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Tobacco Cessation: A Review

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ABSTRACT

Tobacco use is one of the biggest public health threats. Tobacco use is clearly a big hazard in terms of its magnitude and use in different forms. There is no safe level of exposure to tobacco, as users can experience health consequences at any age. Globally, it accounts for 8 million deaths every year, among which 1.3 million are due to second-hand smoking. It also has heavy social and economic burdens. Tobacco is the most important preventable cause of death and disease among adults. The burden of tobacco-related illness and death is heaviest in low- and middle-income countries, due to a lack of public awareness, inadequate healthcare infrastructure, and weak regulatory interventions. Most of the tobacco users who become aware of the dangers of tobacco-use want to quit. However, the nicotine present in tobacco products is highly addictive and makes it difficult to quit. Without proper cessation support, hardly 4% of users who attempt to quit tobacco use will succeed. Tobacco cessation in the adult population is essential to accelerate the reduction in smoking-related morbidity and mortality.

KEYWORDS: Tobacco Cessation, NRT, Counselling, Intervention, Quitting Tobacco

INTRODUCTION:

Tobacco use is one of the biggest public health threats.[1] The International Agency for Research on Cancer (IARC) has classified tobacco products in all forms as Group 1 carcinogens.[2] Use of tobacco is a major risk factor for many diseases, like cancer, lung disease, cardiovascular disease, dementia and stroke.[3] The most common form of tobacco-use throughout the world is Cigarette smoking.[1] But, the most important matter of concern is the increasing use of tobacco among adolescents, young adults and women.[4]

Most of the users have an intention to quit tobacco-use.[5] But, without a proper cessation support hardly 4% of users who attempt to quit will succeed.[3] It has been found that tobacco-usage shows a substantial decrease with increasing levels of education. This reflects the importance of tobacco awareness education and intervention programmes among children as well as adults.[6] So, the main objective is to see that no one uses tobacco, and that every effort is made to get people to quit all forms of tobacco and to prevent everyone, especially youth, from starting to use any tobacco product.[7]

DISCUSSION:

There are three main phases to tobacco cessation: preparation, intervention, and maintenance. The purpose of preparation is to boost the smoker's desire to quit and confidence in his/her ability to succeed. Intervention can be done in many forms or a combination of forms, to help users achieve abstinence. Maintenance is necessary for permanent abstinence and it includes support, coping strategies, and

substitute behaviors. The majority of smokers who have successfully quit have used cessation programmes at some point throughout the course of their smoking habit.[8]

PHARMACOTHERAPY FOR TOBACCO CESSATION:

Pharmacotherapies, now recognized as the "standard of care", have shown an empirical track record of success in treating nicotine addiction, and multiple studies have revealed that they greatly increase long-term quitting rates.[9]

NICOTINE REPLACEMENT THERAPY (NRT): These contain only nicotine, and are devoid of other harmful ingredients found in tobacco, thus avoiding symptoms associated with withdrawal.[9,10] NRT includes:

- **Nicotine gum:** The gum has 4mg/2mg of nicotine in it, which is released from a resin on chewing and is buccally absorbed. For a less dependent user, 2mg will be sufficient.[11] For someone who uses tobacco within 30 minutes of waking, 4mg dose is recommended. Two types of gum are produced in India: mint flavor for smokers and gutkha flavor for smokeless tobacco users.[10] First 6 weeks, one piece of gum is taken every 1-2 hours, to ensure ease of withdrawal symptoms. Following 6 weeks, 1 piece is used every 2-4 hours, and then 1 piece every 4-8 hours.[12] The gum is slowly chewed for 5 minutes until the taste is strong. Then it is placed between the cheeks and gums on one side, for 10 minutes. When the taste fades, the gum is again chewed for 5 minutes and placed for 10 minutes on the other side. This goes on for 30 minutes.[11,13] Majority use nicotine gum for ≥9 months, and 10-20% do so for longer than two years. Only 1-2% of smokers eventually stop gum use.[9,10] It was also found that 5–20% of smokers can become addicted to nicotine gum.[14,15]
- **Nicotine patch:** It is a transdermal formulation that is absorbed very quickly through the skin. It can be used for 16-hours/24-hours.[9] The 16-hour patches come in doses of 15/10/5mg, and the 24-hour patches come in 21/14/7mg doses.[13] The right dose depends on his/her current smoking status. 21mg is recommended when the patient smokes >10 cigarettes/day. Initial doses are 15mg for 16 hours or 21mg for 24 hours. After 4-6 weeks, an intermediate dose of 14 mg for 24 hours or 10mg for 16 hours is administered. 2-4 weeks later, the dosage is further lowered to 7mg for 24 hours or 5mg for 16 hours.[9] The patch is applied onto dry, hair-free skin on the chest, upper arm, shoulder or back.[16] Successful quitting rate ranges between 15-20%.[17,18] Combining the nicotine patch with an oral NRT increases quit rates by 34-54%.[19] The 21mg patch shows a greater success rate than the 15mg patch. The 24-hour patch and the 16-hour patch produce similar quit rates.[14,15]
- **Nicotine lozenges:** They are over-the-counter capsules, coming in regular and mini sizes of strengths 2mg and 4mg.[7] 4mg is recommended for a more dependent user and 2mg is recommended when taken along with a nicotine patch.[20] Over time, the dose is reduced till a total treatment time of 12 weeks.[7] Lozenge is moved around in the mouth and allowed to dissolve slowly over 20-30 minutes.[20] The abstinence rates of 2mg and 4mg lozenges were found to be 46% and 48.7%, respectively, at 6-weeks.[21]
- **Nicotine inhaler:** Inhalers deliver nicotine buccally.[9] Each cartridge contains 10mg of nicotine.[13] Short and shallow puffs are taken, for four 5-minute sessions, or continuously for about 20-minutes.[22] It is used for about 12 weeks in total.[7] The abstinence rate is around 20%.[23]
- **Nicotine nasal spray:** They are delivered through the nasal or oral cavity, and are more rapid compared to other NRTs. Each bottle delivers 200 sprays and each spray contains 0.5mg, used for a total of 12 weeks.[7,13,24] The tip of the bottle is inserted and sprayed into the nostrils, while breathing

through the mouth. Sniffing, swallowing, or inhaling is avoided. If the nose runs, gentle sniffing is done to retain the medicine for absorption. After 2-3 minutes, the nose is blown.[24] Earlier studies showed them to be very helpful in highly dependent smokers, but later studies do not show such advantage.[9] Its quit rate was found to be at 4-45%.[25]

All the commercially available NRTs increase quit rates by 1.5 to 2-fold, regardless of the setting.[14] Prospective randomized clinical trials have shown that combination of NRT and counselling results in better cessation rates, than counselling alone.[14]

NON-NICOTINE MEDICATIONS:

Bupropion Hydrochloride Sustained Release (SR) tablets: Bupropion, originally an antidepressant, was approved for tobacco cessation in 1997. It is available in a single dose of 150mg, which is given twice a day, at 8 hours interval.[26] After initial dose of 150mg/da for 6 days, 300mg/day is prescribed. Bupropion therapy is started 1-2 weeks before the quit date to help reach stable levels of drug in the blood. After which 7-12 weeks of treatment is recommended, with up to 6 months of maintenance.[10,27,28] Bupropion has a success rate of 49-72%.[29] Approximately 1 in 5 remain tobacco-free for at least one year with bupropion therapy.[28]

Varenicline: Varenicline comes in 2 different doses: 0.5mg (white pill) and 1mg (blue pill). First three days, 1 white tablet is taken each day. Days 4 to 7, two white tablets are taken, one in the morning and one in the evening. From day 8 till the end of the treatment, two blue tablets are taken.[30] It is recommended as a 12-week regimen. The number of people quitting tobacco with varenicline is higher than with bupropion or with NRT. Low-dose varenicline decreases the frequency and severity of side effects.[31] In India where dependence over smoke-less tobacco is common, varenicline was found to be effective.[32]

Selegeline Hydrochloride: Selegiline comes as a capsule and an orally disintegrating tablet. Selegiline doses of 5mg is taken once a day during the first week and it is increased to 5mg twice daily for the remaining 7 weeks.[33] The orally disintegrating tablet is usually taken once a day before breakfast without food or liquids.[33] Among the few clinical trials that have been carried out so far, it has been found that there is a three-fold increase in abstinence at week 8, and also showed decreased craving.[34]

Nortriptyline: Nortriptyline is available as 10mg and 25mg tablets. The effect of nortriptyline is not immediate and so it's started 10-28 days before the quit date. A dose of 25mg should be taken once daily. The dosage will be increased slowly over a 10-day to 5-week period. The maximum dose given is 75-100mg/day and the treatment lasts for 12 weeks, but may extend for up to 6 months.[35] There is evidence that people using nortriptyline have a successful quitting of 48-178%.[29]

Clonidine: Clonidine is mostly used as a backup medication for people who cannot or do not want to take NRT or bupropion.[10] As comparison to NRT, clonidine causes more serious adverse effects (drowsiness and postural hypotension) and withdrawal symptoms. Clonidine can be taken through oral or transdermal route. The oral dosage varies from 0.15-0.45mg/day. Dosage is customised based on tolerance and/or body weight, a day prior to quit day. Transdermal dosages are 0.1-0.3mg/day.[36] Clonidine increased smoking cessation in eight out of nine trials when used as a patch or at small doses, and also appears to be more effective in female smokers.[10,32]

Cytisine: The effectiveness of Cytisine for continuous abstinence is superior to that of NRT, especially in women.[37] Dosage of Cytisine in the first 3 days is 1capsule every 2h (maximum:6capsules/d), from day 4-12 1capsule is taken every 2.5h (maximum:5capsules/d), day 13-16: 1capsule every 3h

(maximum:4capsules/d), during 17–20days: 1capsule every 5h (maximum:3capsules/d) and finally, from day 21–25 1–2 capsules/day is prescribed.[38]

Every patient should be given the option of pharmacotherapy as there is no absolute contraindication for it. However, specific patient groups like; Pregnant or nursing mothers, smokers who have pulmonary or cardiovascular illness, light smokers (<10cigarettes/day), chewers (<1sachet/week), adolescents and young people who are just trying tobacco; must be considered because some of the drugs may have severe effects on them.[10]

NON-PHARMACOLOGICAL METHODS OF CESSATION:

Cold Turkey: Quitting cold turkey means stopping without the aid of NRT.[39] About 90% of tobacco quitters quit completely, all of a sudden, with no medicines or NRTs.[7,40] It helps in benefitting the body and getting over the burden of withdrawal symptoms faster compared to gradual withdrawal.[39] It is found that only about 5-7% are able to quit on their own and stay quit for at least 6-12months, and the chances of a successful quit attempt are much higher in someone who uses assistance. [7,39,40]

Gradual Withdrawal: Another way is gradual withdrawal, i.e., cutting down on the number of tobacco products used a little bit each day. This method slowly reduces the amount of nicotine in the body and also reduces withdrawal symptoms.[40] A Cochrane review of 10 RCTs found no statistically significant difference between cold turkey and gradual withdrawal in terms of quit rates.[41] But sudden cessation is more likely to result in long-term abstinence than gradual withdrawal.[42,43]

Psychological interventions: It includes self-help materials, brief therapist-delivered interventions such as advice from a healthcare professional, intense counselling and combinations of these approaches.[44]

Individual counselling: These sessions are based on a behavioural approach in which counsellors use a series of open-ended questions to assess motivation for cessation, areas of concern, anticipated problems and possible solutions.[45] This type of counselling includes planned personal activities by a qualified cessation counsellor and is of 10minutes duration.[45] Generally, sessions last for 4weeks following a quit date. Multiple and lengthier meetings are found to be more successful.[45] Individual counselling, used independently of pharmacotherapy, is estimated to increase cessation by 40% to 80% after at least 6 months.[44] However, it is even more effective when used in combination with pharmacotherapies.[46]

Group/Peer therapy: Group therapy gives patients the chance to learn behavioural approaches for quitting as well as to support and encourage one another. Participants attend regular meetings with a facilitator, typically an expert in tobacco cessation counselling.[47] Self-help groups, online support communities, peer-delivered or peer-run services, peer partnerships, and peer employees or volunteers in healthcare settings, are just few examples of peer-support therapy.[46] According to a Cochrane analysis, group therapy is superior to self-help and other less intensive therapies. There are insufficient evidences to compare the effectiveness of it to individual counselling. Recent research indicates that those who are economically and socially disadvantaged and those who suffer from mental illness, may benefit more from peer support programmes.[46]

Mobile Phone-based Interventions: Cell phone-based tobacco cessation interventions generally include cessation advice, motivational messages, health education, content to distract from cravings, reminders for appointments, medication adherence, self-management and monitoring, which can be delivered via text or video messages, or through Apps.[48] Apps can be customised for the user by adding age, weight, and a variety of personal preferences. One such mobile phone intervention introduced by the Government

of India in collaboration with the WHO, is the m-Cessation programme.[49] Research findings indicate that cell phone-based interventions are associated with a 2-fold increase in cessation rates.[50]

Telephone-counselling: Telephone counselling can be proactive (the counsellor initiates contact) or reactive (the smoker calls quitline). The reactive telephone services offer information, recorded messages, personal counselling or a mixture of components.[51] Proactive telephone counselling consists of 7 counsellor-initiated telephone calls over a 3-month period. It is conducted as one 30-minute session and up to six additional 10-minute sessions, along with 3 supplementary brochures.[52] Reactive counselling showed a quit rate of 7-10%, while proactive counselling showed 11-14% success. Increased number of calls increased the chances of quitting, as per research reports.[51]

Video-counselling: Software for real-time video communication transmits live video and voice over the Internet, enabling counsellors to offer assistance to smokers who want to quit.[53] It may provide quitlines and other cessation providers an additional effective solution to delivering counselling directly to clients in their own homes, and is also sustainable during pandemic situations.[54] There is little evidence about the effectiveness of video counselling for smoking cessation, as no trials have investigated it yet.[54]

Self-help interventions: Self-help refers to taking the initiative to quit and taking action toward cessation without anyone else's involvement. Self-help usually takes the form of written materials like pamphlets, booklets, mailings, manuals, but may also include other forms of media such as video or audiotape. Information is available on NRT products or other medications and on other aspects of quitting, smoking, health and relapse.[55] Pairing self-help with other cessation programs has been proven to be more effective than self-help alone. The abstinent rate of self-help alone was found to be 12.3 %.[56]

Behavioral Intervention:

The notion that therapy is unnecessary and irrational anxieties about it are common in tobacco dependence, and it is due to an addicts' rejection of their own addiction and need for help. This can be countered by using behavioural intervention methods, which concentrates on educating the user, offering counselling, or a combination, employing various theoretical models to accomplish these goals.[57] It is done by applying the following standard interventions:[9,57]

- Five A's approach
- Five R's approach for patients not willing to quit.
- Motivational Interviewing.

FIVE As:

The 5 As is a short intervention technique with evidence-based framework for organizing tobacco cessation in health care settings and are considered the gold standard for delivery of tobacco cessation.[9,57] This procedure can work well and just needs 5-15 minutes.[10] The 5 As are as follows: **Ask-Advise–Assess–Assist-Arrange**[9,10,57]

ASK: Question, identify, and record each patient's tobacco-use status systematically during every appointment.[9,57] The key pieces of information are: current tobacco-use and interest to quit. The Fagerstrom Nicotine Dependence/Tolerance Questionnaire can be used to better quantify tobacco-use.[10,57]

ADVISE: Everyone tobacco-user should be strongly encouraged to stop in a supportive and non-confrontational manner.[9] Should assist users in comprehending how health effects of smoking apply to them specifically and think through the implications.[10] Advise should have a Clear, Strong and Personalized message.[9] The non-users should be advised never to use tobacco. The tobacco quitters should be congratulated and offered support if needed.[11]

ASSESS: To assist a patient with cessation, his/her willingness to commit to this change should be assessed using the below given steps:

1. **Assess the user's position on the Stages of Behavior Change Cycle**.[9]
2. **Assess the level of Nicotine Dependence:** Using Fagerstrom Nicotine Dependence Scale for smokers, and Modified Fagerstrom Nicotine Dependence Scale for smokeless-tobacco-users.[57] Other nicotine dependence scales that can be used are: The Cigarette Dependence Scale (CDS), The Nicotine Dependence Syndrome Scale (NDSS), Tobacco Dependence Screener (TDS), Wisconsin Inventory of Smoking Dependence Motives (WISDM-68), and The Hooked-on Nicotine Checklist (HONC). [58,59,60]
3. **Assess the willingness to quit:** Using Readiness to Quit Ruler and Confidence to Quit Ruler.[57]

ASSIST: The users are helped to quit the tobacco habit. Aiding the patient in quitting involves providing counselling and medication.[61] In tobacco users who are willing to quit, the motivational stage should be utilized efficiently.[9] For the users who are not willing to quit, 5 Rs are used in motivational interviewing to let tobacco users identify the key issues themselves.[10,57] They are as follows: **Relevance-Risks-Rewards-Roadblocks-Repetition**.[26]

Relevance: The patient is encouraged to identify why quitting is personally relevant, being as specific as possible.

Risks: The patient is asked to identify negative consequences of continued tobacco use on them.[10]

Rewards: The user is asked to identify and discuss benefits of quitting.[10]

Roadblocks: The tobacco user is assisted in identifying barriers to quitting.[10,57]

Repetition: The user is reinforced with motivational messages at every chance.[10]

At any point of time during the 5R's, the counsellor assesses the patient's willingness to quit and if found willing, reverts back to the 5A's approach for tobacco cessation.[57]

On encountering with a recent quitter or former user, a clinician will reinforce the patient's decision to stop tobacco use, review the benefits of quitting and assist the patient in solving any withdrawal symptoms or relapse triggers.[10]

ARRANGE: A follow-up contact is an effective method to increase the chances of successful long-term abstinence from tobacco use. The first follow-up is scheduled during the first week. A second during the second week and a third within the first month. Further follow-ups are scheduled as per convenience in 3-4 months, 6 months and 1 year.[9,10,57]

Motivational interviewing: It is a directive patient-centred style of counselling, designed to steer people towards choosing to change their behaviour, and encouraging their self-belief.[62]

Adaptations of MI range from brief 20-minute office interventions (Motivational Consulting) to Motivation Enhancement Therapy (MET), a multi-session course of treatment, including a lengthy assessment, personalized feedback and follow-up interviews. MI can be used alone or in conjunction with other treatments.[62] There are no much evidences on effectiveness of motivational interviewing and there is a need for higher quality research.[46]

ABSTINENCE: The first few weeks after trying to quit tobacco use are when most people relapse. Within 6 months, relapse occurs in about 75% of smokers. Although 60-70% of smokers who quit for at least 6 months continue to maintain their smoking cessation for at least 8 years, the chance of recurrence decreases after 6-12 months of abstinence.[63] At 6-12 months, it was discovered that the abstinence rate in untreated smokers ranged from 3-5%, whereas it was around 7% in those who received brief guidance and

between 10-12% in those who received personalised behavioural counselling. Interventions that combine pharmacotherapy and behavioural support have 1-year abstinence rates between 20-30%.[63]

CONCLUSION:

India's tobacco problem is more complicated than it is in most other countries, and as a result, there is an enormous burden of sickness and death. Therefore, it is essential to address this issue through effective tobacco cessation programs, which needs to be started early, especially for young people. It is a challenging but achievable goal. The tobacco pandemic requires a multi-faceted approach that involves individuals, the public, and the government. While governments and health organizations play a vital role in promoting tobacco cessation, individuals can promote a healthier and smoke-free world by taking a proactive approach to tobacco cessation. Together, we can reduce the harmful effects of tobacco use and promote a healthier and smoke-free world.

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