

How smoking affects the way you look

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SMOKING AND THE SKIN

One of the most obvious effects of smoking is on the appearance of the skin. Skin that is damaged by tobacco smoke typically has a greyish, wasted appearance¹, and can be affected in several ways. The more a person smokes, the greater the risk of premature wrinkling. One explanation for this is that smoking increases the production of an enzyme that breaks down collagen in the skin, causing it to sag.² Collagen is the main structural protein of the skin and is essential for the skin's elasticity.

Smokers in their 40s often have as many facial wrinkles as non-smokers in their 60s.³ Skin damage caused by smoking may not be immediately visible to the naked eye, but is still happening, and can start to be detected in one's 20s or 30s. Over time, while collagen is reduced, squinting in response to the irritating nature of tobacco smoke and the puckering of the mouth when drawing on a cigarette can cause wrinkling around the eyes (known as Crow's feet) and mouth.⁴

Tobacco smoke dries the surface of the skin, further contributing to wrinkling.⁵ Smoking also reduces the amount of blood flowing to the skin by constricting blood vessels near the skin's surface, depleting the skin of oxygen and essential nutrients transported in blood.⁶

Together, these changes add up to what some doctors describe clinically as a "smoker's face".⁷

SMOKING AND WOUND HEALING

Smoking impairs wound healing, delaying recovery and increasing the risk of complications.^{8,9} The problems that smoking can cause are so serious that some plastic surgeons have even declined to perform cosmetic surgeries on patients who refused to quit smoking.¹⁰ The Royal College of Anaesthetists advises that quitting smoking any time prior to surgery is beneficial.¹¹

SMOKING AND PSORIASIS

Psoriasis is a chronic inflammatory skin condition which, while not life-threatening, can be extremely uncomfortable and disfiguring. Smokers have a two-to-threefold higher risk of developing psoriasis than non-smokers, with women being at the greatest risk.^{12,13}

Smoking also increases the risk of palmoplantar pustulosis (PPP), an incurable skin condition involving extreme inflammation of the hands and feet, which can occur on its own or in conjunction with psoriasis.^{14,15} In fact, 95% of patients with PPP are smokers, most of whom are heavy smokers.¹⁴

SMOKING AND WOUND HEALING

Although stopping smoking leads to considerable improvements to health, it is often associated with weight gain.¹⁶ This is a proven effect and the average weight gain is around 7-9 kg.¹⁷ In one study 42% of quitters gained over 10 kg (22 lbs) where subjects were tracked for 8 years.¹⁸ It is vital to note that although significant weight gain can lead to other serious health

problems, the health effects of the modest weight gain many quitters experience is vastly outweighed by the health benefits from stopping.^{19 20}

There are several risk factors which are associated with an increased risk of weight gain after quitting smoking. Being young, of lower socio-economic status and a heavy smoker are significant predictors of greater weight gain.²¹ Obese smokers tend to gain the most weight after quitting smoking¹⁸. Peri and postmenopausal women are also more likely to gain weight after quitting.²²

Although the reasons for post-cessation weight gain are not fully understood, some have attributed it to the fact that smoking increases the body's metabolic rate (the rate at which calories are burned up) by about 10%.^{23 24} The effect of nicotine on metabolic rate may also explain why smokers tend to weigh less than non-smokers.²⁵ Another theory is that smoking alters the body-weight set point (the weight towards which a person tends to return despite attempts to gain or lose weight). It has been suggested that nicotine may artificially lower a person's body weight set point, so that the weight gained on stopping reflects a return to the body's natural weight set point.²⁶

Nicotine also increases central nervous system levels of norepinephrine, dopamine and/or serotonin, which can suppress appetite and facilitate weight loss.²⁴

Although smoking can facilitate weight loss, many smokers are still overweight or obese. The combination of excess weight and smoking has been shown to accelerate the ageing process of the body. One study showed that being both overweight and a smoker can age a person by ten years or more.²⁷

Once again, it must be stressed that the benefits from quitting smoking massively outweigh the increased risk of weight gain that can follow a successful quit attempt.

BODY SHAPE

Smoking can affect body shape, changing fat distribution in a way that is associated with disease. Smokers store body fat in an abnormal distribution because smoking can interfere with the endocrine system (the glands in your body which produce hormones).²⁸

In smokers, more fat is stored around the waist and upper torso and less around the hips. This means smokers are more likely to have a higher waist-to-hip ratio (WHR) than non-smoker.^{29 30 31} A high WHR is associated with a much higher risk of developing diabetes,³² insulin resistance,²⁴ heart disease,^{33 34} stroke,³⁵ metabolic syndrome,^{36 37 38} gallbladder problems,³⁹ and breast cancer.⁴⁰ Studies have shown that the waist to hip ratio increases with the number of cigarettes smoked per day.^{41 42}

EFFECTS ON THE MOUTH

Halitosis (bad breath) along with stained teeth and gums are a well-known side effect of smoking.⁴³ Tobacco use increases the risk of periodontitis (inflammation of the gums),⁴⁴ which results in swollen gums and bad breath, and can cause teeth to fall out.⁴⁵ Smoking could be responsible for up to 40% of chronic periodontitis cases among adults and smokers tend to respond more poorly to treatment.⁴⁶

Smoking can also impact tooth implants. Smoking increases the risk of failure of tooth implants and post-operative complications.⁴⁷ The more a person smokes, the more likely the implant is to fail.⁴⁸ One study in a recent review article found that "approximately one in every three implant failures occurred in smokers, and one in five patients with early failures smoked over 10 cigarettes per day, while only 12.3% of patients without failures were smokers."⁴⁹

Other common non-malignant oral conditions in

smokers include the darkening of gum pigmentation (“smoker’s melanosis”); leukoplakia of the tongue (“smoker’s tongue”), characterized by white spots or patches on the tongue or vulva; and a grey-white palate with red papules (bumps) a symptom of inflamed salivary glands (“smoker’s palate”/nicotine stomatitis).^{50 45}

OTHER EFFECTS

Complexion: Smoking can make people more prone to acne and delay the healing of blemishes. Women have been found to have more frequent and severe acne, which worsens the more they smoke.⁵¹ Smoking is also considered a trigger for acne inversa, a chronic inflammatory skin disease that can be disfiguring.⁵²

Researchers have also found a link between smoking and accelerated hair loss and greying.⁵³ Smoking can damage eye blood vessels creating a bloodshot appearance in the eyes while causing irritation.⁵⁴ Prolonged smoking causes noticeable discolouration of the fingers and fingernails on the hand used to hold cigarettes.⁵⁵

In extreme cases, cancer of the lip, tongue, gums, etc. can cause severe disfiguration. These topics are covered extensively in the ASH research report [Tobacco and Oral Health](#).

SMOKING CESSATION AND APPEARANCE

One international study found that 13.3% of men and 21% of women acknowledged that the effect of smoking on their appearance was one of the factors that motivated them to quit.⁵⁶ In a UK study, youth and young adults aged 16-24 also took their appearance into consideration in making the decision to quit smoking. The effect of this factor varied by gender, with young women more worried about their skin.⁵⁷

Another study from the UK measured the reactions of women aged 18-34 to facial age progression,

using software which could produce artificial aging in digital images. Respondents were shocked at the possible future appearance of their skin, if they continued to smoke. The study concluded that using age-appearance morphing techniques to personalise the experience for female smokers significantly increased their motivation to quit smoking.⁵⁸

Smoking can negatively interfere with sleep patterns which in turn can have effects on the skin. According to a study carried out by CHEST, there is a direct link between smoking and sleep Apnea (when a person’s breathing is interrupted during sleep).⁵⁹

Cigarette smokers are four times as likely as non-smokers to report feeling unrested after a night’s sleep.⁵⁹ This can result in sleep deprivation and sleep fragmentation.⁶⁰ Sleep deprivation can affect the physical look of the eyes, mouth, and skin.⁶¹ For instance, with sleep deprivation, blood flow to the skin is reduced, and according to a study based on 25 participants, faces appeared paler after not sleeping.⁶² Facial cues from sleep deprivation have also been connected to various social consequences, effecting communication and social interaction.^{61 62} These factors can be highlighted to promote smoking cessation.

CESSATION ADVICE

Health care professionals should consider using appearance-based arguments to appeal to smokers in motivating them to quit on an evidence-based basis. Preliminary studies show that smoking cessation interventions related to appearance may have a positive impact on quitting.^{63 64} Although NICE guidance⁶⁵ does not specifically mention using the negative effects on a smoker’s appearance as motivation to quit, the U.S. Clinical Practice Guideline states: “*The clinician should ask the patient to identify potential benefits of stopping tobacco use. The clinician may suggest and highlight those that seem most relevant to the patient. Examples of rewards follow:*

[Your] home, car, clothing, breath will smell better. [You will have] improved appearance, including reduced wrinkling/aging of skin and whiter teeth."

The Guideline also provides suggestions for what to say to smokers about the likelihood of post-cessation weight gain, including which pharmacological supports have been shown to delay weight gain (bupropion, nicotine gum and nicotine lozenges).⁶⁶

REFERENCES

1. Demierre MF, Brooks D, Koh HK, Geller AC. Public knowledge, awareness, and perceptions of the association between skin aging and smoking. *Journal of the American Academy of Dermatology*. 1999 Jul 1;41(1):27-30.
2. Lahmann C, Bergemann J, Harrison G, Young A. Matrix metalloproteinase-1 and skin ageing in smokers. *The Lancet*. 2001 Mar 24;357(9260):935-936.
3. American Council on Science and Health, 2003. Cigarettes: What the warning label doesn't tell you.
4. Daniell HW. Smoker's wrinkles: A study in the epidemiology of crow's feet. *Annals of internal medicine*. 1971 Dec 1;75(6):873-80.
5. Muizzuddin N, Marenus K, Vallon P, Maes D. Effect of cigarette smoke on skin. *Journal of the Society of Cosmetic Chemists*. 1997 Sep 1;48(5):235-42.
6. Roth GM, Shick RM. The cardiovascular effects of smoking with special reference to hypertension. *Annals of the New York Academy of Sciences*. 1960 Sep;90(1):308-16.
7. Model D. Smoker's face: an underrated clinical sign? *BMJ*. 1985 Dec 21-28;291(6511):1760-1762.
8. Sørensen LT. Wound healing and infection in surgery. The clinical impact of smoking and smoking cessation: a systematic review and meta-analysis. *Arch Surg*. 2012 Apr;147(4):373-83.
9. Gottrup F, Jørgensen B, Karlsmark T. News in wound healing and management. *Curr Opin Support Palliat Care*. 2009 Dec;3(4):300-304.
10. Salcido R. Smoking cessation: an important factor in wound care. *Adv Skin Wound Care*. 2007 Nov;20(11):576-578.
11. Royal College of Anaesthetists. You and your anaesthetic. *RCoA* May 2008
12. Naldi L, Peli L, Parazzini F. Association of early-stage psoriasis with smoking and male alcohol consumption. *Arch Dermatol*. 1999 Dec;135(12):1479-1484.
13. Metelitsa AI, Lauzon GJ. Tobacco and the skin. *Clin Dermatol*. 2010 Jul-Aug;28(4):384-390.
14. Mrowietz U, van de Kerkhof PC. Management of palmoplantar pustulosis: do we need to change? *Br J Dermatol*. 2011 May;164(5):942-946.
15. Meyer N, Viraben R, Paul C. Addictions and psoriasis: an example of the dermatologist's implication in preventive medicine?. *Ann Dermatol Venereol*. 2008 Feb;135 Suppl 4:S259-262
16. Farley AC, Hajek P, Lycett D, Aveyard P. Interventions for preventing weight gain after smoking cessation. *Cochrane Database Syst Rev*. 2012 Jan 18;1:CD006219.
17. Parsons AC et al. Interventions for preventing weight gain after smoking cessation. *Cochrane Database Syst Rev*. 2009 Jan 21;(1):CD006219.
18. Lycett D et al. Associations between weight change over 8 years and baseline body mass index in a cohort of continuing and quitting smokers. *Addiction*. 2011 Jan;106(1):188-196.
19. Fiore MC et al. Treating Tobacco Use and Dependence: 2008 Update. *Clinical Practice Guideline*. U.S. Department of Health and Human Services. Public Health Service. 2008 May.
20. Pistelli F, Aquilini F, Carrozzi L. Weight gain after smoking cessation. *Monaldi Arch Chest Dis*. 2009 Jun;71(2):81-87.
21. Filozof C, Fernández Pinilla MC, Fernández-Cruz A. Smoking cessation and weight gain. *Obes Rev*. 2004 May;5(2):95-103.
22. McVay MA, Copeland AL. Smoking cessation in peri- and postmenopausal women: a review. *Exp Clin Psychopharmacol*. 2011 Jun;19(3):192-202.
23. Zoli M, Picciotto MR. Nicotinic regulation of energy homeostasis. *Nicotine Tob Res*. 2012 Nov;14(11):1270-1290.
24. Audrain-McGovern J, Benowitz NL. Cigarette smoking, nicotine, and body weight. *Clin Pharmacol Ther*. 2011 Jul;90(1):164-168.
25. Chatkin R, Chatkin JM. Smoking and changes in body weight: can physiopathology and genetics explain this association?. *J Bras Pneumol*. 2007 Dec;33(6):712-719.
26. Cabanac M, Frankham P. Evidence that transient nicotine lowers the body weight set point. *Physiol Behav*. 2002 Aug;76(4-5):539-542.
27. Valdes AM. et al. Obesity, cigarette smoking, and telomere length in women. *Lancet*. 2005 Aug 20-26;366(9486):662-664.

28. Tweed JO, Hsia SH, Lutfy K, Friedman TC. The endocrine effects of nicotine and cigarette smoke. *Trends in Endocrinology & Metabolism*. 2012 Jul 1;23(7):334-42.
29. Canoy D. et al. Cigarette smoking and fat distribution in 21,828 British men and women: a population-based study. *Obes Res*. 2005; 13: 1466–1475.
30. Berlin I. Smoking-induced metabolic disorders: a review. *Diabetes Metab*. 2008 Sep;34(4 Pt 1):307-1314.
31. Kwok S et al. Body fat distribution in relation to smoking and exogenous hormones in British women. *Clin Endocrinol (Oxf)*. 2012 Dec;77(6):828-833.
32. Ford ES. Prevalence of the metabolic syndrome defined by the International Diabetes Federation among adults in the U.S. *Diabetes Care*. 2005 Nov;28(11):2745-2749.
33. Behn A, Ur E. The obesity epidemic and its cardiovascular consequences. *Curr Opin Cardiol*. 2006 Jul;21(4):353-360.
34. Yusuf S et al. Obesity and the risk of myocardial infarction in 27,000 participants from 52 countries: a case-control study. *Lancet*. 2005 Nov 5;366(9497):1640-1649.
35. Rhéaume C, Leblanc MÈ, Poirier P. Adiposity assessment: explaining the association between obesity, hypertension and stroke. *Expert Rev Cardiovasc Ther*. 2011 Dec;9(12):1557-1564.
36. Pisinger C, Toft U, Jørgensen T. Can lifestyle factors explain why body mass index and waist-to-hip ratio increase with increasing tobacco consumption? The Inter99 study. *Public Health*. 2009 Feb;123(2):110-115.
37. Chiolero A et al. Consequences of smoking for body weight, body fat distribution, and insulin resistance. *Am J Clin Nutr*. 2008 Apr;87(4):801-9.
38. Cena H, Fonte ML, Turconi G. Relationship between smoking and metabolic syndrome. *Nutr Rev*. 2011 Dec;69(12):745-753.
39. Tsai CJ et al. Prospective study of abdominal adiposity and gallstone disease in US men. *Am J Clin Nutr*. 2004 Jul;80(1):38-44.
40. van Kruijsdijk RC et al. Cancer risk in patients with manifest vascular disease: effects of smoking, obesity, and metabolic syndrome. *Cancer Epidemiol Biomarkers Prev*. 2013 Jul;22(7):1267-1277.
41. Shimokata H et al. Studies in the distribution of body fat. III. Effects of cigarette smoking. *JAMA*. 1989 Feb 24;261(8):1169-1173.
42. Akbartabartoori M, Lean ME, Hankey CR. Relationships between cigarette smoking, body size and body shape. *Int J Obes (Lond)*. 2005 Feb;29(2):236-243.
43. Zalewska A et al. Halitosis: a common medical and social problem. A review on pathology, diagnosis and treatment. *Acta Gastroenterol Belg*. 2012 Sep;75(3):300-309.
44. César Neto JB et al. Smoking and periodontal tissues: a review. *Braz Oral Res*. 2012;26 Suppl 1:25-31.
45. Vellappally S et al. Smoking related systemic and oral diseases. *Acta Medica (Hradec Kralove)*. 2007;50(3):161-166.
46. Zee KY. Smoking and periodontal disease. *Aust Dent J*. 2009 Sep;54 Suppl 1:S44-50.
47. Heitz-Mayfield LJ, Huynh-Ba G. History of treated periodontitis and smoking as risks for implant therapy. *Int J Oral Maxillofac Implants*. 2009;24 Suppl:39-68.
48. Snider TN, Cottrell D, Batal H. Summary of current consensus on the effect of smoking on implant therapy. *J Mass Dent Soc*. 2011 Winter;59(4):20-22.
49. Palma-Carrió C et al. Risk factors associated with early failure of dental implants. A literature review. *Med Oral Patol Oral Cir Bucal*. 2011 Jul 1;16(4):e514-517.
50. Thomsen SF, Sørensen LT. Smoking and skin disease. *Skin Therapy Lett*. 2010 Jun;15(6):4-7.
51. Preneau S, Dreno B. Female acne - a different subtype of teenager acne?. *J Eur Acad Dermatol Venereol*. 2012 Mar;26(3):277-382.
52. Meixner D et al. Acne inversa. *J Dtsch Dermatol Ges*. 2008 Mar;6(3):189-196.
53. Gatherwright J et al. The contribution of endogenous and exogenous factors to female alopecia: a study of identical twins. *Plast Reconstr Surg*. 2012 Dec;130(6):1219-1226.
54. Satıcı A et al. The effects of chronic smoking on the ocular surface and tear characteristics: a clinical, histological and biochemical study. *Acta Ophthalmol Scand*. 2003 Dec;81(6):583-587.
55. Just-Sarobé M. Smoking and the skin. *Actas Dermosifiliogr*. 2008 Apr;99(3):173-184.
56. Reid RD et al. Sex differences in attitudes and experiences concerning smoking and cessation: results from an international survey. *Patient Educ Couns*. 2009 Jul;76(1):99-105.
57. Grogan S, Fry G, Gough B, Conner M. Smoking to stay thin or giving up to save face? Young men and women talk about appearance concerns and smoking. *Br J Health Psychol*. 2009 Feb;14(Pt 1):175-186.
58. Grogan S et al. Women smokers' experiences of an age-appearance anti-smoking intervention: a qualitative study. *Br J Health Psychol*. 2011 Nov;16(4):675-689.

59. Zhang L et al. Power Spectral Analysis of EEG Activity During Sleep in Cigarette Smokers. *Chest*. 2008 Feb;133(2):427-432.
60. Krishnan V, Dixon-Williams S, Thornton JD. Where There is Smoke...There is Sleep Apnea. Exploring the Relationship Between Smoking and Sleep Apnea. *Chest*. 2014 Dec; 146(6):1673-1680.
61. Sundelin T et al. Cues of fatigue: effects of sleep deprivation on facial appearance. *Sleep*. 2013 Sep 1;36(9):1355-1360.
62. Sundelin T et al. Negative effects of restricted sleep on facial appearance and social appeal. *R Soc Open Sci*, 2017 May 17;4(5):160918.
63. Flett K et al. How effective are physical appearance interventions in changing smoking perceptions, attitudes and behaviours? A systematic review. *Tob Control*. 2013 Mar;22(2):74-9.
64. Grogan S et al. A randomized controlled trial of an appearance-related smoking intervention. *Health Psychol*. 2011 Nov;30(6):805-9.
65. National Institute for Health and Care Excellence. Stop smoking services. NICE public health guidance 10. 2008 Feb.
66. Fiore MC et al. Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. U.S. Department of Health and Human Services. Public Health Service. 2008 May.