

Introduction

Individuals with high levels of depression are more likely to smoke than individuals with low levels of depression. At present, the reason for this association remains unclear. Possibly, these two traits are influenced by the same genes. This study examines the association between smoking and depression in men and women who participated in the longitudinal studies of the Netherlands Twin Register.

Results

About 11% of the women reports depressive symptoms compared to 7% of the men ($p < .0001$). The percentage subjects who never smoked is higher in women than in men (66.9% and 70.35% respectively, $p = .005$).

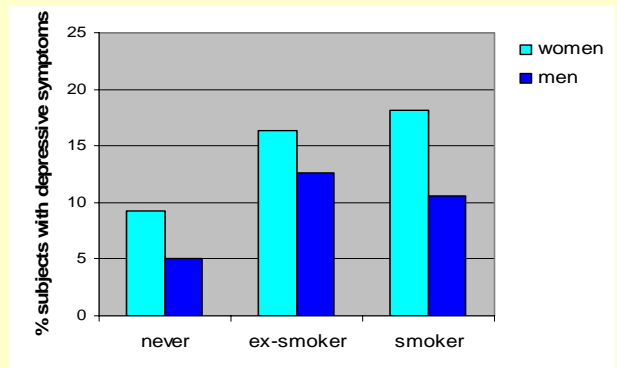
Figure 1 shows that the percentage subjects with depressive symptoms (according to the BDI) is higher in smokers and ex-smokers compared to never smokers ($p < .0001$).

Fig 1. Percentage subjects with depressive symptoms in never smokers, ex-smokers and smokers.

Method

Data on smoking and depression (Beck Depression Inventory) are collected by mailed survey in 1993 and 1997. In total, 5303 twins participated at least once.

Mean age of the twins when completing the survey was 21.6 years ($SD 9.3$). In total, 3380 females and 2268 males participated in this study.



Twin correlations show that both smoking status (non-smoker, ex-smoker, smoker) and depression scores (based on BDI) are heritable traits (Table 1). Smoking status is also influenced by shared environmental influences.

Table 1. Correlations for smoking behavior and for depression in different zygosity groups.

	Smoking	Depression
MZM	.84	.65
DZM	.64	.28
MZF	.86	.62
DZF	.65	.36
DOS mf	.62	.41

The correlation between smoking in a twin and depressive symptoms in the co-twin seems higher for dizygotic male twin pairs compared to monozygotic male twin pairs. This pattern of correlations is not observed in female twins.

Table 2. Cross-correlations between smoking and depression.

	Within subject:	Between twin 1&2:
MZM	.13	.02
DZM	.27	.22
MZF	.21	.18
DZF	.30	.15
DOS males	.28	.16
DOS females	.18	.30

Conclusions

- The percentage subjects with depressive symptoms is higher in smokers and ex-smokers compared to non-smokers.
- Smoking status and depression score are both influenced by genetic factors although smoking status is also influenced by shared environmental factors.
- Cross-correlations between smoking and depression show an interesting pattern. Further research is necessary to explore the cause of the association between smoking and depression.