

Metformin in combination with lifestyle changes effectively reduces body mass index and waist circumference in overweight/obese children and adolescents



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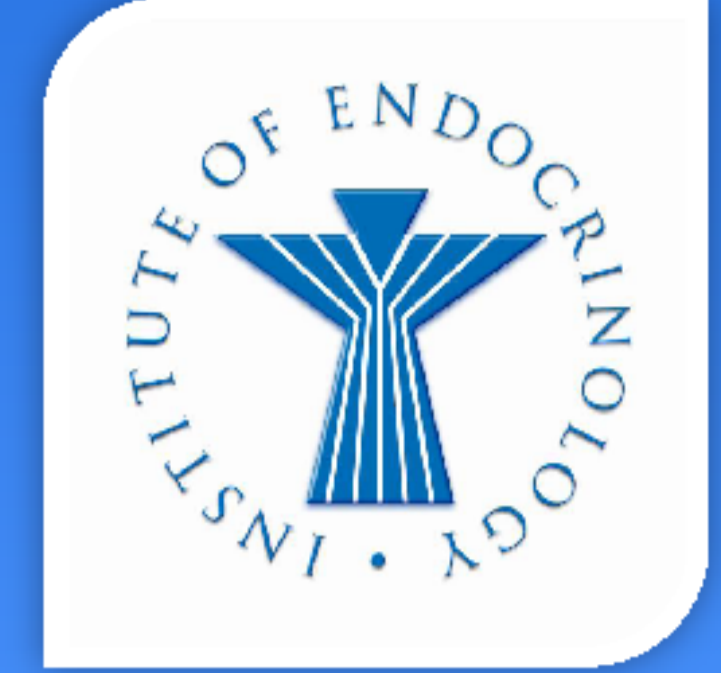
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Background

Overweight (OW) and obesity (OB) in paediatric population has been shown to be associated with an increase in prevalence of insulin resistance and type 2 diabetes (T2D) in youth. Use of Metformin reduces insulin resistance, appears to be promising for T2D prevention. Metformin also inhibits fat cell lipogenesis and may reduce food intake and weight.

Aim

To assess the efficiency and safety of metformin use in combination with lifestyle changes or alone for weight management in OW and OB children and adolescents.

Objective

Study included 145 children and adolescents aged 10-17 years with OW (BMI-SDS 1.0-2.0) and OB (BMI-SDS \geq 2.0). BMI-SDS was defined according to International Obesity Task Force criteria for children. Lean mass was calculated as total weight minus fat mass assessed by Goran formula according to skinfolds thicknesses.

For intervention, study participants were randomized into 4 groups:

- 1st group - controls (n=33);
- 2nd group - lifestyle changes with 2-times weekly swimming pool exercise and monthly dietologist counseling (n=26);
- 3rd group - metformin 500 mg BID (n=21);
- 4th group - metformin 500 mg BID combined with lifestyle changes (as in 2nd group) (n=32).

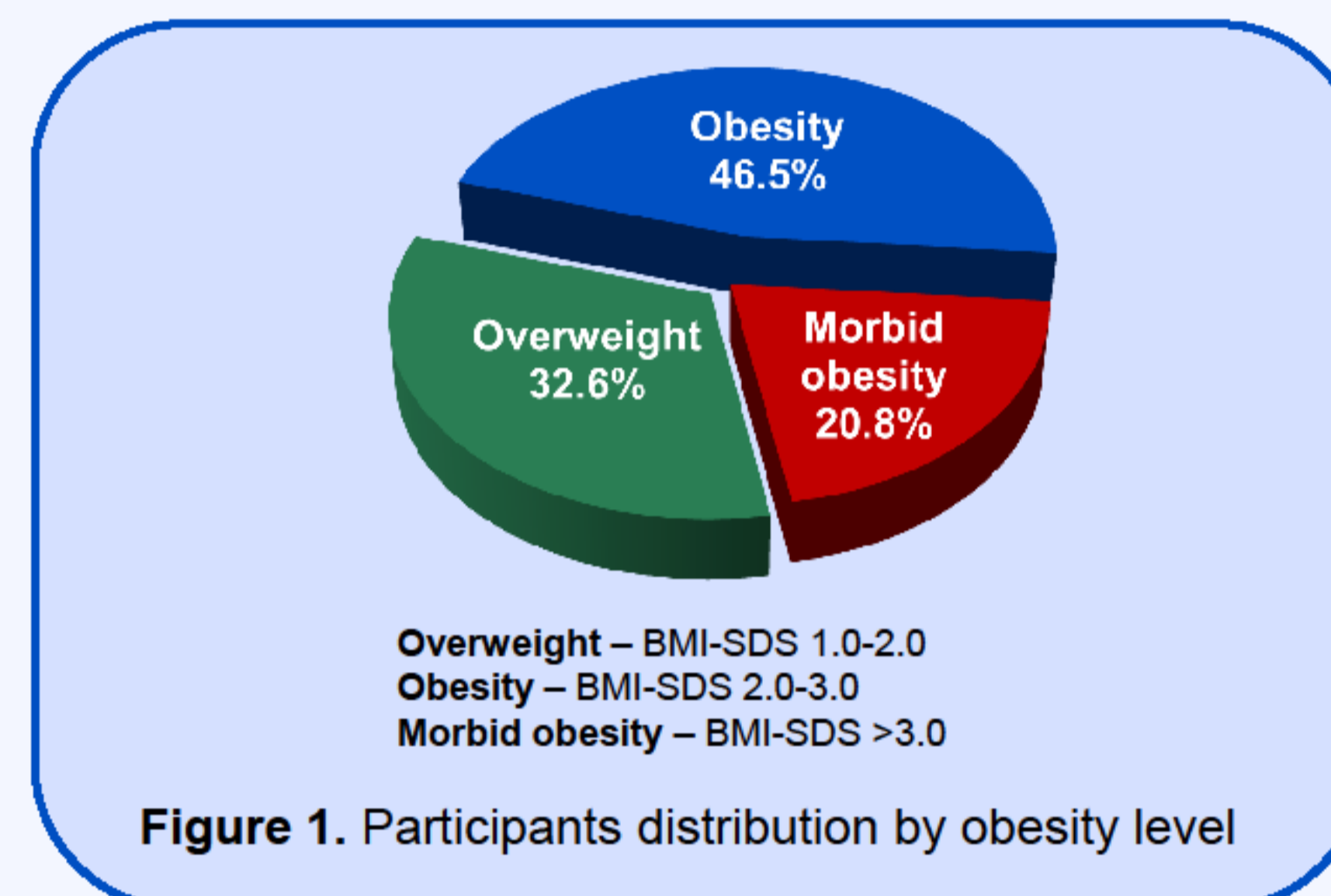
Anthropometric evaluation was performed at the baseline and after 12 months of intervention.

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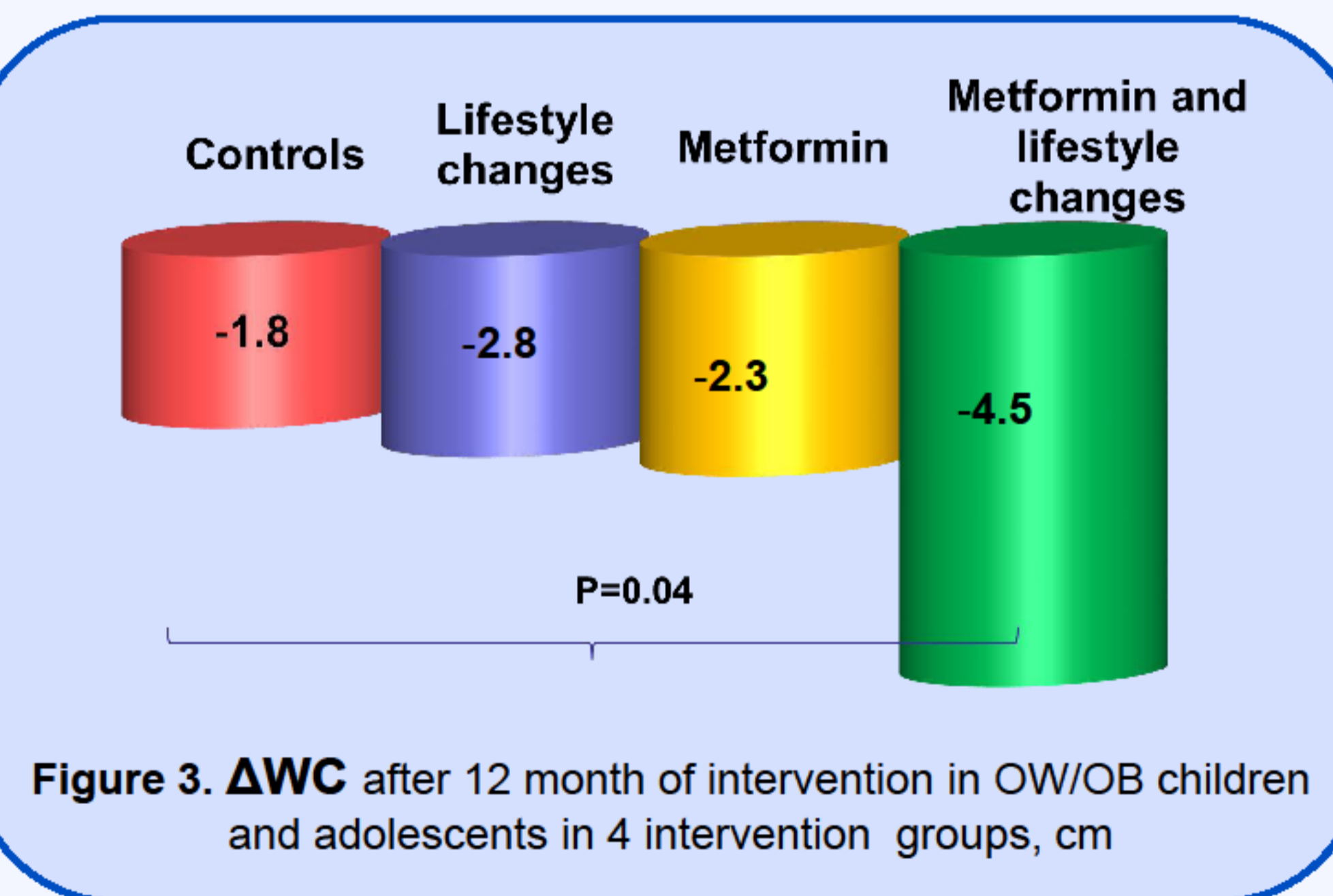
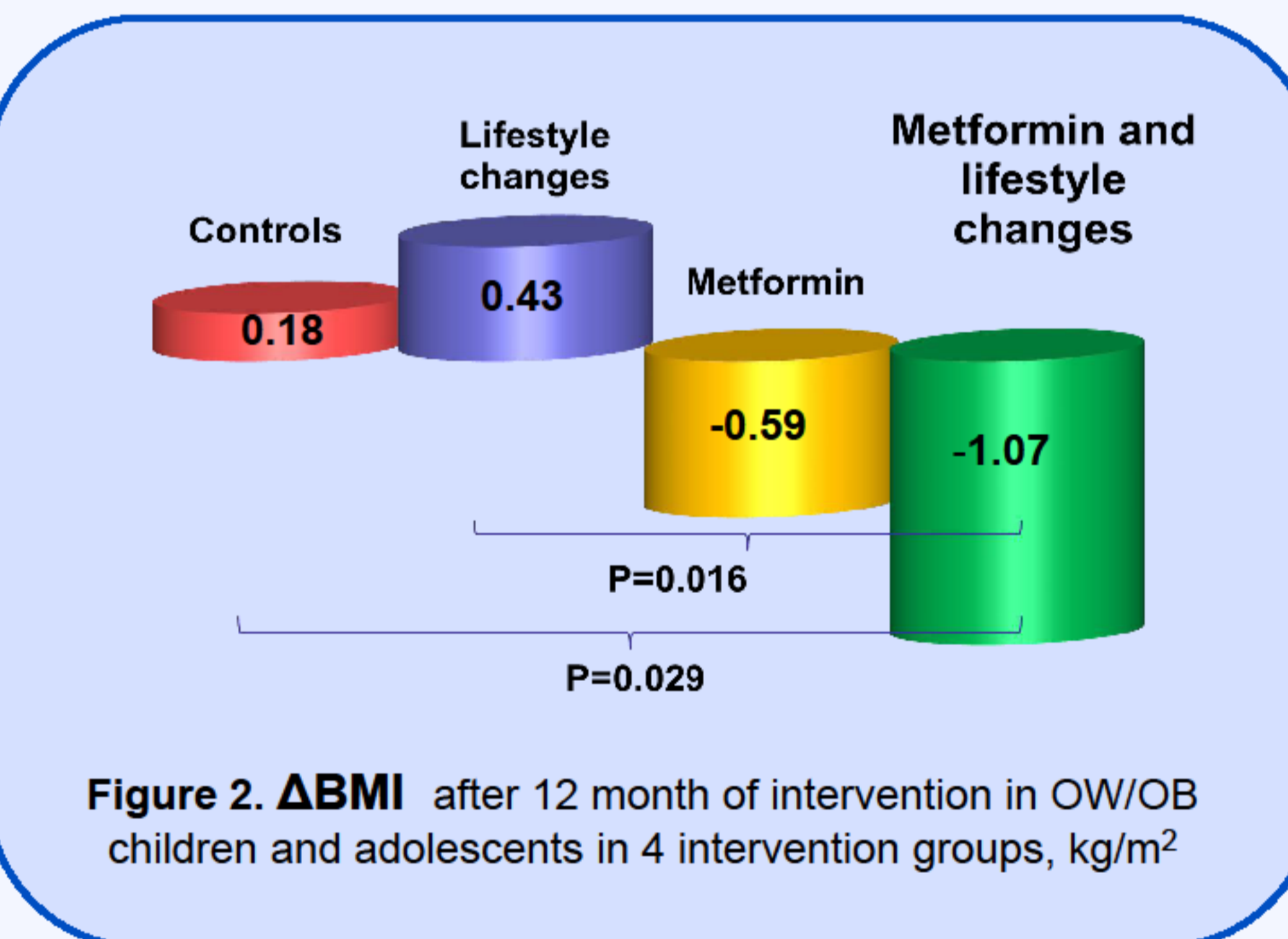
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Results

Study subjects mean age was 13.4 ± 2.0 years; 44.1% were boys. Distribution by obesity level is presented in figure 1.



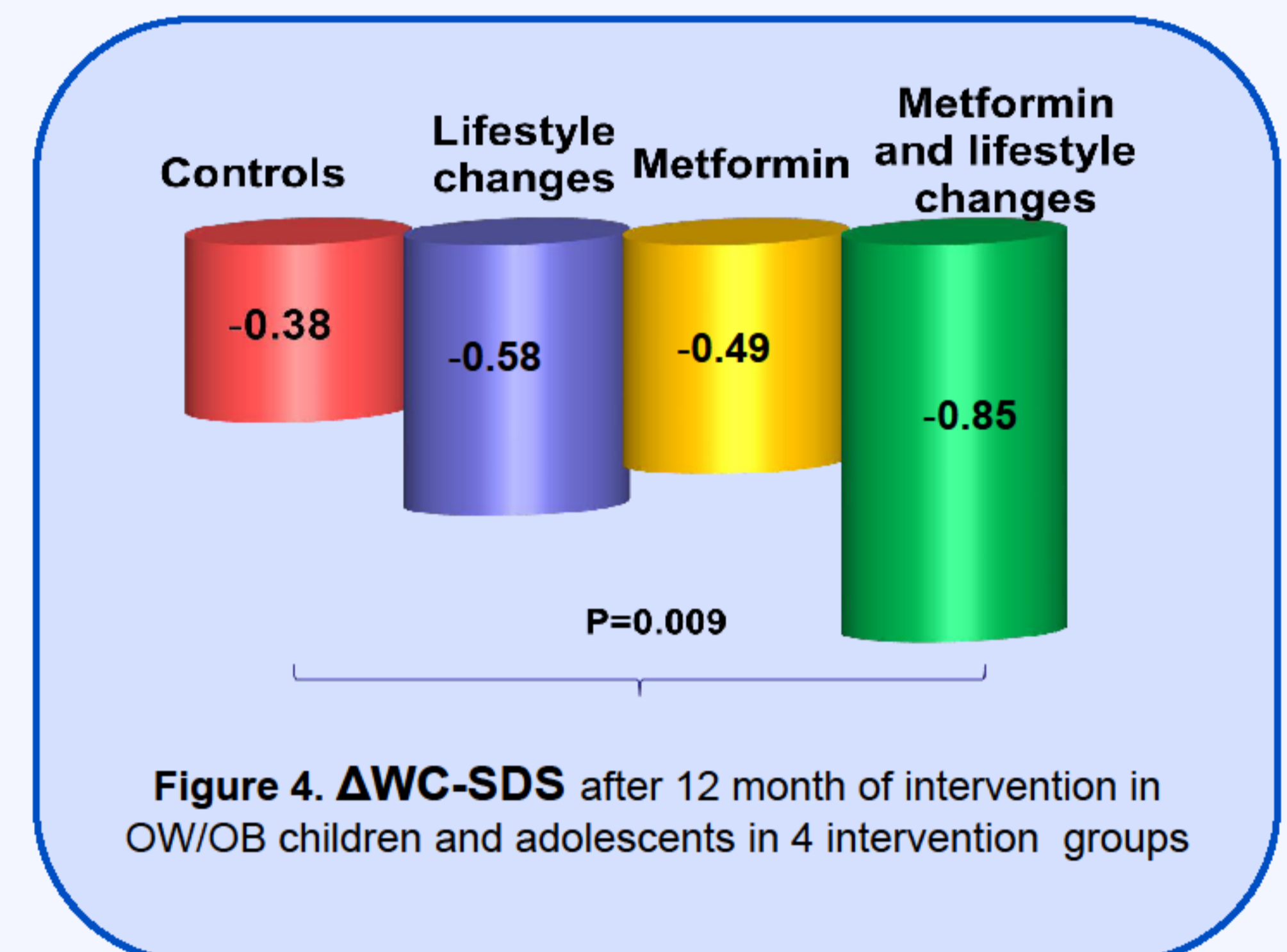
Reduce in BMI, waist circumference (WC) and WC-SDS adjusted by gender and puberty stages was significantly greater in the 4th group compared to the 1st group (Figures 2, 3 and 4).



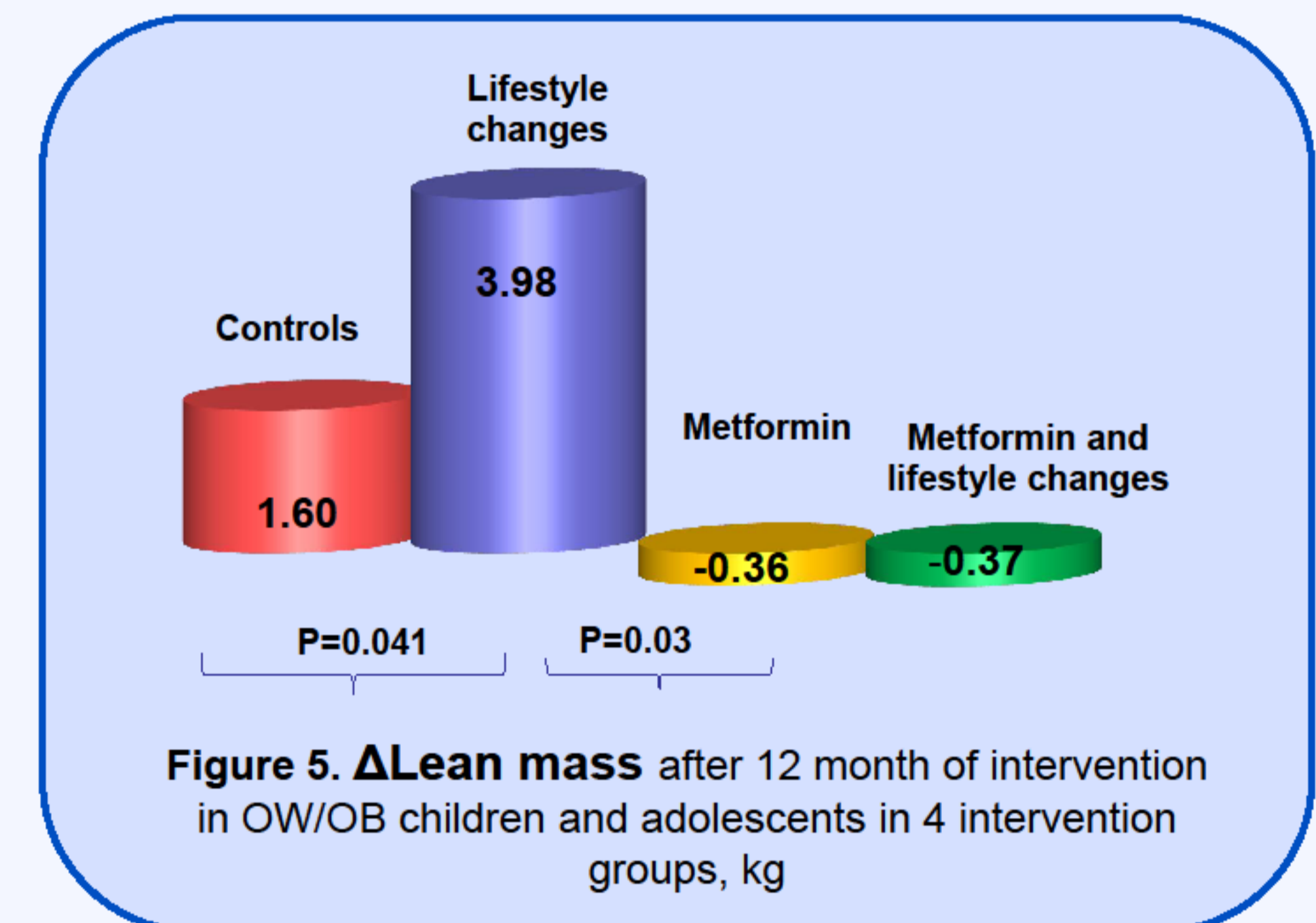
Initially, mild side effects of metformin (nausea, diarrhea) were observed in 21.6% of subjects from 3rd and 4th groups, which disappeared within 1 week of metformin administration.

Acknowledgements

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Adjusted by gender and puberty stages, lean mass was significantly increased in 2nd group compared to 1st and 3rd groups (Figure 5).



Conclusions

12 months metformin treatment with lifestyle modification was effective and safe method reducing BMI and waist circumference in OW/OB children and adolescents, superior to that of lifestyle changes alone.

References

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