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SEX-SPECIFIC ASSOCIATION OF THE MAOA RS1137070 POLYMORPHISM WITH INTERNET ADDICTION SEVERITY AMONG AL-QUDS UNIVERSITY STUDENTS-PALESTINE: A CROSS-SECTIONAL STUDY

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Abstract:

Background: The rapid expansion of Internet usage has raised concerns about a possible association between Internet Addiction (IA) and a person's genetic predisposition. Studies indicate that the functional variation in the gene that encodes the enzyme monoamine oxidase A (MAOA) may affect the regulation of neurotransmitters involved with reward processing and impulse control, both of which relate to excessive Internet use. However, the role that MAOA polymorphisms play in the development of IA has not been well characterised; especially when it comes to identifying sex-specific differences regarding their effects. Objective: The goal of this study was to determine the associations between MAOA rs1137070 polymorphisms and IA severity, while considering demographic and academic characteristics and possible differences in the effect of the MAOA polymorphisms between males and females.

Method: The study used ordinal logistic regression analyses to assess whether MAOA rs1137070 is related to IA severity among graduate and postgraduate students from different faculties from Al-Quds University. Analyses controlled for demographic (e.g., age, year in school, major course of study, residence) and academic (e.g., school) factors. In addition to the overall analysis, sex-stratified analyses were conducted to explore how the MAOA rs1137070 polymorphisms might be related to IA severity in male and female participants.

Results: The total population of individuals included in the study did not show any statistically significant relationship between the MAOA rs1137070 genetic polymorphism and IA (internet addiction) severity. However, when the data were stratified by gender, a statistically significant relationship emerged in males where those with the TC genotype showed an approximately 50% less chance (odds ratio=0.55; p=0.011) of having higher IA severity than those who were of the TT genotype, indicating that carriers of the TC genotype may have a protective effect against severe IA. A borderline association was also observed between the CC genotype and lower levels of IA severity among male study participants. No statistically significant relationship was found between MAOA genotype and IA severity for female participants. In addition, academic year and location of residence were significantly associated with IA severity among

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female study participants. This suggests that there are environmental and academic influences on female IA severity as compared to male IA severity.

Conclusion: The findings of this study indicate that the MAOA rs1137070 association with IA severity is specific to the male population, as the genetic effects were only found in males. This reinforces the need to consider genetic mechanisms related to X-linked chromosomes when researching behavioral addiction by sex and shows the complicated relationship between genetics and the environment that influence an individual's vulnerability to developing IA.

Key Words: Neurotransmitters, Internet Addiction, MAOA

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