UNIT 3  TOBACCO ADDICTION

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3.0  INTRODUCTION

Tobacco is one of the most highly addictive and most extensively used drugs around the world. Cigarette smoking is perhaps the most common form of nicotine use in the world and certainly the most lethal in the long run. Even though it is considered as a significant risk factor in many health problems such as lung diseases, cancer and cardiovascular diseases, it is highly common throughout the world. The risk for non-smoking people is also high as second hand smoke causes serious health consequences for them. Current scientific literature clearly establishes the actions of nicotine within the central nervous system that lead to the development of dependence, and withdrawal symptoms. Other factors that contribute considerably to nicotine’s highly addictive potential include the efficient drug delivery system of the cigarette, its high level of availability, the small number of legal and social consequences of tobacco use, and the sophisticated marketing and advertising methods used by tobacco companies. The past three decades have seen considerable progress in understanding the neurochemical basis of nicotine’s effects and in the development of effective behavioural and pharmacological interventions to promote cessation. In this Unit you will learn about the causes, health hazards and treatment of tobacco dependence.
3.1 OBJECTIVES

After studying this Unit, you will be able to,

- explain tobacco and nicotine dependence;
- know the Indian tobacco products;
- explain the causes of tobacco and nicotine dependence;
- describe the health hazards of tobacco use;
- know the nicotine withdrawal syndrome;
- describe the assessment of tobacco dependence; and
- discuss the management of tobacco dependence.

3.2 TOBACCO AND NICOTINE DEPENDENCE

Tobacco is a plant product obtained from ‘Solaneace’ family in the plant kingdom. ‘Nicotianatobaccum’ is the main source of tobacco in northern India. There are nearly 3000 chemicals in tobacco smoke and 4000 in smokeless tobacco.

Let us distinguish between a few terms we come across while discussing any substance abuse. These are intoxication, harmful use, abuse, addiction, dependence and withdrawal. The term intoxication is used for a reversible nondependent experience with a substance that produces impairment. Harmful use is similar to abuse, but it usually applies to drugs prescribed by physicians that are not used properly. Psychological dependence, also referred to as habituation, is characterized by a continuous or intermittent craving for the substance to avoid a dysphoric state.

Drug addiction and drug dependence are often used interchangeably. In current nosology, “addiction” word is only used for behaviour addictions and for other substances, “dependence” term is used. Addiction usually refers to repetitive pattern of a behaviour or substance use irrespective of its harmful consequences. Whereas drug dependence usually refers to a syndrome characterised by physiological, cognitive, somatic, psychological set of symptoms associated with use of a particular substance. It is associated with craving, tolerance, withdrawal and use despite harmful consequences of the same.

Brain researchers have found a pleasure centre in the brain, which becomes activated when good (i.e. likable) things like food, sex, music comes our way. Nicotine is the main active chemical in tobacco responsible for addiction, which stimulates the same pleasure centre and therefore is felt by the user as a highly satisfying and rewarding experience, resulting in repeated use. Nicotine generally causes heightened alertness and improved functioning in continuous repetitive tasks. Users also report relaxation and decrease in fatigue with smoking and; irritability, restlessness, anger and frustration with difficulty in concentration and sleep while trying to leave.

From tobacco smoke, nicotine is absorbed through lung and in smokeless tobacco, it passes through mucosal membrane of mouth and nose or skin. Rate of absorption is enhanced in an alkaline environment and reduced in an acidic environment. Because of the large surface area of the lungs, the mildly acidic smoke of cigarettes is absorbed almost immediately and completely on inhalation, giving rise to high concentration arterial nicotine boli which reach the brain in less than 10 seconds. Nicotine has a distributional half-life of about 15 minutes and a terminal half-life in blood of about 2 hours. About 70
to 80 per cent of nicotine is metabolized to cotinine, which has a half-life of around 16 hours. This means that blood levels decline overnight to non-smoking levels, and regular cigarettes are required over the course of the day to maintain elevated blood nicotine concentrations. Repeated inhalation of tobacco generates boli of nicotine delivered into the brain, superimposed on a relatively stable level of plasma nicotine maintained by the smoker throughout the smoking day.

### 3.3 EPIDEMIOLOGICAL TRENDS OF TOBACCO USE

Tobacco is the commonest substance of use in India, is legally and socially sanctioned and used in a wide variety of ways including smoking, chewing, applying to gums, sucking and gargling.

Global Adult Tobacco Survey (GATS) India (2010) data revealed that more than one out of three adults in India (35 per cent) used tobacco in some form or the other. Among them, 21 per cent of adults used only smokeless tobacco, 9 per cent only smoked and 5 per cent smoked as well as used smokeless tobacco. Overall tobacco use is much higher among Indian males at 48 percent but is also a serious concern among females among whom prevalence is 20 per cent.

In India, khaini or tobacco-lime mixture (12 per cent) is the most commonly used smokeless tobacco product, followed by gutkha (a mixture of tobacco, lime and areca nut) (8 per cent), betel quid with tobacco (6 per cent) and tobacco dentifrice (5 per cent). Bidi (9 per cent) is most commonly used smoking product, followed by cigarette (6 per cent) and hukkah (1 per cent).

The WHO, the US Centers for Disease Control and Prevention, and the Canadian Public Health Association developed the Global Tobacco Surveillance System (GTSS) to assist the WHO member states in establishing such a method. The Global Health Professions Student Survey (GHPSS) is one of the components of GTSS. All countries conducting the GHPSS use a common survey methodology, similar field procedures for data collection, and similar data management and processing techniques. The GHPSS is a school-based survey of third-year students pursuing advanced degrees in dentistry, medicine, nursing, and pharmacy. The GHPSS uses a core questionnaire that includes questions on demographics, prevalence of tobacco use, knowledge and attitudes about tobacco use, exposure to secondhand smoke (SHS), desire of smokers to stop smoking, perception of the health professional’s role in patient counseling, and training received in counseling patients on smoking-cessation techniques.

As per the Global Health Professions Student Survey (GHPSS), India (2009), 6.5 per cent third year dental students smoked cigarettes and 8.6 per cent used other tobacco products. Among medical students, 13.4 per cent third year medical students smoked cigarettes and 11.6 per cent used other tobacco products. Global Youth Tobacco Survey (GYTS) India, 2009 revealed that 14.6 per cent of 13-15 years school going children in India used tobacco products out of which 4.4 per cent smoked cigarettes and 12.5 per cent used other forms of tobacco. These figures are alarming because these professional students will themselves lead the war against tobacco and because earlier initiation increases chances of long term dependence.

### 3.4 INDIAN TOBACCO PRODUCTS

- Tobacco use in smoking form: Bidi, cigarette, hookah, chillum and chiroot are the few common modes of smoking tobacco in India. Cigar smoking is limited to
certain limited social groups. Bidi is an unprocessed form of tobacco wrapped in a *tendu* leaf and tied with a string. Bidi smoking stick is specific to India although it is being exported and raising alarm bells in other countries as well. It is about 6 times more common than cigarette smoking (Taylor et al 2001). Although bidi contains about 1/4 the amount of tobacco compared to a cigarette, it delivers a comparable amount of tar and nicotine. A bidi is thus no less dangerous than a cigarette.

- **Smokeless Tobacco:** In India, tobacco is used in smokeless manners in a wide variety of ways with multitude products such as betel quid, mixture of tobacco, lime areca nut, tobacco with lime, mishri, mawa, gutkha and many others.

### 3.5 CAUSES OF TOBACCO DEPENDENCE

There is no simple answer to the question - “why people use tobacco ?” There are some biological factors as well as factors in the environment which interact together to give rise to tobacco dependence. Initiation of smoking is subject to a number of influences: environmental, behavioural, and personal factors all play a part. Environmental influences include parental smoking (approximately doubling the likelihood of a child starting to smoke), and smoking by siblings and friends. Tobacco advertising and promotions effectively target young people with images of smoking as trendy, sporty, and successful. Young people from deprived backgrounds where smoking is the norm are more likely to become smokers.

Availability, social sanction and peer pressure are important factors that promote initiation and continuation of use of tobacco, leading to tobacco dependence. Cigarette smoking is linked with poor school performance, truancy, low aspirations for future success, and early school leaving or drop-out. Smoking in adolescents is frequently associated with other problem behaviours including alcohol and other drug use and other risk taking or rebellious behaviours, as well as with low self-esteem, anxiety, and depression. School-based interventions to reduce smoking by teenagers have shown some initial success, but longer term follow-up has found that these effects dissipate leading researchers to advocate approaches involving the creation of a wider social environment supportive of non-smoking.

Stressful living circumstances also lead to high rates of smoking in the unemployed, lone parents, people who are divorced or separated, the homeless, heavy drinkers, drug users, and prisoners.

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<th>Self Assessment Questions 1</th>
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<tbody>
<tr>
<td>1. Differentiate between addiction and dependence.</td>
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| 2. Mention the ways in which tobacco is used. |
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3.6 HEALTH HAZARDS ASSOCIATED WITH TOBACCO USE

3.6.1 Physical Morbidity Associated with Tobacco Use

Use of tobacco leads to premature deaths. Smoking causes deaths from cancer, the great bulk of deaths from chronic respiratory disease, and is a major contributor to circulatory diseases. Smoking is recognized to cause 80 per cent or more of all lung cancers. In addition it is responsible for most cancers of the upper respiratory tract (lip, tongue, mouth, pharynx, and larynx) and for a smaller fraction of cancers of the bladder, pancreas, oesophagus, and kidney. Among both men and women, deaths from cardiovascular disease (ischaemic heart disease, aortic aneurysm, and stroke) outnumber those from all other causes, including lung cancer.

Tobacco use in any form has marked effects upon the soft tissues of the oral cavity. Tobacco use is associated with oral precancerous lesions such as leucoplakia and erythroplakia. Leucoplakia is the most common precancerous lesion associated with smoking and/or chewing tobacco. Oral submucous fibrosis (OSMF) is emerging as a new epidemic, especially among the youth. In this disease, fibrous bands develop in the mouth, mucosa loses its elasticity and the ability to open the mouth reduces progressively. In extreme cases, victims may be only able to open their mouths enough to pass through a drinking straw. This disease does not regress, has no known cure and has a very high potential for cancer development. The dramatic increase in OSMF among young people in India has been attributed to chewing gutka and paan masala.

“Tobacco use has an adverse effect on the sexual and reproductive health of both men and women. Men who smoke have a lower sperm count and poorer sperm quality than non-smokers. The effects of maternal tobacco use (smoked and smokeless) during pregnancy include decreased foetal growth, spontaneous abortions, foetal deaths, pregnancy complications including those that predispose to preterm delivery and long term effects on the surviving children. Exposure to second-hand smoke during pregnancy has been associated with lower infant birth weight.”


As well as being the single largest cause of preventable premature death, cigarette smoking is a cause of a number of disabling but generally non-fatal conditions. These include chronic obstructive pulmonary disease, peripheral vascular disease, cataracts, Crohn’s disease, gastric and duodenal ulcers, hip fracture in elderly people, and periodontitis, the major cause of tooth loss in adults. Passive smoking also causes a significant burden of disease in non-smokers, especially infants and children.
Health Consequences Associated with Tobacco Use

1) Respiratory diseases: chronic obstructive pulmonary disease, pneumonia, bronchitis
2) Oral lesions: leucoplakia, erythroplakia, oral submucosal fibrosis, oral cancer
3) Cancerous lesions: carcinoma involving bladder, cervix, oesophagus, stomach, kidney, larynx, lung, pharynx
4) Heart & blood vessel disease: coronary heart disease, peripheral vascular disease
5) Sexual dysfunction: erectile dysfunction, infertility, decrease sperm counts

The World Health Organization (WHO) has estimated that approximately 5.4 million people died worldwide from tobacco-related illnesses in 2006 and says that “unless urgent action is taken, tobacco’s annual death toll will rise to more than eight million” by the year 2030, with over 80% of those deaths occurring in low-income countries.

3.6.2 Psychiatric Morbidity Associated with Tobacco Use

Tobacco use is higher among persons with mental illness than general population. Among severe mental illnesses, approximately 50 per cent of all psychiatric outpatients, 70 per cent of outpatients with bipolar I disorder, almost 90 per cent of outpatients with schizophrenia, and 70 per cent of substance use disorder patients smoke. Moreover, data from UK (Meltzer et al. 1995) conducted in general population suggested that persons with neurotic disorders e.g. depression, phobia, obsessive compulsive disorder are twice as likely to smoke as compared to general population and are less successful in their attempts to quit smoking than other persons.

It is not fully clear, why do people with mental health problems smoke more, few possible explanations are discussed. There might be common aetiologies to both smoking and mental illness. There is also evidence to suggest that nicotine may be a form of self medication. Nicotine may help ameliorate symptoms of attention deficit hyperactivity disorder, depressive symptoms and negative symptoms of schizophrenia. (www.nice.org.uk/niceMedia/documents/smoking_mentalhealth.pdf).

Tobacco has serious impact on physical and mental health of persons. Thus, a holistic health approach for these patients should address tobacco dependence management in addition to management of primary mental disorder.

3.7 NICOTINE WITHDRAWAL SYNDROME

DSM-V Syndromal Description

Nicotine Dependence

A pattern of nicotine use, leading to clinically significant impairment or distress as manifested by at least three of seven criteria occurring at sometime during a 12 month period.

1) Tolerance
   a) Absence of nausea, dizziness and other characteristic symptoms despite using substantial amounts.
   b) A diminished effect with continued use of the same amount of nicotine.
2) Withdrawal
a) Presence of characteristic withdrawal syndrome or

b) The use of substance or related substances to relieve or avoid withdrawal symptoms.

3) Use of nicotine in large amounts or over a longer period than was intended.

4) Persistent desire or unsuccessful efforts to cut down or control nicotine use.

5) A great deal of time spent in activities necessary to obtain the substance, in use of the substance or in recovery from its effects.

6) Important social, occupational or recreational activities given up or reduced because of substance use.

7) Continued use despite having a persistent or recurrent physical or psychosocial problem that it is likely to have been caused or exacerbated by nicotine use.

**Nicotine Withdrawal**

1) Daily use of nicotine for at least several weeks.

2) Abrupt cessation of nicotine use or reduction in the amount of nicotine used, followed within 24 hours by 4 or more of following signs
   
   - irritability, frustration or anger
   - Anxiety
   - Difficulty in concentrating.
   - Increased Appetite
   - Restlessness
   - Depressed mood
   - Insomnia

3) The symptoms in criteria above causes clinically significant distress or impairment in social, occupational or other important areas of functioning.

4) The symptoms are not due to a general medical condition and are not better accounted for by any other mental disorder.

**Self Assessment Questions 2**

1) What are the physical health hazards associated with the use of tobacco?

2) Describe the signs of nicotine withdrawal.
3.8 ASSESSMENT OF TOBACCO DEPENDENCE

Assessment can be carried out by various means. These are Clinical examination and interview, Instruments or Questionnaires, and Objective methods. Let us know about each of these.

A) **Clinical:** Here, assessment is carried out by eliciting information as well as carrying out a detailed examination of the patient in following domains:

   i) History
   ii) Physical examination
   iii) Mental status examination

The relevant information can be gathered from patient as well as the care giver including:

- Frequency of use
- type(s) of tobacco product being used
- duration of use
- route of intake
- complications (physical, social, familial, occupational)
- attempts to leave the drug (abstinence)
- reasons for relapse

B) **Instruments / Questionnaires:** This provides a more structured way of assessment. For assessment of dependence in tobacco users, there are simple tools/questionnaires which can be applied easily and in a very short period of time by any person. Some of them are mentioned below:

   i) **CAGE Questionnaire:**

   This simple tool is very useful for screening person with any addictive disorders and can be applied in very short span of time. It is suitable for use in community settings. It has four components which is framed into questions with answer in “Yes” or “No”.

   a) Cut Down
   b) Annoyed
   c) Guilt
   d) Eye Opener

   Two or more of “Yes” response will qualify a person for tobacco dependence and need for treatment (See in Box)

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<thead>
<tr>
<th>CAGE Questionnaire</th>
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<tbody>
<tr>
<td>A) Have you ever felt a need to cut down or control your smoking, but have difficulty doing so?</td>
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<tr>
<td>B) Do you ever get annoyed or angry with people who criticize your smoking or tell you that you ought to quit?</td>
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</table>
C) Have you ever felt guilty about your smoking or about you did while smoking?
D) Do you ever smoke within half an hour of waking up (eye opener)?

ii) The Fagerstrom test for Nicotine dependence is another standard instrument used as a screening test to assess the severity of nicotine dependence. There are scales for both smoking and smokeless tobacco. Based on the score, the level of addiction can be low (score less than 4), medium (score 4-6) or high (score more than 6).

C) **Objective methods** such as measurements of the concentration of nicotine or its metabolite, cotinine, in blood, urine, or saliva is often used in research as an objective index of dependence because it provides an accurate measure of the quantity of nicotine consumed, which itself is a marker of dependence. Carbon monoxide concentration of expired air is a measure of smoke intake over preceding hours; it is not as accurate an intake measure as nicotine based measures, but it is much less expensive and gives immediate feedback to the smoker.

![Fagerstrom Test for Nicotine Dependence](image)

**Diagnosis** ICD 10 of World Health Organization (WHO) and DSM V of American Psychiatric Association (APA) have independently proposed a cluster of factors to make a uniform diagnosis of tobacco use disorders.

**Dependence:** It requires presence of 3 of following in past 1 year:
Tobacco dependence is a chronic condition that often requires repeated interventions. Because effective tobacco dependence treatments are available, every patient who uses tobacco should be offered at least one of these treatments. Tobacco dependence treatments are both clinically effective and cost effective in relation to other medical and disease prevention interventions.

### 3.9.1 Non Pharmacological Management

A variety of behaviour therapies, ranging in complexity from simple advice offered by a physician or other health care providers so much more extensive therapy offered by counselors, have been shown to be effective for tobacco cessation. The persons can be helped to identify high risk situations, avoid them and manage withdrawal. Self help tips help patients to overcome and manage the use of tobacco.

Various approaches/ methods are described below

**Brief Intervention** (DGHS, 2011) – This consists of advice to stop using tobacco, given to all tobacco users, usually during the course of a routine consultation or interaction. Explain clients following benefits of leaving nicotine.

Begin this way- From the moment you quit smoking, it only takes 20 minutes for your body to start undergoing beneficial changes.

- **20 Minutes:** Blood pressure drops to normal; pulse rate drops to normal; temperature of hands and feet increases to normal.
- **Within 8 Hours:** Carbon-monoxide level in blood drops to normal; oxygen level in blood becomes normal.
- **Within 24 Hours to 48 hours:** Chance of heart attack decreases. Nerve endings start regenerating; ability to smell and taste begins to improve.
- **Within 72 hours:** Bronchial tubes relax, making breathing easier.
- **Within 2 Weeks to 3 Months:** Circulation improves, lung function increases up to 30%
- **Within 6 Months:** Coughing, sinus congestion, fatigue and shortness of breath decrease. The lungs function better, as congestion reduces, so does the chance of infection.
- **Within 1 Year:** Risk of coronary heart disease decreases to half that of a smoker.
- **Within 10 Years:** Risk of dying from lung cancer is reduced to half.
- **Within 15 Years:** Risk of dying from a heart attack is equal to a person who never smoked

**Behavioural Support** – This involves support, other than medications, aimed at helping people stop their tobacco use. It can include all cessation assistance that imparts knowledge about tobacco use and quitting, provides support and teaches skills and strategies for changing behaviour.

Basic knowledge, certain competencies and skills are required to provide effective counseling for tobacco cessation.
Strategies For Tobacco Cessation - The 5 “A”S and 5 “R”S

The Five A’s (Ask, Advise, Assess, Assist and Arrange) and Five R’s (Relevance, Risk, Rewards, Repetitions, Roadblocks) is a five to fifteen minute research based counseling approach that has proven global success.

The Five A’s Approach

STEP 1: ASK

tobacco-use status be queried and documented at every visit.

STEP 2: ADVISE

A clear strong personalized message should be given to all tobacco users to quit”. It is important to tell the tobacco user about the benefits of quitting.

STEP 3: ASSESS

Assess two things

i) Level of dependence

ii) Readiness for change: Determine willingness to make a quit attempt and offer help as per the stages of change in which client is.

a) Not ready (Pre contemplation)

These tobacco users are not seriously considering quitting in the near future. They only see the positive aspects of tobacco and do not like to acknowledge the disadvantages. Encourage such a person to think about his/her tobacco use and make an offer of help. Offer them written information on the harms of tobacco use and benefits of quitting.

b) Unsure (Contemplation)

These tobacco users are seriously considering quitting in the near future. This group is particularly amenable to brief motivational interviewing. Talk to them about the relevant health effects of tobacco use and barriers to cessation.

c) Ready (Preparation)

These tobacco users are planning and ready to quit and have usually made a 24-hour quit attempt in the past year. This group is motivated to quit soon and is the group most likely to attempt to quit in the near future.

d) Action

These are former tobacco users who have quit in the last 6 months. This is when the risk of relapse is highest with about 75% of relapses occurring in this stage, within the first week. This is a period where support and strategies to prevent relapse are important. If relapse occurs, it is important that this should not be seen as failure, but considered a learning experience and as part of quitting process.

e) Maintenance

These are tobacco users who quit for more than 6 months. The non-tobacco use behaviour is established and the threat of tobacco use gradually diminishes. The chances of relapse diminish over time.
STEP 4: ASSIST

The following strategies are suggested to assist tobacco users in motivational stage:

<table>
<thead>
<tr>
<th>Action</th>
<th>Strategies for implementation</th>
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<tbody>
<tr>
<td>Help in making a QUIT PLAN.</td>
<td>Preparations for quitting:</td>
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<tr>
<td></td>
<td>Set a quit date; ideally, the quit date should be within 2 weeks.</td>
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<td>Tell family, friends, and co-workers about quitting, plan and seek their support.</td>
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<td></td>
<td>Anticipate challenges to planned quit attempt, particularly during the critical first few weeks. These include nicotine withdrawal symptoms.</td>
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<td>Remove tobacco products from surroundings.</td>
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<td></td>
<td>Avoid – Avoid Smoking or Using tobacco in places where a lot of time is spent e.g. work place.</td>
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<tr>
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<td>Avoid all forms of tobacco, do not substitute one tobacco product for another.</td>
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<tr>
<th>Action</th>
<th>Strategies for implementation</th>
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<tr>
<td>Provide practical counseling (Problem solving / skills training)</td>
<td>Past quit experience-identify what helped and what failed in previous quit attempts.</td>
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<td></td>
<td>Anticipate triggers or challenges in upcoming attempt – discuss challenges and how user will successfully overcome them.</td>
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<td></td>
<td>Alcohol: The tobacco user should consider limiting/abstaining from alcohol while quitting.</td>
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<td></td>
<td>Other tobacco users in the household/workplace: Quitting is more difficult when there is another smoker/tobacco user in the household/workplace. Other housemates/coworkers/peers should also be encouraged to quit.</td>
</tr>
<tr>
<td>Provide intra-treatment social support.</td>
<td>Provide a supportive environment by encouraging tobacco users in their quit attempts.</td>
</tr>
<tr>
<td>Help in obtaining extra-treatment social support.</td>
<td>Provide help in developing social support for quit attempt in the environment outside of treatment. “Ask your spouse/partner, friends and coworkers to support you in your quit attempt.”</td>
</tr>
<tr>
<td>Recommend Pharmacotherapy.</td>
<td>Explain how the medications improve success rates and reduce withdrawal symptoms.</td>
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STEP 5: ARRANGE

Arrange or schedule a follow-up. Follow up contact should occur soon after the quit date, preferably during the first week. A second follow up contact is recommended within the first month. Follow up visits after advice to quit have been shown to increase the likelihood to successful long term abstinence. During the follow up, quitters have some common withdrawal problems and a solution should be suggested accordingly.

PERSONS WHO ARE NOT WILLING TO QUIT TOBACCO

THE 5 “R”s APPROACH

For tobacco users who are not ready to make a quit attempt, provide a brief intervention designed to promote the motivation to quit and information about harmful effect of tobacco. The tobacco user may have fears and concerns about quitting, or may be demoralized because of previous unsuccessful attempts and relapse. This group may respond to a motivational intervention build around the 5 “R”s; i.e. Relevance, Risk, Rewards, Roadblocks and Repetition. It is designed to educate, reassure and motivate the client to quit tobacco use.
Algorithm of stepwise management of tobacco cessation (three tier approach)

It was developed as a part of WHO tobacco cessation programme and currently is also being used in the community settings and has been found to be of great clinical use. Algorithm promotes individualisation of treatment as per severity of tobacco dependence. If low level of dependence, then start with self help tips and followed by behavioural interventions and if it fails then only pharmacological management to be considered. However, if dependence is of higher level then directly patient can be started with pharmacological management along with behavioural interventions.

3.9.2 Pharmacological Management

Pharmacological effects of nicotine play a crucial role in tobacco addiction, and pharmacotherapy has to address this component of tobacco dependence. A pharmacological treatment for smoking cessation should both block the positive reinforcing effects of nicotine and prevent or reduce the development of withdrawal symptoms.

Nicotine Replacement Therapy (NRT)

Nicotine replacement therapy (NRT) acts in several ways; it relieves craving and withdrawal symptoms, which are relieved with relatively low blood nicotine levels, and causes positive reinforcement for arousal and stress relieving. Nicotine replacement products are available in a number of forms, including gum, transdermal patch, nasal spray, lozenge, and inhaler. The various forms of nicotine replacement therapy differ in
Addictions

terms of route of administration and speed of absorption, as well as in the extent to which they offer a situational response to craving and a behavioural ritual to replace the rituals of cigarette smoking. None gives the high concentration arterial bolus of nicotine characteristic of cigarette smoking, and the overall dose of nicotine they provide is typically only one-third to one-half of that from cigarettes. This, coupled with the absence of toxic tar and gas phase components of cigarette smoke, gives them a reassuring safety profile.

Gum is available in 2 mg and 4 mg (per piece) doses. For those smoking <25 cigarettes per day, the 2-mg dose is recommended; for >25 per day, the 4-mg dose is recommended. Gum should be used for up to 12 weeks, no more than 24 pieces per day. Dosage should be tailored to the individual patient. NRT should be used cautiously in cardiovascular patients, common adverse effects are soreness and jaw-ache.

The efficacy of nicotine replacement therapy appears to be largely independent of other elements of treatment. Although absolute success rates are higher with more intensive behavioural support, the effect of nicotine replacement therapy in doubling the chance of quitting is found in brief interventions and over-the-counter.

3.10 NON-NICOTINE PHARMACOLOGICAL TREATMENTS

1) Bupropion, an atypical antidepressant with some noradrenergic and dopaminergic activity, became the first non-nicotine medicine licensed for smoking cessation in the United States, Canada, and Mexico. The mechanism of action appears not to be related to the drug’s antidepressant effect but rather to pathways common to addiction. Clinical trials, among non-depressed smokers, have shown clear advantage over placebo, and there is evidence that bupropion and the nicotine skin patch have additive effects in enhancing outcomes.

2) Varenicline a new drug has sown promising results in patients with nicotine dependence. It is more effective than 24-hour NRT and bupropion. Like NRT and bupropion, varenicline significantly reduces nicotine withdrawal symptoms, and there is also evidence it makes smoking less rewarding so may help prevent ‘slips’ develop into full relapse.

3) Clonidine is one of the medication that is effective but having too many side effects and not in use.

Combination Therapy

Combined behavioural and pharmacological therapies appear to be the best approach for treating tobacco dependence. Because these therapies operate by different mechanisms, complementary and potentially additive effects may be expected. Nicotine Replacement Therapies (NRT) combined with supportive counseling are the most widely used and intensively reached treatment method. Although self help strategies alone marginally affect quit rates, individual and combined pharmacotheapies and counseling either alone or in combination can significantly increase cessation.

Self Assessment Questions 3

1) What are the methods of assessment of tobacco dependence?

.....................................................................................................................
2) Mention the components of the CAGE questionnaire.

3) What are the five A’s?

4) The 5 “R”s are Relevance, ________, Rewards, __________, and Repetition.

3.11 LET US SUM UP

Tobacco dependence or addiction has a huge cost on our population in terms of reduced manpower, decreased productivity, impaired relationships and mortality. Significant progress has been made in understanding the relationships among nicotine’s behavioural, subjective, physiologic, and neuroregulatory effects. Moreover, this type of scientific research on nicotine dependence has led to improved techniques for reducing tobacco use. Guideline researches conclude that first-line medications, including bupropion and nicotine replacement therapies, should be used in conjunction with behaviourally based counseling to produce optimal outcomes in smoking cessation. Despite the development of new medications and their increasing availability over the counter, treatment challenges remain.

3.12 ANSWERS TO SELF ASSESSMENT QUESTIONS

Self Assessment Questions 1

1) Addiction usually refers to repetitive pattern of a behaviour or substance use irrespective of its harmful consequences. Whereas drug dependence usually refers to a syndrome characterised by physiological, cognitive, somatic, psychological set of symptoms associated with use of a particular substance. It is associated
with craving, tolerance, withdrawal and use despite harmful consequences of the same.

2) Tobacco is used in a wide variety of ways such as smoking, chewing, applying to gums, sucking and gargling.

3) Tobacco is used in smokeless manners in a wide variety of ways with multitude products such as betel quid, mixture of tobacco, lime areca nut, tobacco with lime, mishri, mawa, gutkha and many others.

Self Assessment Questions 2

1) The physical health hazards associated with the use of tobacco are Respiratory diseases: chronic obstructive pulmonary disease, pneumonia, bronchitis, Oral lesions: leukoplakia, erythroplakia, Oral submucosal fibrosis, oral cancer, Cancerous lesions: carcinoma involving bladder, cervix, oesophagus, stomach, kidney, larynx, lung, pharynx, Heart & blood vessel disease: coronary heart disease, peripheral vascular disease; and Sexual dysfunction: erectile dysfunction, infertility, decrease sperm counts.

2) Following are the signs of nicotine withdrawal:
   i) Irritability, frustration or anger
   ii) Anxiety
   iii) Difficulty in concentrating
   iv) Increased Appetite
   v) Restlessness
   vi) Depressed mood
   vii) Insomnia

Self Assessment Questions 3

1) The methods of assessment of tobacco dependence are Clinical examination and interview, Instruments or Questionnaires, and Objective methods.

2) The components of the CAGE questionnaire are, Cut Down, Annoyed, Guilt, and Eye Opener.

3) The Five A’s are Ask, Advise, Assess, Assist and Arrange.

4) Risk, Roadblocks.

3.12 UNIT END QUESTIONS

1) Discuss the causes of tobacco dependence.

2) Describe the various assessment methods of tobacco dependence.

3) Explain the non-pharmacological management of tobacco dependence.

4) How will you assist tobacco users in the motivational stage?

5) Discuss pharmacological management of tobacco dependence.


