



Nutrition and Acne: Exploring the Connection

Vanya Birdanova, MD, PhD; Vasilev Preslav, MD, PhD; Iveta Petrova, MD; Ivelina Jordanova, MD, PhD;
Ivelina Ruseva, MD, PhD; Valentina Kuzova
Faculty of Public Health, Faculty of Medicine, Medical College, MU-Pleven

INTRODUCTION

Acne vulgaris is a persistent inflammatory skin condition affecting the pilosebaceous unit. Its development involves a combination of factors, including increased sebum production, changes in keratinization leading to comedone formation, colonization of hair follicles by Cutibacterium acnes, and the release of inflammatory mediators.

Additional factors influencing acne include hormonal fluctuations, genetic predisposition, certain medications, stress, and dietary habits. Foods with a high glycemic index, increased carbohydrate intake, and dairy products have been associated with acne occurrence, particularly among individuals following a Western dietary pattern. The impact of diet on acne severity may also be influenced by sex and ethnicity.

This study aimed to investigate the relationship between the severity of acne vulgaris and the eating habits of young Bulgarian women.

METHODS AND MATERIALS

The study included 46 women with acne vulgaris, aged between 14 and 40 years. The severity of acne was assessed by a dermatologist and classified according to the Global Acne Grading System (GAGS) - Figure 1.

The Global Acne Grading System classifies severity as mild (1–18 points), moderate (19–30 points), severe (31–38 points), and very severe (>39 points).

Dietary intake of various foods and beverages was evaluated using the Food Frequency Questionnaire (FFQ) method.

Data were analyzed using SPSS v.26. The χ^2 test, independent samples t-test and bivariate correlations were used. A p-value < 0.05 was considered statistically significant.

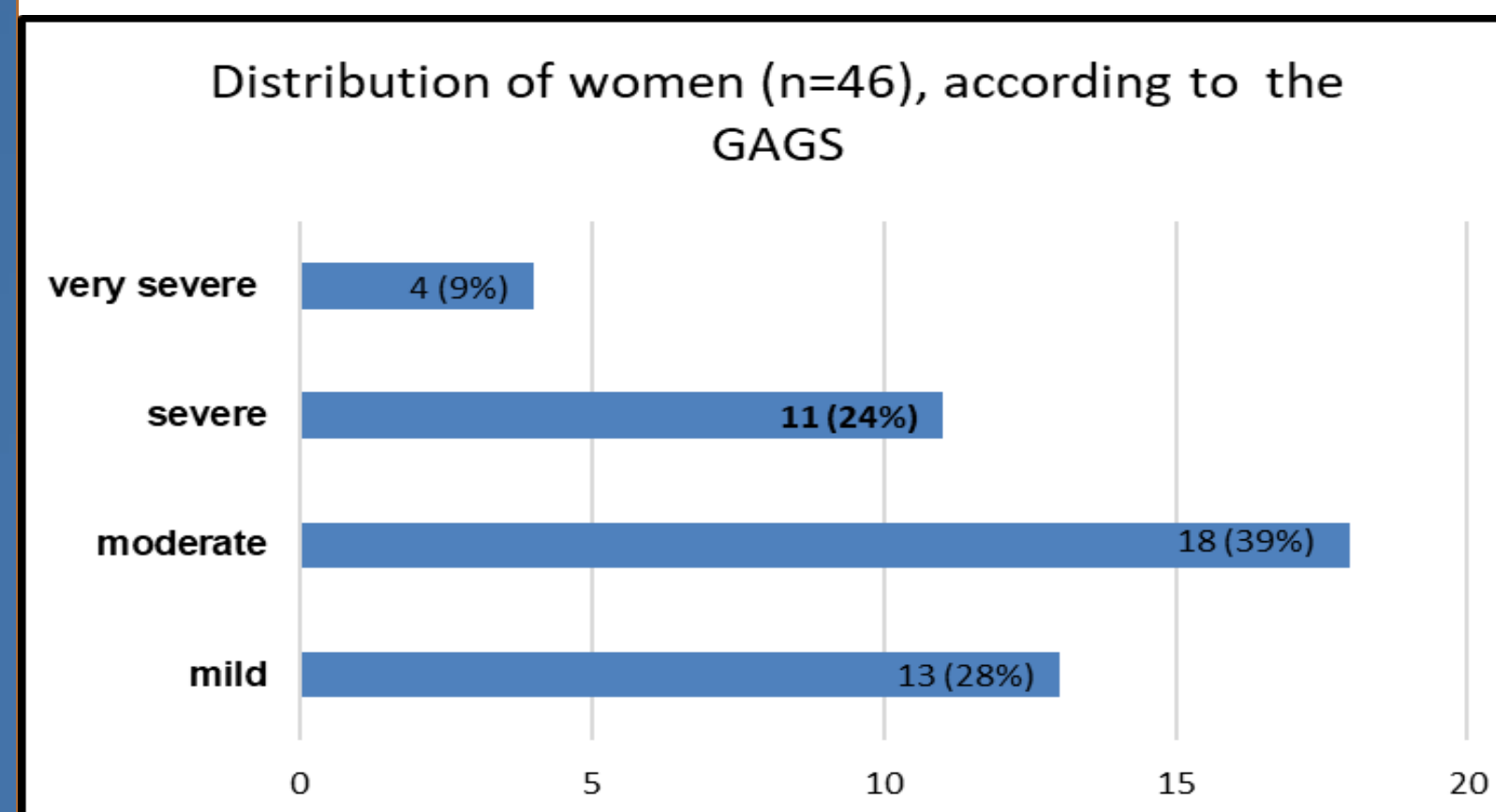


Figure 1 Distribution of cases according to Global Acne Grading System

RESULTS

1. A significant negative correlation between acne severity and intake of nuts ($r=0.51$; $p<0.05$), indicating that higher nut consumption is associated with milder acne.
2. A positive correlation between acne severity and milk consumption ($r=0.46$, $p<0.043$), suggesting that increased milk intake is linked to more severe acne.
3. A positive correlation between acne severity and intake of sugary products and honey ($r=0.61$, $p<0.016$), implying that higher consumption of sugar – rich foods may worsen acne.
4. Low daily intake of vitamins-, antioxidants-, and fibres – rich foods such as fresh vegetables, fruits, whole grain bread, and legumes was observed among the studied women with acne. (Figure 2)
5. Higher frequency of sunflower oil, processed meats, and beer consumption in cases of severe and very severe acne.

DISCUSSION

The findings are consistent with international evidence supporting the role of dietary factors in the pathogenesis of acne.

- Fresh milk contains bioactive molecules, such as insulin-like growth factor-1 (IGF-1), which may stimulate sebocyte proliferation and enhance comedogenesis.

- Diets high in refined carbohydrates and foods with a high glycemic index increase circulating insulin levels, thereby promoting sebaceous gland activity and cutaneous inflammation.

- Insufficient intake of fruits and vegetables can result in deficiencies of essential micronutrients, including vitamins A, C, E, and zinc, which possess recognized antioxidant and anti-inflammatory properties relevant to skin health.

- A reduced intake of dietary fiber and probiotic-rich foods may lead to dysbiosis of the gut microbiota, contributing to systemic low-grade inflammation and potentially exacerbating acne severity.

CONCLUSIONS

This study demonstrates that the consumption of high glycaemic index foods, dairy products, processed meats, and alcohol is associated with increased severity of acne in young women. Conversely, a low intake of vitamins-, antioxidants-, and – fibres – rich foods may contribute to poorer skin conditions. These findings highlight the importance of dietary intervention as part of a comprehensive approach to acne management.

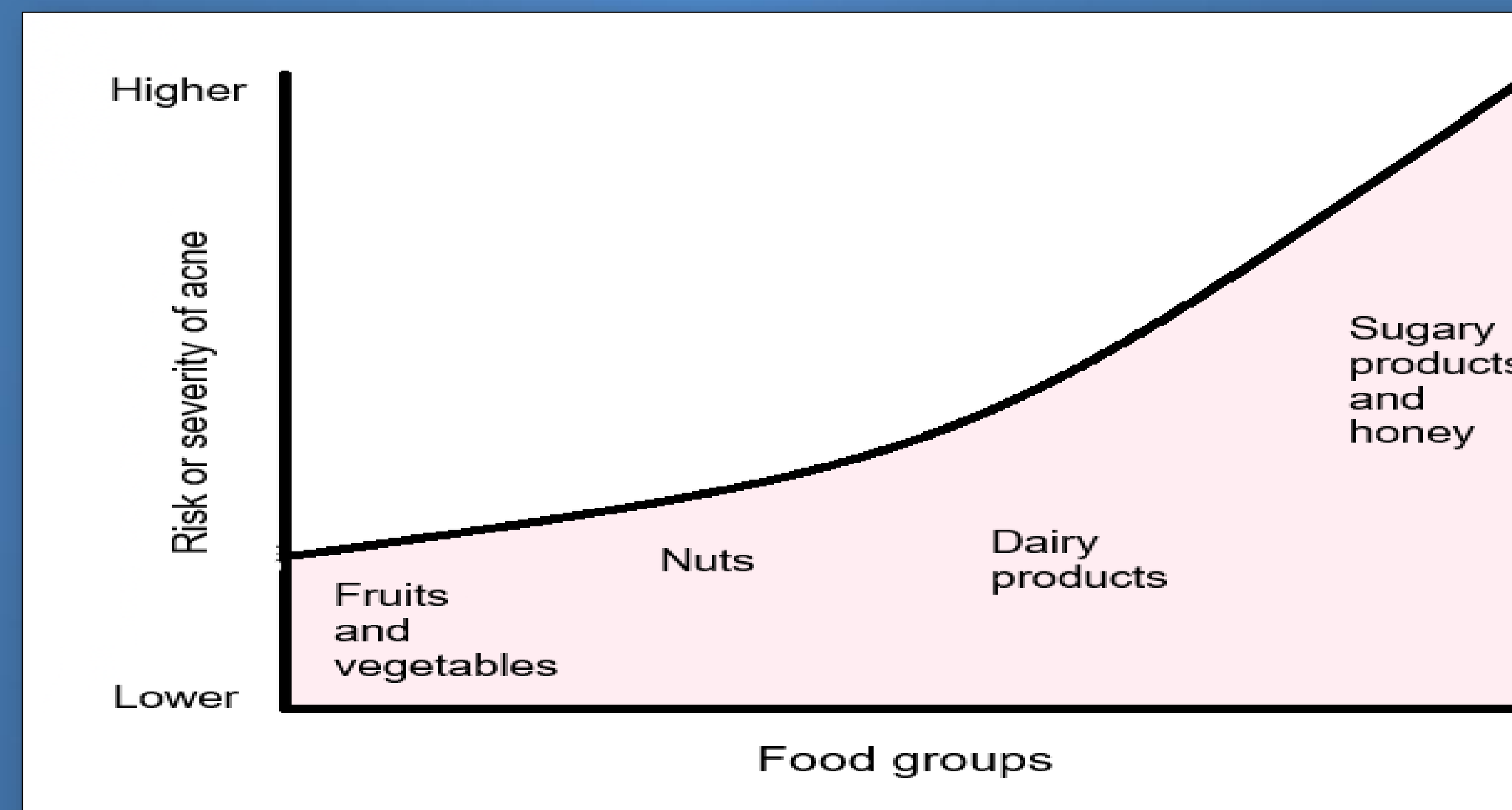
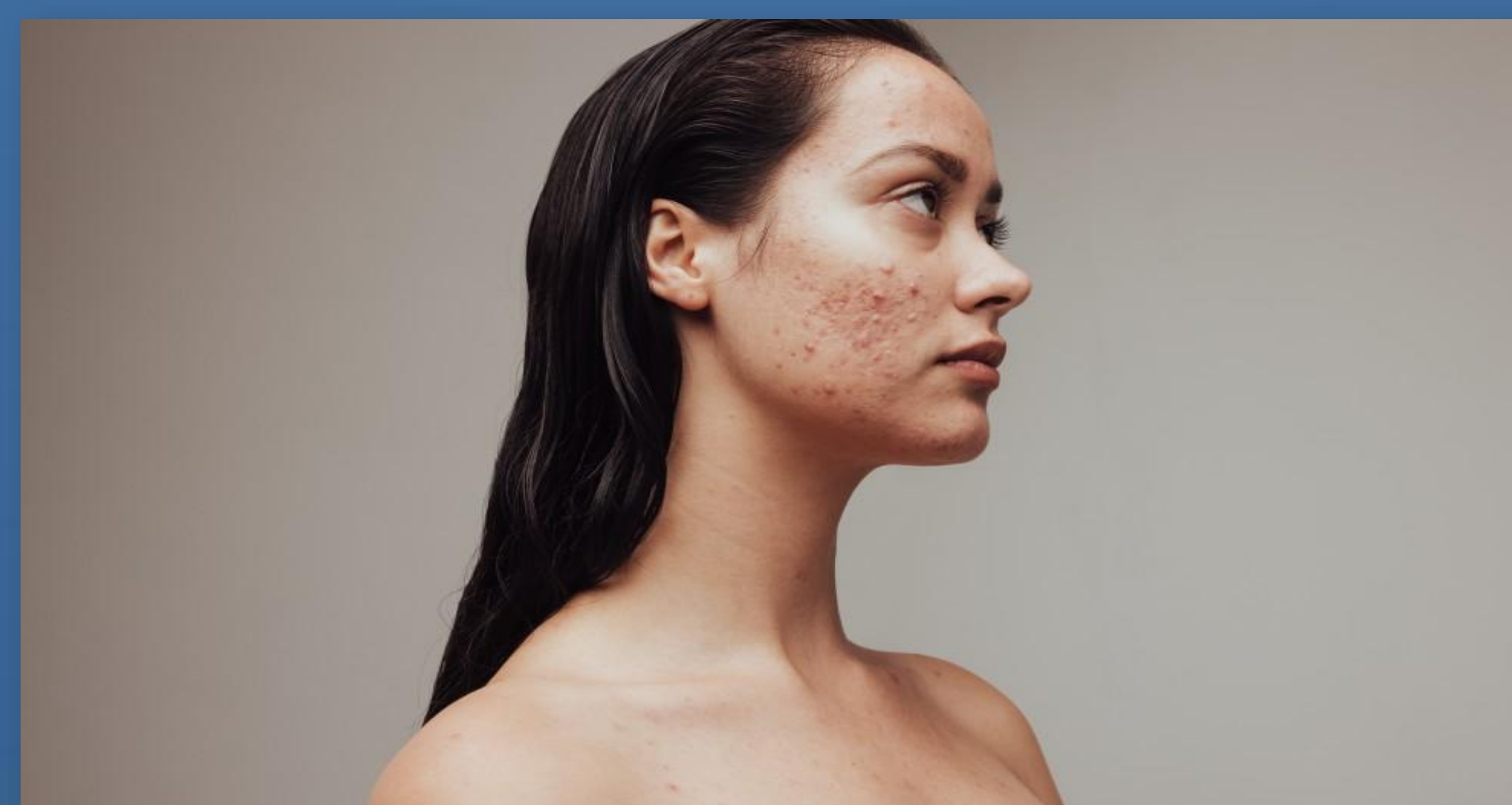


Figure 2 Relationship between food groups intake and acne severity among the study participants



REFERENCES

1. Alsulaimani H, Kokandi A, Khawandanh S, Hamad R. Severity of acne vulgaris: comparison of two assessment methods. *Clinical, cosmetic and investigational dermatology*. 2020 Sep 28;7:11-6.
2. Aslam MB, Hafeez MA, Khan IU. Unveiling the Role of High Glycemic Diets on Acne Formation. *Indus Journal of Bioscience Research*. 2025 Mar 14;3(3):123-7.
3. Chen YW, Wu CY, Chen YJ. Gastrointestinal comorbidities in patients with acne vulgaris: A population-based retrospective study. *JAAD international*. 2025 Feb 1;18:62-8.
4. Doshi A, Zaheer A, Stiller MJ. A comparison of current acne grading systems and proposal of a novel system. *International journal of dermatology*. 1997 Jun;36(6):416-8.
5. Gürel RC, Yıldırım M, Erturan İ, Korkmaz S, Kumbul Doğuç D. Measurement of Acne Severity, Dietary Habits, and Blood Zonulin Levels in Acne Patients. *Journal of Cosmetic Dermatology*. 2025 Mar;24(3):e70083.
6. Indrawan D, Lestari DP. The Role of High-Glycemic Index Foods in Acne Vulgaris Progression: Insights from a Young Adult Population. *SHIFANA: Journal of Digital Health Innovation and Medical Technology*. 2025 Feb 25;1(2):83-91.
7. Omar SI, El-Mulla KF, Eldabah N, El-Busaidy A. The effects of Ramadan fasting on acne vulgaris: clinical, immunological, and oxidative status considerations. *Archives of Dermatological Research*. 2025 Dec;317(1):1-9.
8. Xu W, Xu J, Huang D, Wang C, Song J, Chen X, Suo H. Acne vulgaris: advances in pathogenesis and prevention strategies. *European Journal of Clinical Microbiology & Infectious Diseases*. 2025 Jan 15;1-8.
9. Zhu Z, Zhong X, Luo Z, Liu M, Zhang H, Zheng H, Li J. Global, regional and national burdens of acne vulgaris in adolescents and young adults aged 10–24 years from 1990 to 2021: a trend analysis. *British Journal of Dermatology*. 2025 Feb;192(2):228-37.

CONTACT

Vanya Birdanova, MD, PhD
MU-Pleven
Email:
vania62@gmail.com

RAD CONFERENCE

THIRTEENTH INTERNATIONAL CONFERENCE ON RADIATION,
NATURAL SCIENCES, MEDICINE, ENGINEERING, TECHNOLOGY AND ECOLOGY

JUNE 16-20, 2025
HUNGUEST HOTEL SUN RESORT, HERCEG NOVI, MONTENEGRO

