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Introduction

This study was conducted to evaluate risk for age-related macular degeneration (AMD) amongst construction workers in Ireland. AMD is the leading cause of blindness amongst the elderly in the developed world (Congdon et al. 2004). These data were collected in order to determine whether a clinical and lifestyle risk analysis of construction workers would show them to be at increased risk of developing AMD.



Methods

A total of 853 subjects were recruited into this study. Study data were collected in conjunction with the nurse-led Construction Workers Health Trust (CWHT) health screening service. Information on lifestyle variables, with emphasis on risk factors for AMD, was obtained from each subject by questionnaire. Clinical details were recorded for each subject (blood pressure, cholesterol, body mass index [BMI] etc.), and macular pigment (MP) was measured by heterochromatic flicker photometry using the MacuScope. A predicted percentage risk of development of visually consequential AMD at a later stage in life was generated using specialised software provided by Sightrisk Ltd.

Results

The mean \pm standard deviation (SD) predicted percentage risk of developing AMD for the average construction worker at the age of 70 using the Sightrisk software was calculated as 20.1 ± 10.2 percent.

28.45% of subjects stated by questionnaire that they have a high exposure to daylight (Figure 1). 14.65% stated by questionnaire that they always wear sunglasses when in sunlight, and 17.70% stated by questionnaire that they never wear sunglasses when in sunlight.

The mean \pm SD BMI of the study group was 26.3 ± 3.91 . 45.02% of subjects were in the overweight BMI category, 37.87% of subjects were in the normal BMI category, and 15.24% were in the obese BMI category (Figure 2).

There was an inverse and statistically significant relationship between predicted percentage risk of AMD development at the age of 70 using the Sightrisk software and MP optical density amongst the construction workers ($r^2 = 0.096$, $P = <0.01$) (Figure 3).

Current cigarette smokers were at significantly increased predicted risk of developing AMD at the age of 70 using the Sightrisk software when compared to both past and non-smokers ($P = <0.01$) (Figure 4).

Conclusion

In conclusion, the average construction worker was identified by the Sightrisk software to be at approximately double the risk of predicted AMD development when compared to the normal population. The known accepted and published prevalence of AMD in the normal global population at the age of 70 is 10% (Klein et al., 1997).

Of importance, use of sunglasses or protective lenses should be advised for construction workers with a medium or high exposure to sunlight. Positive modification to BMI should also be encouraged, by dietary modification and/or increase in physical exercise. Smoking cessation and dietary modification, to include leafy greens, coloured fruits and vegetables, and in some cases dietary supplementation containing the macular carotenoids should be advised, to reduce the risk of AMD in construction workers, or individuals with similar environmental and lifestyle traits (e.g. cigarette smokers, individuals with diets lacking in fruits and vegetables, individuals exposed to high amounts of sunlight, and individuals with sedentary lifestyles).

Acknowledgements

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Figure 1: Exposure to daylight (Questionnaire-derived)

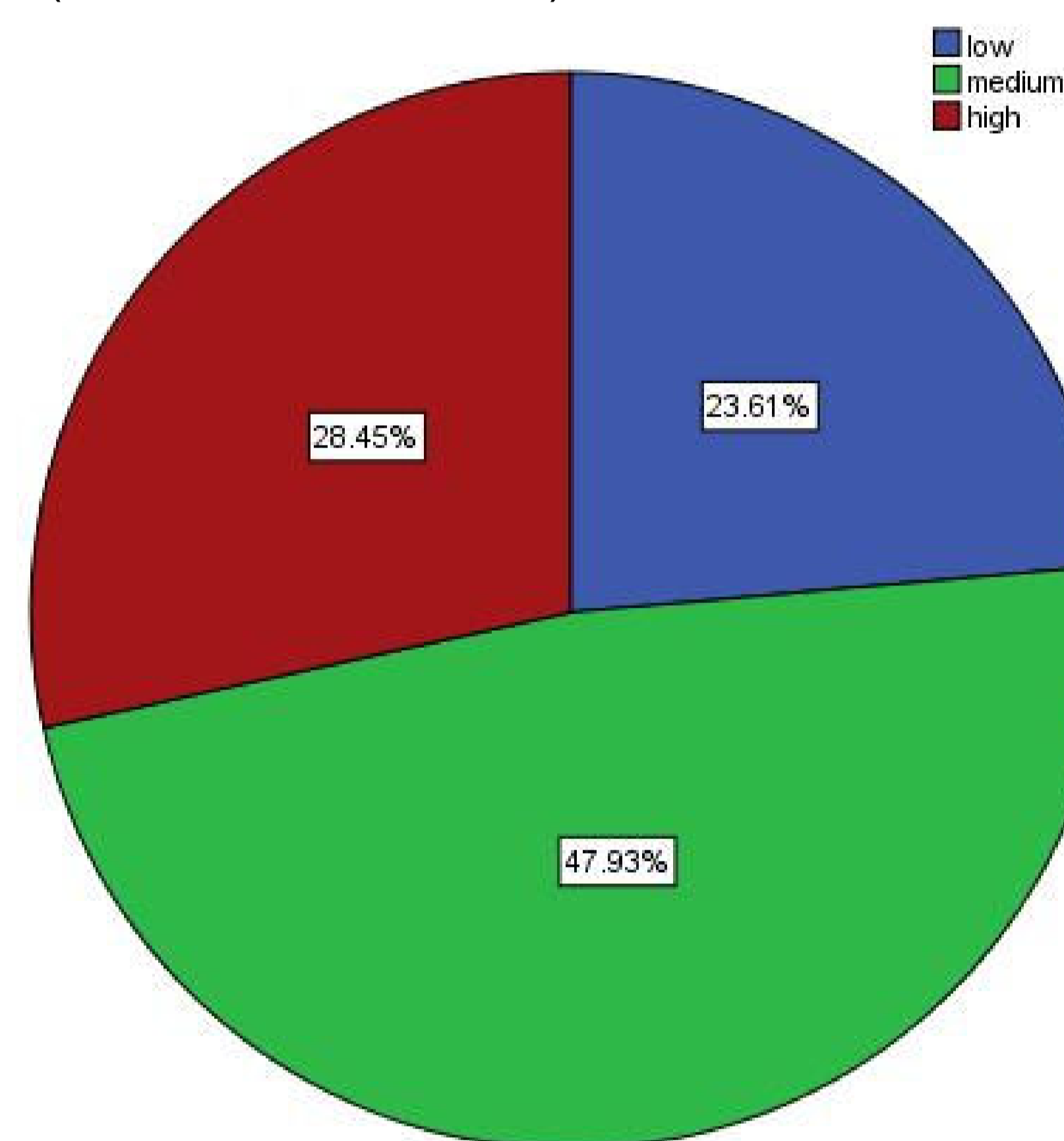


Figure 2: BMI

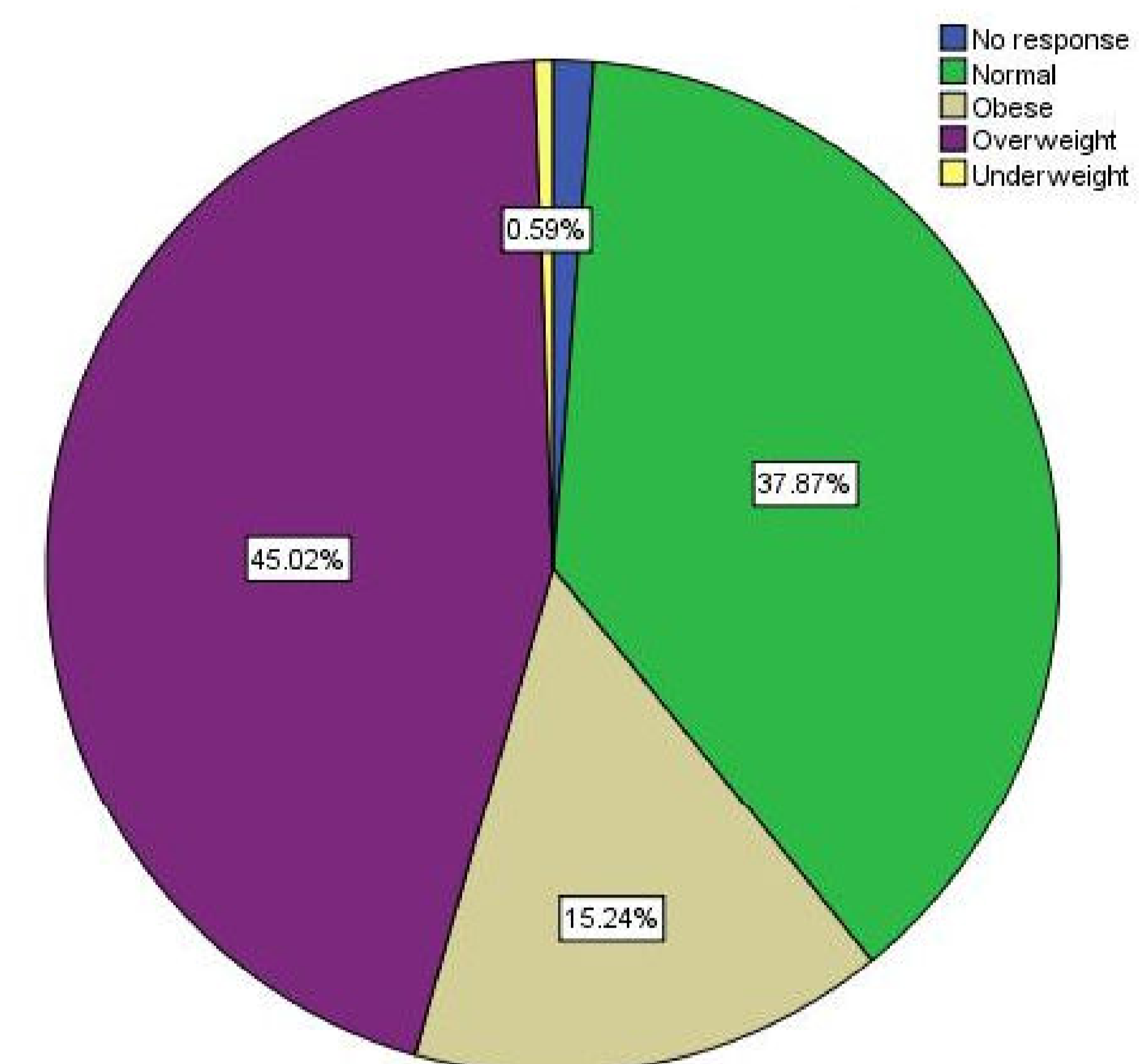


Figure 3: Predicted AMD percentage risk and macular pigment optical density

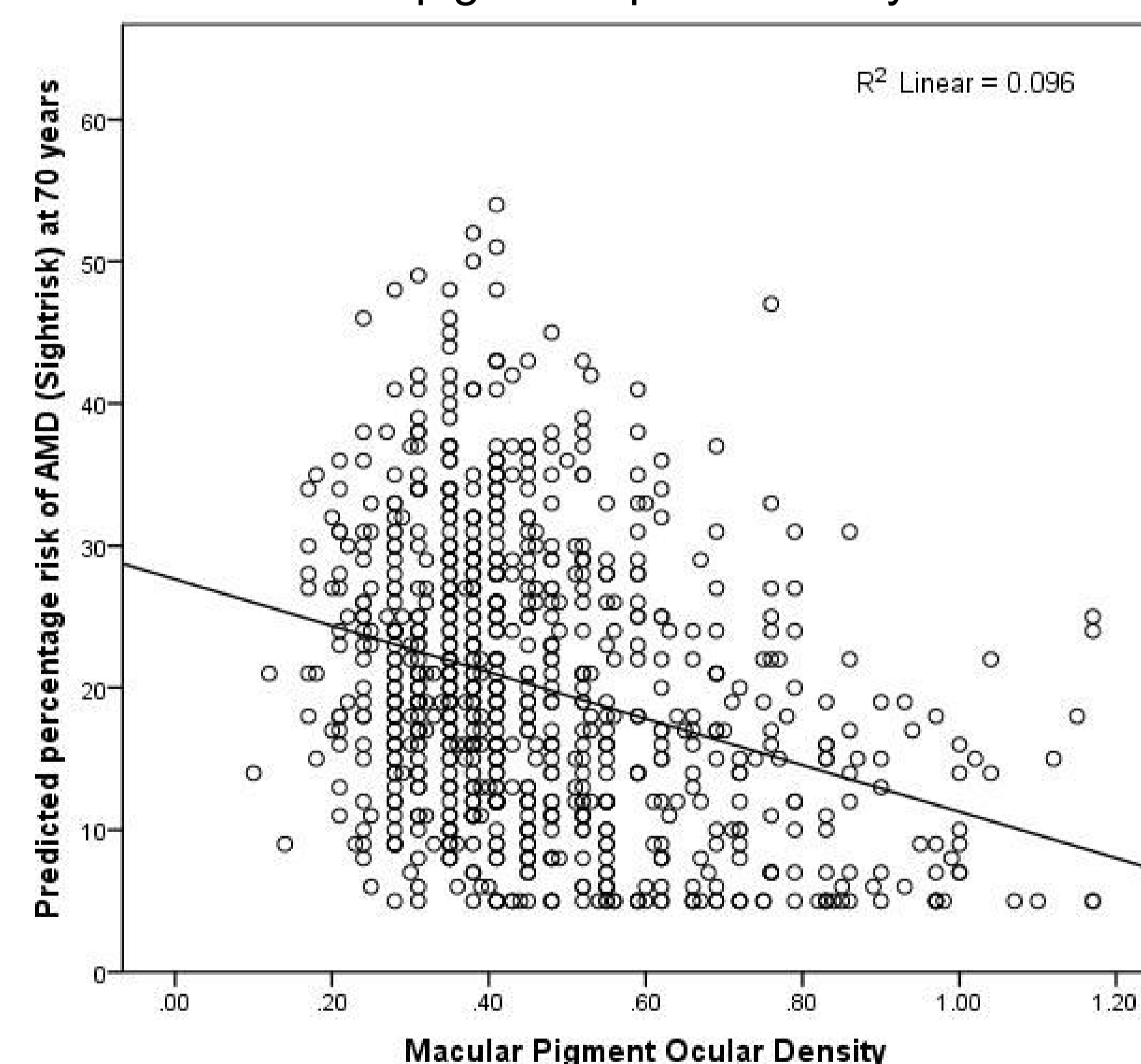
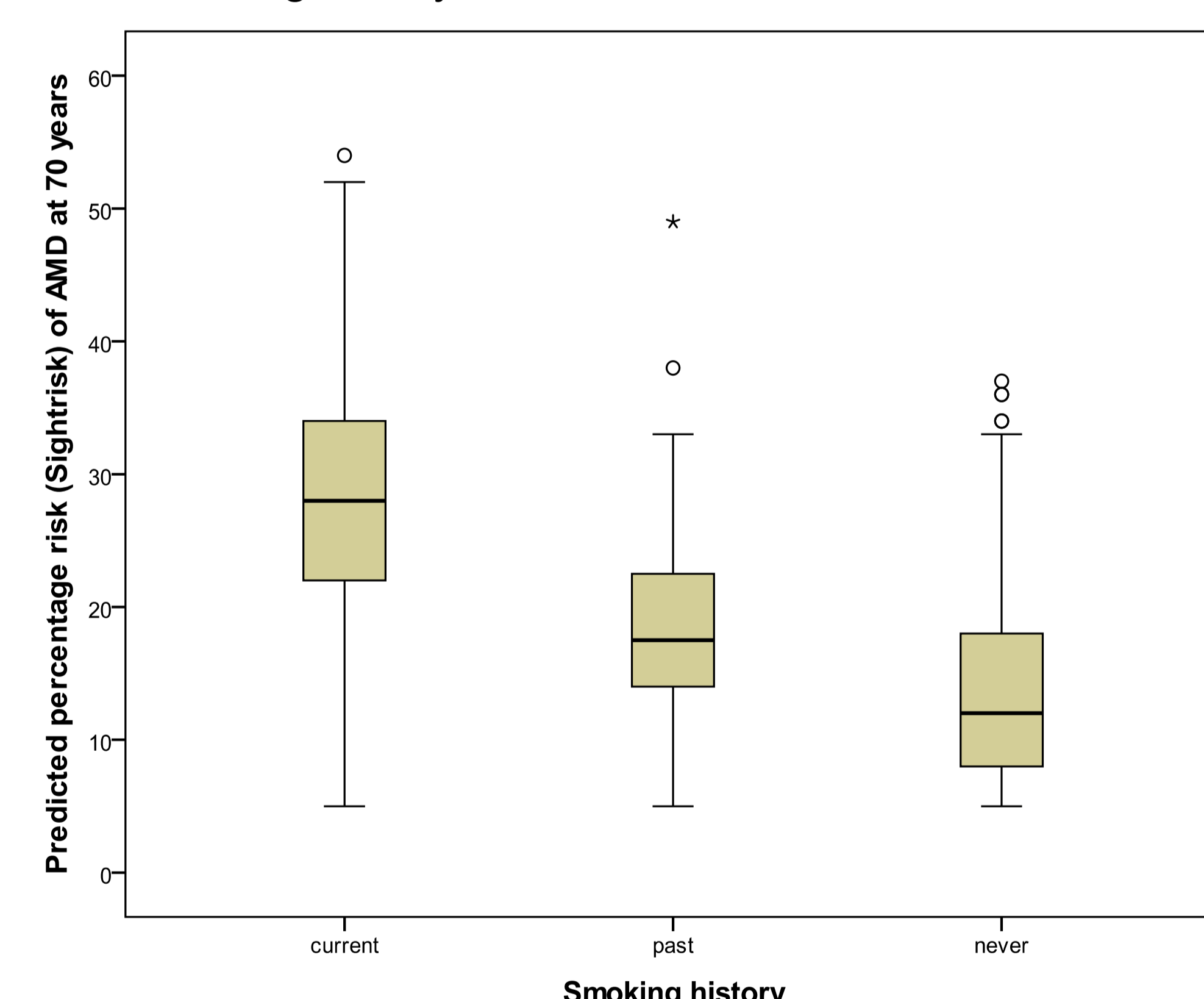


Figure 4: Predicted AMD percentage risk and smoking history



References

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