

FACT SHEET – SNUS AND CARDIOVASCULAR EFFECTS

KEY MESSAGES

- There is no conclusive evidence that use of Swedish snus causes chronic cardiovascular diseases, or long-term risk factors for these diseases.
- An international research group concluded that the use of snus does not increase the risk of cardiovascular disease, although it may increase cardiovascular disease mortality. An author of a meta-analysis concluded that there is no clear evidence that snus is associated with cardiovascular disease.
- Nine epidemiology studies have examined the relationship between use of Swedish snus and cardiovascular disease incidence or mortality. Seven found no significant association; however, two reported that snus use may be associated with increased risk of fatal heart disease.
- The relationship between use of snus and long-term risk factors for cardiovascular disease is unclear. Two studies suggest that snus use is associated with hypertension. Snus use has not been associated with atherosclerosis.
- There is evidence that Swedish snus may cause transient changes in the cardiovascular system during use (such as increased blood pressure and elevated heart rate). These changes reverse when use of snus ceases.

POSSIBLE QUESTIONS

Why has the effect of snus use on the cardiovascular system been studied?

Cigarette smoking is known to be associated with increased risk of cardiovascular disease. It is logical that researchers would be interested in the relationship between other types of tobacco products and cardiovascular diseases.

What conclusions have been reached by authoritative bodies or in review studies on the association between snus and the risk of cardiovascular disease?

The European Commission's Scientific Committee on Emerging and Newly Identified Health Risks concluded that the use of snus increases the risk of death after myocardial infarction but that it does not increase the risk of myocardial infarction (SCENIHR 2008). SCENIHR also concluded that it is unclear whether long-term snus use increases the risk of hypertension, but concluded that both animal experiments and epidemiological studies indicate that oral tobacco use has short-term effects on blood pressure and heart rate.

Lee (2007) conducted a meta-analysis of smokeless tobacco use and cardiovascular disease risk. Results did not reveal a significant increased risk when the analysis was restricted to the Scandinavian studies.

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Is there evidence that snus use causes chronic cardiovascular diseases?

There is no conclusive evidence that snus use causes chronic cardiovascular diseases. Nine epidemiology studies have examined the relationship between snus use and chronic cardiovascular diseases. Six of these did not find that use of Swedish snus was associated with significantly increased risk of specific diseases, including ischemic heart disease (Haglund et al. 2007), myocardial infarction (Hergens et al. 2005; Huhtasaari et al. 1992; Huhtasaari et al. 1999; Wennberg et al. 2007), sudden cardiac death (Wennberg et al. 2007), and coronary heart disease (Johansson et al. 2005). Although a more recent study did not find a significant association with increased mortality due to overall cardiovascular disease (Roosar et al. 2008), two earlier studies did report an association (Bolinder et al. 1994; Hergens et al. 2007).

Some authors have suggested that the reason for the conflicting findings may be differences in the study populations. The first seven studies evaluated the general population, whereas the latter two examined a defined subpopulation (i.e., a cohort of Swedish construction workers). Results from this group of construction workers may not be applicable to the general population as they may differ in socioeconomic status, health status, or lifestyle factors.

Is there evidence that snus use affects long-term risk factors for cardiovascular disease?

The relationship between use of snus and long-term risk factors for cardiovascular disease is unclear. There is conflicting evidence as to whether snus use is associated with increases in resting blood pressure or hypertension among chronic snus users. Based on examination of nine studies of this association, Lee (2007) reported a significant association with hypertension in only the study of construction workers (Bolinder 1992). A significant association of snus use with hypertension was also observed when this cohort was updated (Hergens et al. 2008). Snus use has not been associated with atherosclerosis (e.g., Bolinder et al. 1997; Wallenfeldt et al. 2001). Hypertension and atherosclerosis are stronger predictors of long-term ischemic heart disease than are acute changes in heart rate and blood pressure.

Is there evidence that snus use causes short-term cardiovascular effects?

Yes. Numerous studies have shown that snus users experience short-term cardiovascular effects during use, such as increased blood pressure and increased heart rate (Lee 2007). Nicotine is known to affect blood vessel tone, which contributes to the changes seen. These changes are transient (i.e., they do not persist after removal of snus from the mouth).

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