

# Nicotine Gum in Smoking Cessation

Oshi Chaturvedi<sup>1</sup>, Priyam Chaturvedi<sup>2</sup>

## ABSTRACT

Cigarette is one of the most contaminated drug delivery system. Smoking remains the foremost cause of numerous diseases. Mortality as a result of tobacco smoking can be caused by diseases, which includes expansive range of cancers, respiratory and cardiovascular diseases. Nicotine has been proven to bolster smoker's dependence on tobacco. As nicotine is the one causing the dependence in smokers the use of nicotine from another more reliable source for supporting while smokers try to abstain from smoking is advantageous. These alternative sources of nicotine are popularly called as Nicotine Replacement Therapy. Nicotine gums are one of the most common and initial product to be developed under nicotine replacement therapy. They have been demonstrated to help abstain from smoking from various studies. Nicotine gums are easily available in market as over the counter medicine, though proper knowledge about the directions for using nicotine gums, the precautions which should be taken while using nicotine gums and side effects which can be caused by using nicotine gums is crucial to be understood before utilizing this form of nicotine replacement therapy.

**Keywords:** Nicotine Gum, Smoking Cessation

## INTRODUCTION

Nicotine replacement therapy (NRT) is a treatment used so as to aid smokers to quit smoking. In this therapy, nicotine present in cigarette is substituted by supplying nicotine in reliable forms such as nicotine gums, nicotine lozenges, and nicotine patches. The treatment assists in reducing withdrawal symptoms linked with smoking cessation, and is therefore helpful in fighting the urge to smoke.<sup>1</sup> The diseases caused by cigarette smoking are not primarily due to nicotine but rather due to massive amount of carcinogens and toxins produced while burning and inhaling tobacco products.<sup>2</sup> Meanwhile nicotine plays the role of major chemical component responsible for addiction of tobacco products.<sup>3</sup> Hence nicotine replacement therapy proves to be a beneficial treatment for tobacco dependence as it provides a medication with a promising risk-to-benefit ratio to replace the drug of abuse with nicotine medications.<sup>2</sup>

## NICOTINE GUM

The first variety of NRT to become extensively available was chewing gum. The nicotine resin complex is offered in a buffered chewing gum base. These nicotine chewing gums facilitates nicotine to be directly absorbed by the buccal mucosa, which in turn causes a plasma concentrations that is roughly half of that produced by smoking a cigarette.<sup>4</sup> The gum is available in various strengths and can be used either after scheduled intervals or can be taken when needed. Decreasing the amount of nicotine gums taken per day

(tapering) can be considered in 8 to 12 weeks.<sup>5</sup>

Directions for use:

- Nicotine gums are used as chewing gums, they are not to be swallowed
- It can be proposed as a predetermined dose or it can be taken as much and as often as desired. Treatment is generally started by using a 2 mg nicotine gum.
- For an extremely dependent smoker or someone who previously has been unable to quit smoking with 2mg gums, 4mg gums can be suggested.
- These gums may be used frequently initially, by chewing one piece of gum in every 1-2 hours for the first 6 weeks. And then can be followed up by chewing only one piece of gum every 2-4 hours for next three weeks, and then just one piece in every 4-8 hours next three weeks.
- Nicotine gum should be chewed slowly until it softens up and begins to get a peppery taste or slight tingling is felt in the mouth.
- As soon as tingling sensation is felt in the mouth people are advised to stop chewing and place the piece between your gums and cheek and leave it in that place.
- Placement of the nicotine gum in the buccal mucosa is crucial for the absorption of nicotine, failure to do so will lead to more of the nicotine being swallowed which may instigate side effects like nausea and vomiting.
- When gum starts to lose its peppery taste or tingling feel, you can chew it again until either peppery taste or the tingling sensation reappears.
- Go over this process as many times as required, for up to 30 minutes.

## PRECAUTIONS<sup>6</sup>

- It is advised not to chew two pieces of gum at the same time
- It is unsafe to use more than prescribed number of chewing gums or unsafe side effects may happen.
- If not under supervision it is advisable to not chew more than 24 pieces of 2 mg gum in a day.
- Nicotine gum is not to be swallowed.
- It is contraindicated to eat or drink within 15 minutes before using the gum, or while you are using it.

<sup>1</sup>Student (Internship), Peoples College of Dental Science and Research Centre Bhopal, <sup>2</sup>2<sup>nd</sup> Year PG Student, Department of Pedodontics and Preventive Dentistry, College of Dental Science, BBD Lucknow, India

**Corresponding author:** Oshi Chaturvedi, A-89, Minal Residency, J.K. Road, Bhopal, India

**How to cite this article:** Oshi Chaturvedi, Priyam Chaturvedi. Nicotine gum in smoking cessation. International Journal of Contemporary Medical Research 2017;4(9):1964-1966.

- It is recommended to chew slowly until tingling sensation or peppery taste can be felt in mouth.
- It is advisable to discontinue consuming nicotine gum for any duration longer than 3 months.
- Nicotine gums pieces shouldn't be used right after the other.
- Gradually lessen the amount of nicotine gums chewed per day after 2-3 months, which will prevent nicotine withdrawal symptoms.
- Nicotine gums are not considered safe after 12 weeks of use.
- The use of nicotine gums by pregnant women is strictly prohibited.

#### Side effects<sup>6</sup>

- Nervousness and unease.
- Feeling disoriented
- Tenderness in chest and pressure
- Burning numbness or tingling feeling that is not normal
- Dizziness
- Headache
- Nausea
- Diarrhea
- Sore throat
- Jaw pain
- Cold sweat
- Blurred eye sight
- Malaise
- Allergic reactions like- rash, hives, itching, red swollen blisters or peeling skin with or without fever, wheezing, tightness in the chest or throat, hoarseness, swelling of the mouth, face, lip, tongue or throat.

#### WEANING OF NICOTINE GUM

- Reduce the chewing time with every piece from the normal 30 minutes to 10-15 minutes for 4 to 7 days.
- Cut back the total number of pieces used per day by about one piece every 4 to 7 days.
- Increase the interval between uses of two nicotine gum pieces.
- Start by substituting single or multiple pieces of nicotine gum with sugarless gum for an equal number of pieces of nicotine gum.
- If at first using 4 mg gum, replace it with 2 mg gum and apply any of the steps mentioned.
- Contemplate terminating the use of nicotine gum all together, when the craving for nicotine is placated by chewing just one or two pieces of gum per day.<sup>15</sup>

#### BRAND NAMES OF NICOTINE GUMS<sup>14</sup>

- NICORETTE 2 Mg TABLET  
Mfg. JOHNSON and JOHNSON Packet size: 1 piece  
MRP: INR 22.00
- NICOTEX 2Mg Chewing Gum  
Mfg. CIPLA  
Packet size: 9 pieces  
MRP: INR 64.00
- NICO GUM 4 Mg

Mfg. CIPLA  
Packet size-10 pieces  
MRP: INR 75.00

- EU COMINT 2Mg TABLET  
Mfg. ELDER  
Packet size-20 pieces  
MRP: INR 125.00

#### DISCUSSION

A study was conducted in 1984 on the effect of nicotine chewing gum in smoking cessation. In this study the effect of 2mg nicotine chewing gum as an aide to group therapy for smoking cessation has been analyzed. The deduction from the study came out to be that Nicotine chewing gum is effective in improving the success rates in smoking cessation centered on group therapy.<sup>13</sup> A different study conducted in 2009 on smoking cessation or reduction alongside nicotine replacement therapy was done, it appraised the efficacy and safety of nicotine gum (4mg) or nicotine inhaler (10mg) in assisting smokers to reduce or quit smoking. The inference of the study was that treatment with 10 mg nicotine inhaler or 4 mg nicotine chewing gum resulted in a significantly higher abstinence rate.<sup>7</sup> In 2008 a study to monitor effect of Cigarette abstinence on impairing memory and metacognition despite the administration of 2 mg Nicotine Gum was done, it assessed the effects of cigarette abstinence and nicotine gum on sustained attention, free recall, and metacognition using a within-subjects design. From the study it could be concluded that nicotine gum can improve smokers' performance in basic aspects of cognition like sustained attention but may not alleviate the detrimental effects of cigarette abstinence on higher-level processes such memory and metacognition.<sup>5</sup> In 2011 a study examined whether providing information to a misinformed person about the innocuous nature of nicotine replacement therapy neutralized the apprehension of a person towards his intentions to use NRT. They concluded from the study that while a substantial amount of smokers are still misinformed about the safety of NRT, these misinformed smokers would increase consideration of NRT if misperceptions are properly addressed.<sup>10</sup> In another study the plasma nicotine absorption and clinical tolerability of NHTG2 to that of NHG1 and Nicorette fresh mint was compared. Study findings denote that NHTG2 gum provides a much speedier absorption of nicotine in blood without any significant decrease in tolerability. The rate of delivery and onset of therapeutic effects are related, these gums would be expected to provide more rapid therapeutic effects.<sup>11</sup> It can be inferred from all the studies mentioned that, treatment with nicotine gums result in significantly higher chances of abstinence<sup>7</sup>, they prove to be effective in increasing success rates in smoking cessation.<sup>13</sup> Some of the newly manufactured nicotine gums NHTG2 gums are able to provide much more speedy therapeutic effects than NHTG1 gums.<sup>11</sup> A sizeable portion of smokers are still misinformed about the safety of NRT, providing corrective information to address these misconception will cause smokers to become more open to NRT treatment which would improve quit

rates and benefit overall wellbeing of public.<sup>10</sup> Nicotine gums can boost a smokers' functioning in basic aspects of cognition like sustained attention, but might not alleviate the detrimental effects of cigarette abstinence on higher process such as memory and metacognition.

Major component of world's smoking population lives in India. Most of these smokers wish to quit smoking, but only few are able to. Some of these are able to quit 6 weeks after proper counseling and medication. The biggest hindrance in smoking cessation is the negligible knowledge about the ill effects on health by smoking. Another factor that hampers the chances of smoking cessation is the lack of follow up of patients by doctors, which may be due to lack of incentives, resources and government funding. Another factor can be misapprehensions held by doctors about NRT.

Tobacco cessation clinics (TCCs) were set up in India by WHO and Govt. of India to make available tobacco cessation intervention. 31% of the total registered cases in the initial 5 years were treated with nicotine gums and behavioral counseling. The abstinence rate in counseling group were 15%-17%, whereas abstinence rate in medication group were drastically higher, they were around 53%-60%.<sup>15</sup>

Treatment of smoking habit with the help of NRT can be made popular India by providing better knowledge about nicotine gums to smokers, by making NRT accessible and cost effective.

## CONCLUSION

Nicotine gums are effective as a part of holistic approach to promote smoking cessation. They increase the odds of quitting substantially. These chewing gums are not mystical cure for a smoking habit; they rather act as a positive sustenance for nicotine addiction present in smokers'. These nicotine gums are ultimately more effective in those who are willing to quit.

## REFERENCES

1. Silagy C, Lancaster T, Stead L, Mant D, Flower G. Nicotine replacement therapy for smoking cessation. *Cochrane Database Syst Rev.* 2004;3:CD000146.
2. Reginald V. Fant, Jack E. Henningfield. Nicotine Replacement Therapy. Primary care: clinics in office practice 1999; 26:633-652
3. Tore Sanner, Tom K. Grimsrud Nicotine carcinogenicity and effects on response to cancer treatment/review. *Front Oncol.* 2015; 5: 196-197.
4. Russell MA, Feyerabend C, Cole PV. Plasma nicotine levels after cigarette smoking and chewing nicotine gum. *British Medical Journal* 1976; 1:1043-6.
5. William L. Kelemen and Erika K. Fulton. Cigarette Abstinence Impairs Memory and Metacognition Despite Administration of 2 mg Nicotine Gum. *Exp Clin Psychopharmacol.* 2008; 16: 521-31.
6. What special precautions should I follow? Before using nicotine gum (Internet) [updated: 07 September 2017, cited on 18<sup>th</sup> sept 2017] available from: www.medlineplus.com, U.S. National Library of Medicine.
7. Kralikova E, Kozak JT, Rasmussen T, Gustavsson G and Houezec JL. Smoking cessation or reduction with

nicotine replacement therapy: a placebo-controlled double blind trial with nicotine gum and inhaler. *BMC Public Health* 2009;9:433.

8. Henningfield JE, Radzius A, Cooper TM, Clayton RR. Drinking coffee and carbonated beverages blocks absorption of nicotine from nicotine polacrilex gum. *JAMA* 1990; 264:1560-4.
9. Hughes JR, Hatsukami DK, Skoog KP. Physical dependence on nicotine in gum. A placebo substitution trial. *JAMA* 1986;255:3277-9.
10. Ferguson SG, Gitchell JG, Shiffman S, Sembower MA, Rohay JM, Allen J. Providing accurate safety information may increase a smoker's willingness to use nicotine replacement therapy as part of a quit attempt. *Addict Behav.* 2011 Feb 13
11. Saul Shiffman, Edward J. Cone, Agust R. Buchhalter, Jack E. Hennigfield, Jeffery M. Rohay, Joe E. Gitchell, John M. Pinney, Tom Chau. Rapid absorption of nicotine from new nicotine gum formulation. *Pharmacol Biochem Behav.* 2009;91:380-4.
12. Benowitz NL. Clinical pharmacology of nicotine: implications for understanding, Preventing and treating tobacco addiction. *Clin Pharmacol Ther.* 2008;83:531-41
13. Agneta I. M. Hjalmarsen (1984) effect of nicotine chewing gum in smoking cessation: a randomized placebo controlled double-blind study. *JAMA.* 1984;252:2835-8.
14. Other brand names for nicotine gums (Internet) [updated: 07 September 2017, cited on 18<sup>th</sup> sept 2017] available from: www.medlineplus.com, U.S. National Library of Medicine.
15. Lindsey F Stead, Rafael Perera, Chris Bullen, David Mant, Jamie Hartmann-Boyce, Kate Cahill, Tim Lancaster. Nicotine Replacement therapy for smoking cessation (The Cochrane library)
16. P Murthy, S Saddichha, tobacco cessation services in India: recent developments and the need for expansion. *Community Research.* 2010;47:69-74.

**Source of Support:** Nil; **Conflict of Interest:** None

**Submitted:** 04-09-2017; **Accepted:** 03-10-2017; **Published:** 12-10-2017