

NAZIV DISERTACIJE: UTICAJ INTERVENTNOG PROGRAMA NA PREVENCIJU KOMPLIKACIJA UZROKOVANIH INZULINSKOM REZISTENCIJOM KOD ŽENA REPRODUKTIVNE DOBI**Autor:** Lejla Čano Dedić**Mentor:** Prof. dr. Arzija Pašalić**Datum odbrane:** 24.10.2024.**DOI:** <https://doi.org/10.17532/DD.2024.02>**SAŽETAK**

UVOD: Prevalencija inzulinske rezistencije kod žena reproduktivne dobi u cijelom svijetu bilježi dramatičan i neočekivan porast shodno paralelnom porastu prevalencije pretilosti, kao jednog od glavnih faktora rizika. Pored pretilosti, mnoga istraživanja ukazala su na ulogu leptina u patogenezi IR-a. Hiperinzulinemija, IR i promjene u leptinskom obrascu kod žena mogle bi predstavljati važan prediktor kliničkog toka IR-a, uključujući i nastanak kardiom metaboličkih komplikacija DM 2, gestacijskog dijabetesa, PCOS-a, neplodnosti, kardiovaskularnih oboljenja i karcinoma. Prethodna istraživanja sugeriraju da bi se pravovremenom identifikacijom žena reproduktivne dobi s IR-om uz primjenu preventivno- intervenih programa modifikacije životnog stila ostvario veliki napredak na putu preveniranja kardiom metaboličkih komplikacija IR-a.

CILJEVI: Procijeniti znanje, stavove i praksu žena reproduktivne dobi s IR-om na početku i na kraju interventnog programa, utvrditi vrijednosti tjelesnog sastava kod žena reproduktivne dobi s inzulinskom rezistencijom, analizirati vrijednosti laboratorijskih parametara kod žena reproduktivne dobi s IR-om, analizirati vrijednosti leptina kod žena reproduktivne dobi s IR-om, ispitati i komparirati prediktivnost tjelesnog sastava i laboratorijskih parametara kod žena reproduktivne dobi s IR-om, kreirati nutritivnu terapiju za žene reproduktivne dobi s IR-om prema subgrupama, procijeniti efekat interventnog programa na tjelesni sastav i laboratorijske parametre kod žena reproduktivne dobi s IR-om, kreirati preventivno-interventni vodič za žene reproduktivne dobi s IR-om.

MATERIJAL I METODE: U istraživanje je uključeno 87 žena reproduktivne dobi, starosti od 18 do 45 godina, s prebivalištem na području Kantona Sarajevo koje zadovoljavaju definirane kriterije za uključanje u istraživanje. Mjerenje tjelesnog sastava provedeno je na Institutu za razvoj zdravstva Univerziteta u Sarajevu – Fakultet zdravstvenih studija, dok je mjerenje laboratorijskih parametara izvršeno u Poliklinici Atrijum u Sarajevu, uz prethodno pribavljenu saglasnost za istraživanje. Provedeno je prospektivno, kohortno, eksperimentalno istraživanje, interventnog tipa, opservacijsko-analiitička metoda u kojoj su korišteni instrumenti istraživanja: anketni upitnik, mjerenje tjelesnog sastava i određivanje laboratorijskih parametara.

REZULTATI: Nakon implementacije programa, prosječna ocjena znanja, stavova i prakse žena reproduktivne dobi s dijagnozom IR-a značajno je optimizirana u odnosu na početne vrijednosti (sa $7,67 \pm 1,40$ bodova na $9,89 \pm 0,32$ bodova; sa $7,46 \pm 1,10$ bodova na $8,15 \pm 0,66$; s $2,17 \pm 1,59$ na $4,66 \pm 1,62$). Utvrđena je značajna redukcija udjela masnog tkiva (s $41,6\%$ na $39,23\%$, $p = 0,045$), s akcentom na visceralnu mast (s $18,98 \pm 5,16$ kg na $16,62 \pm 4,93$ kg, $p = 0,009$) uz značajno smanjenje metaboličke starosti organizma (s $43,3 \pm 7,7$ na $37,4 \pm 7,41$ godina, $p < 0,001$). Dokazane su pozitivne promjene u metaboličkim indikatorima IR-a: glukoza (s $5,3 \pm 0,30$ mmol/l na $5,04 \pm 0,43$ mmol/l, $p < 0,001$), inzulin (s $13,63 \pm 4,26$ μ U/ml na $11,48 \pm 4,0$ μ U/ml, $p = 0,004$), HOMA-IR (s $3,23 \pm 1,08$ na $2,59 \pm 1,03$, $p < 0,001$), leptin (sa $16,74 \pm 5,38$ ng/ml na $11,06 \pm 2,07$ ng/ml, $p < 0,001$), Matsuda indeks (s $3,87 \pm 1,56$ na $4,99 \pm 2,21$, $p < 0,001$). Utvrđena je redukcija parametara povezanih s razvojem kardiovaskularnih oboljenja: sistoličkog krvnog pritiska (sa $119,48 \pm 13,23$ mmHg na $111,32 \pm 9,71$ mmHg; $p < 0,001$), dijastoličkog krvnog pritiska (sa $79,48 \pm 9,59$ mmHg na $71,79 \pm 8,88$ mmHg, $p < 0,001$), nivoa holesterola (s $4,97 \pm 0,84$ mmol/l na $4,61 \pm 0,99$ mmol/l, $p = 0,024$), LDL-a (s $3,08 \pm 0,78$ mmol/l na $2,70 \pm 0,87$ mmol/l, $p = 0,008$), VLDL-a (s $0,65 \pm 0,22$ mmol/l na $0,50 \pm 0,20$ mmol/l, $p < 0,001$), visokog rizika za kardiovaskularna oboljenja (s $18,6\%$ na $3,8\%$, $p < 0,001$).

ZAKLJUČCI: Utvrđen je pozitivan uticaj interventnog programa na korekciju najvažnijih parametara tjelesnog sastava uključenih u patogenezu IR-a, metaboličkih indikatora IR-a (glukoza, inzulin, HOMA-IR, leptin, Matsuda indeks), optimizaciju znanja, stavova i prakse, uz značajnu redukciju rizika za razvoj kardiovaskularnih oboljenja. Interventni program sa strategijom modifikacije životnog stila mijenja stavove, promiče zdrave stilove života, optimizira kardiom metaboličko zdravlje, educira, što na kraju kao ishod ima zdravu populaciju žena u fertilnoj dobi koje, kao takve, daju puni doprinos ekonomskoj i društvenoj sigurnosti.

Ključne riječi: inzulinska rezistencija, leptin, interventni program, kardiom metaboličke komplikacije

DISSERTATION TITLE:**Author:** Lejla Čano Dedić**Mentor:** Prof. dr. Arzija Pašalić**Date of defence:** 24. October 2024.**DOI:** <https://doi.org/10.17532/DD.2024.02>**ABSTRACT**

INTRODUCTION: The prevalence of insulin resistance in women of reproductive age throughout the world is experiencing a dramatic and unexpected increase, in line with the parallel rise in the prevalence of obesity, as one of the main risk factors. In addition to obesity, many studies have pointed to the role of leptin in the pathogenesis of IR. Hyperinsulinemia, IR, and changes in the leptin pattern in women could represent an important predictor of the clinical course of IR including the development of cardiometabolic complications of DM 2, gestational diabetes, PCOS, infertility, CVD, and cancer. Previous studies suggest that timely identification of women of childbearing age with IR along with the application of preventive-intervention programs of lifestyle modification would achieve great progress in the prevention of cardiometabolic complications of IR.

OBJECTIVES: To evaluate the knowledge, attitude, and practices of women of reproductive age with IR at the beginning and the end of the intervention program, to determine the values of body composition in women of reproductive age with insulin resistance, to analyze the values of laboratory parameters in women of reproductive age with IR, to analyze the values of leptin in women of reproductive age with IR, examine and compare the predictability of body composition and laboratory parameters in women of reproductive age with IR, create nutritional therapy for women of reproductive age with IR according to subgroups, evaluate the effect of the intervention program on body composition and laboratory parameters in women of reproductive age with IR, create a preventive- intervention guide for women of reproductive age with IR.

SUBJECTS AND RESEARCH METHODS: The study included 87 women of reproductive age, aged 18 to 45, living in Sarajevo Canton who meet the defined criteria for inclusion. Body composition was measured at the Institute for Health Development of the University of Sarajevo - Faculty of Health Studies, and laboratory parameters were measured at the Atrium Clinic in Sarajevo with previously obtained research consent. A prospective, cohort, experimental research, interventional type, observational-analytical method was conducted in which research instruments were used: survey questionnaire, measurement of body composition, and determination of laboratory parameters.

RESULTS: After the implementation of the program, the average score of knowledge, attitudes and practices of women of reproductive age diagnosed with IR was significantly optimized compared to the initial values (from 7.67 ± 1.40 points to 9.89 ± 0.32 points; from 7.46 ± 1.10 points to 8.15 ± 0.66 ; from 2.17 ± 1.59 to 4.66 ± 1.62). A significant reduction in the proportion of adipose tissue was found (from 41.6% to 39.23%, $p=0.045$) with an emphasis on visceral fat (from 18.98 ± 5.16 kg to 16.62 ± 4.93 kg, $p=0.009$) with a significant reduction in the metabolic age of the organism (from 43.3 ± 7.7 to 37.4 ± 7.41 years, $p<0.001$). Positive changes in metabolic indicators of IR were demonstrated: glucose (from 5.3 ± 0.30 mmol/l to 5.04 ± 0.43 mmol/l, $p<0.001$), insulin (from 13.63 ± 4.26 μ U/ml to 11.48 ± 4.0 μ U/ml, $p=0.004$), HOMA-IR (from 3.23 ± 1.08 to 2.59 ± 1.03 , $p<0.001$), leptin (from 16.74 ± 5.38 ng/ml to 11.06 ± 2.07 ng/ml, $p<0.001$), Matsuda index (from 3.7 ± 1.56 to 4.99 ± 2.21 , $p<0.001$). A reduction of the parameters associated with the development of CVD was found: systolic blood pressure (from 119.48 ± 13.23 mmHg to 111.32 ± 9.71 mmHg; $p<0.001$), diastolic blood pressure (from 79.48 ± 9.59 mmHg to 71.79 ± 8.88 mmHg, $p<0.001$), cholesterol (from 4.97 ± 0.84 mmol/l to 4.61 ± 0.99 mmol/l, $p=0.024$), LDL (from 3.08 ± 0.78 mmol/l to 2.70 ± 0.87 mmol/l, $p=0.008$), VLDL (from 0.65 ± 0.22 mmol/l to 0.50 ± 0.20 mmol/l, $p<0.001$), high risk for CVD (from 18.6% to 3.8%, $p<0.001$).

CONCLUSIONS: A positive impact of the intervention program on the correction of the most important parameters of body composition involved in the pathogenesis of IR, metabolic indicators of IR (glucose, insulin, HOMA-IR, leptin, Matsuda index), optimization of knowledge, attitudes, and practices, with a significant reduction of the risk of developing CVD, was determined. An intervention program with a lifestyle modification strategy changes attitudes, promotes healthy lifestyles, optimizes cardiometabolic health, and educates, ultimately resulting in a healthy population of women of childbearing age who, as such, make a full contribution to economic and social security.

Keywords: insulin resistance, leptin, intervention program, cardiometabolic complications