Investigating the Association Between Skin Disorders and Eating Disorders: A Systematic Review and Meta-Analysis

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Introduction

- Eating disorders are severe psychiatric disorders associated with significant morbidity.

- Dermatologic manifestations of eating disorders are well documented.

- The role of skin disorders as a potential risk factor for eating disorders remains unclear.

- This study examines the association between skin disorders and eating disorders.

Population

Patients diagnosed with dermatological conditions

Intervention

No intervention (Correlation Study)

Comparison

Individuals not diagnosed with dermatological conditions

Outcome

Development of an eating disorder as per the DSM-V criteria

Objectives

1

To determine whether individuals with dermatological conditions have an increased risk of developing eating disorders.

2

To evaluate the role of appearance-related self-perception in eating disorder development.

3

To compare the risk of eating disorders across different types of skin disorders (e.g., acne, psoriasis, atopic dermatitis).

Methodology

Search Strategy

- PRISMA-guided systematic review and meta-analysis
- Databases searched:
  - PubMed
  - Scopus
  - Embase
- Screening performed using Rayyan.ai
- 1,577 records identified
- 17 studies included

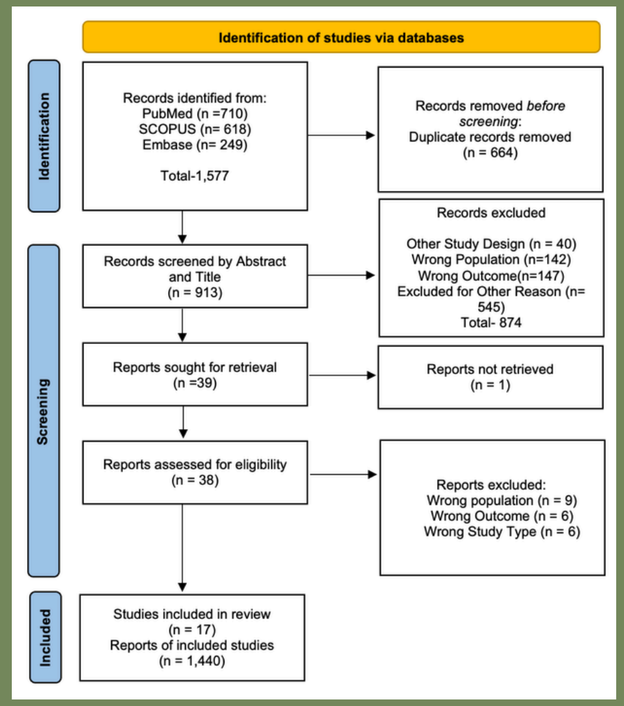


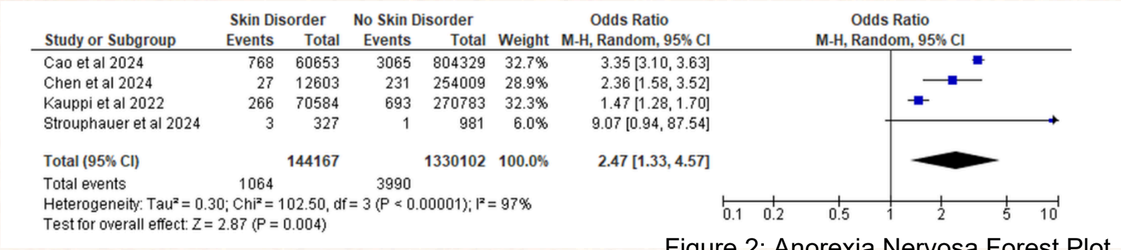
Figure 1: Prisma Diagram

Data Extraction & Analysis

- Independent extraction by two reviewers
- Demographic and outcome data collected
- Random-effects model used
- Odds ratios pooled
- Heterogeneity assessed using I^2 statistic

Results

Anorexia Nervosa



Study or Subgroup	Skin Disorder Events	Skin Disorder Total	No Skin Disorder Events	No Skin Disorder Total	Weight	Odds Ratio M-H, Random, 95% CI
Cao et al 2024	768	60653	3065	804329	32.7%	3.35 [3.10, 3.63]
Chen et al 2024	27	12603	231	254009	28.9%	2.36 [1.58, 3.52]
Kauppi et al 2022	266	70584	693	270783	32.3%	1.47 [1.28, 1.70]
Strouphauer et al 2024	3	327	1	981	6.0%	9.07 [0.94, 87.54]
Total (95% CI)		**144167**		**1330102**	**100.0%**	**2.47 [1.33, 4.57]**
Total events	1064		3990			

Heterogeneity: Tau² = 0.30; Chi² = 102.50, df = 3 (P < 0.00001); I² = 97%
Test for overall effect: Z = 2.87 (P = 0.004)

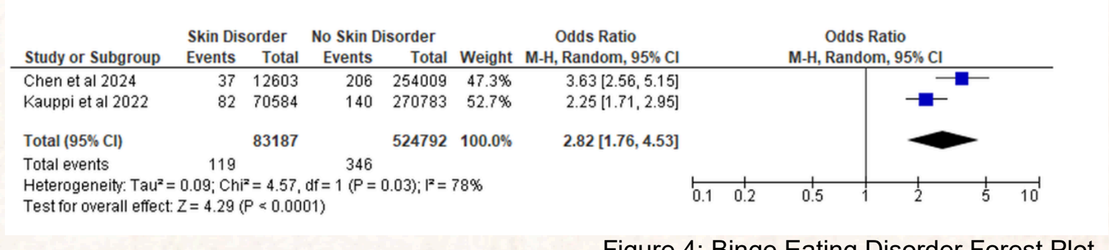
Odds Ratio M-H, Random, 95% CI
0.1 0.2 0.5 1 2 5 10

Figure 2: Anorexia Nervosa Forest Plot

OR = 2.47 (95% CI 1.33–4.57, p = 0.004)

- Individuals with skin disorders had 2.5 times higher odds of AN.
- Considerable heterogeneity was observed (I^2 = 97%).

Binge Eating Disorder



Study or Subgroup	Skin Disorder Events	Skin Disorder Total	No Skin Disorder Events	No Skin Disorder Total	Weight	Odds Ratio M-H, Random, 95% CI
Chen et al 2024	37	12603	206	254009	47.3%	3.63 [2.56, 5.15]
Kauppi et al 2022	82	70584	140	270783	52.7%	2.25 [1.71, 2.95]
Total (95% CI)		**83187**		**524792**	**100.0%**	**2.82 [1.76, 4.53]**
Total events	119		346			

Heterogeneity: Tau² = 0.09; Chi² = 4.57, df = 1 (P = 0.03); I² = 78%
Test for overall effect: Z = 4.29 (P < 0.0001)

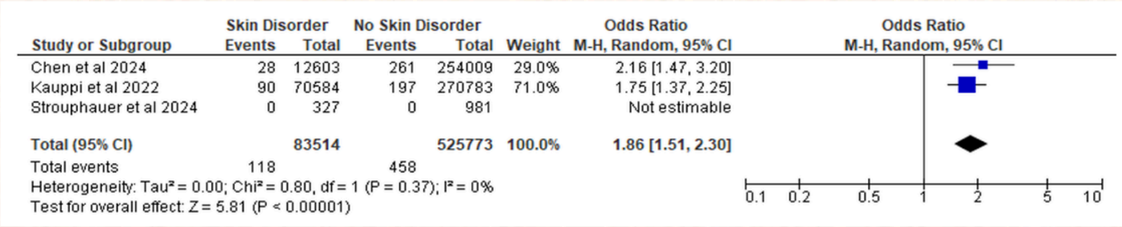
Odds Ratio M-H, Random, 95% CI
0.1 0.2 0.5 1 2 5 10

Figure 4: Binge Eating Disorder Forest Plot

OR = 2.82 (95% CI 1.76–4.53, p < 0.001)

- Individuals with skin disorders had 2.8 times higher odds of BED.
- High heterogeneity was observed (I^2 = 78%).

Bulimia Nervosa



Study or Subgroup	Skin Disorder Events	Skin Disorder Total	No Skin Disorder Events	No Skin Disorder Total	Weight	Odds Ratio M-H, Random, 95% CI
Chen et al 2024	28	12603	261	254009	29.0%	2.16 [1.47, 3.20]
Kauppi et al 2022	90	70584	197	270783	71.0%	1.75 [1.37, 2.25]
Strouphauer et al 2024	0	327	0	981		Not estimable
Total (95% CI)		**83514**		**525773**	**100.0%**	**1.86 [1.51, 2.30]**
Total events	118		458			

Heterogeneity: Tau² = 0.00; Chi² = 0.80, df = 1 (P = 0.37); I² = 0%
Test for overall effect: Z = 5.81 (P < 0.00001)

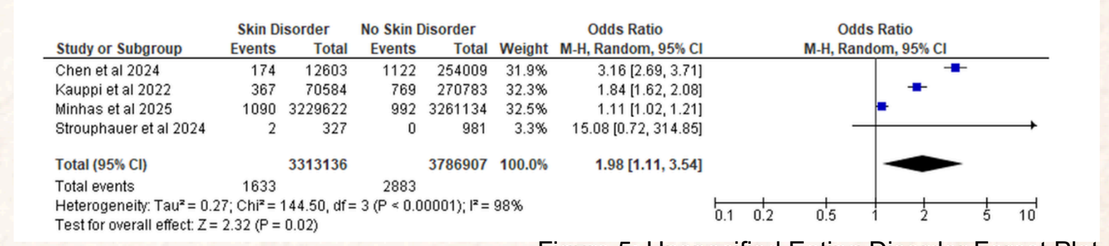
Odds Ratio M-H, Random, 95% CI
0.1 0.2 0.5 1 2 5 10

Figure 3: Bulimia Nervosa Forest Plot

OR = 1.86 (95% CI 1.51–2.30, p < 0.001)

- Individuals with skin disorders had 1.9 times higher odds of BN.
- No significant heterogeneity was detected (I^2 = 0%).

Unspecified Eating Disorder



Study or Subgroup	Skin Disorder Events	Skin Disorder Total	No Skin Disorder Events	No Skin Disorder Total	Weight	Odds Ratio M-H, Random, 95% CI
Chen et al 2024	174	12603	1122	254009	31.9%	3.16 [2.69, 3.71]
Kauppi et al 2022	367	70584	769	270783	32.3%	1.84 [1.62, 2.08]
Minhas et al 2025	1090	3229622	992	3261134	32.5%	1.11 [1.02, 1.21]
Strouphauer et al 2024	2	327	0	981	3.3%	15.08 [0.72, 314.85]
Total (95% CI)		**3313136**		**3786907**	**100.0%**	**1.98 [1.11, 3.54]**
Total events	1633		2883			

Heterogeneity: Tau² = 0.27; Chi² = 144.50, df = 3 (P < 0.00001); I² = 98%
Test for overall effect: Z = 2.32 (P = 0.02)

Odds Ratio M-H, Random, 95% CI
0.1 0.2 0.5 1 2 5 10

Figure 5: Unspecified Eating Disorder Forest Plot

OR = 1.98 (95% CI 1.11–3.54, p = 0.02)

- Individuals with skin disorders had 2 times higher odds of UFED.
- Considerable heterogeneity was observed (I^2 = 98%).

- Significant association observed between dermatologic disorders and all eating disorder subtypes examined.
- Increased odds were observed across all eating disorder subtypes examined.
- Findings suggest that the impact of dermatologic conditions may extend beyond physical symptoms alone.
- Psychological and behavioral mechanisms may contribute to the observed association.

Discussion

1

Perceived Loss of Control

Eating disorders have been linked to a desire to regain or maintain a sense of control. Chronic dermatologic conditions may challenge this sense of control, potentially contributing to maladaptive eating behaviors.

2

Diet as a Means of Skin Management

Dietary modification is commonly perceived as a method of improving skin health. Individuals may therefore adopt restrictive or disordered eating patterns in an attempt to manage dermatologic symptoms.

3

Psychological Impact

The psychological burden associated with visible skin disorders may contribute to the observed association between dermatologic disorders and eating disorders.

Conclusion

Key Takeaways

- Skin disorders were associated with significantly increased odds of all eating disorder subtypes examined.
- Individuals with skin disorders demonstrated the highest odds of binge eating disorder (OR = 2.82) and anorexia nervosa (OR = 2.47).
- These findings support the need for integrated dermatologic and mental health assessment and management.

Clinical Implications

- Screen dermatology patients for disordered eating behaviors.
- Consider psychological support for high-risk individuals.
- Encourage multidisciplinary care involving dermatology and mental health services.

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THANK YOU!