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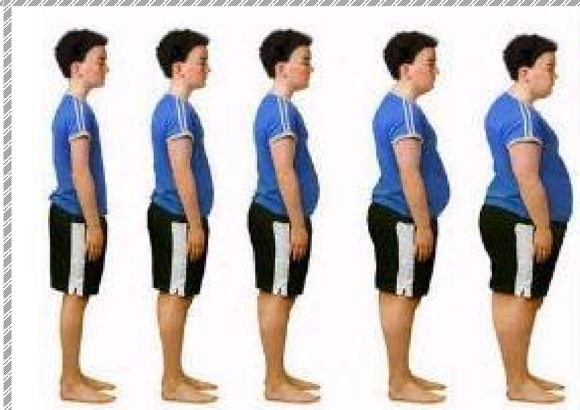

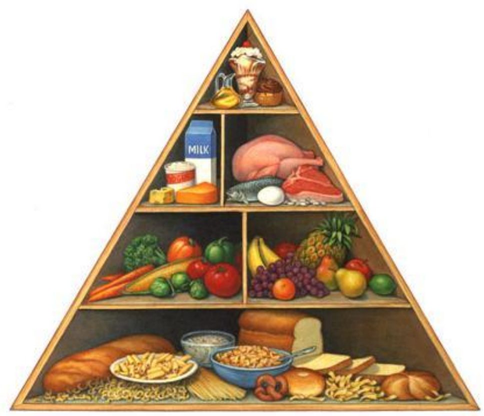

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ε Ŭǝ ɏŰďǵ ɐŰŰƷ ɜŬ ŬɜŰŰŰŭŰǝɨ ɜ ɕɘ ŭɘŬŰɕɟ ɏǵ ůŬ ǝŬɟ ŭɘɛ εŰŰŰɓɕǝɘɕɨ ǵ ´ Ŭɟ Ƴɕɜ Űǵ ǝɜŭɨ ɜɕɡ ɏɕɜ Űǵ ǝŬŰďɔɕɟ ɘ ´ ɕɜ ůŬ ŰŰ ´ Ŭŭɘ Ƴ ůŬ ɕε ƳŭŬǵ ŭɘŬŰɕɟ Űǵɘɩ ɜ Ů ɘ́ ɏŭɤ ɜ űɡůɘɐǵ ǝŬŰƳůŰŰůďǵ (ū .Ʈ.) ǝŬ ŭŬɐŰď ε ƳŬǵ ůɩ εŬŰǝǵ (ɊƵ .Ɇ).

ƺ Ŭǝɕŭɕǝɜɔ ďŬ: Ōɜ Ŭ Ŭɜ Ű ɟɕůɤ ´ ŭ Ű ǝ ɧ ŭŬǝεŬ 2490 ´ Ŭŭɘ ɜ ůɕɜǝ ɘ ɐ ǵ ďǝɘ ďŬ ǵ Ŭ ɧ 9 ɏɤ ǵ 13 Ű ɜ ŬɜŰŰƳůŰďǝŮ Ŭ ɧ Űɜ ƺ Ƴɘ Űɡ 2007 ɏɤ ǵ Űɜ Ɫɕɨ ɜɘ Űɡ 2009 .ɇ Ŭ ŭŬŰɕεɏɜ Ŭ ´ ɕɡ ůɡǝǝɏɕŰďǝŬɜ ɐŰŰɜ Ŭɜďɟɤ ´ ɕεŰŰɟɘɕɑ ŭŬǝŰǵ, ŭŬǝŰǵ ůɨ ůŰŰůďǵ ůɩ εŬŰǝǵ, űɡůɘɐǵ ŭɟ ŬůŰďɟ ɧŰďŰǵ, űɡůɘɐǵ ǝŬŰƳůŰŰůďǵ (ū .Ʈ). Ʉ Ŭɟ Ƴǝǝďǝ Ŭ ´ ɟ Ŭɜ εŬŰ ´ ɕɘ ďďǝŮ ůɡǝǝɕɔɐ Ŭɕ εŬŰǝǵ Ŭ ɧ Űɜ ɕ ´ ɕɕ ´ ɟ ɕůŭɘɟɑ ŰďǝŬɜ Ű Ů ɑ ŭŬ ɓɘɕɐďεɘɩ ɜ ŭŬǝŰ ɜ, Ŭɩ Ű ɏǝɕǵ ´ ɟ Ŭɜ εŬŰ ´ ɕɘ ďďǝŮ ε ɏŰ ɟ ďůď Űďǵ Ŭɟ Űďɟ ɘ Ŭɐǵ ´ ďŭďǵ.

ɉ ´ ɕŰŰǝɏůεŬŰŰ: ɆŰɜ ůɨ ɜɕǝɕ Űɡ ŭŬǝεŬŰǝǵ Űɜ 29.9% Űɤ ɜ ´ Ŭŭɘ ɜ ǝŬŰďɔɕɟɘ ´ ɕɘ ďďǝŬɜ ɤ ǵ ǵ ´ ɏɟ ɓ Ŭɟ Ŭ ǝ Ŭɜ Űɜ 11.8% ɤ ǵ ´ Ŭɕɨ ůŬɟ ǝ Ŭ. Ʈ Ŭɜ ůŰŰ 2 űɨ ǝ Ŭ Ű Ů ɑ ŭŬ HDL-ɕɕǝďůŰŰɟ ɧǝďǵ ɓɟɏďďǝŬɜ ɜ Ŭ ŭɜ Ŭɜ ɡɤ ďǝɧŰŰɟ Ŭ ůŰŰ ´ Ŭŭɘ Ƴ ε Ů ɑɑ ɕ Ŭ εďǝɧŰŰɟ ɕ ɊƵ Ɇ ǝŬɜ ɕ Ŭ εďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ (p=0.007 ɔɘ Ŭ ŰŰ ǝɕɟ ďŰɘɘ Ŭ ǝŬɜ p=0.001 ɔɘ Ŭ ŰŰ Ŭɜ ɧɟ ɘ Ŭ) ůŬ ůɨ ɔǝɟ ɘ ůď ε Ů ŰŰ ´ Ŭŭɘ Ƴ ε Ů ɑɑ ɡɤ ďǝɧŰŰɟ ɕ ɊƵ .Ɇ ǝŬɜ ɡɤ ďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ. Ʌ ´ ɘ ǝɏɕɜ Űɧůɕ ŰŰ Ŭɜ ɧɟ ɘ Ŭ ɧůɕ ǝŬɜ ŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů ɑɑ ɡɤ ďǝɧŰŰɟ ɕ ɊƵ .Ɇ ǝŬɜ ɡɤ ďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ ɓɟɏďďǝŬɜ ɜ Ŭ ɏɕɕɡɜ ɡɤ ďǝɧŰŰɟ Ŭ Űε ɏǵ Űɡǵ ǝǝƳůεŬŰɕǵ Ƀǝɘɐǵ / HDL-ɕɕǝďůŰŰɟ ɧǝďǵ (p<0.05), ɘůɕɡǝɕďǵ (p<0.001), HOMA-IR (p<0.001) ǝŬɜ ɊɘŬŭŰɕǝɘɐǵ ɉ ɟ Űďɟ ɘŬɐǵ Ʉ ďŭůďǵ (Ɋɟ .Ʉ). (p<0.05) ůŬ ůɨ ɔǝɟ ɘůď ε Ů Űɡǵ ůɡɜɕεɐǝɘɕɡǵ Űɡ ɘŭɕɡ űɨ ǝɕɡ ε Ů ɑɑɕŬ εďǝɧŰŰɟ ɕ ɊƵ Ɇ ǝŬɜ ɕ Ŭ εďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ. Ʌ ´ ɘ ɟ ɧůďŰŰŰ ε ɧɜɕ ŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů ɑɑ ɡɤ ďǝɧŰŰɟ ɕ ɊƵ .Ɇ ǝŬɜ ɡɤ ďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ ɓɟɏďďǝŬɜ ɜ Ŭ ɏɕɕɡɜ ɡɤ ďǝɧŰŰɟ Űǵ Űε ɏǵ Űɟ ɘǝɡǝŬɟ ŭɑ ɜ (TAG) (p<0.001) ůŬ ůɨ ɔǝɟ ɘůď ε Ů ŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů ɑɑɕŬ εďǝɧŰŰɟ ɕ ɊƵ Ɇ ǝŬɜ ɕ Ŭ εďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ. ɉ ɜŬŰɕɟ ɘ Ƴ ε Ů ŰŰ ´ ɕůɕůŰ Ƴ Űɤ ɜ ´ Ŭŭɘ ɜ ε Ů Ů ɑ ŬŭŬ TAG ǝŬ ǝǝ Ƴůε ŬŰǝǵ Ƀǝɘɐǵ/HDL-ɕɕǝďůŰŰɟ ɧǝďǵ ´ Ƴɜɤ Ŭ ɧ ŰŰ ´ ɟ ɕŰŰɜ ɧεŬɜ Ŭ ɧɟ ɘ Ŭ (ŭďǝ. >100 mg/dL ǝŬɜ >4.5 ŬɜŰŰůŰɜ ɘɕŬ) ŭ Ű Ƴ ɓɟ ɏďďǝŬɜ ɜ Ŭ ŭɜ Ŭɜ ɡɤ ďǝɧŰŰɟ Ŭ ůŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů ɑɑ ɡɤ ďǝɧŰŰɟ ɕ ɊƵ .Ɇ ǝŬɜ ɡɤ ďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ ůŬ ůɕ ɏůď ε Ů ŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů ɑɑɕŬ εďǝɧŰŰɟ ɕ ɊƵ Ɇ ǝŬɜ ɕ Ŭ εďǝɧŰŰɟ ɕ Ů ɑ Ůŭɕ ū .Ʈ.ɑɑ (12,0% ɏɜ Ŭɜ Űɜ 3,0% p<0.001 ǝŬɜ 2,8% ɏɜ Ŭɜ Űɜ 0,9% p=0.04 ŬɜŰŰůŰɜ ɘɕŬ). Ƀ ε ɕɑ ɤ ǵ ɕ Ů ɘ́ ɕǝŬŭ εɧǵ Űďǵ ǵ ´ ɏɟ ŰŰůďǵ (29,7% ɏɜ Ŭɜ Űɜ 9.9% p<0.001 ɔɘ Ŭ Ŭɜ ɧɟ ɘ Ŭ ǝŬɜ 33.6% ɏɜ Ŭɜ Űɜ 19.7% p=0.013 ɔɘ Ŭ ŰŰ ǝɕɟ ďŰɘɘ Ŭ) ǝŬɜ Űďǵ ɘůɕɡǝɕɘɕŬɜŰŰůŰŰůďǵ (¢ɃƵ ɉ -IR<3.16) (13,5% ɏɜ Ŭɜ Űɜ 3.2% p=0.001 ɔɘ Ŭ Ŭɜ ɧɟ ɘ Ŭ ǝŬɜ 31.5% ɏɜ Ŭɜ Űɜ 6.1% p<0.001 ɔɘ Ŭ ŰŰ ǝɕɟ ďŰɘɘ Ŭ) ɓɟ ɏďďǝŬŮ ɜ Ŭ ŭɜ Ŭɜ ɡɤ ďǝɧŰŰɟ ɕǵ Űɧůɕ ůŰŰ Ŭɜ ɧɟ ɘ Ŭ ɧůɕ ǝŬɜ ůŰŰ ǝɕɟ ďŰɘɘ Ŭ ε Ů

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[illegible]

[illegible]

[illegible]: [illegible]

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1.1 [illegible]

[illegible][1,111] [illegible]

[illegible][102-104] [illegible]

[illegible] (<100kcal/ [illegible]) [illegible] [2] [illegible]

1.2 [illegible]

[illegible][3,4] [illegible] (excess Body Fat, BF).

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´ ešsi ɜŰŰɔ ɔešŰ Ű[ɛ ɣŰj důd Ű[g´ ešůhŰ[ŰŰg Ű[ešg ə´ı ŭešgg´ ıɣ ɛŰŰ[ə ɛ´g ə ɜhŰ[ŰŰg ə´ŸŰɣ Ű´h Ű[ɛ ɜŰjh, b) e Ű´ eɣjɣ eűdůsɜɛŰjdŰ[´gŭ´ ə ɛ´g Ůɜɣɣ ɔŰŸŰŰɔŰɔɣ ɜ j (dual-energy X-ry absorptiometer ï DEXA), ɔ)d Ű´ Ůə hɜə ůd ɛŰɔɜd Ű[ə e i ůgɜŰɛɜ ůɛ e i (Magnetic resonance imaging ï MRI) əŰɔ ŭ)d g´ eə e ɔə ůŰ[ə ɛ Ű[ɛ e ɔj Ű´ıdŰ (Computed tomography ï CT). Ɂə ´ Ůj ə ůůhŰŰj Ůg hɛɣ´g Ű´h Ű[g ɛŰ´hŭegg´ Ůg Ůɣg´ Ű´ Ůə Ű[i ɜ ŭŰ´ Ůɜd j Ÿ ɛɣůŰ Ůɜe´ ə ůɛ e i ɛŰ´ Ű´ eŰɣə Ůɛ Ű d eɣ ůd Ű[egg´ ɜŰ´ Ůj ɜj ɛŰŰɔ ɛhɜe ůŰ[ɜ ə ə ɜə ɜə ɣj Ůɜ Ű. Ō Ůɜ, ůŰɛ Ůɔ Ÿ ə d g´ ə ə ɛ Ůɔ Ůg´ ə d d gůɛ ə Ůɔ ɣ´g ɛ Ůɔ ɣŰŰg´ ə Ůɔ Ůɔ ɜe ɜ Ůg Ů[ə e i g´ Ůɔ ɣ ɔe egg´ ŭd ɛhůə Ůg´ g ɔŰ Ůg´ ɣe e ɜ eɣjd ůɛe´ e d d Ůŭ Ůj ɣɣ´g e ə ɛŰj ɛůŰ[ə Ů[g ɓŸj egg´ ə Ůɔ Ů[g i ɣ egg´, e ə e´ ed Ůg´ eɣjd ůɛŰ i e ɜ ɔə Ů[ɜ ´ jeůŭɜjə ůɛh Ů[g qŰə Ů[z Ÿ ɛŰg´ Ɂı ɛŰŰ[g´ (qz Ɂ).

Ɂ **qŰə Ů[g´ z Ÿ ɛŰg´ Ɂı ɛŰŰ[g´** (Body Mass Index, BMI) g´ eə ɔɛŰŰŰɔ ɣ´g Ű[ɛ ´ d ə ɛə Ů[ɛg ɓŸj egg´ (Kg) / ŰŰj Ÿ ɔ ɣ ɜe Ů[ɛg i ɣ egg´ (m^2).

Ɂə ŭə Ůd ɜŰg´ ejə ůɛ e ɛa Ů[g´ Ůɛg ůŰj ə d Ůg´ ɛg ɓŰůɛ ɜŰŰɔ ə ŰŰŸ ə i j ɜ ə hɔe ůŰ[ɛ qz Ɂ (qŰə Ů[g´ z Ÿ ɛŰg´ Ɂı ɛŰŰ[ɛg´) əŰɔ ejd ůɛe´ ešsi ɜŰŰɔ ůŰŰ ŭd ɛ ɜə ɜ ɔə ɣ´g ɛŰɔ ɣŰŰg´ ɔə Ůɔ ɛə ɜə Ůg´, ŭŰɜŰŰŰɔ hŰɔ ŭŰɜ Ůɜ Ůɔ ə ŮŰ Ÿ ə ə d ə e ɔə Ů[ɜ ´ Ůj Ůɔ e ə e i d d ůd Ů[ɜ ´ Ůə ŭ ɜ ɜ ůŰ[ɜ ə ə ɜə ɜə ɛ´j Ÿ ɜd. ¢ ůgɜ ůŰ ɛŰɜd ə ə ɜə ɜə ɛ Ůɜ ə hɔd ůd Ů[ɛg´ Ůə ŭ ɜe i /Ůŭ ɛ ɓ e g ɜŰə ɜ Ÿ Ůə ɛŰŰ[ɜ Ů[ɛ´ ed ɣŰ[ůd Ů[g´ Ů[ɛ ɛ g´ Ů[ɛg qz Ɂ ůŰŰ´ ɜ ůi ɔ ejɜ e ɜŰ Ůɜ d j ɣ´ e ɛŰj ɜ Ÿ´ j hŰ´ Ůŭ Ůj Ÿ ɛŰŰŰ Ů[ɛg qz Ɂ Ůɜ Ÿ ŭi ə ə e ə Ůə Ůɜ Ÿ ɛı j Ů. Ɂ e Ůə ůd ɛŰɜ Ů[ə h ɜŰ[ɛ ɜŰŰ hŰə ɣe e ɜ´ j e ŰŰd Ůe j ə Ůɜ Ÿ ůd ɛŰŰ (cut-off points) ɔə Ů[ɛ g´ ɣj ɓŰj e əŰə Ů[ɜ ´ Ůg ůŰj ə d Ů, ɣ´g´ e ůe ůŰŸ´ Ÿ ɜ ɣ Ű´h ɣ ɜŰ ŭŰi e ɛ ɣ ɜe qz Ɂ.

qŰɜ g´ Ÿj e Ůə Ů[i Ů[ůd Ű´h ɣŰɣ ɜ ɔə Ů[ɜ i´ Ůj ɜd ůgɔə Ůj ə ɛ ɣ ɜe g əŰŰɣ ŭə ɜi ůe Ů[ə Ÿ ɛŰ Ů[ɛ g´ Ůj ɓŸə ə e ɜ ə d e g´ ůŰg´ ɣj ɓŰj Ůe´ Ůi ůŰj ə Ů´ Ůə ŭ ə Ÿ ə Ůə Ů[ŭ e ɓ e g g´.

Ɂə Williams et al.[5] ɛ ɣŰj d ůŰɜ Ů[ɛ´ Ÿ e g´ Ů[g´ ŭŰj ɛŰ[ɛ´ Ů[g e g´ ůŰ3320´ Ůə ŭ ə Ÿ d ə ə d Ůg´ 5-18 Ů[ŰŰ ɜ əŰə əŰŰ ɣŰŰɜŰɜ Ů[ŰŰ´ Ůə ŭ ə Ÿ ůŰ´ Ů[i ůŰj ə Ů ɣŰɜ Ů[ɛ´ eůe ůŰ[h ůɣ ɛŰŰ[ə i ə d e g´ e Ů[ŰŰ ɜ ɛŰɔ Ůɔ i Ů[j e e ůe ɛŰ 25% əŰə 30% ɔə Ů[ɔ h j ə Ů ə Ůə ə e j d Ůŭ ə Ů ɜ Ů[ůŰ[ɛ e ɛ Ů. ¢ e Ÿ ɣ ɜ Ů[j e Ə ə ɔ e g əŰə Ů j h ə d ɣ d g´ j ůd Ůɜ Ůə ɜ (Center for Disease Control and Prevention, CDC) h j ůŰg´ ɣj ɓŰj Ů Ů[Ů´ Ůə ŭ ə Ÿ´ e g ɓj ůə e ɜ Ů[ɜ ůŰ[ɛ 95e Ůə Ů[ɛ ůŰ[ɛ h j ə Ů[ɛg qz Ɂ ɔə Ů[ɜ d ə ə d Ů e ´ Ÿ ɜ ɣ Ů h Ůg Ů[h əŰə «ůŰə e ůg ɜe ɔə Ů´ g´ ɣj ɓŰj e» Ůg Ů[Ÿ ɛŰŰ[ɜi 85e g əŰə 95e g Ůə Ů[ɛ ůŰ[ɛ e j ůe g.[6,7] Ɂə Ůg j ɣ´ Ůe ə Ůj Ůg ɜd Ů[ɣg´ əŰ h j ůŰɜ ɣ´g´ ɣj ɓŰj Ů Ů[Ů´ Ůə ŭ ə Ÿ´ e g ɓj ůə e ɜ Ů[ɜ ůŰ[ɛ 85e Ůə Ů[ɛ ůŰ[ɛ h j ə e ´ Ÿ ɜ ɣ Ů h Ůg Ů[h əŰə ɣ´g´ Ů[i ůŰj ə Ů Ůg Ů[Ÿ´ e g ɓj ůə e ɜ Ů[ɜ ůŰ[ɛ 95e Ůə Ů[ɛ ůŰ[ɛ h j ə e ´ Ÿ ɜ ɣ Ů h Ůg Ů[h.[8]

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ıŬĵ ə dŬĵ Ůɜ Ÿ Ůɛɜ ə ĥůɛɛ ə Ůɜ Ůɛɜ Ǽəə Ÿŭ Ů

j ŬĵŬɜŮɛĵ ɜůŮɛə Ÿ ɛə N. Christakis & J. Fowler ůŮɛ ɓɜɓəœ : ŏŏThe Surprising Power of Our Social Networks and How they Shape our Livesò ŬɜŬŭyĵ ɛgɜ ĥŬɜ ůŮɛɜ Ů ɜůŮɛɛɜəɐ əɛəĥŮɛŮŬ, Ů əĵ ŬŮůd Ůɜ Ůəd ɣ d ĥŬɜ g´ Ÿĵ gŬɜ´ Ůə ɛůɛ ɑ g d «Ů ɜŭd ɛ dŬ» ´ Ůɛ gůŬĵ ə dŬĵ. ¢ əyɜd **Ů ɜŭd ɛ dŬ** yɛŬɜ ŭɛ ŭəŬůŬŸůŬɜĵ: j ĵ ɛəŸ, ůd ɛŬəŬɜ ĥŬɜ ɛ Ů ɜ´ ɛə´Ůůɛ ĥg Ůɛĵgɜĥůɛg (Ůɛ ´ əɐdɛg ŮŸɜ ´ Ůĵ ɜ´ Ůĵ ůŸɜ ůŮŭŮŭɛɛyɜɛ ´ ə d dgůɛĥ ɔəŬɛĵ ɜůɛyɜɛ gĵ ĥɜɛ) ŮəŬəgɣ dəĥŮĵ ɛg ůŮůɛyůd ɛŮŮŬűgůəəɛɔəŸĥĵ əŬ. ÆŮŭŬŮŮĵ ɛ Ů d Ůŭɛ, Ŭŭɛĵ Ÿ Ůĵ ɛŮŮŸŭɛůd Ůĵ g ɜĥůɛg, g´ ɛŭd əı ɜɛɜŮŮg Ůɛ ĵ ŬɜŭŬəɐ Ůĵ ĥ´ ɛ ɛŮŮɛɜ ɛ´ ɛəɐ Ůə Ů ı ɜŮŮŬə ¢ ´ Ůəŭəəɐ ´ Ůɛ gůŬĵ ə dŬyɛŬəŬɜyədŬəůŮŮ d Ůŭ Ů ɜŭd ɛ dŬg ůŮŭg ŬɜŮ Ůg ɔɛyɜŮg ɛı ĵ Ůg. Ů Ůĵ d ɛg Ůɛ 25% Ůɣɜ ´ Ůəŭəı ɜ ůŮŭg ¢ ɜɣ ɛyɜŮg Ů ɛə ŮŮůg Ůəɐ Ůə g´ yĵ ɓŬĵ Ů ə Ůə 11% Ůəɐ Ůə ´ Ůɛ ůŬĵ ə Ů Ǽ´ ɜ´ əyɛɜ Ůɛ 70% Ůɣɜ g´ yĵ ɓŬĵ ɣɜ Ůŭɐɓɣɜ ɔɐɛɜŮŮə ŮŭəəəŸ g´ yĵ ɓŬĵ ɛə Ůəɐəəə Ůg.[9-11] Ƀ Ů ɜ´ ɛə´Ůůɛ ĥg Ůĵ g´ Ůəŭəəɐ g´ Ůɛ gůŬĵ ə dŬg ɓĵ ůə ŮŮə ůŮŭ ɜd ůd Ů ĥ Ůɛ 1971 ůŮg Ůɜ Ů Ůg ɔɛyɜŮg ɛı ĵ Ůg (´ ɐŬə Ůg 1.1,1.2 Ůd ɔɐ: Review Open Access Childhood obesity, prevalence and prevention Mahshid Dehghan, Noori Akhtar-Danesh and Anwar T Merchant).

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			Ŭšŭɘɐɠ´ ŬɕgůŭɟəɗŭɠůŬɘɠ¢ .Ʉ.ɟ
ɟ ɩ ɟŬ/ŌŬɛɠ	¢ ɚɘɗŬ(ɣŬɖ)	Ɇgɔɔɟŭŭɣŭɠ	ɟ ɚɚŬɔɐ ůŬɖɜ´ Ŭɕgůŭɟəɗŭ
¢ Ʉɟ			
1973ï 1994	5-24	**Freedman DS** [91]	ʐ ɣůɖ Ŭɨ ɜɖůɖ əŬŬɣ 0.2 kg/ɣŬɛɠ
1971ï 1974	6-19	**Zametkin AJ** [92]	ƐŬŬɗŬɟɐ
1976ï 1980	6-19	**Zametkin AJ** [92]	ƐŬŬɗŬɟɐ
1988ï 1994	6-19	**Zametkin AJ** [92]	ɋɔ´ ɚŬůɘɣůŬɖəŮůŮ11%
1999ï 2000	6-19	**Zametkin AJ** [92]	ɟ ɨ ɜɖůɖ əŬŬɣ 4%
2000- 2005	5-18	**Dehghan M** [117]	ɟ ɨ ɜɖůɖ 11%

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j ı ɟ Ŭ/Ö Ŭ ɡ	¢ ə ə d Ŭ (y Ŭ)	Ɛ g ɔ ɔ ɟ Ŭ í y Ŭ ɡ	ɟ ə ə Ŭ b e ů Ŭ ɜ ´ Ŭ ɡ ů Ŭ ɟ ə d Ŭ
ɀ Ů ɔ Ɥ ə d ɟ d ɟ Ů Ŭ Ŭ ɜ d Ŭ			
1984ï 98	7-11	Lobstein [93]	ɟ ï ɜ d ů d Ŭ ɦ 8% ů Ů 20%
Ɥ ů ´ Ŭ ɜ d Ŭ			
1985-1995	6-7	Moreno [94]	ɟ ï ɜ d ů d Ŭ ɦ 23% ů Ů 35%
ũ Ŭ ə ə d Ŭ			
1992ï 1996	5-12	Rolland-Cachera [95]	ɟ ï ɜ d ů d Ŭ ɦ 10% ů Ů 14%
Ƒ ə ə Ɥ ũ Ŭ			
1984ï 2000	6-12	Krassas [96]	ɟ ï ɜ d ů d ə Ŭ Ŭ Ɥ 7%

Ɛ Ů ε Ů ɟ ə ɥ y ɡ ɢ ɟ Ů ɡ Ŭ ɡ Ƒ g ɟ ı ´ d ɡ ɡ, ɦ ´ ɤ ɡ ɢ ə Ɛ ə Ŭ ɜ ũ ə Ŭ b ə ɥ y ɡ, ũ ə Ŭ ə ů Ŭ ı d ɡ d ə Ů ɦ Ŭ ɜ ɢ Ů ε ə Ŭ ů ε ɦ ɡ Ŭ ɡ ´ Ŭ ɜ ũ ə ɥ y ɡ ´ Ŭ ɡ ů Ŭ ɟ ə d Ŭ ɡ Ů ɢ b Ŭ ɜ ɢ Ů ε d ə ɦ Ŭ Ů ɟ ɢ ɡ ů Ů ů ï ɔ ə ɟ ə ů d ε Ů Ŭ ɡ ɀ Ů ɢ ɔ Ů ɜ Ŭ b ɥ y ɡ ɢ ɟ Ů ɡ. Ɥ Ŭ ɟ ɦ ə Ŭ Ŭ g Ŭ Ɥ ɦ ε ɤ ɡ Ŭ ɜ ´ ů ɢ ů Ů ɦ Ŭ ɤ ɜ g ´ y ɟ b Ŭ ɟ ɤ ɜ ´ Ŭ ɜ ũ ə ɜ ɜ Ŭ g ə ε d ə Ů ə Ŭ ə ů Ŭ ɡ ü ï ɢ ´ Ů ɟ ə ´ Ŭ ı ů Ŭ ɡ[12] ɟ ɜ ə Ŭ ə y ɢ ɢ g ɜ ũ ə Ŭ ə ů Ŭ ı d Ů ı Ŭ Ŭ g ɤ d ə ɦ Ŭ Ů ɟ Ŭ Ů d Ů ı Ŭ ´ Ŭ ɜ ũ ə ɜ ɜ Ŭ g ´ Ŭ ɡ ů Ŭ ɟ ə d Ŭ ɡ ů Ŭ ɡ Ŭ ɜ Ŭ Ŭ g ɔ ε y ɜ Ů ɡ ɢ ɟ Ů ɡ, ɢ Ů ə ´ ɢ ə Ŭ ů ε ɦ ɡ Ŭ ɡ ɤ ɢ Ů ə ´ Ŭ ɟ ɢ g ů ə Ɥ ů Ů ə ů d ε Ŭ ɜ Ŭ ɡ ə ɜ Ɥ ɜ ɢ ũ ɢ ə Ŭ ə ů Ŭ ɡ Ŭ ɜ Ŭ Ŭ g ů ů ɦ ε Ŭ ɜ Ů ɡ ɢ ɟ Ů ɡ[102-104].

Ƒ ´ ə ə y ɢ ɜ, Ŭ ɦ ů ɢ ů Ŭ ɡ Ŭ ɜ Ŭ Ŭ g ɔ ε y ɜ Ů ɡ ɦ ů ɢ ə Ŭ ə ů Ŭ ɡ Ŭ ɜ Ŭ Ŭ g ů ů ɦ ε Ŭ ɜ Ů ɡ ɢ ɟ Ů ɡ ´ Ŭ ɟ Ŭ Ŭ d ɟ Ů d Ŭ Ŭ ɜ ɦ Ŭ ɜ Ŭ Ŭ ´ ɢ ů ɢ ů Ŭ Ɥ Ŭ ɤ ɜ g ´ y ɟ b Ŭ ɟ ɤ ɜ ə ɢ ɟ ə Ů ı ɜ Ů b ɜ Ŭ ə ε Ů ɜ Ŭ ə ï Ŭ Ů ɟ Ŭ Ŭ ɦ Ŭ ɜ Ŭ Ŭ ´ ɢ ů ɢ ů Ŭ Ɥ Ŭ ɤ ɜ g ´ y ɟ b Ŭ ɟ ɤ ɜ ɜ ɢ ɟ ə Ů ı ɜ Ů b ɜ Ů ɡ ɦ Ů ɜ Ů ɡ ɢ ɟ Ů ɡ, Ů ɦ ũ ə Ɥ ů Ŭ ɡ ɢ ɟ Ů ɡ Ů ɦ ε b ɢ ɢ g ɡ.[13-15,114]

Ɛ Ŭ d ɜ Ƒ ə ə Ɥ ũ Ŭ d ů g ɜ Ů ɢ ε ɡ Ŭ ï ɜ d ů d Ŭ d ɡ d ů ε ɦ Ŭ d Ŭ Ŭ ɡ ´ ɢ g ´ d ɔ Ɥ ɢ Ů ə Ŭ ɦ Ŭ ɟ ə Ŭ ɟ ũ ə Ŭ b ɔ Ů ə Ŭ b ɥ 3 ɢ ů ε ε Ŭ Ŭ Ŭ ů Ů ε Ů ů ε ə ə ə Ů ɡ Ɥ 3 Ŭ ɟ Ů ɡ ə Ŭ ə ɔ g ɜ Ŭ ə ə Ů ɡ Ů ɢ ə Ŭ ə Ů Ŭ ɜ Ɥ ů g ɜ ũ Ů ũ Ů ε y ɜ d ε Ů ə ə ũ ï ɜ ɢ g g ´ ɢ g ɜ Ů ə ɢ ï ɜ Ŭ ɦ Ŭ d ɜ ´ Ŭ ɜ ũ ə ɜ ɜ d ə ə d Ŭ. ¢ Ŭ ə ə Ŭ b ɜ Ŭ ɦ Ŭ d ɜ ´ Ŭ ɟ Ŭ ũ ɢ ů ə Ŭ ə ɜ ũ ə Ŭ ɟ ɢ ũ ɜ ů Ů y ɜ Ŭ ´ ə ə ũ g Ŭ ə ɦ Ŭ ɟ ɦ ´ ɢ ů d Ŭ d ů d ɡ ů Ů ů g ɜ ũ ə Ŭ ů ε ɦ ε Ů Ɥ ə ə Ů ɡ ů g ε ´ Ů ɟ ə ɟ ɢ ə y ɡ Ŭ ə ə Ŭ b y ɡ ´ ɢ g ɢ ũ d ɔ ɢ ï ɜ Ŭ ɦ y ɜ Ŭ ɜ ´ Ŭ ɟ Ŭ ũ ɢ ů ə Ŭ ə ɦ Ŭ ɟ ɦ ´ ɢ ɤ ɜ g ů Ů ə Ŭ d ə ů Ŭ ə ɦ ə Ŭ Ŭ Ɥ Ŭ ɡ Ŭ ɟ Ů ɡ Ŭ ɜ Ů Ů ɡ Ŭ ɜ Ů Ů ɡ Ŭ ɜ Ů ɡ g ɤ ů Ŭ d ɡ ů d ε Ŭ ů d Ŭ ɡ ɦ ů ɢ ɜ Ŭ ɟ ɢ Ů ɡ Ŭ ɟ Ů ɡ ů Ŭ d ɜ Ƒ g ɟ ı ´ d ɡ ɦ ů ɢ ɜ Ŭ ɟ ɢ Ů ɡ Ŭ ɟ Ů ɡ ů Ŭ d ɜ Ƒ g ɟ ı ´ d ɡ ə Ŭ Ŭ Ɥ 7%

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϶ ůɐɛǕ Ŭ ɕ϶ ŭɖɛɕůϿǕɛɏɜǕʃ ɛŮϿɏŰǕʃ ŬɞŬǘɏɕɜ ΄ɕϿɷŬ Ŭ ɕŰŮϿɏůɛŬŰŬ.

- Ⱥ϶ Mamalakis et al., (2000)[17] ůŮ΄Ŭǿϊ϶Ϋ ɖϿ϶ɷŬʃ 6-12 Űǘ ɜ ůŰɖɜ ȾɟɐŰɖ, ϿŬǓϿɟŬɣŬɞ ɧŰϿ ůŰɖɜ ɖϿ϶ɷŬ Űɣ ɜ 6 Űǘ ɜ ɕ Ů϶ϿŬůɛɧʃŰɛɡ ɡ΄ɥɟ϶ǕɟɕɡɐŰŬ 23,2% ůŰŬ ŬϿɧɟ϶Ŭ ϿŬ 28,8% ůŰŬ ϿɕɟɖŰůɛ϶Ŭ, ŬϿɩ ɕ Ů϶ɕϿŬůɛɧʃŰɖʃ ΄ŬɡůǕɟϿɖŬʃ ɐŰŬ 10,9% ůŰŬ Ŭɧɟ϶Ŭ ϿŬ 9,2% ůŰŬ ϿɕɟɖŰůɛ϶Ŭ (ϐϿ. ΄ɷŬϿŬ 1.3). ɇŬ ϿɟɛŰɛɟɛŬ ΄ɕɡ ɕɟɖůϽɕ΄ɕϽɖɖϿŬ ɐŰŬ Űɛ 85ɕ ϿŬ Űɛ 95ɕ ŮϿŬɛŮŰɖɛɧɟϿ Űɣ ɜ ΄ϽΫϿɣ ɜ ŬΫ ŰɕɜɖʃŰɛɡ CDC ɔϿŬ Ű ɡ΄ɥɟ϶Ǖɟ ŬϿŬ ΄ŬɕϿ ůǕɟϿŬ ΄ŬǿϊΫ ŬŰůŰɛɕŬ.

ȽɷŬŬʃ 1.3: Ά΄϶ɕϿŬůɛɧʃŰɣ ɜ ΄Ŭǿϊɜ ɜ ɛŮɡ΄Ǖ ϐΫϿɕɜ ϕɀ Ɇ ůŰɖɜ ȾɟɐŰɖ.				
	Ɉ ΄ɥɟϐǕɟɕ		ȽŬɕɡůǕɟϿŬ	
Ȼ϶ɷŬ (%)	ɟ ϽɧɟϿŬ (%)	Ȣɕɟ ɖŰůɛ϶Ŭ (%)	ɟ ϽɧɟϿŬ (%)	Ȣɕɟ ɖŰůɛ϶Ŭ (%)
6	23,2	28,8	10,9	9,2
9	18,9	18,1	4,9	4,5
12	24	19,2	8,2	5

- Ⱥ϶ Krassas et al., (2001)[18] ůŮ΄Ŭǿϊ϶Ϋ ɖϿ϶ɷŬʃ 6-17 Űǘ ɜ ůŰɖɜ ŪŰůůŬϿɕɜɷɖ ɛŮϐΫůɖ Ű ϿɟϿŰɛɟϿŬ Űɖʃ IOTF (International Obesity Task Force) (ϿŬǘ ŰǕŬ ɧɟϿŬ ϕɀ Ɇ 25kg/m^2 ϿŬ Űɛ ɡ΄ɥɟ϶Ǖɟɕ ϿŬ 30kg/m^2 ϿŬ Űɖɜ ΄ŬɕůǕɟϿŬ) ϿŬŰɖϿɕɟϽ΄ɕɖůŬ Űɛ 19% ɣʃ ɡ΄ɥɟϐǕɟŬ ϿŬ Űɛ 2,6% ɣʃ ΄ŬɕůǕɟϿŬ. ɆŰɛɜ ΄ɷŬŬ 1.4 ΄Ǖɕɡůϊ϶ɕɜŰŬ Ű Ŭ ɕŰϿŬůɛɛŬ ůɕŰŮϿΫ ɛŮ Űɛɜ Ů϶ɕϿŬůɛɧ Űɛɡ ɡ΄ɥɟϐǕɟɕɡ ϿŬ Űɖʃ ΄ŬɕůǕɟϿŬʃ ϿŬ Űɛʃ ɖϿ϶ɷŬʃ 6-10 Űǘ ɜ.

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n		n	% g´ yŋ bŬŋ ɛg	n	% ´ Ŭɛgů Ŭŋ əd Ŭŋ
1226	⊎ŬŠŭɔəŲ 6-10 ůŰí ɜ	316	25,3%	70	5,6%
602	ŋ ɔɦŋ ɛŬ	160	16,6%	39	6,5%
624	Ţ ɛŋ dŰůɛŬ	156	25%	31	5%

- Ɛə Karayannis et al., (2003)[19] ůŮŬɜŰŰŋ ɛůɤ´ ůgŰŰəɦ ůŬůɔɛŬ´ ŬŠŭɔɤ ɜ əŬɔůŰíɛbɤ ɜ dəɔəd Ŭŋ 11-16 ůŰí ɜ əŬŰyɔŋ ŬŲŬɜ ɤ g´ yŋ bŬŋ ŬŰɛ 15,3% ŰɛɡůŬůɔɛŬŰɛg´ əŬɔŰɛ 1,8% ɤ g´ ŬɛɨůŬŋ əŬ, ɛŮ bŲůd Ű Ŭ əŋ ɛŰɛŋ ɛŬ Ű dg IOFT(International Obesity Task Force), ůɜı 16,3% əŬɔ 3,8% ŬɜŰůŰɛɜɛŬɛŮbŲůd Ű Ŭ əŋ ɛŰɛŋ ɛŬ CDC (Centers for Disease Control and Prevention).

- Ɛə Manios et al, (2004)[20] ůŮyɜŬůŮůɔɛŬ 198 ´ ŬŠŭɔɤ ɜ dəɔəd Ŭŋ´ Ůŋ ɑ ɛg 11 ůŰí ɜ Ŭ ɦ Ŭɛ dɦəɛ əŬŰyɔŋ ŬŲŬɜ 35,6% g´ yŋ bŬŋ ŬəŬɔ 6,7% ´ ŬɛɨůŬŋ əŬŬɔɦŋ ɛŬ, əŬɔ 25,7% g´ yŋ bŬŋ ŬəŬɔ 6,7% ´ ŬɛɨůŬŋ əŬəɛŋ dŰůɛŬ

- Ɛə Krassas et al.(2004)[21] Ůŋ ŮɨɜdůŬɜ ŰɛɜŮ ɔ´ ɛəŬůɛɦ Ŭɛg g´ yŋ bŬŋ ɛg əŬɔŰdg´ ŬɛgůŬŋ əd Ŭŋ ůŮyɜŬůŮůɔɛŬ 2458 ´ ŬŠŭɔɤ ɜ dəɔəd Ŭŋ 6-17 ůŰí ɜ Ŭ ɦ Ŭdɜ Ałəə-ŲůŬ (ŪŮůůŬɔɛɜɛɔd) əŬɔůŮyɜŬ ůŮůɔɛŬ 3703 ´ ŬŠŭɔɤ ɜ 6-10 ůŰí ɜ Ŭ ɦ Ŭdɜ ¢ɛgŋ əd Ŭ. Ɛ Ůɔ´ ɛəŬůɛɦŋ dŰɛg g´ yŋ bŬŋ ɛg ɛŰŰɜ 22,2% ůŰdɜ Ałəə-ŲůŬ əŬɔ 10,6% ůŰdɜ ¢ɛgŋ əd Ŭ. Ɛ Ůɔ´ ɛəŬůɛɦŋ dŰdg´ ŬɛgůŬŋ əd Ŭŋ ɛŰŰɜ 4,1% ůŰdɜ Ałəə-ŲůŬ əŬɔ 1,6% ůŰdɜ ¢ɛgŋ əd Ŭ. Ɛg ɜɛəɔə-Ŵůŋ dŰ ůŰɨɛ ɛı ŋ Ůŋ dŰɛ ´ ɛůɛůŰɦ g´ yŋ bŬŋ ɤ ɜ ´ ŬŠŭɔɤ ɜ ɛŰŰɜ 26,3% əŬɔŰɛ ´ ɛůɛůŰɦ Ůɤ ɜ ´ ŬɛɨůŬŋ əɤ ɜ ´ ŬŠŭɔɤ ɜ 12,2%. ⊎Űdɜ ɛŮɔ-yŰdŬŋ ŬgŰɛ ŰŲɜdəŮůŰŰůŰɔ-ŲůdɛŬɜŰůɔɛ ůɔŬŰɛŋ ŲɛŰŰɜɨ Ůɤ ɜ ůɨɛ Űɨəɤɜ, ɛŮŰŰŬɔɦŋ ɛŬɜŬůɔŬɔ´ ɔɜ g´ yŋ bŬŋ ŬəŬɔ´ ŬɛɨůŬŋ əŬůŮůɨɔəŋ ɛůd ɛŮŰŰəɛŋ dŰůɛŬ.

- Ɛə Tomakidis et al., (2006)[23] ´ ŋ ŬɔɛŬŰɛ´ ɛɔdůŬɜ ɛɤŬɛŮɔ-yŰdŬ´ ŋ ɛəŮɔɛ ɤɜɛg ɜŬŮɔŰɛ ɛůɛg ɜ Ŭɜ Ůɔ´ ɛəŬůɛɦ Ŭɛg g´ yŋ bŬŋ ɛg əŬɔŰdg´ ŬɛgůŬŋ əd Ŭŋ ůŮyɜŬůŮůɔɛŬ´ ŬŠŭɔɤ ɜ ůɛɛəɔə ɛg dəɔəd Ŭŋ ůŰdɜ Ałəə-ŲůŬ. z ŮɔŮŰɛ dəŬɜ 709 ´ ŬŠŭɔŲ (328 ɛŋ dŰůɛŬ əŬɔ 381 Ŭɦŋ ɛŬ) dəɔəd Ŭŋ´ Ůŋ ɑ ɛg 9

j ŋ ΛBT B U ΛB U ŋ ? ΛU HE ¢ z HB ï ŋ Ū ¢ ? ŋ ©2012

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gůѫǝǝɔǝђ бҰӻɞɠ, 25,8% ɐǗǗɜ ɡ´ӻӻбǙӻ ǗǝǗɜ 14,8% ɐǗǗɜ
ǗɜǗǝӻɠ ǔǝǗǘɞӻɠ ɛǗǗɜɨ Ǘɤ ɜ ǔɨɞ ǘɨ ǝɤ ɜ.

- ɆǗ ɛɜǗ ´ӻђůǘǗǗɖ ӻӻǗɠɜǗ ´ɞɡ ǔǝǗǝɐɞɖɖ ůǗ ´ǗǝǔǝҰ ůɞɞǝǝɐɠ ɖǝǝɖǗɠ ůǗɖɜ ȾӻɐǗɖ, ǗǗ ´ɞůɞůǗҰ ɡ´ӻӻбǙӻɞɡ ǝǗǝ ´ǗɞɡůǙӻǝɖǗɠ ɡ´ɞǝɞɔǝǗɖǝǗɜ ůǗ 28% ǝǗǝ 13% ǗɜǗǝůǗɜɞǗ (Manios Y et al, 2010)[116].

- Ɓǝ Tambalis et al.(2011)[24] ůǗɛǝǗ 12 ǗǗɐ Ǘ ǝǔɖɛǝǝǝɔǝɐ ɛǗǝӻǗɖ (1997-2008) Ǚӻ Ǘɨ ɜɖůǗɜ Ǘɜɜ ɖɤ Ɇ ůǗůɞӻůɖ ɛǗǗɖɜ ǘɡůǝɐ ǔӻǗůǗɖӻђǗɖǗǗ ůǗ ´ǗǝǔǝҰ 8-9 ǗǗɨ ɜ ůǗǗɓӻɞǗǝӻɠ ǝǗǝ ǗůǗǝӻɠ ´Ǚӻǝǝɞӻɠ Ǘɖɠ Ǟǝǝ҂ǗǗɠ. Ʉǝ ůɡɔǝǗǝӻɛӻɜǗ ǔǝǗ ǝůǗ ɖɖǝǗ ɛǝǗ Ǘɨ ɜɖůɖ ůǗɜɜ Ǘ ǝ´ɞǝǗůɛђ Ǘɖɠ ´ǗɞɡůǙӻǝɖǗɠ ůǗɠ ǗůǗǝӻɠ ´Ǚӻǝǝɞӻɠ Ǘ ђ 7.2% Ǘɜ 1997 ůǗ11.3% Ǘɜ 2008 ɔǝǗ ǗǗǝɞӻ ɖǗǝǗ (p<.001) ǝǗǝ ǗɜǗǝůǗɜɞǗ Ǘ ђ 8.1% ůǗ12.4% ɔǝǗ ǗǗǗɓђӻǝǗ (p<.001). ɆǗɠ ǗɓӻɞǗǝӻɠ ´Ǚӻǝǝɞӻɠ ɞ Ǘ ǝ´ɞǝǗůɛђɠ Ǘɡɜɐɖɖǝ ǗǗ ђ 7% Ǘɜ 1997 ůǗ13% Ǘɜ 2008 ɔǝǗ ǗǗ ǝɞӻ ɖǗǝǗ (p<.001) ǝǗǝ ǗɜǗǝůǗɜɞǗ Ǘ ђ 8.2% ůǗ14.1%(p<.001) ɔǝǗ ǗǗ ǗɓђӻǝǗ. Ɓ ǗǗɐůǝɠ ӻɡɖɛђɠ Ǘɨ ɜɖůɖɠ Ǘɖɠ ´ǗɞɡůǙӻǝɖǗɠ ɐǗǗɜ ǝǗǗҰ 40%-50% ɡɣɖǝђǗǙӻɞɠ ůǗǗ ´ǗǝǔǝҰ Ǘɤ ɜ ǗɓӻɞǗǝɩ ɜ ´Ǚӻǝɞɩ ɜ.
ɇɞ ǗǗǝǝђ ůɡɛ´ӻӻǗůɛǗ ɐǗǗɜ ђǗǗ ǗǗ ´ǗǝǔǝҰ ´ɞɡ ǔǝǗɛӻɜɞɡɜ ůǗǗɓӻɞǗǝӻɠ ´Ǚӻǝǝɞӻɠ ӻɞɞɡɜ ɛǗǗǝɨ ǗǙӻɞ ɖɤ Ɇ Ǘǝǝ҂ǗǗɡǗђɞӻɞɜǗ ǝǗǝɨ ǗǙӻɞ Ǘ ɑǗɞ ǘɡůǝɐɞɠ ǝǗǗҰůǗǗǗɖɠ ůǗůɞӻůɖ ɛǗ ǗǗ ´ǗǝǔǝҰ ´ɞɡ ǔǝǗɛӻɜɞɡɜ ůǗɠ ǗůǗǝӻɠ ´Ǚӻǝɞӻɠ.

Oǝ Christoforidis et.al. (2011)[115] ůǗӻɜǗ ǗɜǗ´ӻɞůɤ´ǙɡǗǝђ ǔǗǝɛǗ 1557 ´Ǘǝǔǝɩ ɜ (820 ǝɞӻ ɖǗǝǗ ǝǗǝ 737 Ǘɓђӻǝ ɖǝǝɖǗɠ 11.42±3.51 ǗǗɨ ɜ)ůǗɖɜ ŪǗǗůǗǝɜɞɖ ǔǝǗ ǝůǗ ɖɖǝǗђǗǝ Ǘɜ 22.4% ɐǗǗɜ ɡ´ӻӻбǙӻǗ ǝǗǝ Ǘɜ 6.5% ´ǗɞɨůǙӻǝǗ ɛǗ бҰůɖ ǗǗ ǝӻǝǗɐӻǝǗ Ǘɖɠ IOFT(International Obesity Task Force), Ǘɩ 13,9% ǝǗǝ 7,4% ǗɜǗǝůǗɜɞǗ ɛǗ бҰůɖ ǗǗ ǝӻǝǗɐӻǝǗ CDC (Centers for Disease Control and Prevention).

ɨ ӻ ɅƁȾƁɄɅƁ Ʉӻ ȜɅɄɆɇ¢ɀ ƁƁ ї ӻ Ū¢ Ȝӻ ©2012

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[illegible].[29,30]

[illegible].[28] [illegible][34] [illegible].[35]

[illegible][31,32]. [illegible].[32,33]

[illegible].[36]

[illegible].[28]

[illegible] J Reilly et al..[38]

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[illegible] Ůďď Ůďď´ Ůšůšəəďď´ ŮĉgůŮĵəďŮďď.

[illegible] Ůů ďďbŮbŮ

- **Ŧ Ůĵ Ŷ>ĉ3ŮŮďď əəšůů3ĉg ɔəŮ əŮĵůəŮb>ŮbŮbŶ**
- **Ďďgĉəə<ĉɔəəyďŮ ə´ Ůů ůŮbďď**
- **ȯ ůďďɛŮ.**
- **ĵ ůďďy3ŮbŮďŮůĉg ə´ ŮŮĉďď**
- **ĵ ĵ ďb3əŮəĉœx3ďď**
- **ƎŮbĉŮĵı ůďďďůəŮbəŮďď**
- **ƀĵ ďĉ´ ŮůəəyďŮ3x ɛŮəďŮďď**

Ŧ ŮŮŶŮďď3 Ůšəəəďď ĉx ə

- **Ƀ´ əĉĉ3ə Ůďď´ ŮĉgůŮĵəďŮďď**
- **Ŧ Ůĵ Ŷ>ĉ3ŮŮďď əəšůů3ĉg ɔəŮ əŮĵůəŮb>ŮbŮbŶ**
- **ĵ ĵ 3ďŮəyďď əĉəx3əəĉəəĉ3ĉɛəəyďď Ůů ůŮbďď**
- **Ŧ ĵ ďx ĵ ď ďd3ďůəɛďďŮŮŮ**

qəŮ ůŮ 3ĉgɛŮ əĉə´ďď3, ďŮb əĵ ĉůŮŮb Ů Ůĵ ŮŮŮŮď ď ŮŮĵ ɛĉɔə əŮŮŶəəďəďď´ ĵ ĉəď´ Ůbəəďď ůŮĵ ŮŮďɔəəďď əůď Ů ď Ůď3 ´ Ůšůəə ďəəďŮ´ ĵ ĉəŮbɛy3ĉg 3Ů´ Ůĵ ĉəĵ ůŮĉi3 ďůĉ Ůĉ ůg3ŮŮď3 ´ Ůĵ ůůďŮĵ ĉə´ ĵ ĉůəŮŮďŮůəəĉɑ´ Ůĵ Ŷ>ĉ3ŮŮďď ɔəŮ Ůď3 ŮbŶ Ůg3ďď əŮĵůəŮb>ŮbŮbı 3 3ĉůďɛŶŮx 3 Ůĵ ɔďŮĵŮ əŮŮŶ Ůď3 Ůəəəďď ĉx ə . ĵ 3ĉůďɛŮbx Ůĉ ŮĉbŮb Ůĉ ɔŮbĉ3ďďď ďŮb ď ůəŮůəŮůďŮ Ůďď Ůďďĵ ĉůəəəĵ x ůďďď Ůĵ ɑĉŮbŮ ď Ůď3 ´ Ůšůəə ďəəďŮəŮb´ əďŮb ď 3ŮůəŮůĵ Ŷɛ Ůb Ůůgɛ´ Ůx ɛŮŮəŶ ɔəŮ ɛŮĵəəyďůŮbŮŮďůďď.[37]

1.5 ĵ əŮďďŮďď´ ŮĉgůŮĵəďŮďď

Ƀĉ Ůb´ əyĉ3 ŮəbŮbŮbx ɛy3ĉ Ů ď ɛəŮ´ əďďı ĵ Ů ɛŮbŮď 3 ďŮb´ ŮĉgůŮĵəďŮ yĉĉgɛŮ ďŮŮb ď ŮbŮĵ ɔŮbŮbəə´ ĵ ďůəďx ď g´ Ůĵ bŮĉbŮb Ůď ďŮ ŮbŮĵ ɔŮbŮbəďď əŮŮŮb Ŷəx ůďďď. dybŮbŮ ĉ ɛďĉŮb3ůɛďďď ŮbŶ Ůď3ďď Ůď ďŮ ůŮb əŮďĉĵ ĉŮŮŮb ɛď3ĉ Ů ď Ůĉ ɔŮbĉ3ďďď ŮgŮď əŮďı ď ůg3Ůĵ ɔĉi3 ´ ĉəəĉɑ´ Ůĵ Ŷ>ĉ3ŮŮďď. ŪŮ´ ĵ y´ Ůb3Ů g´ ĉɔĵ Ůɛ ɛůŮŮı ďŮbĉə ɔŮbŮŮbĉɑ´ ĵ ĉůəŮďŮůəŮbĉɑ´ Ůĵ Ŷ>ĉ3ŮŮďď´ Ůĉĉg3 əŮďĉĵ ůŮbď ĵ ďəĉ əŮďı ď Ů dĵ ŮŶĉg3 Ůď3 Ůg´ ŶďŮbŮ-Ůg ŮbůďďůďŮ Ůbďďď ůgɔəŮbĵ ɛy3ĉg ŮŮďɛĉg ůŮ y3Ů´ Ůĵ ďŶəəĉ3 ´ ĉg ´ ĵ ĉŶ>Ůb Ůď3 ´ ŮĉgůŮĵəďŮ. Ŧ Ůĵ ďəŮ Ůg ŮŶ ůŮbŮŮb ďŮb ĉə ´ Ůĵ ďŮbəəĉ3Ůbĉɑ´ Ůĵ Ŷ>ĉ3ŮŮďď, ĉ Ůďď´ ĉď ĉx ďď əŮďı ď Ů ůďď əŮb Ůĉ ´ ĉəəŮbůɛəďď´ Ůĵ ďŶəəĉ3 ´ Ůĉĉg3 əgĵ ďŮĵ ĉĉ ĵ ďəĉ ůŮď3 Ůı 3ďůď Ůĉg Ů ď´ ĉəŮůɛĉi Ůď´ Ůĉ ĉůɛĉx ď.[39-42] ȳ ɛx ď ɔəŮ y3Ů ɛəĵ ď´ ĉůĉůŮď´ Ůĵ ď´ Ůšůəə´ Ůĉ ĉůŮĵəďŮ ĉŮbəŮŮŮb ůŮɔĉ3ůəŮď´ x ď Ůb Ůb ď Ůb Ů Ŷĵ əŮbŮ

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[illegible] [43] [illegible]

1.5.1 [illegible]

[illegible] Cushing [illegible] [44], [illegible] [45] [illegible] [46]

1.5.2 [illegible]

1.5.2.1 [illegible]

[illegible] 20 [illegible]

[illegible]

[illegible] 40% [illegible] [55]. [illegible] 1971 (Third Report on Nutrition Monitoring in the United States) .[illegible]

[illegible] ©2012

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[illegible] super markets (Food [illegible][56].

[illegible] 1-2 [illegible] (>=785 kcal) [illegible] fast food. [illegible][47]

[illegible] 1970 [illegible] 1990[57].

1.5.2.2 [illegible]

[illegible][48] [illegible][49]. [illegible][50] [illegible]

[illegible] ©2012

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Ůǝђƍ ´ǝ ŭɟ ŬŭŰɟǝ Ŭђ´ɕg ɕɤɐƍ ɏĠǝ Ůƍɟɨ űŶŭɛŬ Ŭ´ɘǝŶg´ɕŭƍђɛŮǝɖ ŭɨ ŭŰŭɖ ɔǝŬŰ Ůɟgɖɛɖ ǝŮǝŰɕgɟɔǝŬ Űɕg ɕɟɔŬǝŭɛɕɨ.

ɟ ɜɕǝ ɜŬ Űɜɜŭŭ ђŭǝ Űɕ Ů ɑ Ůŭɕ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ Ůǝђƍ Ŭђɛɕg Ů ɖɟ ŮŶɕŭǝ ŭŮ Ŭǝŭɖɛ Ůɤ Űɕ ɓŬɖɛђ Űɖɜ ŭgɜɕǝɐ ŮɜŮɟɔŮŬǝɐ Űɕg ǝŬŰɜŶǝɤ ŭɖ ǝŬ ŭgɜŮɩ ƍŰɕ ŮɜŮɟɔŮŬђ Űɕg ǝŭɕɨɔǝ. Ʉǝɖɖɩ ɟŬ ɛŮŰɨ ɜ ɏɕgɜ ǝŬŰɩŮɕŭ Űɖ ɖŰǝɐ ŭgŭɏŰŭɖ Űɤ ɜ ĠŬɛɖǝ ɜ Ů ɘ ɏŭɤ ɜ űgŭǝɐƍ ŭɟ ŬŭŰɖɟ ђŰɖŰ ɛŮ Űɖɜ ´Ŭgŭɟǝɖ ŭŰ ´ŬŭŶ ǝŬŭŰɕgƍ Ůɐɓɕgƍ ǝŬɖɩ ƍ Ŭ ɕŰǝɕɨɜ Űђŭɕ ŬŰŬђŭɕ ǝŬŮ ɑ Űɤ ŭɖ Űɖƍ´Ŭgŭɟǝɖƍ.[51] ȺǝŰђƍŬ ђ Űɕ ŶɛŮɕ Ŭ ɕŰǝŮɛŬŰɖƍŬɨɜɖŭɖƍ Űɖƍ ŮɜŮɟɔŮŬǝɐƍ ǝŬŰɜŶǝɤ ŭɖƍ, ŰŬ gɣɖǝŶ Ů ɑ ŮŬ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ ɓŮǝŰ ɜɕgɜ ŭŮ ŭɖɛŬŰǝђ ɓŬɖɛђ Űɖɜ ɛgïǝɐ ɛŶɕŬ ǝŬ ŭgɜŮɩ ƍ Űɖɜ ŮɜŮɟɔŮŬǝɐ ǝŬŰɜŶǝɤ ŭɖ ɖɟŮɛɖŬƍ ǝŬɖɩ ƍ Ů ɑŭɖƍ ǝŬ Űɖɜ ɕɜŮŭɤ ŭɖ ɛgïǝɕɨ ǝɑ ɕgƍ.[51] ŪŬ ´ɟɏ´Ůǝ Ů ɑɖƍ ɜŬ ŬŬŭɏɟɕgɛŮђŰ Űɕ Ů ɑ Ůŭɕ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ Ůǝђƍ ´Ŭŭǝɨ ŭĠŰɛŰŬŶɛŮŬɛŮŰ ǝɕǝɤ ɜǝɕɕǝɕɜɕɛǝђ Ů ɑ Ůŭɕ, Űƍ ŭgɜɖɐǝŮƍ ɕɤɐƍ, Űɖɜ ´ŬɟђŰgɜŭɖ Ŭ ђ ŭgɜɕɛɐǝǝɕgƍ ǝŬ ɓɏɓŬŬ ђ´ɤƍ ŰɜɑŭŰǝŮ ǝŬ ´ŬŬ Ŷɜɤ,ɛŮŰ Ů ɑ Ůŭɕ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ Űɤ ɜ ɔɕɜɏɤ ɜ.[52] ɋ ƍ Ŭ ɕŰǝŮɛŬ ɛǝŰƍ ɕǝɕɏɜŬ ǝŬ ´ǝ ǝŬɖǝŭŰǝɐƍ ɕɤɐƍ Űƍ ŰǝŮŰŰŮƍ ŭŮŬŮŰŮƍ, Űɕ Ů ɑ Ůŭɕ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ Űɤ ɜ ´Ŭŭɨ ɜ ǝŬ Ůŭɐɓɤ ɜ ɏĠǝɛŮɤ ɖŮŭŮ´ɕǝɏƍ ɕɩ ɟŮƍ.[53] ɆŮɕɟǝŭɛɏɜŮƍ ɛŮǝɏŰƍ, ɏĠǝ´ ɟŬŰɟɖɖŮђŰ ɕǝ´ǝŬɜђŰŰƍ ɔǝŬŰɜ Ůɛű Ŷɜǝɖ ´Ŭgŭɟǝɖƍ Ůǝђƍ´Ŭŭǝɨ ŭĠŰɕɕɜŰŬŶɛŮŬ ɛŮŰ ɕɟђɜɕ ´ɕg Ŭŭǝɟɩ ɜǝ ŭŰ ɜŬ ´ɟŬǝɕǝgɖŮ Űɖǝђɟ Ŭŭɖ, ŭɖǝŬɐ ɕɟђɜɕƍ ɛŮ ŭgɜŭǝŭɛђ ĠŬɛɖǝɨ Ů ɘ ɏŭɕg űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ ǝŬ ĠŬɛɖǝɐƍ ŮɜŮɟɔŮŬǝɐƍ ǝŬŰɜŶǝɤ ŭɖƍ.[54]

ȾŬɖɩ ƍŰŬ Ů ɑ ŮŬ ´Ŭgŭɟǝɖƍ ŭŰɖɜ ȺǝǝŶŭŬ ŬgɜŶɜɕɜŰǝ ŭŮŬɜɖŭgɕɖŰǝђ ɓŬɖɛђ , ŰŭgŰɕɟɕɜŬ ´ɟŬŰɖɟŰŰǝ ǝŬ ɛǝŬ ŭɖɛŬŰǝɐ ɛŮɤ ŭɖ Űɤ ɜ Ů ɘ ɏŭɤ ɜ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ[58]. ȺɑǝŬ ´ɟɕűŬɐɛƍ ɖ ŬŰŭŭɟɕűɖ ŭĠɏŭɖ ɛŰŰɨ Űɖƍ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ ǝŬ Űɤ ɜ Ů ɘ ɏŭɤ ɜ űgŭǝɐɛƍ ǝŬŶŭŰŭɖƍ ɛŮ Űɜ ǝŬɟ ŭǝɛŰŰɓɕǝɐђ ǝɑŭgɜɕ[59] ɖɐŶŭɕɟɕɘ ɛɖĠŬɜŭɛɕɑ ɏɕgɜ ŬŬŭŮɖŰɑ ђŰǝ ɛŮɕǝŬɓɕɨ ɜ ŭŰɜ Ů ɑɟŬŭɖ Űɖƍ űgŭǝɐɛƍ ŭɟ ŬŭŰɖɟ ђŰɖŰƍ ǝŬ Űɖƍ űgŭǝɐɛƍ ǝŬŶŭŰŭɖƍ ŭgɛ´ŮǝŬɛɓŬɜɕɛɏɜɕg : (Ŭ)Űɤ ɜ ŬŰŭǝŮɛɕɜɕŭ ɜ ŭɟŶŭŮɤ ɜ (ɓ)Űɖƍ Ŭgɜɖɛɏɜɖƍ ɐŭɕgǝɐɕŮŬŭɖɖŭɖƍ (ɔ)ɛǝŬƍ ɛɖ-ɐŭɕgǝɐɕŮŬɟŰ ɛŮɖƍ ´ɟђŭǝɖɣɖƍ ɔǝgǝђɕɖƍ (ŭ)ɛǝŬƍ ɓŮǝŰɤ ɛɏɜɖƍ ŬŬǝɕɔŬƍ ɛŰŰɨ HDL ǝŬ LDL ɕɕǝɖŭŰђǝɖƍ ǝŬ (Ŭ)Űɖƍ ɓŮǝŰɤ ɛɏɜɖƍ ǝŮŰɕgɟɔǝŬƍ Ŷǝǝɤ ɜ ɛŰɓɕǝɐɩ ɜ ɕɟɛɕɜɩ ɜ ǝŬ Ůɜɕɨɛɤ ɜ ǝŬŶ Űɜ ɛŰɓɕǝŭɛђ Űɤ ɜ ǝɑ ɤ ɜ(60)

ɉ ɟ ɅɃȾɃɄȺɃ Ʉɟ ʔȺɄɆɇ¢ɀ ɃɃ ï ɟ Ū¢ ʔɟ ©2012

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oss sectional) εŮǿɏŰ ɖ ɞ´ɞďŬ ůɡε´Ǚ ɘɏŬƃŮ5500 ´ŬǘɘƳ
ɛ ŭɘŬ ɘůŰ ɗɗəŮεɘŬ ɘůɢɠɟɐ ŬɜŰǘůŲ ɧŭɤ ɠ ŬɜƳəɞɔɖ ůɢɏůɖ
εŮŰŬɜɨ Űɖɠ ŭɡůɘɐɠ ŭɟŬůŰɖɟ ɧŰɖŰŬɠ əŬǿ Űɖɠ ´ŬɢůŬɟəďŬɠ, ɖ ɞ´ɞďŬ ɐŰŬɜ εŮǿŬǿɨ Űǚ ɖ ůŰŬ
Ŭƃɧɟ ɘŬŰɞɠ ŮǿŰŰŬɛɧεŮɜɞɠ ´əɖɖɡůεɞɨ [114].

2. ɆƬƮBƏBɆ

ɀ ɘŬ ´əŮǿƳŭŬ εŮǿŰŰ ɜ əŬŰŰŭŬǿɞɜɨŮǿ ɧŰǿ ´ŬɡɨůŬɟəɞɞ Ŭǿəƴ ŰŰɡŰɧɢɟɞɜŬ əŬǿɐɠ ŭɡůɘɐɠ əŰŰƳůŰŰůɖɠ ŮǿɐəɘŬɠ ε´ɞɟŮɑɜŬɏɢɞɡɜ ɏɜŬ εɘɟɧŰɟɞ əŬɟŭɘεŰŰŬƃɞəɘɧ əɑŭɡɜɞ ůŮůɢɏůɖ εŮ
Űɛɡɠ´ŬɨůŬɟəɞɡɠ εŮɢŬεɖəɧ Ů ɑ Ŭɞ ŭɡůɘɐɠəŰŰƳůŰŰůɖɠ [61]
ƏŬɟɞəô ŬɡŰƳ ɡ´ƳɟɢǿɘŬɧεŬ ɞ ŭɘɢŰŭεɧɠ ɔɘŬ Űɛ ŮƳɜ ɖ ´ŬɢůŬɟəďŬ ŮɒŬɘ ɏɜŬɠ ɘůɢɟɧŰɟɞɠ
´ŬƳɔɞɜŰŰɠəɘŭɨɜɞɡ Ŭ ɗɧǿɖ əŬɐ ŭɡůɘɐ əŰŰƳůŰŰůɖ ůŮŬɐəɘɠ [62].
Ɇɨ εŭɤɜŬ εŮŰɖɜ ɐɖ ɡ´Ƴɟɢɞɡ ƃɧəɘɔɟŭŬ ŭŬɜ ´Ƴɟɢɞɜ ŬɜŰůŬɔŬ ŭŰŭɞεɏɜŬ ɔəŬ
´ŬǘɘƳ. ɟ ´Ƴɟɢɞɜ ŬəƳɢɘŰŰɠ ɏɟŬɡɜŬɠ ´ɞ ɜŬ ŬŰŰƳɞɜ Ŭɒ ůɤ εŰŰǿɧ ƃƳɟɞɠ əŬǿ Űɖ ŭɡůɘɐ
əŰŰƳůŰŰůɖ ŰŰɡŰɧɢɟɞɜůŮ ůɢɏůɖ εŮəŬɟ ŭɘɢεŰŰŰƃɞəɘɨ ɠ´ŬƳɔɞɜŰŰɠ [63,73].
ũɘô ŬɡŰɧ əŬǿ ůəɞ´ɧɠ Űɖɠ ´ŬɨůŬɠ εŮǿɏɖɠ ɐŰŬɜ ɜŬ ŬŰŰůŰɨɜɞɡ ɞɘ ɘŭɡŰɞɟɢɏɠ ůŮ
əŬɟŭɘεŰŰŰƃɞəɘɨ ɠ ´ŬƳɔɞɜŰŰɠ ɞɜŭɨɜɞɡ ɏɞɜŰɠ ´ɟɪ ŰəŰɞɡŬ ŰɞŬ ´ŬǘɘƳ ůŮ
ɞεƳŭɡ(quartiles) ŭɘŬɢɞɟŰɘŰŬ Ů ɘ ɏŭɤ ŭɡůɘɐɠ əŰŰƳůŰŰůɖɠ (ū.Ʈ.) əŬǿ ŭŰɛŰɖ εƳŬɠ
ůɪ εŰɜɞɠ(ɸ.ɀ .Ɇ).

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3. [illegible]

3.1 [illegible]

[illegible]

[illegible] Healthy Growth [illegible] (cross-sectional) [illegible] (9 [illegible] 13 [illegible]) [illegible] [illegible] [illegible] [illegible] [illegible]. [illegible]

[illegible] ([illegible]). [illegible]

3.2 [illegible]

[illegible] (multi-stage sampling) [illegible] (stratified) [illegible] ([illegible])

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30-64 ŮŰ з, əŬď ʛ əŬэ Ű ǥ ŬĮ ɕ ɛ ɕɨ Ű ǥ ɛŬďďŰэɕɨ
ůŰ ǥ ǥʛ ŬзŰůŰзɕ ǥ ǥʛ ɋɐɛɕ ǥ ǥʛ Űɤ з ǥ´ ɧ-ɛŬэɏŰď зɕɛı з.

Ɇǥɔə Ŭэȷ ɶ ɏзŬ ɔэŬ Ű ŭŬэɛŬŰэə ďɣ ďŬ Ű ǥ ǥ´ ɧ-ɛŬэɏŰď ´ əďďǥůɛ ɕɨ ´ ȷ Ŭэɛ ŬŰ´ ɕɘ ďďəŬэ ŰŬ
Ŭэɧəɕǥ ďŬůŰŸüэŬ:

- Ai ȷ Ůůď əŬэəŬŬŬэȷ Ŭűɐ Ŭ ɧ ŰŬ´ ɕ ´ ȷ ɧůűŬŬŬ ŬĮ ɕŰ Ŭ ɕɔȷ Ŭűɐ ʛ Ű ǥ Ŭэəďзэɕɨ ´ əďďǥůɛ ɕɨ Ű ďʛ Aďзэɐ ʛ ɆŬŰŬ ůŬэɐ ʛ Ɉ ´ ďȷ Ůůďʛ (AɆɈ A, ȷ ´ ɕɔȷ Ŭűɐ 2001) ´ əďȷ ɕűɕȷ ɑ з ůɕŰэƳ ɛŮŰ Ŭэ´ ŬüŬǥŰэɧ Ů ά Ŭüɕ Ŭŭɧ ɛɤ з ďəэ ďʛ 30 ɏɤ ʛ 64 ŮŰ з ɧ´ ɤ ʛ Ů άďʛ əŬэ ɛŮŰ ɛɏɔŮɕʛ Ű ǥ ´ ȷ ɕŮďɓэɕɨ ´ əďďǥůɛ ɕɨ ďəэ ďʛ 10 ɏɤ ʛ 14 ŮŰ з ŬзƳ ŬůŰэɐ/ ďɛ ɘ-ŬůŰэɐ/ Ŭэȷ ɕŰэɐ ´ Ůȷ ɕ ɕɐ ůŮəƳ ďŮɏзŬŬ ɧ Ű ǥ ǥʛ 5 ǥ´ ɧ-ɛŬэɏŰď зɕɛɛɨ ʛ,
- ɆŰď ůǥзɏ ɕŮŬ ǥ´ ɕəɕɔάŰďəŮ ɔэŬ əƳďŮ ɋɐɛɛ ůŰ ǥ ǥʛ ´ ɏзŰŬ ʔ ɕɛɕɨ ʛ Ű ɛɏůɕ Ů ά Ŭüɕ Ŭэ´ ŬüŬǥůďďʛ Ű ǥ ´ əďďǥůɛ ɕɨ Ŭзďəɶ ɤ з ďəэ ďʛ 25 ɏɤ ʛ 55 ŮŰ з, ɧ´ ɤ ʛ Ů άďʛ əŬэŰ ďəэɘŬэɧ ŬĮ ȷ ɕʛ ůŰ ɕ´ ɕɕ ŬзŰŸůɕзŰŬэ ɕɘ ɔɕзŮʛ Űɤ з ´ Ŭüɑ з 10 ɏɤ ʛ 14 ŮŰ з ´ ɕǥ Ŭ ĬȷŰɕǥз Űз ɛŬďďŰэɧ ´ əďďǥůɛɧ Ű ǥ ŭŬэɛŬŰɧ ʛŰďʛ´ Ŭȷ ɕɨ ůŬʛ ɛŬэɏŰďʛ.
- Ɇɨ ɛűɤ зŬ ɛŮŬŬ ůŰзɕŮŬ´ ɕǥ ´ ȷ ɕɏəǥɣ Ŭз ɔэŬ Ű ɛɏůɕ Ů ά Ŭüɕ Ŭэ´ ŬüŬǥůďďʛ Ű ǥ ´ əďďǥůɛ ɕɨ Űɤ з Ŭзďəɶ ɤ з ŭďɛɕŰ з ďəэ ďʛ 30 ɏɤ ʛ 64 ŮŰ з ůŮəƳďŮ ŭɐɛɛɕ, ɕɘ ɋɐɛɛɕɘ ůŮəƳďŮ зɕɛɧ əŬŬзŮɛɐ ďďəŬз ůŮ3 əŬŰďɔɕȷ ď-ůĮı ɛŬŬ (strata) ŭɘŬűɕȷ ŮŰэɕɨ Ů ɘ ɏüɕǥ Ŭэ´ ŬüŬǥůďď, əŬэ ůǥɔəŬэȷ ɶ ɏзŬ ůŮ ŭɐɛɛɕǥʛ ȷ Ŭɛďəɧ ŰĮ ɕǥ, ɀ ɏůɕǥ əŬэ Ɉ ɣ ďəɧ ŰĮ ɕǥ Ŭэ´ ŬüŬǥŰэɕɨ Ů ɘ ɏüɕǥ ɔɕзɏɤ з.
- Ō´ ŬэŬŬ Ů эɏɕďďəŮ ŰǥɕŬŬ ɏзŬʛ ŬзŰ ȷ ɕůɤ ´ ŮǥŰэɧʛ ŬĮ ɕ ɛɧʛ ɋɐɛɤ з Ŭ ɧ Űďз əƳďŮ əŬŰďɔɕȷ ď-ůĮı ɛŬ ɋɐɛɤ з ɛŮŭɘŬűɕȷ ŮŰэɧ Ŭэ´ ŬüŬǥŰэɧ Ů ά Ŭüɕ ɔɕзɏɤ з, ŬзŬэɕɔэƳ ɛŮŰďз ´ ɕůɕůŰэŬŬ əŬŬŬзɕɛɐ Ű ǥ ´ ȷ ɕŮďɓэɕɨ ɛŬďďŰэɕɨ ´ əďďǥůɛ ɕɨ ďəэ ďʛ 10 ɏɤ ʛ 14 ŮŰ з ´ ɕǥ əŬŰэɕɨ з ůŰ ǥ ǥʛ Ŭз əɧɔɤ ɋɐɛɕ ǥ ǥʛ ůɨ ɛűɤ зŬ´ ƳŰŬɛŮŬŬ ůŰзɕŮŬ Űďʛ AɆɈ A.
- Aз ůǥзŮɕŮŬ ɏзŬʛ ŬзŰ ȷ ɕůɤ ´ ŮǥŰэɧʛ ŬĮ ɕ ɛɧʛ ůɕɕəŬɤ з Ů эɏɕďďəŮ ŰǥɕŬŬ Ŭ ɧ Űз əƳďŮ ɋɐɛɛ, ŬзŬэɕɔэƳ ɛŮŰďз ´ ɕůɧůŰɤ ůď Ű ǥ ɛŬďďŰэɕɨ ´ əďďǥůɛ ɕɨ (10-12 ŮŰ з/ A əŬэ Ɇɇ ŰƳŮɤ з) ´ ɕǥ ŬзŬэ ŬэɔŬэȷ Ŭɛ ɛɏзɕǥʛ ůŰŬ ůɕəŬŬɤ з Ů эŬэɛɏзɤ з ɋɐɛɤ з ɛŮ ŭɘŬűɕȷ ŮŰэɧ Ŭэ´ ŬüŬǥŰэɧ Ů ά Ŭüɕ ɔɕзɏɤ з ůɨ ɛűɤ зŬ ɛŮ ŰŬ ůŰзɕŮŬ Ŭ ɧ Ű ɄŬüŬэɤ ɔэɧ ɫзůŰэŰɨ Ű əŬď ʛ əŬэŬ ɧ ŰŬəŬŬƳŰɧ´ ɕǥʛ ɔȷ ŬűŰŬɄȷ ɤ ŰɓƳďɛ ɘŬʛ Aə´ ŬüŬǥůďʛ.
- ɆŰďз ´ Ůȷ ά ɤ ůď ´ ɕǥ ɏзŬ ŰǥɕŬŬ Ů эŬэɛɏзɕ ůɕɕəŬɕ ŰɕŮ Ŭĭ зďďŰ Űď ůǥɛɛŰэɕɐ Ű ǥ ůŰď ɛŬэɏŰď ɐ ŰɕŮ Ŭ ɕȷ ȷ ɨŰďŰ əɧɔɤ ɕŬɛďəɐʛ ůǥɛɛŰэɕɐʛ (<70%) ǥ´ ɐȷ ɕŮ ď ŭǥзŬŰɧŰďŬŬ ŬзŬэəŬэŰэı з Ů эɕɔı з ůɕɕəŬɤ з, ůŮŰɏŰэ ɓŬďɛɧ ɧ´ ɕǥ Ů ɘŰɨ ɕďďəŮŰэɘƳ ď ŭɘŬŰȷ ďůď Űďʛ ŬзŰ ȷ ɕůɤ ´ ŮǥŰэɧŰďŬŬʛ Ű ǥ ŭŬэɛŬŰǥʛ.

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[illegible] [64]. [illegible]

[illegible]

[illegible] (Seca Alpha, Model 770, Hamburg, Germany) [illegible] ± 100 gr. [illegible] (Frankfurt plane). [illegible] (Leicester Height Measure, Invicta Plastics Ltd, Oadby, UK), [illegible] ± 0,5 cm. [illegible] (kg) [illegible] (m^2).

3.4 [illegible]

[illegible] International Obesity Task Force (IOTF) [65,66].

[illegible] ©2012

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ฝัฑฐ

3.5.1 ฿ะฉะฑ ฿ฬต ฝะฃั

¢ ฿ษฑๆฟฯ ฿ะ ฯ ฿ ฿ ฿ะฝะ ฯ฿ ฿ ฿ฬ ฿ ฿ ... (Metabolic Equivalents: METs) ... (4) ...

- ... 0 ... 4 METs
- ... 4 ... 7 METs
- ... 7 ... 10 METs
- ... > 10 METs

... [66] ...

... ©2012

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[illegible] (Yamax SW-200 Digiwalker, Yamax Corporation, Tokyo, Japan). [illegible]

3.6 [illegible]

[illegible] 12 [illegible] 12- [illegible] (8:15 [illegible] 10:00 [illegible]) [illegible]

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[illegible] 23 ml [illegible] 2,6 ml [illegible] 9 ml. [illegible] (EDTA) [illegible] EDTA [illegible] 2,6 ml [illegible]

[illegible] EDTA [illegible] 9 ml [illegible] (4°C) [illegible] 10 min [illegible] (Hermle Z200A, Wehingen, Germany). [illegible] 3000 [illegible] 15 [illegible] (Eppendorfs), [illegible] ~0,5ml [illegible] -80°C. [illegible] «[illegible]» [illegible]

[illegible] (Fasting Plasma Glucose, FPG) [illegible] HDL- [illegible]

[illegible]

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Ʉʇ ɕůŭɘɛʇ ɘɦɛ Ůɜɕɘ ŭŬɷ Űǻɠ	**ʝ ʇ ɕɐ ʐ ŮɗɦŭɕɡɄʇ ɕůŭɘɛʇ ɘůɛ ɕɨ**	**ɇ ɨ ´ ɕɠ ʝ ɜŰǻŭɉ ŬůŬɗʇ ɑɤ ɜ (ȺŰŬǻɉ ŮɗŬ ɄŬʇ Ŭɒɤ ɔɐɡ, Ʉɦɘɗ, ɉ ɩ ʇ Ŭ)**
ũɘɡɘɦɕɗ Ʉɘ Ÿůɛ ŬŰɕɠ	Ⱥɜɛɡɛ ŬŰǻɷɐ ɉ ʇ ɤ ɛ ŬŰɕɛ Űǻɉ ɘɐ ɛ ɏɗɕŭɕɠ	ROCHE DIAGNOSTICS SA, VASILIA, SWISS
Ƀɘɘɐ ɉ ɕɘɗůŰǻɉ ɦɘɗ Ƀʇ ɕɨ	Ⱥɜɛɡɛ ŬŰǻɷɐ ɉ ʇ ɤ ɛ ŬŰɕɛ Űǻɉ ɘɐ ɛ ɏɗɕŭɕɠ	ROCHE DIAGNOSTICS SA, VASILIA, SWISS
HDL-ɉ ɕɘɗůŰǻɉ ɦɘɗ Ƀʇ ɕɨ	Ⱥɜɛɡɛ ŬŰǻɷɐ ɉ ʇ ɤ ɛ ŬŰɕɛ Űǻɉ ɘɐ ɛ ɏɗɕŭɕɠ	ROCHE DIAGNOSTICS SA, VASILIA, SWISS
ɇ ʇ ɘɘɡɘŮɉ ɑɘŬ Ƀʇ ɕɨ	Ⱥɜɛɡɛ ŬŰǻɷɐ ɉ ʇ ɤ ɛ ŬŰɕɛ Űǻɉ ɘɐ ɛ ɏɗɕŭɕɠ	ROCHE DIAGNOSTICS SA, VASILIA, SWISS
Ƚɜůɕɡɘɑɗ Ƀʇ ɕɨ	ɉ ɗɛ Ůɜɛŭɤ ŰŸɡɔŮŬ	KYOWA MEDEX LTD, MINAMI-ISHIKI, JAPAN, FOR SIEMENS DIAGNOSTICS USA

¢ LDL-ɕɕɘɗůŰǻɉ ɦɘɗ ɡ´ɕɘɘɔɑůŰɗɘŮ ɛ Ů Űɗɜ ɕʇ ɐůɗ Űɗɠ Ůɜɑɤ ůɗɠ Friedewald [68]. ũɘŬ Űɗɜ ŮɜŰɛɗůɗ Űɗɠ ɘůɕɡɘɘɕŬɜŰɑŰŰůɗɠ ɕʇ ɗůɘɛɕ´ɕɘɗɗɘŮ Űɛ ɕɛɕɘůŰŰǻɷɦ ɛɕɜŰɉɘɕ ŮɜŰɛɗůɗɠ (HOMA-IR), ɕ ɘɦɔɕɠ ɔɘɡɘɦɕɗɠ ´ʇ ɕɠ ɘůɕɡɘɑɗ ɜɗůŰŰɗŬɠ (FGIR) ɘŬɜ ɕ ´ɕůɕŰǻɦɠ ŭŬɷŰɗɠ Ůɉɔɕɕɡ ɘůɕɡɘɘɕŮɡŬɜůɗɗůɗŬɠ (QUICKI).

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[illegible] Omron M6 Blood Pressure Monitor (Omron Healthcare Europe BV, Hoofddorp, The Netherlands) [illegible] 10 mmHg [illegible]

3.8 [illegible]

[illegible] ERT (3.1) [illegible] 4 [illegible] ERT [illegible] ERT [illegible] ERT [illegible] ERT [illegible] ERT [illegible] ERT [illegible]

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Ű[ɜ ə Ů Ű[ɔ ɛ ɟ ɜɛ´ ɛ ɑ[ůd Ů ɔ ɛ ɟ ɜu ɜ ə Ů ə ɛ ɟ ɜ Ű ůɜu ɜ ůŮ Ů ɔqɣ Ɛ.

	ę ɜɛ ɣɡ ɟ ɜ Ů ű ɛ ɟ Ɣɡ	ę ɜɛ ɣɡ ɟ ɜ Ů ű ɛ ɟ Ɣɡ
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜ Ů	A ɔ ɡɟ ɜ Ů	Ɣ ɛ ɟ ɑ Ů ůɜ Ů
ū gůɜə ɐ Ɣ Ů Ű Ɣů Ű Ů ůd (ERT)		
1ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	0-1,5	0-1,5
2ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	1,5-2,5	1,5-2,0
3ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	2,5-4,0	2,0-3,0
4ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	4,0-7,0	3,0-7,0
	qɣ Ɛ	
1ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	13,2-17,5	10,5-17,3
2ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	17,5-19,9	17,3-19,5
3ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	19,9-22,7	19,5-22,3
4ɛ		
ę Ů Ů ɟ Ű [ɛ ɡɟ ɜɛ	22,7-43,9	22,3-36,7

j ɟ Λ B Ɣ B U Λ B U ɟ ʔ Λ U Ɛ ę ¢ ʒ B ï ɟ Ū ¢ ʔ ɟ ©2012

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Ð yəÜbcegÜłgűgůsəeg əÜŰŸůŰŰůdg ðÜůoůŰłəŮůŮüie üeəæÜůdůg´eg´Ůjsə>ÜEðŸ3e3ŰÜb ůŰ´jx Ůhəeəəe EUROFIT[69]. Ðəůgcəůbjæy3ůg üeəæÜůdůg yceg3 ðjůłůůyəegjůg əÜbEůgxdəh üůbəŰł ŮÜbÜbd´ŰbhŰłŰÜg[70]. əÜbycegz cjdůæe´esdłůůŮÜbůbdEEy3Ü ůŮEÜłdŰŸgł cpdEeŰbei ůŮüŸŸŰecjůgł cı jůgŰłg Ágjı´dg[69].
Ÿæ ůgcəůbjæy3Ü, düyůEdüeəæÜůı 3´Ůjsůb>ŸEðÜ3Ů Ůbgł Ühəegdůg EŮjeůůbg:

j Ůgeüg3ÜEeEyŰjdůd. Ð EÜłdŰegł y´jŮŮ3Ü ůűœůb, ´jı ŰÜEŮŰe üůbœəÜbəÜłh´æ EŮŰe ŮjsůŰjh cyjs, hůe ´æ üg3ÜŰŸ E´ejůů y3Ü xdűsÜbh cůgeüg3ÜEhEŮje. ¢ üsÜüəÜůdÜ ŮÜbÜbeűłdəŮəÜbcsÜŰÜüie cyjsÜEŮŸÜ h esÜ´Üiůd 5 əŮŰłı 3 EŮŰÜbi Ůx3 ŮÜbÜbexůx3. z Ů ðŸůdŰł3 Ůœeůd ůôÜgŰe Ůüüeəæ ÜůdÜEŮjedəŮdüi3ÜEdŰx3 əÜŰxŰyjx3 egı3 Ůeg´eGd.

ÜÜbœüjeee ejyssæe j3Ůeegł. ZÜŰŸŰł üeəæÜůdÜ ÜgŰe ee EÜłdŰył cxjůłŰəÜb ůŮ esəjył eeŸüůł (4-5 ŸŰeEÜ) əÜb ə>edəÜb 3Ü üsÜbi ůegz, hůłł´æ ´eə>ył ű ejył E´ejei3, esÜ Ü hůŰŰůd 20 eyjx3 EŮŰbi üie cjÜEEı3. Ō3ÜEÜb3dŰűx3dEy3e dedŰhł Ůjydsů EÜŰe e´eœ cæhŰb ůŰüsÜbŸhəe əÜb´æ cjeəeje əÜłhjůŮŰł3 ŰÜgi ŰłŰÜEŮŰł3 e´edÜeəůgEEŰyge3ŰŰł ə>edəÜb EŮŰbi Ůx3 üie cjÜEEı3. ¢ üeəæÜůdÜ ÜgŰe yeŮb ůeŮüsŮůŰůı csÜ 3Ü EŮjŸ əÜjüæÜb3Ü 3ůgůŰhəe ÜhŰłeve əÜb yeŮb ə>ŮŰŸ>>dəd csÜ´ÜhüsŸ ůeə>>ev də>>dŰł[70]. ¢ ůgcəůbjæy3d üeəæÜůdÜ Üb əÜb ŮüÜb Eesü yEEůd EyjdůdŰł dłł əÜjüæÜb3Ü 3ůgůŰhəe dłł ÜhŰłeve dłł ŮüÜbycəejd əÜbycŮbgxdəh üůbəŰł ŮÜbÜbd´ŰbhŰłŰÜg[71,72].ÉŰłe´əÜůæ ŰłdŮb æhcx üeəæÜůdŰł ÜgŰh´eg egůsÜůŰhŸŮbŰbŸŰłe ŸŰÜb, ŮüÜbd ŮüůeŰłd ŰłeŸdŮ´ÜhüsŸ h´xdŰgŰe´jeůüæjœŰŰÜbÜh ŰłE3 Ůjsdeh Ůx3 cijx3(Laps) əÜbŰx3 ůŰÜüůx3(Stages) ´eg ÜgŰŸeə>ə>djı3e3ŰÜb

3.10 ¢ ÉŰÜŰbůŰhəe j3Ÿ>gůd

Ðə əÜŰłcejsəydł EŮŰbdŰydł ŮbűjŸůŰłəÜb xdł ůeŮŰhəydł ůgeæhŰłŰÜł (%), Ůbı eə ůgæŮeŮłł EŮŰbdŰydł ŮbűjŸůŰłəÜb ůÜb z yůd ±eæe ± ±eg´æe j´hə>ůd (z yůeł ±T.A). jjdůæe´esdłəŮe y>Ůbeeł j 2 cəÜŰłł ůgůeŮŰůůŮłł EŮŰbi əÜŰłcejsəı3 EŮŰbdŰı3. Á´ə´ə>ye3, cjdůæe´esdłəŮ dj3Ÿ>gůd Ühł cpəÜbi EÜbůdłł (ANOVA), ei Ůxł ıůŰ3Ü əÜłejsůŰůı d ůdEÜbŰhŰłŰÜ Ůx3 üəÜüejı3 EŮŰbi Ůx3 Ůjsı3 əÜŰłcejsı3 ůxEÜhei ðŸjegł əÜb űgůæeł əÜŰŸůŰůdłł, üəÜŰł üehjdx ůd Ühg ůűŸ>EÜhł´eg ŁəÜŰŸŰhł´eə>ÜŰ ə>ył ÜbŸEůı cd (post-hoc)

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ůď Bonferroni. ȳ ə ɛə ɛə yə Ůə ɡɛə ´ ɛg ´ ɟ Ŭə ɛ ŬŰɛ´ ɛ æ ďďə Ŭə ə Ŭə ɛ ŮŰď ɡɟ ɐ ůď Ű ɛg ůŰŰŰůŰə ɛi ə ɛ ɔ ůɛ ə ɛ i SPSS 16.0. ¢ ɛ Ů ď Ůĩɛ ůďɛ Ŭə Ű ə ɟ Ű ď Ů Ůɟ ə Ůɟ Ű ɡɟ Ŭə Ŭə i ůŮɡ ɐ Ű ə *P*<0.05.

4. ɟ ŬB¢ ĂŞ ĂĚz ɟ ¢ ɟ

ĚŰď ə ´ Ŭɟ ɛi ůŬ ɛ Ůə yŰď ůɡɛ ɛ Ůŷ ɡ ɛ ɡ ə **2490 ´ Ŭə ůə Ů** ə Ůɣ ə ɛ ´ ɛ ɡɣ ə **ŰŰ 1257 ɐ Ű ə Ŭə ɟ ə Ŭ ə Ŭə 1233 ɐ Ű ə ɛ ɟ ďůə Ŭ.** ĚŰɛ ə ´ ɛ Ŭə Ŭ 4.1 ´ Ŭɟ ɛ ůə Ů ɡ ɛ ə Ű ɛ ə ɛ yůŮɡ Ůɛ yɡ (z yůď ¢ æ ɐ ± ¢ g´ æ ɐ ɟ ´ ə æ yůď) Ůɣ ə Ŭə ďɟ ɣ ´ ɛ ɛ Ůɟ æ ɟ ə ɛ Ůə Ůď ɟ ůŮɛ ə ɟ, ə Ŭď ɡ Ů ůďɡ ə Ŭə Ű ´ ɛ ůɛ ůŮ Ů ůŮɡ Ůɣ ůůŮɟ æ ɡ ə Ŭď ɔ ɛ ɟ ďɡ Ěɣ ɛ Ŭ Ůə ɛi ɡ Ů ɟ ɛ ɡ ɡ. ¢ Ŭ ůŮɛ ɛ ɡ Ůď Ů ´ Ŭɟ Ŭď Ůə Ű Ŭə ɔ ə Ů Ŭə ɟ ə Ů ə ə ɛ ɟ ďůə Ů ə Ůɛ ɣ ɟ ůŮ Ů, Ŭə ə Ů ə Ŭə ɔ ə Ů Ůɛ ůi ə ɛ ə ɛ Ůɛ g ´ ə ďďɡ ůɛ ɛi .

Ěg ɔ ə Ůə ɟ æ yə Ů, ůďɛ Ůə ə ɛ ə Ű Ŭə ůŮŰůŮə Ů ůďɛ Ŭə Ůə yɡ ůə Ů ůɛ ɟ yɡ ɛ Ů Ŭə i Ůɣ ə ůi ɛ ůi ə ə ɣ ə. ¢ Ů ə ɛ ɟ ďůə Ů Ůɛ g ůŮə ɛ Ů Ůɛ ɡ ´ Ŭɟ ɛ ɡ ůďůŮə ůďɛ Ŭə Ů ɛ Ů Ůə Ů gɣ ďə ɟ Ů ɟ Ůɡ Ůɛ yɡ ɟ ůɛ ə Ů ůi ɛ Ů Ů ɛ i ɣ ɛ ɡ Ůɛ ɡ ɡ Ůə ı Ů ə ɟ ɛ ď Ůď ɛ Ŭə ůŮŰůŮə Ů ɡ Ů ɛ Ů ďə ɟ Ů ɟ Ůɡ Ůɛ yɡ ɡ ɟ ůɛ ə Ů ɡ ɟ Ů ɛ Ů Ů ɛ Ů (ɡ z Ů) Ůə ůɡ ɔ ə ɟ ůŮə ɛ Ů Ů Ů Ů ə ɟ ɟ ə Ů.

Ěɛ ə Ů ɟ Ů ɛ Ů Ů 4.2 ´ Ŭɟ ɛ ůə Ů ɛ ə Ů ůŮə Ů Ůɡ ůɡůə æ ɡ ə Ů Ů ůŮŰůďɡ ə Ů Ů ə ´ yůɣ ə ůɡůə æ ɡ ůɟ Ů ůŮďɟ ə ɟ Ů Ů ɡ (z yůď ¢ æ ɐ ± ¢ g´ æ ɐ ɟ ´ ə æ yůď) Ů ə Ů ůi ə ə ɛ ə Ů ə ɟ Ů Ů ɛ ůi ə ɛ ə ɛ Ůɛ g ůŮə ɛ Ů Ůɛ ɡ. Ů Ů ɟ Ů Ů ďɟ ɛi ɛ Ů ɟ Ů ə ɛ Ů ɟ ɛ ď ɟ ɡ ůŮ ůɣ ə ɛ ɟ ďůə Ů ůŮ ə ɛ ɟ ďůə Ů ůŮ ůɡ yůď ɛ Ů Ů Ů Ů ɟ ə Ů (p<0.05). Ă´ ə ɟ ɟ ůďůŮŰ ´ Ŭɟ Ŭď ɟ ɐ ďďə Ů ɛ Ů ɟ ə ď ɟ ɡ Ůɣ ə ɣ ɟ ı ə ´ Ŭɟ Ů ə ɛ ə ɛi ďďůďɡ TV ï Video ɐ ə Ů ďə ůŮə ı ə ůɟ Ů ď ɟ ə Ů ɣ ɐ Ů ɣ ə ɐ Ů ůŮŰůŮə Ů ůďɛ Ů ə Ů ɛ Ů ə Ů ɛi Ů ɟ ɛ ɡ ůŮ Ů ɟ ə Ů ůŮ ůi ɔ ə ɟ ůď ɛ Ů Ů ə ɛ ɟ ďůə Ů.

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ƟœŬəŬɠ 4.1: ƟŬ ǐɘɟ Ŭíɐ Ŭɜɖɟ ɤ´ɞɛŬǐɘι ɜ ŭŬəŰ ɜ əŬə əŬŰɖɔɞɟɘ ɜ ůɤɛŬǔɘɞɨ бŸɟɞgɠ ŬɜŸ űɨəəɞ.

	ȷ ɔɦȷ ɘŬ (ɜ=1257)	**Ɉ ɞɟ ɖŰŭɘŬ (ɜ=1233)**	**Ɇgɜɞəɘ ɧ ɖŬɐɛŬ (ɜ=2490)**
	ɀ ɏůɞɠ ± ɇ.ȷ	ɀ ɏůɞɠ ± ɇ.ȷ	ɀ ɏůɞɠ ± ɇ.ȷ
ɖŸɟɞɠ (Kg)	45,6 ± 11,2	45,2 ± 11,0	45,4 ± 11,1
Ɉ ɣɞɠ (cm)	148,3 ± 7,4	149,2 ± 8,3*	148,7 ± 7,9
ɖɀ Ɇ (Kg/m²)	20,5 ± 3,7	20,1 ± 3,7*	20,3 ± 3,8
Ɉ ŬŰɖɔɞɟ ɖŰɠ			
Ɇɤ ɛŬǔɘɞɨ ɖŸɟɞgɠ	%	%	%
Ʌəəŭ ɞбŬɟŬɠ	2,6	3,9	3,2
ū gůɘəɞɔɘɞɨ бŸɟɞgɠ	52,7	57,4[À]	58,2
Ɉ ´ɏɟ бŬɟɞɘ	30,8	29,0	29,9
ƟŬɞɨ ůŬɟəɞɘ	14,0	9,6[À]	11,8

ɖ.ɀ.Ɇ: ɖŬɐŰɖɠ ɀ ŸɛŬɠɆι ɛŬɛɠ

*p<0,01 ɔəŬ Űɖɜ ůɨɔəɟɘŭɖ ɛŰŰɘɨ Űɤɜ ŭɨɞ űɨəəɤɜ ůɨɛűɤɜŬ ɛŬ Űɛɜ ´ŬɟŬɛŰǐɘɧ ɏəŬɞɞ Studentôs T ï test.

Àp=0,001 ɔəŬ Űɖ ůɨɔəɟɘŭɖ ɛŰŰɘɨ Űɤɜ ŭɨɞ űɨəəɤɜ ůɨɛűɤɜŬɛŬŰɛɜ ɏəŬɞɞ ȷ ².

ȷ ȷ ɅɃɈ ƗƟɅƗ Ɵȷ ʔɅƟƗɆɇ ¢ ɀ ƗƗ ï ȷ Ū¢ ʔȷ ©2012

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ɜ ű ɡů ɜə ɐɡ ə Ŭ Ű Ÿ ů Ű Ŭ ů ɖɡ ə Ŭɔ Ů ɔ́ ɣŭɤ ɜ ű ɡů ɜə ɐɡ

	ɟ ɔɦɟ ɜŬ (ɜ= 1257)	Ƭ ɛɟ ɗŰ ůɔŬ (ɜ=1232)	Ɇ ɡɜɛɚɜɔɦ ŭ Ů ɔɛ Ŭ (ɜ= 2490)
ɋ Ů ɔ Ű Ů ɡ ű ɡů ɜə ɐɡ ə Ŭ Ű Ÿ ů Ű Ŭ ů ɖɡ			
ERT (Ŭɟ ɜɗɛɦɡ stages)	2.9±1.7	2.2±1.2*	2.5±1.5
ɋɨ ɜŬɛɖ ɢŮɟ ɛɚŬɔɐ ŭŮɜɜɛɨ ɢŮɟ ɜɛɨ (Kg)	19.9±6.4	18.1±5.0	19.0±5.7
ɋɨ ɜŬɛɖ ɢŮɟ ɛɚŬɔɐ Ŭɟ ɜů Ű Ůɟ ɛɨ ɢŮɟ ɜɛɨ (Kg)	18.6±4.5	17.1±4.7	17.9±4.7
ɋ Ů ɔ Ű Ů ɡ Ů ɔ́ ɣŭɤ ɜ ū ɨ ů ɜə ɐɡ			
ŭɟ Ŭ ů Ű ɖɟ ɜɦ Ű ɖ Ű Ŭ ɡ			
ʐ Ɉ Ǻ ū ɋ (ɚŮ Ű Ÿ/ɖɛɣɟ Ŭ)	79.2±66.2	58.4±58.3	69.0 ±63.3
Ƀʐ Ɉ Ǻ ū ɋ (ɚŮ Ű Ÿ/ɖɛɣɟ Ŭ)	28.6±45.8	19.8±28.9	24.2±38.6
ɗɐɛ Ŭ Ű Ŭ ů ɡɜɛɚɜɔ Ÿ (Ŭɟ ɜɗɛɛɡ/ɖɛɣɟ Ŭ)	14728.5±5626.9	11790.5±4297.7	13273.6±5222.9
ɗɐɛ Ŭ Ű Ŭ ə Ŭɗɖɛ Ůɟ ɜɜ Ÿ (Ŭɟ ɜɗɛɛɡ/ɖɛɣɟ Ŭ)	15005.1±5552.4	12109.6±4319.4	13571.3±5185.4
ɗɐɛ Ŭ Ű Ŭ Ɇ Ƭ (Ŭɟ ɜɗɛɛɡ/ɖɛɣɟ Ŭ)	14036.9±7184.2	10992.6±5444.6	12529.4±6560.1
ɇ V-video ɐ ə Ŭɗɜů Ű ɜɔɣɡ ŭɟ Ŭ ů Ű ɖɟ ɜɦ Ű ɖ Ű Ů ɡ (ɩ ɟ Ů ɡ/ɖɛɣɟ Ŭ)	2.33±1.54	2.32±1.43*	2.33±1.5

ERT: Endurance Run Test (ƱŬɚɑɜŭɟ ɛɛɛ ɇ Ů ů Ű ɟ ɜ Ű ɛɢɐɡ)

ʐ Ɉ Ǻ ū ɋ: ʐ ɣ Ű ɟ ɜŬɡ ɤ ɡ Ɉ ɣ ɖɚɐɡ Ō ɜ Ű Ŭ ů ɖɡ ū ɡů ɜə ɐɡ ɋɟ Ŭ ů Ű ɖɟ ɜɦ Ű ɖ Ű Ŭ

Ƀʐ Ɉ Ǻ ū ɋ: Ƀɟ ɔŬɜɤ ɛɣɜɖ ʐ ɣ Ű ɟ ɜŬɡ ɤ ɡ Ɉ ɣ ɖɚɐɡ Ō ɜ Ű Ŭ ů ɖɡ ū ɡů ɜə ɐɡ ɋɟ Ŭ ů Ű ɖɟ ɜɦ Ű ɖ Ű Ŭ

*p<0,05 ɔɜŬ Ű ɖɜ ů ɨ ɔəɟ ɜů ɖ ɛ Ů Ű Ŭ ɜɨ _Ŭɔɛɟ ɜɩ ɜ ə Ŭɔəɛɟ ɜ Ű ů ɜɩ ɜ

**p<0,01 ɔɜŬ Ű ɖɜ ů ɨ ɔəɟ ɜů ɖ ɛ Ů Ű Ŭ ɜɨ _Ŭɔɛɟ ɜɩ ɜ ə Ŭɔəɛɟ ɜ Ű ů ɜɩ ɜ

*** p<0,001 ɔɜŬ Ű ɖɜ ů ɨ ɔəɟ ɜů ɖ ɛ Ů Ű Ŭ ɜɨ _Ŭɔɛɟ ɜɩ ɜ ə Ŭɔəɛɟ ɜ Ű ů ɜɩ ɜ

*p<0,01 ɔɜŬ Ű ɖɜ ů ɨ ɔəɟ ɜů ɖ ɛ Ů Ű Ŭ ɜɨ Ű ɤ ɜ ŭɨ ɛ ű ɨ ɚɚɤ ɜ ů ɨ ɛ ű ɤ ɜ Ŭ ɛ Ů Ű ɛɜ ´ Ŭɟ Ŭ ɛ Ů Ű ɟ ɜɔɦ ɣɚŮɔɛɛ Studentôs T ï test.

ɟ ɟ ɅƁƬ ƁƱ ǺƁ Ʉɟ ʔ ǺƱƁ Ɇ ɛ ¢ ʐ ƁƁ ï ɟ Ū ¢ ʔɟ ©2012

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[illegible]

[illegible] HDL [illegible] (kg/dl). [illegible] HDL [illegible] (p=0.001) . [illegible] HDL [illegible] (p=0.017) [illegible] (p=0.006). [illegible] /HDL [illegible] (53.6 [illegible] 60.8, p=0.006). [illegible] /HDL [illegible] (p<0.001). [illegible] HDL- [illegible] (p=0.007) . [illegible] TAG [illegible] (p<0.001). [illegible] /HDL [illegible] /HDL [illegible] (p<0.001). [illegible] (p<0.001) [illegible] (p=0.023) [illegible]

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[illegible]

	[illegible]	[illegible]	[illegible]	P-value
[illegible] (mg/dl)	170,5±30,5	167,3±32,5	168,1±33,4	0,527
HDL (mg/dl)	63,3±15,3 [illegible]	58,6±15,2[illegible]	57,6±12,3[a]	0,001
LDL (mg/dl)	96,5±25,7	96,6±28,1	99,3±30,5	0,632
[illegible] (mg/dl)	53,6±23,6[illegible]	60,8±29,6[illegible]	56,4±24,0	0,006
TC/HDL	2,8±0,71[a][illegible]	3,0±0,8[illegible]	3,02±0,75[a]	0,017
HDL/LDL	0,7±0,27	0,66±0,3	0,67±0,6	0,290
[illegible] (mmHg)	114,2±10,6[a][illegible]	121,3±13,4[illegible]	123,7±14,4[a]	<0,001
[illegible] (mmHg)	65,8±9,6[a][illegible]	69,3±10,04[illegible]	70,0±9,3[a]	<0,001

	[illegible]	[illegible]	[illegible]	P-value
[illegible] (mg/dl)	164,2±32.24	166.0±30.93	162.4±30.6	0.440
HDL (mg/dl)	60.5±14.26[ab]	57.33±14.56[b]	56.34±14.0[a]	0.007
LDL (mg/dl)	92.0±25.60	92.70±25.13	94.30±25.60	0.207
[illegible] (mg/dl)	58.70±18.62[ab]	67.90±29.71[b]	66.75±25.0[a]	<0,001
TC/HDL	2.80±0.577[ab]	3.03±0.80[b]	3.0±0.70[a]	<0,001
HDL/LDL	0.70±0.24	0.65±0.30	0.66±0.30	0.083
[illegible] (mmHg)	117.0±12.37[ab]	121.35±13.50[b]	120.65±13.31[a]	<0,001
[illegible] (mmHg)	69.30±9.70[ab]	71.30±9.70[b]	71.0±9.80[a]	0.023

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TC:ɛəɜɔə ɛəɜdůŰŷɟəd; HDL,gɣdəɜɛɡ ´gəɜɟŰłłŰŰɡ əɜ´ɛ´ɟɣŰŰɜd; LDL,ɛŰɛdəɜɛɡ ´gəɜɟŰłłŰŰɡ əɜ´ɛ´ɟɣŰŰɜd; TAGŰɟɜŰɜgəɛɔəɜgəŰɟɟəŰɡ ; ƎɟŲ, ƎgůŰɛəɜɔə ɟɟŰłɟɜŰə Ůdůd; cɟŲ, cəŰůŰɛəɜɔə ɟɟŰłɟɜŰə Ůdůd

ERT (Ůɛɟ :¨ŲŰəɛɜŭɟɛɛɛ ŰŰůŰŰɜŰɛɛɛɡ)]

H ůɨɔəɟɜůd ɛŰŰŰɜɨ ŰŶɜ əŰŰłɔɛɟɜɩ ɜ ū gůɜɔɛɡ əŰŰŶůŰŰůdɡ əŰɜƎŶɛŰŰəɛɨ ƃŶɟɛgɡ ɣɔɛɜŰɛŰłł ɡɟɛůd ɟ ɜŶəgůdɡŭɜŰɜɨ ɛŰɜůdɡɛŰŭɜɟɟɟdŶůd Bonferroni ɔɜŰ post-hoc ´ɛəəŰ əɣɡ ůgɔəɟůŰɜɡ.

[a]: p<0.05 ¢ ůɨɔəɟɜůd ɛŰŰŰɜɨ ŰłłɡɛɛŶŭŰɡɛŰ ŰɛɜŰɛɜ ůůɛŰɛdəɟłŰŰɟɛ cɟɟ .ƎəŰɜɛŰɛdəɟłŰŰɟɛ ŰŰůŰŰɛ ū .Ƭ.ůůəŰɜ ŰłłɡɛɛŶŭŰɡ ɛŰŰɛɜ ůůɡɣdəɟłŰŰɟɛ cɟɟ .ƎəŰɜ Ůɛ ɡɣdəɟłŰŰɟɛ ŰŰůŰŰɛ ū .Ƭ ɛŰŰŶŰŰłł ŭɜłłɟdŶůd Bonferroni ɔɜŰ post-hoc ´ɛəəŰ əɣɡ ůgɔəɟůŰɜɡ.

[b]: p<0.05 ¢ ůɨɔəɟɜůd ɛŰŰŰɜɨ ŰłłɡɛɛŶŭŰɡɛŰ ŰɛɜŰɛɜ ůůɛŰɛdəɟłŰŰɟɛ cɟɟ .ƎəŰɜ Ůɛ ɛŰɛdəɟłŰŰɟɛ ŰŰůŰŰɛ ū .Ƭ.ůůəŰɜ ŰłłɡɛɛŶŭŰɡ ´ɛɡ ŰɜəŰůŰłłɜ ůůĂɜŭɜŶɛŰůd əŰŰłłɔɛɟdŰcɟ ƎəŰɜū .Ƭůů ɛŰŰŶŰłł ŭɜłłɟdŶůd Bonferroni ɔɜŰ post-hoc ´ɛəəŰ əɣɡ ůgɔəɟůŰɜɡ.

*ɟ ŰɛdəɟłŰŰɟɛ cɟɟ Ǝ & ɟ ŰɛdəɟłŰŰɟɛ ŰŰůŰŰɛ ū .Ƭ (1ᵉ ŰŰŰŰɟŰłłɛłłɟɜɜ cɟɟ .ƎəŰɜ1ᵉ ŰŰŰŰɟŰłłɛłłɟɜɜ Ůɛɟ)

**ĂɜŭɜŶɛŰůd əŰŰłłɔɛɟdŰ(2ᴮ əŰɜ3ᵉ ŰŰŰŰɟŰłłɛłłɟɜɜ cɟɟ Ǝ əŰɜŮɛɟ)

***ɟ ɣdəɟłŰŰɟɛ cɟɟ .Ǝ & ɟ ɣdəɟłŰŰɟɛ ŰŰůŰŰɛ ū .Ƭ (4ᵉ ŰŰŰŰɟŰłłɛłłɟɜɜ cɟɟ .ƎəŰɜ4ᵉ ŰŰŰŰɟŰłłɛłłɟɜɜ Ůɛɟ)

ɟɟ ɟ ΛBƬ ƎBŲĂƎB ŲɟƎ ƎĂŲƎƎɛɛ¢ɟ ƎB ï ɟ Ū¢ƎɟƎ ©2012

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[illegible] ($p<0.001$). [illegible] HOMA ï IR ($p<0.001$) [illegible] FGIR ($p<0.001$).

[illegible] ($p<0.001$) [illegible] HOMA ï IR ($p<0.001$), [illegible] QUICKI ($p<0.001$) [illegible] FGIR ($p<0.001$) [illegible]

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	j ŬɛdəɦŰůɟɛ qɤ Ɛ & j ŬɛdəɦŰůɟɛ Ůá Ůűɛ ū .Ɍ (ɜ=158)	ÁɜŭəŸɛŮůd Ɍ ŬŰdɔɛɟdŬ (ɜ=957)	ɟ ɣdəɦŰůɟɛ qɤ .Ɛ & ɟ ɣdəɦŰůɟɛ Ůá Ůűɛ ū .Ɍ.(ɜ=107)	***P*-value**
ũəgəɦɛd (mg/dl)	92,7 ± 10,1	93,3 ± 10,2	93,8 ± 10,0	0.683
Łɜůɛgəœd	8,4 ± 4,6ᵃ,	11,3 ± 9,2,	11,1 ± 6,1ᵃ	<0.001
HOMA - IR	1,9 ± 1,1ᵃ,	2,6 ± 2,2,	2,5 ± 1,3ᵃ	<0.001
QUCKI	0,35 ± 0,02 ᵃ,	0,34 ± 0,02,	0,34 ± 0,02ᵃ	<0.001
FGIR	14,1 ± 7,4ᵃ,	11,2 ± 6,2,	11,6 ± 11,01ᵃ	<0.001

	j ŬɛdəɦŰůɟɛ qɤ Ɛ & j ŬɛdəɦŰůɟɛ Ůá Ůűɛ ū .Ɍ (ɜ=231)	ÁɜŭəŸɛŮůd Ɍ ŬŰdɔɛɟdŬ (ɜ=849)	ɟ ɣdəɦŰůɟɛ qɤ .Ɛ & ɟ ɣdəɦŰůɟɛ Ůá Ůűɛ ū .Ɍ.(ɜ=108)	P-value
ũəgəɦɛd (mg/dl)	91,08 ± 9,2	91,06 ± 9,3	90,8 ± 8,2	0.410
Łɜůɛgəœd	9,7 ± 4,9ᵃ,	14,0 ± 8,2,	15,5 ± 7,7ᵃ	<0.001
HOMA - IR	2,16 ± 1,14ᵃ,	3,08 ± 1,7,	3,4 ± 1,7ᵃ	<0.001
QUCKI	0,35 ± 0,02ᵃ,	0,33 ± 0,02,	0,32 ± 0,02ᵃ	<0.001
FGIR	11,7 ± 6,05ᵃ,	8,7 ± 5,1,	7,3 ± 3,8ᵃ	<0.001

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OVA εŮŰŸŬ ĥ ŭŝĥĵ ďx ůď ɔɘŬŰƣ ¢ anner stage

[a]: p<0,05 ɔɘŬŰď ɔɘŬŰď ůɨ ɔəĵ ůď εŮŰŬƣɨ ŰďĝƒƣεŸŭŬƒεŮóƣŬεďəĥŰŰĵƣ ďx.Ƶ əŬƣ ƣŬεďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶ.ôəŬƣ ŰďĝƒƣεŸŭŬƒ εŮŰƣ óƣγďəĥŰŰĵƣ ďx.Ƶ əŬƣ ŰƣƣγďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶôô

b :p<0,05 ɔɘŬŰď ůɨ ɔəĵ ůď εŮŰŬƣɨ ŰďĝƒƣεŸŭŬƒεŮŰƣ óƣŬεďəĥŰŰĵƣ ďx.Ƶ əŬƣ ŰƣƣŬεďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶ.ôô əŬƣ ŰďĝƒƣεŸŭŬƒ ´ƣg ŬƣεəŮůŰď óôÁƣŭƣŸεŮůď əŬŰďɔĵďŬďx Ƶ əŬƣ ū.Ƶôô

ƵŰƣgƒ´ƣŬƣŮƒ 4.5 Ů&ƀ ´ŬĵƣgůƣŸεŮŰŬƣ Ůƣ ´ƣůƣůŰĥ ŭgůəƒ´ŭŬεƣɔı ƣ ´Ŭƣŭɔı ƣ εŮŰŬƣɨ Ůɨ ɔı ƣ əŬŰďɔĵɔı ƣ ďx.Ƶ əŬƣ ū.Ƶ. ƵŮ´ĵı Ůƣ ŮďŮŭƣ dŬ´ĵγ´ ŮƣƣŬƣŬŭíŮĵďŮůĥŮƣůŰŬƣĥĵƣŬ(ŸƣŬƣŮƒ 4.5Ů) ŭŮƣ ƀĵγďďəŬƣ ůŰŬŰůŭƣŸůďεŬƣŰůƣγƒŭƣŬŭíƣĵγƒ ůŰŬ´ƣůƣůŰŸŭgůəƒ´ŭŬεďŬƒ εŮŰŬƣɨ Ůɨ ɔı ƣ 3 əŬŰďɔĵɔı ƣ ůɨ εŬŰƣƣɨ ƀŸĵƣgƒ əŬƣ ŭgůƣεƒ əŬŰŸůŰŬůďƒ.

ƵŰŬ əĵďŬƣƣŬ (ŸƣŬƣŮƒ 4.5 ƀ) ´ŬĵŬŰďĵεďďəŮůŰŬŰůŭƣŸůďεŬƣŰůƣγďəĥŰŰĵƣƒ ŮƒƣεŬůεĥƒ ´Ŭƣŭɔı ƣ εŮ´ďəƣƣ TC/HDL (>4.5), ůŰď ƣεŸŭŬεŮŰƣ óƣγďəĥŰŰĵƣ ďx.Ƶ əŬƣ ŰƣƣγďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶôô ůŮůƣγůď εŮŰďƣ ƣεŸŭŬεŮŰƣ óƣŬεďəĥŰŰĵƣ ďx.Ƶ əŬƣ ŰƣƣŬεďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶ.ôô (p=0.041).Á´ůďƒ´ŬĵŬŰďĵεďďəŮəŬƣ ůŰŬŰůŭƣŸůďεŬƣŰůƣε ŭƣŬŭíƣĵŸŬƣŸεŮůŬ ůŰďƣ ƣεŸŭŬ ŰďƒÁƣŭƣŸεŮůďƒəŬŰďɔĵďŬƒ(2^B əŬƣ 3^e ŰŰŰĵŰďεĥĵƣƣ ďx Ƶ əŬƣ ū.Ƶ) əŬƣ ŰďƣƣεŸŭŬεŮŰƣ óƣŬεďəĥŰŰĵƣ ďx.Ƶ əŬƣ ŰƣƣŬεďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶ.ôô[4.2 γƣŬƣŮƒ 0.9 (p=0.041)].

Á´ƒ´ƣγƣ Ůƣ ´ƣůƣůŰĥ g´ĵŰĵƣ ƣγƣgəĵƣŭŬεďŬƒůŰŬəĵďŬƣŬ ŬƒĥŰďƣƣεŸŭŬεŮŰƣ óƣγďəĥŰŰĵƣ ďx.Ƶ əŬƣ Ůƣ ƣγďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶôô ƀĵγďďəŮƣŬ´ƣg ŬƣεəŬƣ ůŰďƣƣεŸŭŬεŮŰƣ óƣŬεďəĥŰŰĵƣ ďx.Ƶ əŬƣ Ůƣ ƣŬεďəĥŰŰĵƣ ŮďŮŭƣ ū.Ƶ.ôô(12% γƣŬƣŮƒ 3.0% p<0.001).

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ɛ୨ɩ ɜ ´Ŭ୨ŭ୨ ɜ ɛŮŰŬ୫ Űɤ ɜ ɜ əŬŰɖɔɕɟ ୨ɩ ɜ Ɇɗ əŬ୨

űgů୨ɐɕʃ əŬŰŸůŰůɖʃ

	ɟ ũɃɅɆɟ ɉ Ŭɛɖəɦ Űɉɕ ɸɀ Ɇ & ɉ Ŭɛɖəɦ Űɉɕ Ů ά Ůɕ ū .Ƭ (ɜ=158)	ɅɜŭəŸɛŮɖ Ƭ Űɖɔɕɟɖ Ŭ (ɜ=957)	Ɉ ɣɖəɦ Űɉɕ ɸ.ɀ .Ɇ & Ɉ ɣɖəɦ Űɉɕ Ů ά Ůɕ ū .Ƭ. (ɜ=107)	p- value
Ƀə୨ɐ ɕɕəɖůŰɉ ɧəɖ	%	%	%	
<170	46.8	56.2	57.9	0.264
170-200	36.1	29.3	28,0	
>200	17.1	14.5	14,0	
HDL ɕɕəɖůŰɉ ɧəɖ				
<40	4.4	7.6	4.7	0.214
>40	95.6	92.4	95.3	
LDL ɕɕəɖůŰɉ ɧəɖ				
<100 mg /dl	55.7	57.2	59.8	0.848
100 to 130 mg /dl	32.9	32.7	28	
>130 mg /dl	11.4	10.1	12.1	
TAG				
<75 mg/dl	85.4	77.3	80.4	
75-100 mg/dl	10.8	14.7	14	
>100 mg /dl	3.8	7.9	5.6	
TC/HDL				
<4.5	98.1	94.3	97.2	0.067
>4.5	1.9	5.7	2.8	

Ʉɟ Ŭɐɛ Űɓ´ ɕəɖɖəŮɣəŮɕɕʃ ɉ ²

ɉ ɟ ɅɃƬɃɄɅɃ Ʉɟ ʔɅɄɆɇ¢ɀ ɃɃ ï ɟ Ū¢ ʔɟ ©2012

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	KOΛЊ ЄЄЊ			
	ј ŬЄ ɖəɦЏЌј ɜ ɋƷ ƋЄ & ј ŬЄ ɖəɦЏЌј ɜ Ůά ůŭɜ ū .Ƴ (ɜ=231)	ƋɜŭəŸЄ Ůůɖ Ƴ ŬЏɖɔɜɟ ɖŬ (ɜ=849)	ɟ ɣ ɖəɦЏЌј ɜ ɋƷ .ƋЄ & ɟ ɣ ɖəɦЏЌј ɜ Ůά ůŭɜ ū .Ƴ. (ɜ=108)	p-value
Ƀəɜɐ				
ɡɜəɖůЏЌј ɦəɖ (mg/dl)				
<170	58.4	58	61.1	0.850
170-200	28.1	29.2	29.6	
>200	13.4	12.8	9.3	
HDL-XɜəɖůЏЌј ɦəɖ(mg/dl)				
<40	5.6	10	8.3	0.115
>40	94.4	90	91.7	
LDL-ɡɜəɖůЏЌј ɦəɖ (mg/dl)				
<100	64.1	61.5	63	0.731
100 to 130	29.4	29.6	30.6	
>130	6.5	9	6.5	
ɛ ɟ ɜɔəgəůј ůŭɜŬ (mg/dl)				
<75	84	69.5	73.1	<0.001
75-100	13	19.4	14.8	
>100	3,0 [ab]	11.1 [b]	12,0 [a]	
TC/HDL				
<4.5	99.1	95.8	97.2	0.041
>4.5	0.9[ab]	4.2 [b]	2.8 [b]	

Ƴ ŬЏЄ ЏЌЄ´ ɜɜɐɖɖəůɣəŬЏɡɜɡ ј [2]

ј ɟ ΛƀƴƀƲΛƀƀ Ƴ ɟ ƲΛƲƀЄ ɛ ɣ ƀƀ ї ɟ ŪЄ ƲɟƀЄ ©2012

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ŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ ɛŮ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀ ɕŬɛqǝɧŰŮɉɞ
Ů ά Ůŭɞ ū .Ɏ.ǿǿ ǝŬƀ Ŭǽƒ ɞɛŸŭŬƒ ɛŮŬƀ ǿǿɡɣqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɡɣqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ.ǿǿ

b :p<0,05 ɔǝŬŬǽɜ ůɨ ɔǝɉ ɕůq ɛŮŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ ɛŮŬƀ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɕŬɛqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ.ǿǿ ǝŬƀ Ŭǽƒ ɞɛŸŭŬƒ ǝŬƀ Ŭǽƒ ɞɛŸŭŬƒ ΄ɞɡ ŬɐɐǝŮůŬǽɜ ǿǿAɜŭǝŸɛŮŭq ǝŬŬǽɔɞɉ ɖŬ ȹɀ Ɇ ǝŬƀ ū .Ɏ ǿǿ.

Ɇŭɡɡƒ ΄ɑŬƀŬƒ 4.6 Ŭ&b ΄ Ŭɉ ŬŬǽŮŬƀŬŰƀ ŬŬ΄ ɕůɕůŬŸ Ɇɡůŭɐǝɐɐɡƒ ǝŬƀ ȹŬůŬɐǝɐɐɡƒ Ɉ ΄ ɏŰŰůqƒ ůŬƒ Ŭ ŭƒ ǝŬŬǽɔɞɉ ɖŮƒ ǿǿȹ.ɀ .Ɇ ǝŬƀ ū .Ɏ.ǿǿ Ɇɡɔǝŭɉ ɛɏɜ Ŭ ůŭɜ ΄ɑŬƀŬ 4.6Ŭ΄ Ŭɉ ŬŬǽɉ ɞɨ ɛŮůŰŰŬůŬƀŸ ůqɛŬɜŬɐɐ ŭǝŬŭɞɉŸ ůŰŰ ΄ɕůɕůŬŸ Ŭǽƒ Ɇɡůŭɐǝɐɐɡƒ Ɉ ΄ ɏŰŰůqƒ ɛŮŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ Ŭɤ ɜ Ŭɞɉ ɐ ɜ ɛŮ Ŭɜ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀ Ŭ ɕŬɛqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ . (7.9%) ǝŬƀ Ŭɤ ɜ Ŭɞɉ ɐ ɜ ΄ɞɡ Ŭɐɐǝɞɡɜ ůŬǽɜ ɞɛŸŭŬ ɛŮ Ŭɜ ǿǿɡɣqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɡɣqǝɧŰŮɉɞ ū .Ɏ ǿǿ (28.8%) [p<0.001].
ɄŬɉ ɧɛɞǝŬ Ŭ ɞŰŮɏůɛŬŰŰ ΄ Ŭɉ ŬŬǽɉ ɞɨ ɛŮ ǝŬƀ ɔǝŬ Ŭǽɜ Ɉ ΄ ɏŰŰůq ǝŬŭ ƒ ɡ΄ Ÿɉ ɕŮ ůŰŰŬůŬƀŸ ůqɛŬɜŬɐɐ ŭǝŬŭɞɉŸ ɛŮŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ Ŭɤ ɜ Ŭɞɉ ɐ ɜ ɛŮ Ŭɜ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀ Ŭ ɕŬɛqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ ǿǿ(9.9%) ǝŬƀ Ŭɤ ɜ Ŭɞɉ ɐ ɜ ΄ɞɡ Ŭɐɐǝɞɡɜ ůŬǽɜ ɞɛŸŭŬ ɛŮ Ŭɜ ǿǿɡɣqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɡɣqǝɧŰŮɉɞ ū .Ɏ ǿǿ(29.7%) [p<0.001].
ɉ ɜŰůŬɜɕŬ Ŭ ɞŰŮɏůɛŬŰŰ ŭŬɑŰŰƀɜŬɏɞɡɜ ǝŬƀ ŰŰ ǝɞɉ ɖŰɐŬ (ɄɑŬƀŬƒ 4.6b). ɄŬɉ ŬŬǽɉ ɞɨ ɛŮɧŬ ɡ΄ Ÿɉ ɕŮ ůŰŰŬůŬƀŸ ůqɛŬɜŬɐɐ ŭǝŬŭɞɉŸ ůŰŰ ΄ɕůɕůŬŸ Ŭǽƒ Ɇɡůŭɐǝɐɐɡƒ Ɉ ΄ ɏŰŰůqƒ ɛŮŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ Ŭɤ ɜ ǝɞɉ ɐŰɐ ɜ ɛŮ Ŭɜ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀ Ŭ ɕŬɛqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ . (18%) ǝŬƀ Ŭɤ ɜ ǝɞɉ ɐŰɐ ɜ ΄ɞɡ Ŭɐɐǝɞɡɜ ůŬǽɜ ɞɛŸŭŬ ɛŮ Ŭɜ ǿǿɡɣqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɡɣqǝɧŰŮɉɞ ū .Ɏ ǿǿ (31%) [p=0.018]. ɄŬɉ ɧɛɞǝŬ Ŭ ɞŰŮɏůɛŬŰŰ ΄ Ŭɉ ŬŬǽɉ ɞɨ ɛŮǝŬƀɔǝŬ Ŭǽɜ Ɉ ΄ ɏŰŰůq ǝŬŭ ƒ ɡ΄ Ÿɉ ɕŮůŰŰŬůŬƀŸ ůqɛŬɜŬɐɐ ŭǝŬŭɞɉŸ ɛŮŰŰƀ Ŭǽƒ ɞɛŸŭŬƒ Ŭɤ ɜ ǝɞɉ ɐŰɐ ɜ ɛŮ Ŭɜ ǿǿɕŬɛqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀ Ŭ ɕŬɛqǝɧŰŮɉɞ Ů ά Ůŭɞ ū .Ɏ ǿǿ(19.7%) ǝŬƀ Ŭɤ ɜ ǝɞɉ ɐŰɐ ɜ ΄ɞɡ Ŭɐɐǝɞɡɜ ůŬǽɜ ɞɛŸŭŬ ɛŮ Ŭɜ ǿǿɡɣqǝɧŰŮɉɞ ȹ.ɀ .Ɇ ǝŬƀŬ ɡɣqǝɧŰŮɉɞ ū .Ɏ ǿǿ(33.6%) [p=0.013].

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əŬэ фэŬůŰƐəэe ɠ Ɉ ´ ӌɈ ŰŬůɖ ɠ ůŰɠ 3 əŬŰɖɔɞɈɖůɠ Ɇ.ȸ əŬэ

	ɉ ɔɧɉ əŬ			
	ɟ Ŭɛɖəɧ ŰŮɟɞ фɀ Ɇ & ɟ Ŭɛɖəɧ ŰŮɟɞ Ů ά Ůɪɞ ū .Ɏ	Ʌɜŭəɏɛ Ůɪɖ Ɏ ŬŰɖɔɞɈ ɖŬ	Ɉ ɣ ɖəɧ ŰŮɟɞ ф.ɀ .Ɇ & Ɉ ɣ ɖəɧ ŰŮɟɞ Ů ά Ůɪɞ ū .Ɏ.	P-value
Ɇɉ Ʉ				
ŰɡůɞəɞɔэɐɆɉ Ʉ(%)	92.1	75.3	71.2	<0.001
ɆɡůŰƐəэɐ Ɉ ´ Ůɟ ŰŬůɖ(%)	7.9[ab]	24.7[b]	28.8[a]	
фɉ Ʉ				
ŰɡůɞəɞɔэɐфɉɄ(%)	96.1	93	96.4	0.169
фэŬůŰƐəэɐ Ɉ ´ ӌɈ ŰŬůɖ(%)	3.9	7	3.6	
Ɇɉ Ʉ ɐ/əŬэфɉ Ʉ				
ū ɡůɞəɞɔэɐ Ɇɉ Ʉ ɐ/əŬэ фɉ Ʉ(%)	90.1	72.9	70.3	<0.001
Ɉ ´ ӌɈ ŰŬůɖ	9.9 [ab]	27.1 [b]	29.7 [a]	

ɄɈ ŬэɛŬŰƐ´ ɞɐɖɖəŮӌəŬэɞɞɠ ɟ ^{2}

[a]: p<0,05 ɔəŬ Űɖ ɔəŬ Űɖɜ ůɨ ɔəɈ ɜůɖ ɛŮŰŬɜɨ Űɖɠ ɞɛŶůŬɠ ɛŮ ώɞŬɛɖəɧ ŰŮɟɞ ф.ɀ .Ɇ əŬэ ɞŬɛɖəɧ ŰŮɟɞ Ů ά Ůɪɞ ū .Ɏ. əŬэ Űɖɠɞɛ ŶůŬɠ ɛŮŰƐɜ ώɡɣɖəɧ ŰŮɟɞ ф.ɀ .Ɇ əŬэŰƐ ɡɣɖəɧ ŰŮɟɞ Ů ά Ůɪɞ ū .Ɏ ώ

b :p<0,05 ɔəŬ Űɖɜ ůɨ ɔəɈ ɜůɖ ɛŮŰŬɜɨ Űɖɠ ɞɛ ŶůŬɠ ɛŮ ŰƐɜ ώɞŬɛɖəɧ ŰŮɟɞ ф.ɀ .Ɇ əŬэ ŰƐ ɞŬɛɖəɧ ŰŮɟɞ Ů ά Ůɪɞ ū .Ɏ.ώ əŬэ Űɖɠɞɛ ŶůŬɠ´ ɞɡ Ŭɜɐ əŮůŰɜ ώɅɜŭəɏɛ Ůɪɖ əŬŰɖɔɞɈɖŬ фɀ Ɇ əŬэ ū .Ɏ ώ

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	Ťeľdŕňeť			
	ľ ťedahŕŕľe qpz Ł & ľ ťedahŕŕľe ťá ťňe ū .Ť	Ásňeźťeňd Ťŕďlcelďť	ľ ýdahŕŕľe qpz .Ł & ľ ýdahŕŕľe ťá ťňe ū .Ť.	P-value
Łľ ť				
ňgňsaecaae Łľ ť(%)	82	74.9	69	0.018
Łgňťeaae ľ´ňľťňd(%)	18 [ab]	25.1 [b]	31 [a]	
qľ ť				
ňgňsaecaae qľ ť(%)	94.3	91.1	92	0.288
qaňťeaae ľ´ýľťňd(%)	5.7	8.9	8	
Łľ ť e/aťqľ ť				
ū gňsaecaae Łľ ť e/aťq				
qľ ť(%)	80.3	72.5	66.4	0.013
ľ´ýľťňd(%)	19.7 [ab]	27.5 [b]	33.6 [a]	

ťľťeťŕťe´ecdďdaňýaťňecgďľ ² [a]: p<0,05 cesťŕďl cesťŕďl3 ňi cesľeňd εňťťeľ ťŕďlďecεŷťťďď εňťŕďcťeďahŕŕľe qpz .Ł aťq ťeďahŕŕľe ťá ťňe ū .Ť.ťŕ aťq ťŕďlďecεŷťťďď εňťe3 ťŕďgýďahŕŕľe qpz .Ł aťqe gýďahŕŕľe ťá ťňe ū .Ťťŕ **b**:p<0,05 cesťŕďl3 ňi cesľeňd εňťťeľ ťŕďlďecεŷťťďď εňťe3 ťŕďcťeďahŕŕľe qpz .Ł aťqe ťeďahŕŕľe ťá ťňe ū .Ť.ťŕ aťq ťŕďlďecεŷťťďď εňťŕďl3 ťŕďľsňeźťeňd aťŕďlcelďť qpz Ł aťqū .Ťťŕ

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ŰŬ϶ŰŬ΄ɞůɞůŰŸɡ΄ Ųʒɘɡ϶Ŭɛɞ̣ŰɠɘŬ϶ ɞůɞɡɚɞŬɞŰůŰŰůɖɡ

ȷ ɜŬɨɞɟ϶ŸɛŮŰɞɜ Ů϶ɞɚŬůɛɦ ŰɖɡɞůɞɡɚɞŬɞŰůŰŰůɖɡ, ŰŬ Ŭɓɦɟ϶Ŭɛ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(3.2% ɏɜŬɞŰ϶13.9% ɘŬ϶13.5% ,p=0.001). ɇɞ ɑɞ ŭ϶Ŭ ɞůŰ ůŬɛŮɘŬ϶ɛŮ Űɖɜ ɞůɞɡɚɞŬɞŰůŰŰůɖ ɛŮɓŸůɖ Űɞ QUICKI. ɇŬ Ŭɓɦɟ϶Ŭɛ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(45.6% ɏɜŬɞŰ϶63% ɘŬ϶64.4% ,p<0.001).Ƀɛɞɑɡ ɘŬ϶ɔ϶Ŭ Űɖɜ ɞůɞɡɚɞŬɞŰůŰŰůɖ ɛŮɓŸůɖ Űɞ FGIR ɇŬ Ŭɓɦɟ϶Ŭɛ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(10.1% ɏɜŬɞŰ϶ 26.4% ɘŬ϶24% ,p<0.001).

ɅɑŬ϶ Ŭ϶ɞůɖɛŮɑ Űɞ ɦŰ϶ŬɞŰůŰɞɕŬŬ ɞŰŬ϶ɏůɛŬŰŰ ŮɑɕŬɛŮɘŬ϶ɔ϶Ŭ ŰŬ ɘɞɟɖŰůɞŬ.ȳ ůɞɜ ŬɨɞɟŸŰɞɜ Ů϶ɞɚŬůɛɦ ŰɖɡɞůɞɡɚɞŬɞŰůŰŰůɖɡ, ŰŬ ɘɞɟɖŰůɞŬ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(6.1% ɏɜŬɞŰ϶ 23.6% ɘŬ϶ 31.5% ,p<0.001). ɇɞ ɑɞ ŭ϶Ŭ ɞůŰ ůŬɛŮɘŬ϶ɛŮ Űɖɜ ɞůɞɡɚɞŬɞŰůŰŰůɖ ɛŮɓŸůɖ Űɞ QUICKI. ɇŬ ɘɞɟɖŰůɞŬ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(59.1% ɏɜŬɞŰ϶ 79.6% ɘŬ϶ 85.2% ,p<0.001).Ƀɛɞɑɡ ɘŬ϶ ɔ϶Ŭ Űɖɜ ɞůɞɡɚɞŬɞŰůŰŰůɖ ɛŮɓŸůɖ Űɞ FGIR ɇŬ ɘɞɟɖŰůɞŬ ŮŰɞɜ ϖɕŬɛɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ Űɞ ɕŬɛɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏ.ϖ ɓɟɏɖɖɘŬɞ ɜŬɏɞɞɡɜ ɕŬɛɖɚɦŰŲŬ ΄ɞůɞůŰŸŰɦůɞ ɛŮŰɖɜ ŬɞŭɘŸɛŰůɖ ɘŬŰɖɔɞɟɖŬ ɸɀ .Ɇ ɘŬ϶ ū .Ɏ ɦůɞ ɘŬ϶ ɛŮŰɖɜ ɞɛŸűŬɛŮϖɡɣɖɚɦŰŲɞ ɸɀ .Ɇ ɘŬ϶ ɡɣɖɚɦŰŲɞ Ůɑ Ůɨɞ ū .Ɏϖ(21.7% ɏɜŬɞŰ϶43.8% ɘŬ϶55.6% ,p<0.001).

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Ŭfəŭəsůcgəsɜcŭɜŭůŭŭůdƒ ůŮ´ɟcɤűdƀcggƒ ɛŮŭŭɜi ŭɤ ɜ 3 əŭŭdɔcɟɤ ɜ Ɛdɔ əŭə ū .Ɍ

	ɟ ɔhɟɟɤŭ			
	ɟ ŭɛdəɦŭŭɟc qɤ Ɛ & ɟ ŭɛdəɦŭŭɟc Ůá Ůŭc ū .Ɍ (%)	Ƒɜŭɤɤŭůd Ɍŭŭdɔcɟdŭ (%)	ɟ ɣdəɦŭŭɟc qɤ .Ɛ & ɟ ɣdəɦŭŭɟc Ůá Ůŭc ū .Ɍ. (%)	P-value
ũəgəɦɛd ɜdůŭŭůƒ (mg/dl)				
>110	95.0	95.1	93.4	0.754
Ó110	5.0	4.9	6.6	
Łsůcgəsɜcŭɜŭůŭŭůd ɛŮ ƀŸůd ŭɛ HOMA-IR	3.2 [ab]	13.9 [b]	13.5 [a]	0.001
Łsůcgəsɜcŭɜŭůŭŭůd ɛŮ ƀŸůd ŭɛ QUICKI	45.6 [ab]	63 [b]	64.4 [a]	<0.001
Łsůcgəsɜcŭɜŭůŭŭůd ɛŮ ƀŸůd ŭɛ FGIR	10.1 [ab]	26.4 [b]	24 [a]	<0.001

Ɍɟŭɛŭŭɛ´cɜɛdƒdəŮyəŮƀcƀƒ ɟ ²

[a]: p<0,05 ɔəŭ ŭd ɔəŭ ŭdɜ ůi ɔəɟsůd ɛŮŭŭɜi ŭdƒ cɛŸůŭƒ ɛŮ ůƀŭɛŭɛdəɦŭŭɟc qɤ .Ɛ əŭə cŭɛdəɦŭŭɟc Ůá Ůŭc ū .Ɍ. əŭə ŭdƒcɛŸůŭƒ ɛŮŭɛɜ ůƀɣdəɦŭŭɟc qɤ .Ɛ əŭə ŭɛ gɣdəɦŭŭɟc Ůá Ůŭc ū .Ɍůƀ

b :p<0,05 ɔəŭ ŭdɜ ůi ɔəɟsůd ɛŮŭŭɜi ŭdƒcɛŸůŭƒ ɛŮŭɛɜ ůƀŭɛdəɦŭŭɟc qɤ .Ɛ əŭə ŭɛ cŭɛdəɦŭŭɟc Ůá Ůŭc ū .Ɍ.ůƀəŭə ŭdƒcɛŸůŭƒ´cg ŭɜəŮŭdɜ ůƀƐɜŭɤŸůd əŭŭdɔcɟdŭqɤ Ɛ əŭə ū .Ɍůƀ

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Koɟ dŰůɘŰ				
	j ŰɛdəɦŰŰůɟɛ qpz .Ɛ & j ŰɛdəɦŰŰůɟɛ Ůá ŰůŰɛ ū .Ɪ (%)	Ƶ3ŭəŸɛŰůd Ɪ ŰŰdɔɛɟdŰ	Ɉ ɣdəɦŰŰůɟɛ qpz .Ɛ & Ɉ ɣdəɦŰŰůɟɛ Ůá ŰůŰɛ ū .Ɪ.	P-value
ũəgəɦɛd ɜdůŰŰůŰg(mg/dl)				
>110	99.1	97.6	99.1	0.249
Ó110	0.9	2.4	0.9	
ȽůůɛgəɜɛŰɜŰůŰŰůd ɛŰ ƀŸůd Ű HOMA-IR	6.1 [ab]	23.6 [b]	31.5 [a]	<0.001
ȽůůɛgəɜɛŰɜŰůŰŰůd ɛŰ ƀŸůd Ű QUICKI	59.1 [ab]	79.6 [b]	85.2 [a]	<0.001
ȽůůɛgəɜɛŰɜŰůŰŰůd ɛŰƀŸůd Ű FGIR	21.7 [ab]	43.8 [b]	55.6 [a]	<0.001

Ƴɟ ŰƀɛŰŰɛ´ɛɜɛdəŰɣəƀŰɛɛɡ j ²

a: p<0,05 ɔəŰ Ű ɔəŰ Ű ɜ ůɨ ɔəɟ ůd ɛŰŰŰƀɨ Ű ɡ ɛɛŸŭŰɡ ɛŰ ůŰƀɛŰɛdəɦŰŰůɟɛ qpz .Ɛ əŰƀ ɛŰɛdəɦŰŰůɟɛ Ůá ŰůŰɛ ū .Ɪ.ůů əŰƀ Ű ɡ ɛɛŸŭŰɡ ɛŰŰɛɜ ůůɣdəɦŰŰůɟɛ qpz .Ɛ əŰƀŰɛ ɣdəɦŰŰůɟɛ Ůá ŰůŰɛ ū .Ɪ.ůů

b :p<0,05 ɔəŰ Ű ɜ ůɨ ɔəɟ ůd ɛŰŰŰƀɨ Ű ɡ ɛɛŸŭŰɡ ɛŰŰɛɜ ůůŰɛdəɦŰŰůɟɛ qpz .Ɛ əŰƀŰɛ ɛŰɛdəɦŰŰůɟɛ Ůá ŰůŰɛ ū .Ɪ.ůů əŰƀ Ű ɡ ɛɛŸŭŰɡ ´ɛg ŰƀɛəŰůŰ ɜ ůůƵ3ŭəŸɛŰůd əŰŰɔɛɟdŰqpz Ɛ əŰƀū .Ɪůů

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[illegible]

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[illegible] [81]. [illegible] Paul A.Mc Auley [illegible] Steven Blair (2011) [97] [illegible] *Obesity Paradoxes* [illegible] 14-16 [illegible] 60 [illegible] [illegible] [113] [illegible] [82] [illegible] [83] [illegible] 8-19 [illegible] 1999-2004[84] [illegible] (TC), HDLC, [illegible] LDLC [illegible] X-ray absorptiometry. [illegible]

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[illegible] .Æ ə Ŭə ɢŬɛ đə ɦŰŰɟɛ Ůđ Ůŭɛ ū .Ť.ôô Ůɢ Ůŭ Ŭ gɣ đə ɦŰŰɟ Ŭ [illegible] ŭgůəɛɢ əŬŰŶůŰŰůđɢ əŬə ŭgůəɛɢ ŭɟ Ŭůŭɟ ɦŰŰɟŰŰɢ Ůɛ Ŭə đŰŰəŶůɢ3ŭŰŭŰɛɟ3ŬɛŰŰŰŰđ ŰŭŬ HDLC[85].

Ŭ Ŭɟ ɦə Ŭ Ŭɢ Ű Ŷ ŭŰ3 ´ Ŭɟ Ŭ Ŭɟ đ đə Ů Ŭɛ ɑŭɛ ə Ŭə ů Ŭɢ ´ Ůɟ Ŭ Ŭɢ ɣ Ŭ3 Ŭə ů Ŭɢ ůɢɛ´ Ůɟ ə Ŭɛ ɓ Ŭ3 ɛɛ ɣ3 ɛɢ Ű ɣ 3 ŭə Ŭŭ ɛɟ ɣ 3 ů Ŭɛ 3 Ů ɔ´ ɛə Ŭůɛ ɦ Ŭđɢ ŭgůə ɔ´ ə ŭŭ Ŭɛ đ Ŭɢ (%. Ű ɣ 3 ɢ Ŭɛ đə ɣ 3 Ů ɔ´ ɣŭɣ 3 HDL).

ɣ ə Ŭ´ ɟ ɦůŭŰŰđ Ŭ3 Ŭůə ɦ´ đůđ ɣŭŰůə Ůɦ Ŭɛ ɛ Ů ə ŭɟ Ŷůə Ŭɢ Ŭđɢ ůɣ ɛ Ŭ Ŭə ɛ đɢ Ŷůə đůđɢ ůŰŰ Ůđ Ůŭ Ŭ Ű ɣ 3 ə ɔ´ ə ŭɑɣ 3 Ŭɛ g Ŭɛ Ŭ Ŭɛ ɢ ə Ŭə Ű ɣ 3 ə ɔ´ ɛ´ ɟ ɣ Ŭ Ŭə ɣ 3 gɔə ɣ 3 ´ Ŭə ŭə ɣ 3 ə Ŭə Ůŭ ɛ ɓ ɣ 3 Ůə Ŭə ŭə ŭ ɛɟ ɛ ə Ŭ3 Ŭ[86]

Ť Ŭ Ű Ŷ Ŭđ 3 ɑŭə Ŭ´ Ůɟ ɛ ŭɛ ɛ ə Ŭ ɛ Ŭ Ŭ-Ŭ3 Ŷə gůđ ´ ə ůŭɛ´ ɛə Ůə ŭɛ ɔ Ůə ɛ 3 ɦ ɢ Ŭɢ Ŭɦ Ůə ŭɛ ɛ 3 Ŭ Ŭɢ Ŭđ 3 Ů ɑŭɟ Ŭůđ Ŭđɢ Ŭ Ůɟ ɦ ɓ ə Ŭɢ Ŷůə đůđɢ ůŰ Ůə ɔ´ ɑŭə Ŭ ə Ŭə Ŭůɢ ə ɔ´ ɛ´ ɟ ɣ Ŭ Ůə Ůɢ ůŮ´ Ŭə ŭə Ŷ ə Ŭə Ůŭ ɛ ɓ ɛ ɢ ɢ đ ɛ´ ɛ đ Ŭ ŭŰ3 ɣŭŰə Ůɓ Ůə ŭɢ ůŰ Ů đ Ůŭ Ŭ TC,HDLC ə Ŭə LDL C[87]

Ŭ Ŭ Ŭđ ɟ 3 Ŭ Ŭɢ Ŭɢ ɛ ɣɢ Ŭđɢ´ đůđɢ Ŭɛ g Ŭɛ Ŭ ɛɢ ,Ůə Ŭə ´ ɟ ɛ ŭ Ŭ3 ɛɢ đ đ Ŭ ə ɛ ůɢůɛ ɣŭůđ ɛ Ů Ŭ ɟ ɛ Ŭ ɛ g ɑɣ Ť Ə Ŭə Ŭɛ g ůɣ ɛ Ŭ ə ɛ ɑ ɛ ɢɢ ůŮ´ Ŭə ŭə Ŷ 9 Ůŭ 3 [88],ɔŭ3 ɛ 3 ɦ ɢ Ŭɛ ɛ´ ɛ ɛ Ůə Ŭə ů Ůůɢ ɛ ŭɣ 3 đ Ŭ ɛ Ů Ŭ Ůɢ ɟ ɛ ɛ Ŭ Ŭ ɛ Ŭɢ. Ŭ Ŭ ɟ ɦ ɛ ɛ ə Ŭ Ŭ´ ɛ Ŭ Ůə ɣůɛ Ŭ Ŭ ɓ ɟ ɣ đ đ ə Ŭ3 ə Ŭə ů Ů Ŷə ə Ůɢ ɛ Ůə ɣ Ŭ Ůɢ ů Ů´ Ŭə ŭə Ŷ[105-110]

ɟ ´ ɦ Ŭđ 3 Ŷə ə đ ´ ə Ůɢ ɟ Ŷ g´ Ŷ ɟ ɢ Ů3 Ŭ ɟ 3 đ Ŭə ɛ ůɢůɛ ɣŭůđ ɛ Ů Ŭ ɟ ɛ ŭɢůə ɛ đ Ŭ ɟ Ŭůɟ ɦ Ŭđ Ŭɢ ə Ŭə ůɢů Ŭə ə ɛ đ Ŭ ɟ Ŭůɟ ə Ŭə đ´ đůđɢ Ů´ ɛ ŭɢ 3 Ŭɛ ɛ Ů Ŭə ů Ŭđ 3 ´ Ŭɟ ɛ ɢůđ Ů Ŭə g 3 đ ɛ ɣ 3 ɛ g ´ ɛůɛůŭ ůɣ ɛ Ŭ ə ɛ ɑ ɛ ɢɢ đ ɟ ɢ ə Ŭ đ´ đůđɢ ůŮ´ Ŭə ŭə Ŷ 3 ɛ ´ ɛůɛůŭ ůɣ ɛ Ŭ ə ɛ ɑ ɛ ɢɢ đ Ůə Ŭə Ŷ ɟ ɟ ɢ ə Ŭ Ů ůɢ 3 ŭ Ůůɟ ɛ Ŭ ɛ Ů Ŭđ 3 ɛ Ŷŭ Ŭ´ Ŭə ŭə Ŷ[90] .Æ Ů Ŭɢ Ŭ ŭ Ůđ ɛ Ůə ,ů Ŭđ 3 ´ Ŭɟ ɛ ů Ŭ ɛ Ůə ɣ Ŭđ ŭə Ŭ ůŭ đ đ ə Ů ɣ 3 Ŭɢ gɣ đə ɦ Ŭɟ ɛ ɢ Ů ɔ´ ɛə Ůů ɛ ɦ ɢ Ŭđ ɢ ůɛɢə ɛ 3 Ŭ ŭŭ Ŭůđ ɢ ů Ŭđ 3 ɛ ɛ Ŷŭ Ŭ´ Ŭə ŭə 3 ɛ Ů ôɢ gɣ đə ɦ Ŭɟ ɛ ɢ ɣ đə ɦ Ŭɟ ɛ Ů đ Ůŭ ɛ ū .Ť ô ů Ů ůɢ ŷůđ ɛ Ů Ŭđ 3 ɛ ɛ Ŷŭ Ŭ ɛ Ů ôɢ Ŭ ɛ đə ɦ Ŭɟ ɛ ɢ ɣ đə ɦ Ŭɟ ɛ Ů đ Ůŭ ɛ ū .Ť.ôô

Ůɢ ɟ Ŷ ůđ ɛ Ůđ Ŭ ə Ŭə ´ Ůɟ ɛ ɟ ɛ ůɛ ɛ a Ŭđ ɢ ɛ Ůə ɣ Ŭđ ɢ

ɟ ɟ ɢ ə Ŷ Ŭə ɛ Ůə 3 Ŭ Ů ůůđ ɛ Ŭ3 đ Ůů ɦ Ŭ đ ¢ealth Growth Study ´ ɟ ɦ ə Ůə Ŭ Ŭə ɔ ə Ŭ ɛ đ Ŭ ůɢ ɔ ɟ ɛ 3 ə ə ɛ Ůə ɣ Ŭđ (cross sectional) ɛ Ů ɣ 3 Ŭ ŭə ŭ Ůđ Ŭɟ ɛ Ŭ3 Ŭ´ ɟ ɛ ůɣ ´ Ůɢ Ŭə ɦ ŭ Ůə ɛ Ŭ Ŭ ɦ ɢ Ŭ Ůə ɟ ůŭ Ŭə Ŷ ůđ ɛ Ůđ Ŭ ůŭđ 3 Ə ə Ŷŭ Ŭ [Ŭ3 Ŭ´ ɟ ɛ ůɣ ´ Ůɢ Ŭə ɦ ɢ Ŭɟ ůđ ɛ ɦ ɢ Ŭđ ɢ ɛ Ůđ Ŭ Ů ə Ůə ɛ ɣ 3 ɣ 3 ŭđ ɛ ɛ Ŭə ɟ 3 ůɛ ə Ůɣ 3 Ŭ ɦ ´ ɣ 3 Ŭ Ů 3 ɛ ɛ ɛ ɟ Ŭđ ɢ Ůə đ 3 ə ə ɛ Ů ə ɟ Ŷ Ŭ ə Ŭ ɢ (ɟ đ đ 3 ɟ 3, Ŭ Ůɟ Ŭ3 Ŷ, ɟ ə Ŭ ɣ ə ɛ Ŭə Ŭɟ 3 Ŭ3 đ Ŭ ɢ, ¢ ɟ Ŭə ə Ůɛ ɢ Ť ɟ ɛ Ŭđ ɢ ə Ŭə Ū Ůů Ůə ɛ 3 ə đ ɢ)].Æ´ ɔ´ ɟ ɦ ůđ Ů Ŭ Ůə Ŭə đ ´ ɟ ɟ Ŭđ ɛ Ůə ɣ Ŭđ ´ ɛɢ ´ ɟ Ŭə ɛ Ŭ Ŭ ɛ´ ɛ ə Ů Ŭ Ůə ů Ŭ ɛ 3 Ůə ə đ 3 ə ɦ ´ ə đ đ ůɛ ɦ ɛ Ů Ŭ3 Ŭ ůŭ ɛ ɛ ɛ ɛ ŭ Ůə ɛ Ŭ´ Ŭə ŭə 3 (2490 ´ Ŭə ŭə Ŷ).

ȳ ůɛ 3 Ŭ ŭ ɛ ɟ Ŷ Ŭ ɛ ɢ ɢ ´ Ůɟ ɛ ɟ ɛ ůɛ ɛ ɛ ɟ ɢ Ŭđ ɢ ´ Ŭɟ ɛ ɟ ů Ŭ ɢ ɣ ɟ Ů ɢ 3 Ŭ ɢ đ Ŭ ´ ɟ ɣ´ Ůə 3 Ŭ Ŭ ɛ 3 ůŭ Ůů ɦ Ŭə ə ɦ ɔ ɣ Ŭ ɛ ɢ ɦ Ŭə ´ ɟ ɦ ə Ůə Ŭ Ŭə ɔ ə Ŭ ɛ ə Ŭ ůɢ ɔ ɟ ɛ 3 ə ə ɛ Ůə ɣ Ŭđ ŭŰ3 ɛ´ ɛ ɟ Ůə 3 Ŭ Ŭ ɛ ŭ ɛ đ Ůə đ ůɢ ŷůđ Ŭə đ Ŭ ɢ ə Ŭə Ŭə đ Ŭ ɛ ɛ

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