

# Polycystic Ovary Syndrome and Obesity Clinical and Laboratory Specialties: A Challenge to Fertility Preservation in Women of Reproductive Age

ARTYOMENKO V.1,2, LAHODA D. 1, SHAPOVAL M. 1, MNIH L. 1,2, DOMAKOVA N. 1

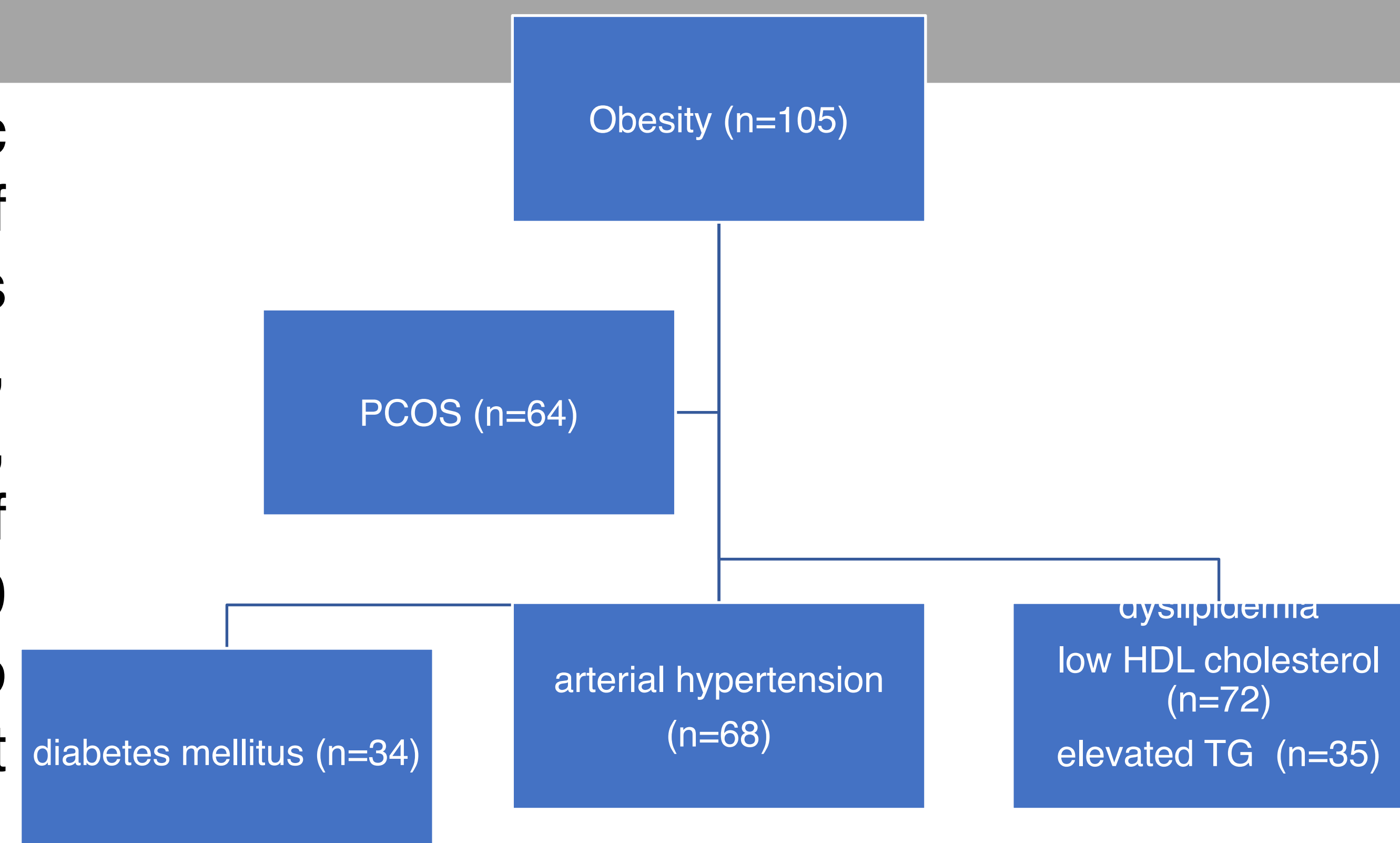
1 Odessa National Medical University, Ukraine,

2 Odessa City Maternity Hospital № 5. Ukraine



## Introduction

Approximately 10-18% of women of reproductive age suffer from polycystic ovary syndrome (PCOS). Women with PCOS have a high prevalence of metabolic syndrome (MS), with an incidence of up to 33%. Obesity is associated with long-term consequences such as cardiovascular disease, difficulty in conceiving and carrying a pregnancy, psychological problems, etc. Hirode et al. (2020) found that in the United States, the prevalence of obesity increases significantly with age, from 19.5% among people aged 20 to 39 years to 48.6% among people aged 60 years and older. It was also found that MS increases the risk of type 2 diabetes mellitus 5-fold and that PCOS is a significant unmodifiable risk factor for these patients.



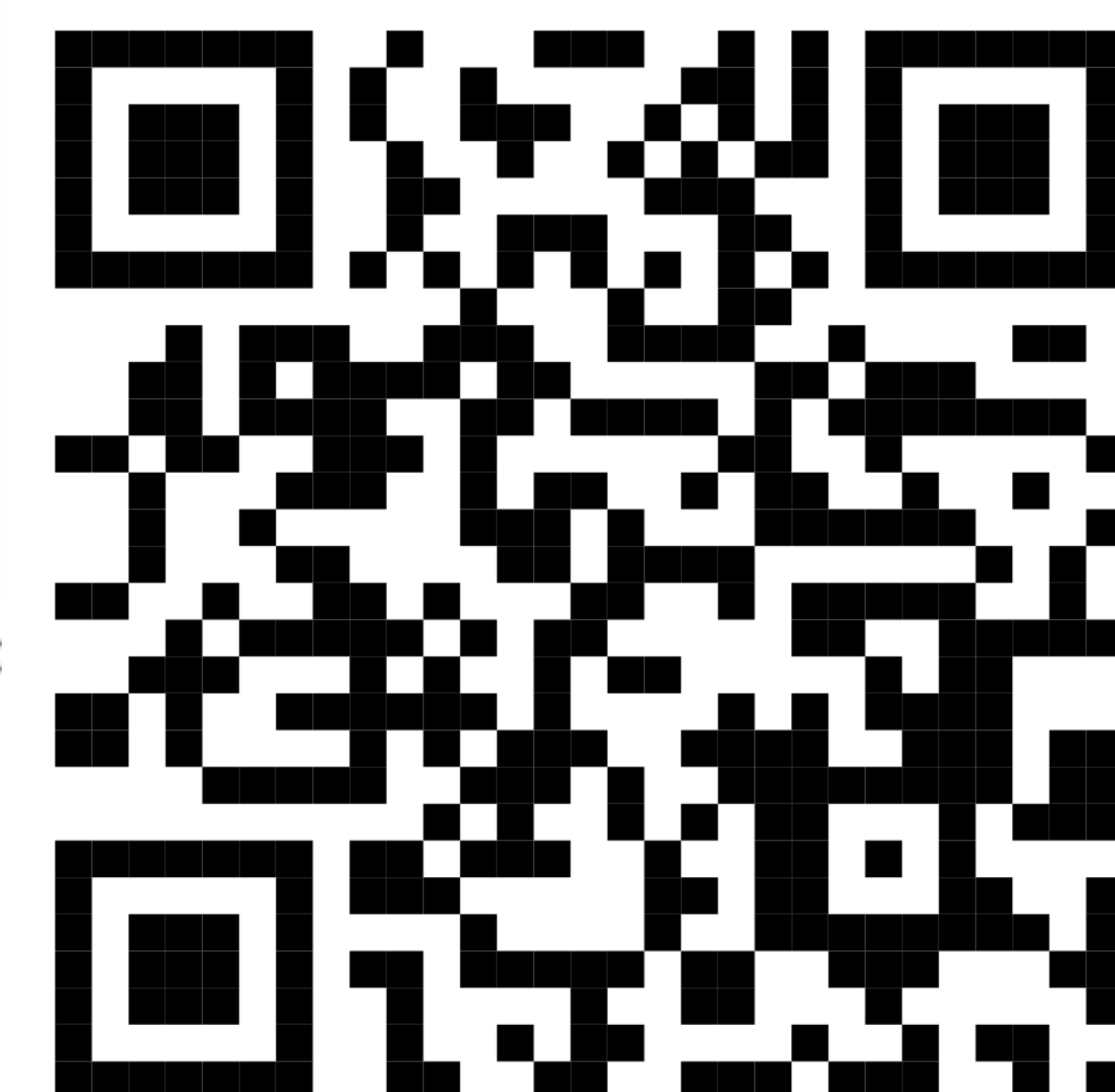
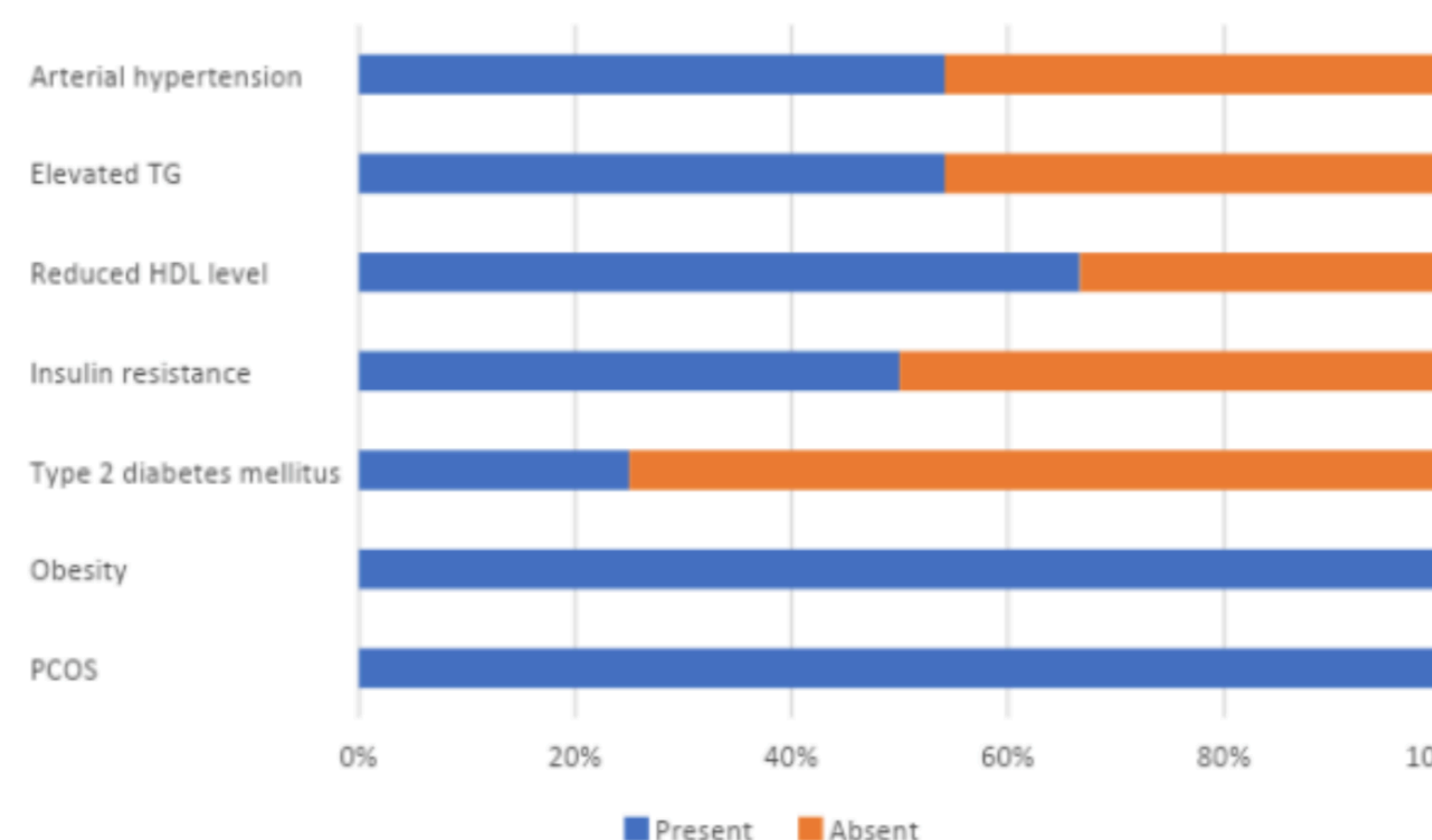
## Results

During 2023 in our clinic 105 women with obesity were examined. The women included in our study were over 18 years old; the average age was 32,12±2,13 years. Of these, 64 had concomitant PCOS (60,95 %).

Along with obesity, the examined patients were diagnosed with type 2 diabetes mellitus (n=34), arterial hypertension in 68 patients, dyslipidemia in the form of low HDL cholesterol in 72 women and elevated TG in 35 patients.

Significant portion of examined women with PCOS also had metabolic syndrome, accounting for 34,36% (n=22) of the 64 cases, nine (14.07% female patients had a combination of PCOS and obesity without MS.

Parameter	Obesity (n=105)	PCOS (n=64)	Obesity + PCOS (n=22)
BMI, kg/m <sup>2</sup>	32,24±0,54	31,97±0,14	33,56±0,61 <sup>^</sup>
Fasting glucose level, mmol/l	6,1±0,43	5,96±0,21	6,12±0,18
Insulin, mIU/ml	21,74±1,25	22,05±2,01	22,14±1,15
HbA1c, %	6,25±0,21	6,18±0,16	6,67±0,31
Blood pressure, mm mm Hg	Systolic	138,37±2,56	145,52±1,42*
	Diastolic	79,46±2,41	75,25±1,73
HDL, mmol/l	0,99±0,17	1,51±0,12*	1,49±0,23**
TG, mmol/l	1,62±0,14	2,18±0,09*	2,05±0,12**



## Conclusions

Obesity is a multifaceted problem in the practice of doctors of many specialties. In many cases, obesity is not an independent disease; one of the most common comorbidities in obese women of reproductive age is PCOS. We consider it appropriate to recommend screening for PCOS to all obese women of reproductive age, which will help maintain the fertility of this category of patients.

## Discussion.

The comprehensive analysis revealed 16 different combinations of MS components. An in-depth examination showed that 73,27% (n=16) of PCOS patients had a combination of three MS components, while 26,79 % had a combination of four MS components (n=8). In addition, the study showed that the majority of women diagnosed with PCOS had persistent obesity and elevated body mass index (BMI) over a long period of time, with a strong positive correlation ( $\rho=0.83$ ;  $r=0.81$ ). These results confirm the multifactorial nature of both PCOS and MS

## References

1. Farhadi-Azar M, Behboudi-Gandevani S, Rahmati M, Mahboobifard F, et al. The Prevalence of Polycystic Ovary Syndrome, Its Phenotypes and Cardio-Metabolic Features in a Community Sample of Iranian Population: Tehran Lipid and Glucose Study. *Front Endocrinol.* 2022;13:825528. doi:10.3389/fendo.2022.825528.
2. Artyomenko VV, Chumak ZV, Shapoval MV. The retrospective analysis results of the endometrial tissue pathological conditions development. *Reprod Endocrinol.* 2020;55:48–52. DOI: 10.18370/2309-4117.2020.55.48-52.
3. Hirode G, Wong RJ. Trends in the Prevalence of Metabolic Syndrome in the United States, 2011-2016. *JAMA.* 2020;323(24):2526–2528. doi:10.1001/jama.2020.4501.
4. Alberti KGMM, Zimmet P, Shaw J. International Diabetes Federation: a consensus on type 2 diabetes prevention. *Diabet Med.* 2007;24:451–63.
5. Artyomenko VV, Velychko VI, Lahoda DO. New approaches to early detection of polycystic ovary syndrome in obese women. *Reprod Endocrinol.* 2022;62:20-25.
6. Volodymyr Artyomenko, Valentyna Velychko, Daria Lahoda, Halyna Danylchuk Common clinical laboratory features among women with polycystic ovary syndrome and metabolic syndrome *JOURNAL of MEDICINE and LIFE.* VOL: 16 ISSUE: 8 AUGUST 2023 p.2015-2019 DOI 10.25122/jml-2023-0057
- 7 Artyomenko, V., Nastradina, N., & Kozhukhar, H. (2023). Changes in the microbiome in women with polycystic ovary syndrome: Literature review. *REPRODUCTIVE ENDOCRINOLOGY*, (68), 30–35. ) <https://doi.org/10.18370/2309-4117.2023.68.30-35>

Correspondence: [vartyomenko2017@gmail.com](mailto:vartyomenko2017@gmail.com)