Theoretical Framework:

Cigarette smoking remains a leading cause of preventable morbidity and mortality worldwide, with well-documented impacts on cardiovascular and metabolic health (World Health Organization [WHO], 2023). Despite global declines in smoking prevalence, significant demographic and behavioral differences persist, emphasizing the need to understand how smoking status interacts with age, sex, and physiological parameters such as body weight and lipid metabolism (Albanes et al., 1987; Wakabayashi, 2008).

Smoking prevalence tends to decline with age, as older adults are more likely to have quit or avoided smoking altogether (Albanes et al., 1987; Bobo et al., 2018). Age-related reductions in nicotine dependence and health-motivated cessation may explain the observed inverse relationship between age and current smoking status, while sex differences remain salient — men generally exhibit higher smoking rates than women across age groups (Plurphanswat & Rodu, 2014; Mammas et al., 2003).

Metabolic consequences of smoking have also been widely documented. Nicotine exposure influences energy balance by suppressing appetite and increasing metabolic rate, resulting in lower mean body weight among current smokers compared to nonsmokers (Akbartabartoori et al., 2005; Sneve & Jorde, 2008). Conversely, smoking cessation is frequently followed by modest weight gain, which may deter attempts to quit (Albanes et al., 1987).

Furthermore, smoking is associated with adverse alterations in lipid metabolism, increasing cardiovascular risk. Current smokers exhibit higher low-density lipoprotein cholesterol (LDL-C) and lower high-density lipoprotein cholesterol (HDL-C) compared to nonsmokers, even when controlling for age, sex, and alcohol use (Li et al., 2018; Zaid et al., 2018; Wakabayashi, 2008). Nicotine-induced oxidative stress and lipid peroxidation may underlie these dyslipidemic effects (Phillips et al., 1981).

Taken together, existing evidence indicates that smoking behavior exerts measurable effects on physiological outcomes across multiple domains. The present study aims to examine the relationship between smoking status and (a) age, (b) body weight, and (c) lipid profiles, controlling for relevant demographic and lifestyle covariates. Specifically, it hypothesizes that:

(H1) older age is associated with a lower likelihood of current smoking;
(H2) current smokers exhibit lower mean body weight than nonsmokers; and
(H3) smokers have higher LDL-C and lower HDL-C compared to nonsmokers, controlling for age, sex, and alcohol use.

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