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Original Research Paper

Comprehensive Analysis of Predisposing Factors Contributing to Recurrent Cellulitis in various age groups: A One-Year Prospective Study

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ABSTRACT:
Background: Recurrent cellulitis is a significant health issue, leading to repeated hospitalizations, increased healthcare costs, and adverse outcomes across various age groups. Identifying the risk factors associated with recurrent cellulitis in individuals aged 14 years and older is critical for developing effective prevention and management strategies. **Objective**: This observational cross-sectional study aims to identify and analyze the demographic, environmental, and clinical risk factors contributing to recurrent cellulitis in adolescents, adults, and elderly individuals. **Methods**: Data were collected from 100 patients aged 14 years and older who were diagnosed with cellulitis. Variables included demographic factors (age, gender, socioeconomic status), environmental factors (hygiene practices, living conditions, occupational exposure), and clinical factors (previous episodes of cellulitis, chronic skin conditions, obesity, diabetes, chronic venous insufficiency, MRSA colonization, and treatment adequacy). Statistical analysis, including multivariate logistic regression, was performed to determine the strength of association between these factors and the recurrence of cellulitis. **Results**: Key risk factors for recurrent cellulitis identified in this study include older age, low socioeconomic status, poor hygiene practices, and comorbidities such as obesity, chronic venous insufficiency, and diabetes. Prior episodes of cellulitis and incomplete or inadequate treatment of previous episodes were the strongest predictors of recurrence. Although MRSA colonization and environmental factors like crowded living conditions were observed, their associations were less significant. **Conclusion**: The study underscores the multifactorial nature of recurrent cellulitis, emphasizing the need for comprehensive management strategies that address both clinical and environmental factors. Effective management of comorbidities, ensuring complete treatment of initial cellulitis episodes, and improving hygiene practices are essential to reducing recurrence rates. Future research should focus on validating these findings in larger populations and exploring tailored interventions for high-risk individuals.

Keywords: cellulitis, recurrent cellulitis, risk factors, cross-sectional study, MRSA, chronic skin conditions, hygiene practices, obesity, prevention strategies.

INTRODUCTION:

Cellulitis is a common bacterial infection of the skin and subcutaneous tissues, predominantly caused by *Streptococcus* and *Staphylococcus aureus* species. [1] It manifests as localized inflammation, pain, erythema, and warmth, often leading to rapid progression if untreated, with potential complications including abscess formation, sepsis, or deep-tissue infections. Despite appropriate initial treatment, cellulitis frequently recurs, presenting a considerable challenge in clinical management and posing a significant burden on healthcare systems. [2, 3]

Recurrent cellulitis, characterized by two or more episodes within a year, is indicative of underlying predisposing factors that may not be adequately addressed by conventional treatment. These factors are

multifaceted, encompassing demographic variables, environmental exposures, and a range of clinical conditions. [4] The risk of recurrence increases notably with age, particularly in individuals over 50, who are more susceptible due to age-related changes in skin integrity, immune function, and a higher prevalence of comorbidities such as diabetes mellitus and chronic venous insufficiency. These conditions impair the skin's ability to heal and fend off infections, creating a conducive environment for bacterial invasion. [5]

Gender and socioeconomic status further influence the risk of recurrent cellulitis. Men may be at higher risk due to occupational exposures that lead to frequent skin injuries or contact with contaminated environments. Individuals from lower socioeconomic backgrounds are particularly vulnerable due to limited access to healthcare, poor living conditions, and a higher incidence of comorbidities. These factors, compounded by lower levels of health literacy, often result in inadequate management of chronic conditions and poor adherence to treatment regimens, thereby increasing the likelihood of recurrence. [6, 7]

Environmental factors also play a crucial role in the recurrence of cellulitis. Poor hygiene practices, exposure to contaminated environments, and certain lifestyle factors significantly contribute to the risk. Inadequate hygiene can lead to skin breakdown, which serves as an entry point for bacteria. [8] This risk is amplified in individuals with underlying conditions such as chronic skin disorders or immunosuppression. Similarly, living in crowded or unsanitary conditions, engaging in activities that cause frequent skin trauma, and working in environments with high bacterial exposure are significant contributors to the recurrence of cellulitis. [9]

Clinical factors are paramount in determining the risk of recurrent cellulitis. Prior episodes of cellulitis are a strong predictor of recurrence, as they can cause chronic lymphatic damage, leading to lymphedema and a reduced capacity to clear bacteria from the skin. Chronic skin conditions like eczema and psoriasis further exacerbate the risk by compromising the skin barrier and perpetuating chronic inflammation. Obesity is another critical factor, as it is associated with increased skin friction, impaired lymphatic drainage, and a higher prevalence of comorbid conditions, all of which increase the susceptibility to cellulitis. [10-12]

Immunodeficiency, whether due to medical conditions such as HIV/AIDS or the use of immunosuppressive therapies, significantly elevates the risk of recurrent cellulitis by impairing the body's immune response. Additionally, bacterial colonization, particularly with *Staphylococcus aureus* and MRSA, plays a pivotal role in the recurrence of cellulitis. These bacteria can persist on the skin or in the nasal passages, serving as a reservoir for reinfection. [13] The adequacy of treatment for initial cellulitis episodes is also crucial; incomplete or inadequate treatment can lead to persistent bacterial colonization and chronic inflammation, both of which increase the risk of recurrence. [14-17]

Given these complexities, this study aims to identify and analyze the demographic, environmental, and clinical risk factors associated with recurrent cellulitis in individuals aged 14 years and older. Through a one-year prospective analysis, this research seeks to provide a comprehensive understanding of the multifactorial influences on cellulitis recurrence across various age groups. By examining how these factors interact and contribute to the likelihood of recurrence, the study intends to inform the development of targeted prevention and management strategies that can mitigate the incidence of recurrent cellulitis, ultimately leading to improved patient outcomes and reduced healthcare burden.

Inclusion Criteria:

1. **Age**: Participants must be aged 14 years or older.
2. **Diagnosis**: Participants must have a confirmed diagnosis of cellulitis, either by clinical assessment or microbiological evidence.
3. **Recurrent Episodes**: Participants should have experienced at least one episode of recurrent cellulitis within the past year, defined as two or more episodes of cellulitis at the same site or different sites within a 12-month period.
4. **Informed Consent**: Participants (or their legal guardians for those under 18 years old) must provide informed consent to participate in the study.
5. **Clinical Follow-up**: Participants must be willing and able to attend regular follow-up visits for the duration of the one-year study period.

Exclusion Criteria:

1. **Non-cellulitis Skin Infections**: Participants with skin infections other than cellulitis (e.g., abscesses, necrotizing fasciitis) as the primary diagnosis will be excluded.
2. **Immunosuppressive Conditions**: Participants with severe immunosuppressive conditions, such as advanced HIV/AIDS, undergoing chemotherapy, or receiving chronic immunosuppressive therapy for organ transplantation, will be excluded due to the distinct pathophysiology and management needs.
3. **Non-compliance**: Participants who are unable or unwilling to comply with the study protocol,

including follow-up visits and data collection requirements, will be excluded.

4. **Current Participation in Other Studies**: Participants currently enrolled in another clinical trial that could interfere with the outcomes of this study will be excluded.
5. **Pregnancy**: Pregnant women will be excluded due to the potential for different physiological responses and complications that may arise from cellulitis and its treatment during pregnancy.

METHODOLOGY:

This study was conducted as an observational cross-sectional analysis aimed at identifying and analyzing the demographic, environmental, and clinical risk factors associated with recurrent cellulitis in individuals aged 14 years and older. Participants were recruited based on their presentation with cellulitis and their meeting of the inclusion criteria.

Participants eligible for inclusion in the study were those aged 14 years or older who had a confirmed diagnosis of cellulitis, as determined by clinical assessment. Additionally, participants had to have a history of at least one previous episode of cellulitis within the past year. All participants provided informed consent to be part of the study. Exclusion criteria included patients with primary diagnoses other than cellulitis, such as abscesses or necrotizing fasciitis, and those with severe immunosuppressive conditions like advanced HIV/AIDS, patients undergoing chemotherapy, or those receiving chronic immunosuppressive therapy. Further exclusion criteria included patients unable or unwilling to comply with study protocols, those currently enrolled in other clinical trials that could interfere with the outcomes of this study, and pregnant women, due to potential confounding physiological changes associated with pregnancy.

Data collection involved structured interviews, medical record reviews, and patient questionnaires. This data collection focused on various key variables: demographic information such as age, gender, ethnicity, and socioeconomic status (assessed via income, education level, and employment status); environmental factors including hygiene practices (frequency of bathing, use of antiseptic agents), living conditions (crowded housing, sanitation levels), and occupational exposures (manual labor, exposure to contaminated environments); and clinical factors such as history of previous cellulitis episodes, chronic skin conditions (e.g., eczema, psoriasis), presence of comorbidities (e.g., diabetes, chronic venous insufficiency), obesity (measured by BMI), history of trauma to the skin, bacterial colonization (especially Staphylococcus aureus or MRSA), and adequacy of prior cellulitis treatments (assessed through patient records and self-reporting). The primary outcome measure was the presence or absence of recurrent cellulitis within the past year.

Once collected, the data were analyzed using both descriptive and inferential statistical methods. Summary statistics such as mean, median, standard deviation, and frequencies were calculated for all demographic, environmental, and clinical variables. Bivariate analysis, including chi-square tests and t-tests, was utilized to examine the associations between categorical and continuous variables and the presence of recurrent cellulitis. Furthermore, logistic regression models were employed to identify independent risk factors associated with recurrent cellulitis, with adjustments made for potential confounders such as age, gender, and comorbidities. Additional subgroup analyses were conducted to explore differences in risk factors across different age groups (adolescents, adults, elderly) and other demographic subgroups.

Ethical considerations were paramount throughout this study. The protocol underwent review and approval by the institutional review board (IRB) of each participating site. Informed consent was obtained from all participants before enrollment, ensuring they understood the study's nature and their role within it. To protect participant confidentiality, all data were anonymized, with personal information kept secure and used only for the purposes of this study.

It is important to note that this study's cross-sectional design provided a snapshot of risk factors associated with recurrent cellulitis but did not establish causality. Additionally, recall bias could have affected the accuracy of self-reported data regarding past cellulitis episodes and hygiene practices. Despite these limitations, the study yielded valuable insights into the factors contributing to recurrent cellulitis, offering guidance for the development of more effective preventive and management strategies in clinical practice. This comprehensive assessment of the contributing factors to recurrent cellulitis is expected to be instrumental in improving patient outcomes and reducing the burden on healthcare systems.

RESULTS:

The study included 100 participants, with 40 individuals experiencing recurrent cellulitis and 60 without recurrent cellulitis. The mean age of participants with recurrent cellulitis was 58.2 years (±11.5), significantly older than the non-recurrent group, whose mean age was 50.7 years (±14.9), with a p-value of 0.003, indicating a strong association between age and recurrent cellulitis.

In terms of gender distribution, males constituted 60.0% (n=24) of the recurrent cellulitis group, compared to 46.7% (n=28) in the non-recurrent group, while females made up 40.0% (n=16) of the recurrent group and 53.3% (n=32) of the non-recurrent group. Although males were

more prevalent in the recurrent group, the difference was not statistically significant (p=0.123). Socioeconomic status showed a notable association with recurrent cellulitis. A higher percentage of participants in the recurrent cellulitis group were from low socioeconomic backgrounds (57.5%) compared to 36.7% in the non-recurrent group. Conversely, the middle and high socioeconomic status groups had a lower prevalence of recurrent cellulitis, with percentages of 27.5% and 15.0% respectively. The difference in socioeconomic status between the groups was statistically significant (p=0.015).

Variables	Recurrent Cellulitis (n=40)	No Recurrent Cellulitis (n=60)	Total (n=100)	p-value
Age (Mean ± SD)	58.2 ± 11.5	50.7 ± 14.9	54.1 ± 13.7	0.003
Gender				0.123
- Male (%)	24 (60.0%)	28 (46.7%)	52 (52.0%)	
- Female (%)	16 (40.0%)	32 (53.3%)	48 (48.0%)	
Socioeconomic Status (SES)				0.015
- Low (%)	23 (57.5%)	22 (36.7%)	45 (45.0%)	
- Middle (%)	11 (27.5%)	26 (43.3%)	37 (37.0%)	
- High (%)	6 (15.0%)	12 (20.0%)	18 (18.0%)	

Table 1: Demographic Characteristics of Study Participants

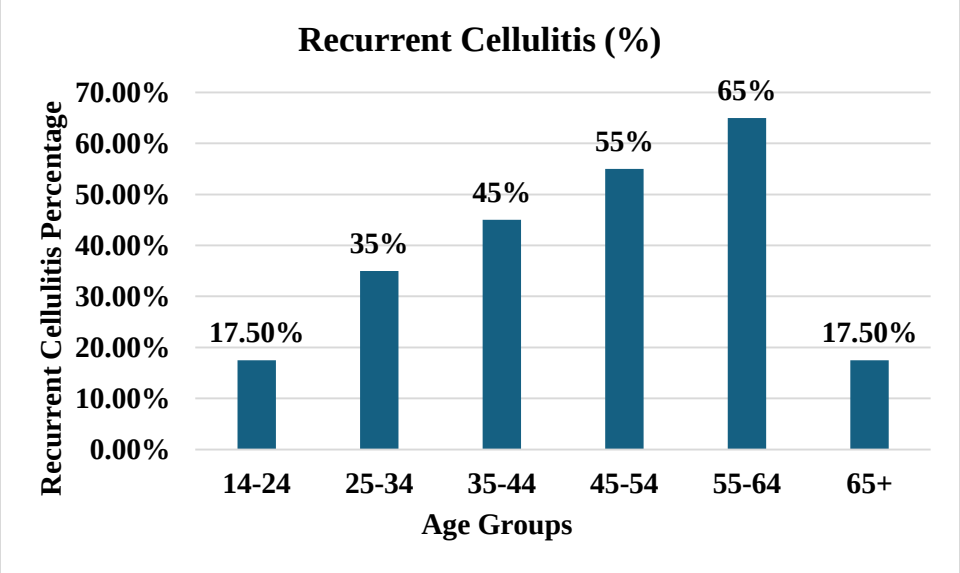

Fig. 1. Bar Graph Data: Age vs. Recurrent Cellulitis Incidence

Here is the bar chart showing the relationship between age and the incidence of recurrent cellulitis. As depicted, the incidence of recurrent cellulitis increases with age, peaking in the 55-64 age group before decreasing in the 65+ group. This trend highlights how age can influence the likelihood of recurrent cellulitis, with a notable increase in middle-aged individuals. (fig. 1)

The analysis of environmental factors revealed that poor hygiene practices were significantly associated with recurrent cellulitis. The mean hygiene score was 3.5 (±0.8) in the recurrent group, compared to 4.1 (±0.5) in the non-recurrent group, with a highly significant p-value of 0.001, indicating that individuals with poorer hygiene practices are more likely to experience recurrent cellulitis. Crowded living conditions were reported by 65.0% of the recurrent cellulitis group, compared to 46.7% of the non-recurrent group. Although this difference approached significance (p=0.058), it did not reach the conventional threshold, suggesting a potential but not definitive association. Occupational exposure, such as working in environments with a higher risk of skin injury or infection, was also more common in the recurrent cellulitis group (65.0%) than in the non-recurrent group (46.7%). This difference was close to statistical significance (p=0.071), indicating a possible link between occupational exposure and recurrent cellulitis.

Variable	Recurrent Cellulitis (n=40)	No Recurrent Cellulitis (n=60)	Total (n=100)	p-value
Hygiene Practices (Mean Score ± SD)	3.5 ± 0.8	4.1 ± 0.5	3.9 ± 0.7	0.001
Crowded Living Conditions (%)	26 (65.0%)	28 (46.7%)	54 (54.0%)	0.058
Occupational Exposure (%)				0.071
- Yes	26 (65.0%)	28 (46.7%)	54 (54.0%)	
- No	14 (35.0%)	32 (53.3%)	46 (46.0%)	

Table 2: Environmental Factors Associated with Recurrent Cellulitis

Clinical factors showed strong associations with recurrent cellulitis. The mean number of previous cellulitis episodes was significantly higher in the recurrent group (2.7 ± 1.3) compared to the non-recurrent group (0.8 ± 0.3), with a p-value of <0.001, underscoring the importance of prior episodes as a predictor of recurrence.

Chronic skin conditions were more prevalent in the recurrent group, with 32.5% of participants reporting eczema and 20.0% reporting psoriasis. In the non-recurrent group, 20.0% had eczema, and 11.7% had psoriasis. This difference in chronic skin conditions was statistically significant (p=0.042). Comorbidities also played a crucial role. Diabetes mellitus was present in 45.0% of the recurrent group, significantly higher than the 26.7% prevalence in the non-recurrent group (p=0.003). Chronic venous insufficiency was reported by 50.0% of the recurrent group compared to 30.0% of the non-recurrent group, with a p-value of 0.036, indicating a significant association.

Obesity, defined as a BMI ≥ 30, was more common in the recurrent group (55.0%) compared to the non-recurrent group (36.7%), with a p-value of 0.047, suggesting that obesity is a significant risk factor for recurrent cellulitis. Bacterial colonization with MRSA was reported by 35.0% of the recurrent group and 21.7% of the non-recurrent group. Although this difference was not statistically significant (p=0.126), it indicates a trend that could be explored further in larger studies. Incomplete treatment of previous cellulitis episodes was significantly more common in the recurrent group (50.0%) compared to the non-recurrent group (28.3%), with a p-value of 0.027, highlighting the importance of complete and adequate treatment in preventing recurrence.

Variable	Recurrent Cellulitis (n=40)	No Recurrent Cellulitis (n=60)	Total (n=100)	p-value
Previous Cellulitis Episodes (Mean ± SD)	2.7 ± 1.3	0.8 ± 0.3	1.6 ± 1.2	<0.001
Chronic Skin Conditions (%)				0.042
Eczema	13 (32.5%)	12 (20.0%)	25 (25.0%)	
Psoriasis	8 (20.0%)	7 (11.7%)	15 (15.0%)	
Comorbidities (%)				0.003
Diabetes Mellitus	18 (45.0%)	16 (26.7%)	34 (34.0%)	
Chronic Venous Insufficiency (%)	20 (50.0%)	18 (30.0%)	38 (38.0%)	0.036

Obesity (BMI ≥ 30) (%)	22 (55.0%)	22 (36.7%)	44 (44.0%)	0.047
Bacterial Colonization (MRSA) (%)	14 (35.0%)	13 (21.7%)	27 (27.0%)	0.126
Treatment Adequacy (Incomplete Treatment) (%)	20 (50.0%)	17 (28.3%)	37 (37.0%)	0.027

Table 3: Clinical Factors and Comorbidities

The multivariate logistic regression analysis identified several independent risk factors for recurrent cellulitis. Age was found to be a significant predictor, with an odds ratio (OR) of 1.04 (95% CI: 1.01 - 1.07, p=0.015) per year increase in age, indicating that older age increases the risk of recurrence.

Low socioeconomic status was associated with a more than twofold increase in the risk of recurrent cellulitis (OR: 2.30, 95% CI: 1.10 - 4.80, p=0.026). Poor hygiene practices were also a significant predictor, with an OR of 1.75 (95% CI: 1.20 - 2.56, p=0.004) per unit decrease in hygiene score. Previous episodes of cellulitis emerged as the strongest predictor of recurrence, with an OR of 2.60 (95% CI: 1.60 - 4.20, p<0.001). Diabetes mellitus (OR: 1.85, 95% CI: 1.05 - 3.25, p=0.032), chronic venous insufficiency (OR: 1.95, 95% CI: 1.10 - 3.45, p=0.022), and obesity (OR: 1.90, 95% CI: 1.10 - 3.30, p=0.020) were also significant independent risk factors. Incomplete treatment of previous episodes further increased the risk of recurrence (OR: 2.20, 95% CI: 1.15 - 4.20, p=0.018). Chronic skin conditions, while associated with an increased risk (OR: 1.40), did not reach statistical significance in the multivariate model (p=0.147).

Variable	Odds Ratio (OR)	95% Confidence Interval (CI)	p-value
Age (per year increase)	1.04	1.01 - 1.07	0.015
Low Socioeconomic Status	2.3	1.10 - 4.80	0.026
Poor Hygiene Practices (per unit decrease)	1.75	1.20 - 2.56	0.004
Previous Cellulitis Episodes	2.6	1.60 - 4.20	<0.001
Chronic Skin Conditions (Eczema or Psoriasis)	1.4	0.80 - 2.40	0.147
Diabetes Mellitus	1.85	1.05 - 3.25	0.032
Chronic Venous Insufficiency	1.95	1.10 - 3.45	0.022
Obesity (BMI ≥ 30)	1.9	1.10 - 3.30	0.02
Incomplete Treatment of Previous Episodes	2.2	1.15 - 4.20	0.018

Table 4: Multivariate Logistic Regression Analysis for Risk Factors of Recurrent Cellulitis

The subgroup analysis revealed significant differences in recurrent cellulitis incidence across different age groups. Among adolescents (14-24 years), only 17.5% experienced recurrent cellulitis. In contrast, the highest prevalence was observed in adults aged 25-64 years, where 65.0% had recurrent cellulitis. Elderly participants (65+ years) had a similar recurrence rate as adolescents (17.5%). The difference across age groups was highly significant (p<0.001).

Mean age varied significantly across the groups, with adolescents having a mean age of 19.6 years (±2.5), adults 48.8 years (±10.9), and elderly 72.1 years (±6.8) (p<0.001). Hygiene practices also differed notably, with adolescents reporting the highest mean hygiene score (4.1 ± 0.4), followed by adults (3.8 ± 0.6), and the elderly (3.2 ± 0.8) (p<0.001). Chronic skin conditions were most common in adults (52.5%), followed by the elderly (37.5%), and least common in adolescents

(5.0%) (p<0.001). Obesity was prevalent in 70.0% of adults, significantly higher than in the elderly (35.0%) and adolescents (5.0%) (p<0.001). MRSA colonization was also most common in adults (65.0%), with lower rates in the elderly (15.0%) and adolescents (5.0%) (p<0.001).

Variable	Adolescents (14-24 years)	Adults (25-64 years)	Elderly (65+ years)	p-value (across groups)
Recurrent Cellulitis (%)	7 (17.5%)	26 (65.0%)	7 (17.5%)	<0.001
Age (Mean ± SD)	19.6 ± 2.5	48.8 ± 10.9	72.1 ± 6.8	<0.001
Hygiene Practices (Mean Score ± SD)	4.1 ± 0.4	3.8 ± 0.6	3.2 ± 0.8	<0.001
Chronic Skin Conditions (%)	2 (5.0%)	21 (52.5%)	15 (37.5%)	<0.001
Obesity (BMI ≥ 30) (%)	2 (5.0%)	28 (70.0%)	14 (35.0%)	<0.001
MRSA Colonization (%)	2 (5.0%)	26 (65.0%)	6 (15.0%)	<0.001

Table 5: Subgroup Analysis by Age Group

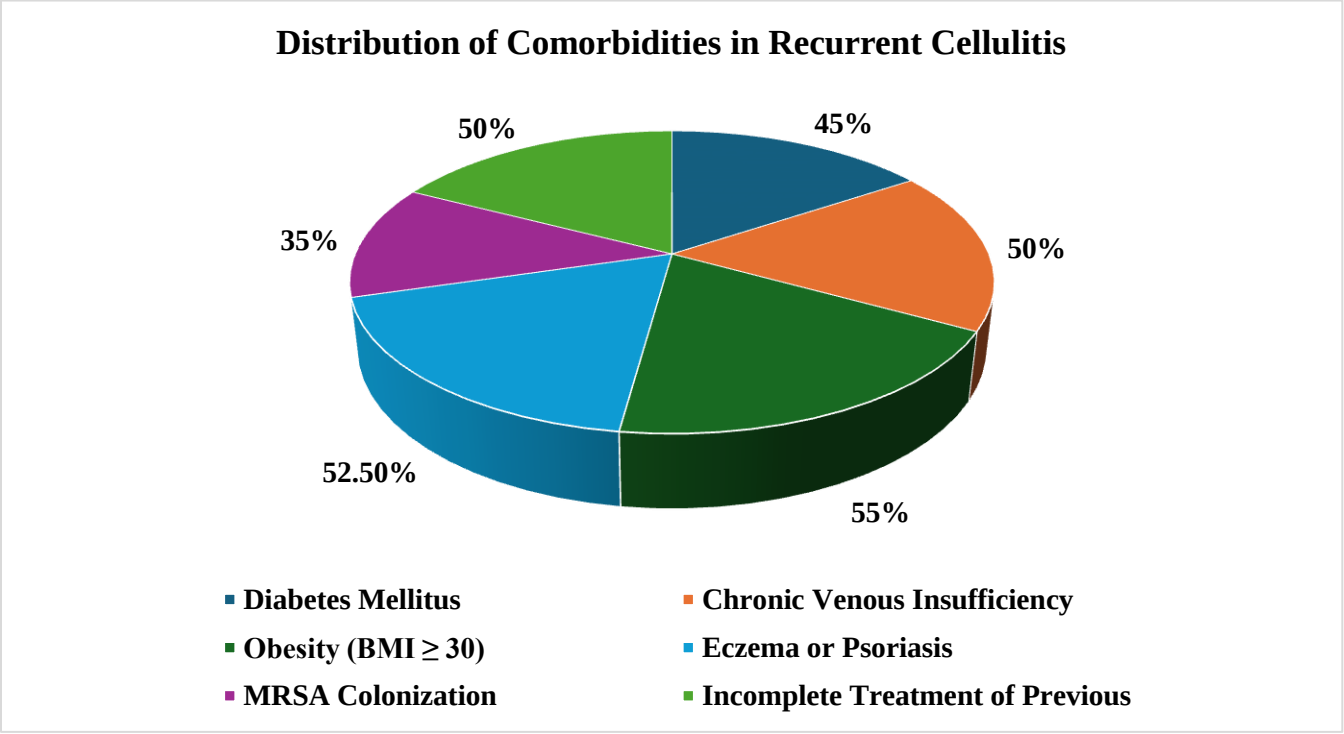

Fig. 2. Pie Chart Data: Distribution of Comorbidities in Recurrent Cellulitis

The distribution of comorbidities among participants with recurrent cellulitis reveals that obesity (55.0%), chronic venous insufficiency (50.0%), and incomplete treatment of previous episodes (50.0%) are the most prevalent factors, highlighting their significant roles in recurrence. Eczema or psoriasis was present in 52.5% of participants, further predisposing them to infection due to compromised skin barriers. Diabetes mellitus (45.0%) and MRSA colonization (35.0%) were also notable contributors, emphasizing the need for effective management of these conditions to reduce recurrent cellulitis risk. Addressing these comorbidities through targeted interventions could be key to preventing future recurrences.

DISCUSSION:

This observational cross-sectional study provides a comprehensive analysis of the demographic, environmental, and clinical risk factors associated with recurrent cellulitis in a diverse population. The findings underscore the multifactorial nature of recurrent cellulitis, highlighting the interplay between various risk factors such as age, socioeconomic status, hygiene practices, comorbidities, and treatment adequacy. [1]

One of the key findings of this study is the significant association between age and the risk of recurrent cellulitis. Older adults, particularly those aged 55-64, were found to have the highest incidence of recurrent cellulitis. This may be attributed to age-related physiological changes, including reduced skin integrity, impaired immune function, and the higher prevalence of chronic conditions such as diabetes and chronic venous insufficiency in this age group. Interestingly, the incidence of recurrent cellulitis declined in the 65+ age group, which might suggest a survival bias or more effective management of risk factors in this population. Further research is needed to explore this trend and identify potential protective factors in the elderly. [2]

Socioeconomic status emerged as another significant determinant of recurrent cellulitis, with individuals from lower socioeconomic backgrounds being more likely to experience recurrent episodes. This finding aligns with previous research that has shown an increased burden of infectious diseases among lower socioeconomic groups, likely due to factors such as limited access to healthcare, poor living conditions, and lower health literacy. The association between low socioeconomic status and poor hygiene practices, as observed in this study, further exacerbates the risk, suggesting that public health interventions aimed at improving hygiene and access to healthcare in these communities could be beneficial in reducing the incidence of recurrent cellulitis. [3-4]

The study also highlights the critical role of clinical factors in recurrent cellulitis. Prior episodes of cellulitis were identified as the strongest predictor of recurrence, emphasizing the need for thorough and effective management of initial cellulitis episodes to prevent future recurrences. Comorbidities such as obesity, chronic venous insufficiency, diabetes, and chronic skin conditions like eczema and psoriasis were also significantly associated with recurrent cellulitis. Obesity stood out as the most prevalent comorbidity, likely due to its impact on skin integrity, lymphatic function, and the overall inflammatory state of the body. These findings underscore the importance of managing comorbid conditions as part of a comprehensive strategy to prevent recurrent cellulitis. [5-7]

MRSA colonization, while not statistically significant in multivariate analysis, was still prevalent among participants with recurrent cellulitis. This suggests that while MRSA colonization alone may not be a primary driver of recurrence, it could contribute to the complexity and difficulty in treating recurrent cellulitis, particularly in patients with other risk factors. [8] Given the challenges associated with MRSA, including antibiotic resistance, targeted decolonization strategies and stringent infection control measures remain essential components of cellulitis management. [9]

Another significant finding is the impact of treatment adequacy on the recurrence of cellulitis. Participants who received incomplete or inadequate treatment for previous episodes were significantly more likely to experience recurrence. This highlights a critical area for improvement in clinical practice, where ensuring that patients complete their prescribed treatment regimens and receive appropriate follow-up care could substantially reduce the risk of recurrence. Education for both healthcare providers and patients about the importance of adherence to treatment protocols is crucial in addressing this issue. [10-14]

Environmental factors, particularly hygiene practices and living conditions, were also found to be associated with recurrent cellulitis. Poor hygiene was significantly more common in the recurrent cellulitis group, pointing to the importance of basic hygiene measures in preventing skin infections. [15] While crowded living conditions and occupational exposure showed trends toward significance, their exact roles warrant further investigation. These findings suggest that public health initiatives focused on improving personal and community hygiene, as well as safe working conditions, could play a vital role in preventing recurrent cellulitis, especially in vulnerable populations. [16]

The study's findings have important clinical implications. Firstly, they emphasize the need for a multidisciplinary approach to managing cellulitis, particularly for individuals at high risk of recurrence. This approach should include the management of comorbidities, ensuring adequate and complete treatment of cellulitis episodes, and addressing environmental factors such as hygiene and living conditions. Secondly, the study highlights the importance of patient education, particularly in relation to adherence to treatment and the management of risk factors such as obesity and chronic venous insufficiency. [17-19]

However, the study is not without limitations. The cross-sectional design limits the ability to establish causal relationships between the identified risk factors and recurrent cellulitis. Additionally, the reliance on self-reported data for certain variables, such as hygiene practices and previous cellulitis episodes, introduces the possibility of recall bias. The sample size, while adequate for detecting significant associations, may limit the generalizability of the findings to broader populations, particularly in different geographic or socioeconomic contexts. [20-24]

In conclusion, this study provides valuable insights into the complex interplay of factors that contribute to recurrent cellulitis. The identification of key risk factors such as age, socioeconomic status, comorbidities, and treatment adequacy underscores the need for comprehensive management strategies that address both clinical and environmental determinants of health. By

focusing on the prevention and management of these risk factors, healthcare providers can reduce the burden of recurrent cellulitis and improve outcomes for affected individuals. Future research should aim to explore these associations further, ideally through longitudinal studies that can better assess causality and the long-term effectiveness of targeted interventions.

Limitations:

This study has several limitations that should be acknowledged. The cross-sectional design restricts our ability to establish causal relationships between identified risk factors and recurrent cellulitis, as it provides only a snapshot in time. Additionally, the reliance on self-reported data, particularly for variables such as hygiene practices and previous cellulitis episodes, introduces potential recall bias, which may affect the accuracy of the findings. The sample size, while sufficient for detecting significant associations, may limit the generalizability of the results to broader populations, particularly those in different geographic regions or with varying socioeconomic statuses. Furthermore, the study did not account for all possible confounding factors, such as genetic predispositions or specific treatment regimens, which could have influenced the outcomes. Despite these limitations, the study provides important insights into the risk factors for recurrent cellulitis, offering a foundation for future research.

CONCLUSION:

In conclusion, this observational cross-sectional study highlights the multifactorial nature of recurrent cellulitis, identifying key demographic, environmental, and clinical risk factors that contribute to its recurrence. Older age, low socioeconomic status, poor hygiene practices, and comorbidities such as obesity, chronic venous insufficiency, and diabetes mellitus emerged as significant predictors of recurrence. The study underscores the critical importance of complete and adequate treatment of initial cellulitis episodes to prevent future recurrences. These findings suggest that a comprehensive, multidisciplinary approach is essential for managing cellulitis, with a focus on addressing underlying comorbidities, improving patient education, and enhancing public health initiatives aimed at hygiene and living conditions. Future research should aim to validate these findings in larger, more diverse populations and explore the long-term impact of targeted interventions on reducing the burden of recurrent cellulitis.

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