Oral findings in drug addicted patients

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Substance abuse is a serious medical problem in today's society. Chemically dependent patients come from all components of society, regardless of financial status, ethnicity, or age. However, dental aspects of these addictions are slightly known to dental professionals.

Introduction
Dark statistics

• In 2014 was reported that 0.5 million Bulgarians suffered from different dependences like drugs abuse, alcoholism or both

• Illicit drug use is highest among adults between 18 to 25 years old

• The heroin dependent adults are over 30,000

• There is a tendency for rise the use of synthetic drugs like amphetamine
Dental professionals must recognize the different types of addictions and the risk factors associated with their deleterious oral effects. This knowledge will allow appropriate and effective preventive and treatment strategies for these patients.
The oral pathology depends on the drug type and its administration, duration of the addiction and the comorbidity. There are two possibilities for drugs to impact oral health: direct and non-direct. Pathogenesis and clinic.
Pathogenesis?

Non-direct effects

Behavioral problems
Neglected oral hygiene
Malnutrition
Co-morbidity (HIV, BVH) etc.
Direct effect

Changes in:
- Salivation.
- Blood supply.
- Local immune response.

Irritating effects, carcinogenic effect, eroding etc.

Pathogenesis?
Papaver somniferum
Xerostomia

Rampant caries (labial and buccal smooth surfaces; Lesions are darker, bigger and painless).

Caries with atypical localization (root surfaces, cuspids, incisal edges etc)

Heroin, Morphine, Codeine, Methadone etc.
Heroin

oral health implications
Poor oral hygiene.

Severe gingivitis and periodontal diseases, soft tissue ulcers.

Increased muscular tonus and bruxism.

Pain in TMJ.
Tooth fractures.
Attrition.

Opiates

Heroin, Morphine, Codeine, Methadone etc.
Rampant caries (atypical lesions localisation on cuspids and incisal edges) and excessive tooth wearing due to bruxism.
Rampant caries (atypical lesions localisation on cuspids and incisal edges) and excessive tooth wearing due to bruxism.
Heroin

oral health implications

Poor oral hygiene, gingivitis and excessive tooth wearing.
Heroin oral health implications

Angular heillitis due to C. albicans infection.
Heroin

oral health implications

Rampant tooth decay.
Heroin

oral health implications

Angular heillitis.

Clotting problems secondary to liver disease due to viral infection can cause problems with haemostasis.
Heroin

oral health implications

Lingua villosa nigra
Cocaine

Erythroxylum coca

Hyposalivation.

Compromised local immunity.

Irritating effects.

Corrosive effect.

Decreased pH and local ischemia.
Cocaine

*Erythroxylum coca*

Acute gingivitis, severe periodontal diseases, angular cheilitis, aphthous ulcers and oral candidosis.

Gingival hyperkeratosis, teeth erosion, glossodynia, and soft palate ischemic necrosis.
Cocaine

Erythroxylum coca

N.B.

Cocaine have dangerous interactions with common dental anesthetics and adrenaline.

It could cause major hypertensive episodes, extreme tachycardia and cardio-pulmonary arrest.
Cocaine

oral health implications

Extreme tooth wearing due to severe bruxism. Bruxism is common in cocaine users and this can result in temporomandibular joint disorders.
Cocaine

oral health implications

Enamel fractures, erosion and caries lesions on the smooth surfaces of the tooth.
Cocaine

Oral health implications

Direct application of cocaine to the gingivae can produce non healing defects and localised bone loss and necrosis

Palatine perforation induced by cocaine
Meth is used in pill or powdered form, and can be injected, smoked or taken orally.

**Systemic effects** - increases systolic and diastolic blood pressure due to cardiac stimulation. Meth produces arrythmias, shortness of breath, hyperthermia, nausea, vomiting.

**Physical effects** of long-term use include body odor, open sores from scratching, sleeplessness, extreme weight loss, blurred vision, convulsions, and irreversible damage to the blood vessels of the brain that causes strokes.
Methamphetamine

"Meth mouth" condition

- Great deal of tooth decay
- Gum disease
- Teeth cracks
- Dry mouth - reduces the amount of protective saliva
- Bruxism or/and clenching
- Poor diet - high calorie carbonated drinks
- Poor oral hygiene
Methamphetamine

distinctive caries pattern due to acidic nature of the drug. Crank decay starts at the gum line and spreads around the entire tooth.
Decay starts at the gum line, affecting the smooth surface of the teeth.
Methamphetamine
oral health implications

“Meth mouth” - advanced condition
Methamphetamine

oral health implications

Caries often seen in between surfaces of the anterior teeth.
Methamphetamine

oral health implications

Secondary infected sores due to immunity alteration and malnutrition. Candida infections are common.
Methamphetamine

oral health implications

Rampant caries with an atypical localisation.
Methamphetamine oral health implications

Caries lesions on the smooth surfaces of the tooth and soft tissues affection.
Methamphetamine oral health implications

Poor oral hygiene.
Cannabis, known as marijuana, is most commonly smoked or added to foods.

Cannabis abusers generally have poor oral health with an increased risk of dental caries and periodontal diseases.

Cannabis smoke acts as a carcinogen and is associated with dysplastic changes and pre-malignant lesions within the oral mucosa. Users are also prone to oral infections, possibly due to the immunosuppressive effects.
Dental treatment on patients intoxicated on cannabis can result in the patient experiencing acute anxiety, dysphoria and psychotic-like paranoiac thoughts.

The use of local anaesthetic containing adrenalin may seriously prolong tachycardia already induced by an acute dose of cannabis.
Cannabis

oral health implications of cannabis use

Great deal of tooth decay and soft palate tissue injection.
Cannabis

oral health implications of cannabis use

Xerostomia and tooth decay.
Cannabis

oral health implications of cannabis use

Poor oral hygiene, dental plaque and stained teeth are common findings.
Cannabis

oral health implications of cannabis use

Alveolitis.
Patients are prone to oral infections, possibly due to the cannabis immunosuppressive effects.
Cannabis

oral health implications of cannabis use

Desquamated heillitis
ORAL HYGIENE HABITS AND USE OF TABACCO AND ALCOHOL

THERE IS A STRONG ASSOCIATION BETWEEN SUBSTANCE MISUSE AND TOBACCO AND ALCOHOL USE
The signs of drug use include severe tooth decay, gum disease, mouth sores, ulcers, stained teeth and broken teeth from drug-induced grinding.

Drugs such as cocaine, methamphetamine and cannabis have dangerous interactions with common dental anesthetics. These could cause major hypertensive episodes etc.

Psychological deviation and potential virus infection (HIV, HBV) are also serious problems.
SEXUAL TRANSMITED DISEASES (HPV)

Condyloma Acuminatum
PROBLEM-ORIENTED APPROACH IN DIAGNOSTIC AND TREATMENT OF ORAL PATHOLOGY IN DRUG ADDICTED PATIENTS
Serious dental and oral health problems irrelevant to common etiological factors.

Amphetamine addicted 18 years old patient with serious dental and oral problems
Dental traumatism

Incidence of trauma is an obvious complication of drug misuse. Facial injuries, tooth and mandibular fractures requiring treatment are common as a result of assaults/ fights which are often alcohol/drug related.
Allergic predisposition

Edema of the uvula in drug addicted patient after local anesthesia.

Patient with poliallergy.
Neglected hygiene and unpleasant body smell. Oral malodor (chemical smell)
SCREENING FOR SUBSTANCE ABUSE

Inadequate behavior, altered speech and coordination, aggression, fear, sweating and strenuous attitude. Altered sensory limen, irritability.
SCREENING FOR SUBSTANCE ABUSE

Changes in the size of the pupils of the eyes not accounted for by changes in light intensity

- Wearing sun glasses in the dental office to cover eye symptoms of drug addiction
- **Amphetamine:** Mydriasis
- **Cocaine:** Mydriasis
- **Ecstasy:** Blurry vision
- **Heroin:** Miosis, eye lid ptosis, altered night vision
- **Marijuana:** Conjunctival injection
SCREENING FOR SUBSTANCE ABUSE

Skin popping scars – a sign of past and present subcutaneous drug abuse

"Track" marks are the result of repeated injection with heroin that is contaminated with substances that irritate the veins.
A particularly problem for dentists are addicted patients who seek practitioners that will liberally prescribe narcotic analgesics. They will often request an appointment near closing time to prevent any definitive treatment and to request a narcotic analgesic until the offending tooth can be treated. The “patient” will often request a specific brand of analgesic, calling it by name.

Simulation of toothache!!!
SCREENING FOR SUBSTANCE ABUSE

Patients from social groups at risk—institutionalized children, prostitutes, religious, ethnic and sexual minorities.
CONVENTIONAL DIAGNOSTIC TESTS

- Anamnesis
- Inspection
- Probing
- Palpation
- TOD
- EOD
- X-ray examination
ADDITIONAL DIAGNOSTIC TESTS

- Saliva testing
- Microbiological testing
- Dietary habits evaluation
- Allergy tests
SALIVA TESTING

1. pH evaluation
2. Buffer capacity evaluation
3. Microbiological test for caries risk evaluation
4. Saliva testing for drug abuse assessment
SALIVA TESTING

pH evaluation
SALIVA TESTING

Buffer capacity evaluation
SALIVA TESTING

Buffer capacity evaluation
SALIVA TESTING

Microbiological test for caries risk evaluation
SALIVA TESTING

Microbiological test for caries risk evaluation
SALIVA TESTING

Microbiological test for caries risk evaluation
## SALIVA TESTING FOR DRUG ABUSE ASSESSMENT

**I-Screen OFD Saliva Drug Test**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Abbreviation</th>
<th>Concentration</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amphetalamone</td>
<td>AMP</td>
<td>50ng/ml</td>
<td>24 ч.</td>
</tr>
<tr>
<td>Methamphetamine</td>
<td>mAMP</td>
<td>50ng/ml</td>
<td>72 ч.</td>
</tr>
<tr>
<td>Marijuana</td>
<td>THC</td>
<td>12ng/ml</td>
<td>3-10 дни</td>
</tr>
<tr>
<td>Opiates</td>
<td>OPI</td>
<td>40ng/ml</td>
<td>10 дни</td>
</tr>
<tr>
<td>Cocaine</td>
<td>COC</td>
<td>20ng/ml</td>
<td>48 ч.</td>
</tr>
<tr>
<td>Phencyclidene</td>
<td>PCP</td>
<td>40ng/ml</td>
<td>10 дни</td>
</tr>
</tbody>
</table>

N.B. Some patients feel they need to be "high" to have the courage to go to the dentist. Do not treat patients while they are under the influence of a drug.
SALIVA TEST FOR HIV STATUS ASSESSMENT
Dental plaque visualization
Dietary advice has a major role to reduce frequency of sugar consumption which may be a lifestyle habit developed during drug use.
It is a recognized problem that substance misusers find accessing dentistry difficult.

The dentists felt uncomfortable in addressing the issues that they suspected.

The drug abusers also feel mistreated. They perceive physician inconsistency and avoidance as signs of biased attitude.

They viewed delayed care as intentional mistreatment.
INFORMED CONSENT AND INFORMED REFUSAL

Informed consent is a process whereby a patient voluntarily agrees to proposed treatment after a discussion of advantages, disadvantages, risks, and alternatives. All states require that patients provide informed consent before dental treatment is commenced.

There are several components of the informed consent discussion. They are:
1. The nature of the proposed treatment, including necessity, prognosis, time element, and cost.
2. Viable alternatives to the proposed treatment, including what a specialist might offer or the choice of no treatment.
3. What are the foreseeable risks, including things likely to occur and risks of no treatment.

When obtaining informed consent, the dental professional should:
1. Use language that is easily understandable.
2. Provide opportunities for patient questions, such as “What more would you like to know?” or “What are your concerns?”
3. Assess patient understanding by stating, “If I have not explained the proposed dentistry clearly or if you have difficulty understanding, please tell me so we can discuss anything you do not understand.”
RECOMMENDATIONS FOR CLINICAL PRACTICE

Careful use of any sharp or cutting tools (needles, scalpels etc.)
RECOMMENDATIONS FOR CLINICAL PRACTICE

Health professionals who come in contact with known drug addicts should be gloved, masked, and/or wear either glasses or safety goggles.
A positive response for hepatic dysfunction requires a medical consultation to provide an evaluation for hepatitis and overall liver function

Rinsing mouth with chlorhexidine solution for 30s is recommended in order to reduce viral load in the oral cavity
All instruments should be routinely sterilized using accepted procedures to kill the hepatitis viruses.
Reduced aerosols production by limited use of air-water spray, ultrasound devices for calculus removal and high-speed handpieces.
Local anesthetics with vasoconstrictors are contraindicated for a patient under the influence of cocaine since an inadvertent intravascular injection would potentiate the vasoconstriction of cocaine and produce a hypertensive crisis.
ALLERGY TESTING!

“Prick”- тест
“Prick” test (evaluation within 20 minutes)
TREATMENT STRATEGIES FOR DRUG MISUSERS

Bruxism is common in drug users and this can result in temporomandibular joint disorders. They are presented with flattening of occlusal surfaces and tenderness of the muscles of mastication.

- Bruxism mouth guard (occlusal splints)
- Myotherapy
- Psychotherapy and mild sedatives
COMMON RECOMMENDATIONS

• Technical procedures are no different for addicts and non-addicts. The dental materials used and the mechanical procedures utilized are the same as those used with non-addicted patients.

• Extended and extensive procedures should be limited to those patients showing the interest to take care of the treatment.

• Temporary treatment could be considered if there is some question as to the patient’s ability or desire to complete the treatment.

• Prevention should be emphasized.
TREATMENT MODALITIES

Caries prevention

- Comprehensive oral hygiene regimen must include dental prophylaxis and oral hygiene instruction consistently every three to six months for partially edentulous patients.

- Regular neutral fluoride is recommended instead of the acidulated ones to prevent further damage to the already compromised dentition.

- The patients need to be educated about the harmful effects of drug abuse on oral and overall health.

- Sialogogues such as pilocarpine, sugarless gum or oral moisturizers can be prescribed to address the problems with xerostomia.
Rampant caries, periodontitis and poor oral hygiene; CFU>10^5
Debridement of all caries lesions with temporarization, calculus and dental plaque removal. The microbial load is reduced CFU $<10^5$. 
Treatment outcome
SURGICAL TREATMENT

The scope depends on individual treatment plan and is relevant to patient’s health condition and co-morbidities.

It is recommended to be performed in surgical office or in clinic.

In particular cases hospitalization is needed in order to perform treatment under general anesthesia, antibiotic treatment and post-operative monitoring.
Selective extraction of poorly damaged teeth
COMPLICATIONS REGARDING SURGICAL TREATMENT

1. Hypertensive crisis, allergic reaction or cardiac arrest due to injection of local anesthetics with vasoconstrictors
2. Infectious diseases transmission
3. Bleeding
4. Delayed or complicated healing process
5. Superinfection
Ceramic constructions are not recommended in cases of irregular muscle tonus and abstinence.

Fractured ceramic crowns and fractured tooth due to severe tooth grinding.
• Dentists must know and recognize the oral aspects of the drug addiction.

• After correct diagnosis, the treatment should be complex in close collaboration with other medical specialists.

• Periodical oral health control is recommended in order to avoid relapse.

• Patient’s family support is conditional.
Complex treatment of heroin addicted patient infected with HBV и HCV. (By courtesy of Dr. Nikolay Nikolov)
Low buffer capacity and high microbial load with *S. mutans* и Lactobacillus (CFU$>10^5$). Hyposalivation.
HCV and HBV positive status
Complex diagnosis

- **Surgical diagnosis:**
  - Radices gangraenosae 18, 17, 16, 14, 38, 44, 46, 47, 48, 13, 25, 34
  - Ectopia dentis 23

- **Dental diagnosis:**
  - Pulpitis chronica ulcerosa 15, 24, 35
  - Caries media 33, 43, 45

- **Prosthetic diagnosis:**
  - Adentia partialis dentium permanentium

- **Orthodontic diagnosis:** Progenia

- **Periodontal diagnosis:** Paradontitis chronica generalisata grad. I
Surgical treatment
Surgical treatment
Endodontic treatment
Prosthetic treatment:

• Plaster models for analysis
Prosthetic treatment with denture
Final adjustment of the denture
Check up
I don’t like drugs!!

but they like me.