey A, Stough C, Suo C., "Neuroimaging Insights: Kava's (*Piper methysticum*) Effect on Dorsal Anterior Cingulate Cortex GABA in Generalized Anxiety Disorder.", *Nutrients.,* **2023**, 15(21), 4586.
26. Shinomiya K, Inoue T, Utsu Y, Tokunaga S, Masuoka T, Ohmori A, Kamei C. "Effects of kava-kava extract on the sleep-wake cycle in sleep-disturbed rats.", *Psychopharmacology (Berl).* **2005,** 180(3), 564 - 9.
27. Bian T, Corral P, Wang Y, Botello J, Kingston R, Daniels T, Salloum RG, Johnston E, Huo Z, Lu J, Liu AC, Xing C., "Kava as a Clinical Nutrient: Promises and Challenges.", *Nutrients.* **2020,** 12(10), 3044.
28. Arring NM, Millstine D, Marks LA, Nail LM., "Ginseng as a Treatment for Fatigue: A Systematic Review.", *J Altern Complement Med.,* **2018,** 24(7), 624-633.
29. Malík M, Tlustoš P., "Nootropic Herbs, Shrubs, and Trees as Potential Cognitive Enhancers.", *Plants (Basel).,* **2023**, 12(6), 1364.
30. Bittles AH, Fulder SJ, Grant EC, Nicholls MR., "The effect of ginseng on lifespan and stress responses in mice.", *Gerontology.,* **1979,** 25(3), 125 - 131.

31. Ratan ZA, Youn SH, Kwak YS, Han CK, Haidere MF, Kim JK, Min H, Jung YJ, Hosseinzadeh H, Hyun SH, Cho JY., "Adaptogenic effects of *Panax ginseng* on modulation of immune functions.", *J Ginseng Res.,* **2021**, 45(1), 32 - 40.
32. Shinjyo N, Waddell G, Green J., "Valerian Root in Treating Sleep Problems and Associated Disorders—A Systematic Review and Meta-Analysis.", *Journal of Evidence-Based Integrative Medicine*., **2020**, 25.
33. Kenda M, Kočevar Glavač N, Nagy M, Sollner Dolenc M., "Medicinal Plants Used for Anxiety, Depression, or Stress Treatment: An Update.", *Molecules.,* **2022**, 27(18), 6021.
34. Caudal D, Guinobert I, Lafoux A, Bardot V, Cotte C, Ripoche I, Chalard P, Huchet C., "Skeletal muscle relaxant effect of a standardized extract of Valeriana officinalis L. after acute administration in mice.", *J Tradit Complement Med.* **2017,** 8(2), 335-340.
35. Tassell MC, Kingston R, Gilroy D, Lehane M, Furey A., "Hawthorn (Crataegus spp.) in the treatment of cardiovascular disease.", *Pharmacogn Rev.,* **2010**, 4(7), 32 - 41.
36. Zhang X, Li H, Jiang G, Wang X, Huang X, Li C, Wu D, Dai Q., "Effects of enzyme supplementation on the nutrient, amino acid, and energy utilization efficiency of citrus pulp and hawthorn pulp in Linwu ducks.", *Trop Anim Health Prod.,* **2018**, 50(6), 1405 - 1410.
37. Nitzan K, David D, Franko M, Toledano R, Fidelman S, Tenenbaum YS, Blonder M, Armoza-Eilat S, Shamir A, Rehavi M, Ben-Chaim Y, Doron R., "Anxiolytic and antidepressants' effect of Crataegus pinnatifida (Shan Zha): biochemical mechanisms.", *Transl Psychiatry.,* **2022**, 12(1), 208.