

NAZIV DISERTACIJE: PROCJENA METABOLIČKOG STATUSA I KARDIOVASKULARNOG RIZIKA PREMA FENOTIPU ABO KRVNIH GRUPA**Autor:** Almedina Hajrović**Mentor:** Prof. dr. Arzija Pašalić**Datum odbrane:** 22.06.2023.**DOI:** <https://doi.org/10.17532/DD.2023.04>**SAŽETAK**

Uvod: Razvoj kardiometaboličkih bolesti i visokog zdravstvenog rizika najčešće se zasniva na prekomjernom nakupljanju lipida, povećanju koncentracije glukoze i inzulinskoj rezistenciji u masnom, jetrenom i mišićnom tkivu, kao i centralnom nakupljanju masti i povišenom udjelu masnog tkiva.

Ciljevi istraživanja: procijentiti znanje i stavove ispitanika o riziku za nastanak kardiovaskularne bolesti, analizirati vrijednosti lipidnog statusa i koncentracije glukoze pri procjeni metaboličkog statusa prema fenotipu ABO krvnih grupa; analizirati parametre krvne slike i brzinu sedimentacije eritrocita prema fenotipu ABO krvnih grupa; analizirati vrijednosti antropometrijskih parametara i vrijednost krvnog pritiska prema fenotipu ABO krvnih grupa; procijentiti rizik za nastanak kardiovaskularnih oboljenja prema fenotipu ABO krvnih grupa; komparirati i ispitati prediktivnost laboratorijskih markera CASTELLI 1 index, CASTELLI 2 index, aterogeni index plazme, aterogeni koeficijent kod različitih vrijednosti rizika za nastanak kardiovaskularnih bolesti. Ispitanici i metode istraživanja: U ovo eksperimentalno, presječno, opservaciono, deskriptivno - analitičko istraživanje je uključeno 203 ispitanika iz skupine radno aktivne populacije starosne dobi od 40 do 65. godina. Istraživanje je realizirano na Institutu za razvoj zdravstva Univerziteta u Sarajevu - Fakulteta zdravstvenih studija u periodu od februara do aprila 2022. Rezultati istraživanja: Na osnovu rezultata istraživanja može se uočiti veća učestalost hiperlipidemije i hipertenzije s većim vrijednostima lipida među ispitanicima B, AB i A krvne grupe, dok je najveći broj ispitanika sa Diabetes mellitusom tip 2 u našem istraživanju bilo B krvne grupe. U odnosu na udio viscelarnog masnog tkiva veoma visok udio je uočen među 28,2% ispitanika AB krvne grupe, dok povišen udio viscelarnog masnog tkiva je uočen među 41,5 % ispitanika B krvne grupe. Analizom vjerovatnoće prisustva tri i više metabolička faktora rizika u našem istraživanju, dokazano je da su A, B i AB značajno predisponirane prisustvu tri i više metabolička faktora rizika, dok su najveći rizik za nastanak kardiovaskularnih bolesti A, B i AB krvne grupe. Temeljni mehanizam odnosa između krvnih grupa i kardiovaskularnih bolesti na način da krvne grupe A, B i AB imaju relativno veće koncentracije vWF-a i faktora VIII koagulacije. Također, u našem istraživanju u nultoj krvnoj grupi uočene su slabije korelacije između obima struka i Q3 rizika ($\rho=0,295$; $p=0,039$), između udjela viscelarnog masnog tkiva i Q3 rizika ($\rho=0,295$; $p=0,039$). Analizom prediktivnosti prisustva tri i više metaboličkih faktora rizika na osnovu vrijednosti BMI, BAI i WHR, dokazali smo da se WHR može koristiti kao prediktor tri i više metaboličkih faktora rizika ($AUC=0,677$; $p<0,001$), kao i BMI ($AUC=0,648$; $p<0,001$), dok je od lipidnih indeksa kao prediktor najsposobniji i najosjetljiviji marker bio aterogeni indeks plazme.

Zaključak: U odnosu na postavljene radne hipoteze možemo reći da je prva radna hipoteza djelimično potvrđena, dok je druga radna hipoteza u potpunosti potvrđena. U prilog djelimične potvrde prve radne hipoteze, utvrdili smo statistički značajne razlike u vrijednostima MCH i neutrofila, WHR i klasifikacije zdravstvenog rizika u odnosu na krvne grupe. Druga radna hipoteza je u potpunosti potvrđena pri čemu su dokazane značajne razlike prisutva tri i više metaboličkih faktora rizika u odnosu na krvne grupe.

Ključne riječi: kardiovaskularne bolesti, faktori rizika, stil života, krvne grupe, metabolički poremećaji, hiperlipidemije, indeks tjelesne mase, odnos obima struka i bokova

DISSERTATION TITLE:**Author:** Almedina Hajrović**Mentor:** Prof. dr. Arzija Pašalić**Date of defence:** 22.Jun 2023.**DOI:** <https://doi.org/10.17532/DD.2023.04>**ABSTRACT**

Introduction: Development of cardiometabolic diseases and high health risk are usually due to excessive accumulation of lipids, increased glucose concentration and insulin resistance in adipose, liver and muscle tissues, as well as central fat accumulation and increased proportion of adipose tissue. Research Objectives: to evaluate the knowledge and attitudes of the respondents about the risk of cardiovascular diseases, to analyze the value of lipid status and glucose concentration in the assessment of metabolic status according to the phenotype of ABO blood groups; to analyze the parameters of blood count and erythrocyte sedimentation rate according to the phenotype of ABO blood groups; to analyze the values of anthropometric parameters and the value of blood pressure according to the phenotype of ABO blood groups; to analyze the percentage risk of cardiovascular diseases according to the phenotype of ABO blood groups; to compare and study the predictability of laboratory markers CASTELLI 1 index, CASTELLI 2 index, atherogenic plasma index, atherogenic coefficient at different risk values for cardiovascular diseases. Subjects and Research Methods: This experimental, cross-sectional, observational, descriptive-analytical study included 203 respondents from the working population group aged 40 to 65 years. The research was conducted at the Institute of Health Development, University of Sarajevo - Faculty of Health Studies in the period from February to April 2022. Results: Based on the research results, a higher incidence of hyperlipidemia and hypertension with higher lipid levels can be observed in subjects with blood groups B, AB and A, while the largest number of subjects with type 2 diabetes mellitus in our study belonged to blood group B. Regarding the percentage of visceral adipose tissue, a very high percentage was observed in 28.2% of subjects belonging to blood group AB, while an increased percentage of visceral adipose tissue was observed in 41.5% of subjects belonging to blood group B. By analyzing the probability of the presence of three or more metabolic risk factors in our study, it was proved that blood groups A, B, and AB are significantly predisposed to the presence of three or more metabolic risk factors, while the highest risk for cardiovascular disease are blood groups A, B, and AB. The underlying mechanism of the association between blood groups and cardiovascular disease is that blood groups A, B, and AB have relatively higher concentrations of vWF and coagulation factor VIII. In our study, weaker correlations were also observed between waist circumference and Q3 risk ($\rho=0.295$; $p=0.039$), between the percentage of visceral adipose tissue and Q3 risk ($\rho=0.295$; $p=0.039$) in blood group zero. By analyzing the predictability of the presence of three or more metabolic risk factors based on BMI, BAI and WHR values, we proved that WHR can be used as a predictor of three or more metabolic risk factors ($AUC=0.677$; $p < 0.001$), as well as BMI ($AUC=0.648$; $p < 0.001$), whereas among lipid indices as a predictor, the most specific and sensitive marker was the atherogenic index in plasma.

Conclusion: In relation to the set working hypotheses, we can say that the first working hypothesis is partially confirmed, while the second working hypothesis is fully confirmed. In support of the partial confirmation of the first working hypothesis, we found statistically significant differences in the values of MCH and neutrophils, WHR and classification of health risk in relation to blood groups. The second working hypothesis was fully confirmed, where significant differences in the presence of three or more metabolic risk factors in relation to blood groups were proven.

Keywords: Cardiovascular Diseases, Risk Factors, Life style, Blood groups, Metabolic disorders, Hyperlipidemias, Body mass index, Waist to hip ratio