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Epidemiology and risk of psychiatric disorders in patients with polymyositis and dermatomyositis: a nationwide population-based cohort study in Taiwan

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ABSTRACT

Objectives To evaluate the incidence and risk factors for psychiatric disorders, including depression and anxiety, and assess the risk of suicide in patients with polymyositis (PM) and dermatomyositis (DM).

Design Retrospective cohort study.

Setting Data were obtained from Taiwan's National Health Insurance Research Database (NHIRD) between 2000 and 2018.

Participants A total of 3477 patients with PM/DM and 13 908 age- and sex-matched non-PM/DM controls were included in the study.

Primary and secondary outcome measures The primary outcome was the incidence and risk of psychiatric disorders in patients with PM/DM compared with controls. Secondary outcomes included the identification of risk factors for psychiatric disorders, mortality and suicide risk in the PM/DM cohort.

Results The incidence rate ratio (IRR) of psychiatric disorders was significantly higher in the PM/DM cohort than in controls (IRR 1.62, 95% CI 1.39 to 1.89), with depression being the most prevalent disorder (IRR 2.25, 95% CI 1.83 to 2.75). Key risk factors included female sex, intravenous steroid therapy, and high-dose oral steroid use. Additionally, the PM/DM cohort exhibited a higher mortality rate (IRR 3.4, 95% CI 3.15 to 3.67) and elevated suicide risk (IRR 1.99, 95% CI 0.96 to 3.86) compared with controls.

Conclusion Patients with PM/DM face a significantly higher risk of psychiatric disorders, mortality and suicide. Integrating mental healthcare into the routine management of PM/DM is crucial to improving patient outcomes and reducing mortality. Future research should focus on the impact of early psychiatric interventions on survival outcomes in this population.

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ The study used a nationwide database (National Health Insurance Research Database) covering over 99% of Taiwan's population, minimising selection bias and ensuring robust population representation.
⇒ Psychiatric disorders were defined strictly, requiring psychiatrist confirmation after three follow-up visits, improving diagnostic accuracy.
⇒ Age- and sex-matched controls allowed for precise comparison and identification of risk factors.
⇒ The retrospective cohort design relied on claims-based data, which lacked detailed laboratory, clinical and lifestyle information, potentially influencing unmeasured confounders.

INTRODUCTION

Polymyositis and dermatomyositis (PM/DM) refer to a group of rare, chronic autoimmune diseases characterised by muscle inflammation, leading to progressive muscle weakness and disability.[1] The chronic nature of PM/DM, coupled with their debilitating symptoms, can severely affect mental health and overall quality of life. These psychiatric issues stem from the chronic pain, disability and social isolation associated with PM/DM, further complicating patient management and treatment outcomes.[2]

Multiple studies have highlighted the elevated incidence of psychiatric disorders, such as depression and anxiety, in individuals with systemic autoimmune rheumatic diseases.[3–5] A study also suggested an association between bipolar disorder and systemic autoimmune diseases.[6] Rheumatoid arthritis, systemic lupus erythematosus and systemic sclerosis are associated with a substantially higher prevalence of depression, anxiety and sleep disorders.[7–10] Similarly, patients with PM/DM frequently experience anxiety, depression and other psychiatric disorders.[11] However, few studies have investigated the psychological burden in patients with PM/DM. Campar *et al* indicated that depression is a common comorbidity in patients with PM/DM, emphasising the need for

comprehensive care regimens that address both physical and mental health.[12] However, their study did not include a comparison cohort.

Despite the known association between chronic systemic autoimmune diseases and mental health disorders, the specific risks and effects of psychiatric disorders in patients with PM/DM are poorly documented. Data related to the mental health burden in this patient population are limited by small sample sizes and inconsistent diagnosis codes used to define mental health conditions. Therefore, this study evaluates the incidence and risk factors of psychiatric disorders in patients with PM/DM using a robust dataset from Taiwan's National Health Insurance Research Database (NHIRD).

MATERIALS AND METHODS

Study design

This population-based retrospective cohort study analysed 2000–2018 data in Taiwan's NHIRD to evaluate the risks of psychiatric disorders and suicide in patients with PM/DM. This study was approved by the Joint Institutional Review Board of Taipei Medical University (N202107001).

Data sources

The NHIRD contains data on beneficiaries enrolled in the National Health Insurance programme, a single-payer mandatory insurance system established in 1995 that insures more than 99% of the Taiwanese population. The NHIRD is an integrated medical database that stores the outpatient, inpatient, emergency, dental care and prescription records of Taiwanese residents. The NHIRD retains identifying data regarding demographic characteristics, area of residence, healthcare use, procedures undergone, expenses incurred and medical treatment and status, including prescriptions and diagnosis codes from the International Statistical Classification of Diseases and Related Health Problems, Ninth and 10th revision, Clinical Modification (ICD-9-CM and ICD-10-CM). The NHIRD contains a registry for catastrophic illness that stores data on patients who have obtained a catastrophic illness certificate from the Ministry of Health and Welfare; this certification process ensures the accurate diagnosis of conditions such as PM/DM.

Specifically, in the National Health Insurance system, patients with PM/DM can apply for a catastrophic illness certificate. Each application is reviewed by independent subspecialists according to the Bohan and Peter classification criteria for PM/DM.[13 14]

Study populations

This study included patients who had received a catastrophic illness certificate for PM/DM (ICD-9-CM: 710.3 or ICD-10-CM: M33.20–M33.29, M33.00–M33.19, M33.90–M33.99 and M36.0) at any time between January 2000 and December 2018. Each patient with PM/DM was matched with four control individuals without PM/DM based on age, sex and index date. The index date of the patients was either the date of catastrophic illness certification or 1 January 2001, if the certification occurred prior to 2001. To ensure the robustness of our study design, we excluded all existing cases of psychiatric disorders prior to the index date, using a minimum 1-year run-in period to accurately identify incident psychiatric cases. Mortality rate and cause of death were assessed in the PM/DM and control cohorts (figure 1).

Patient and public involvement

Patients or the public were not involved in the design or planning of the study.

Study outcomes and follow-up

The primary outcome of this study was the incidence rate of newly diagnosed psychiatric disorders, categorised as depressive disorders (ICD-9-CM: 296.2, 296.3, 300.4, 311; ICD-10-CM: F32, F33 and F34.1), anxiety disorders (ICD-9-CM: 300.0, 300.2, 300.3, 308.3, 309.81; ICD-10-CM: F40, F41, F42 and F43), bipolar disorders (ICD-9-CM: 296.0, 296.1, 296.4, 296.5, 296.6, 296.7, 296.8, 296.80 and 296.89; ICD-10-CM: F30, F31 and F34.0) and sleep disorders

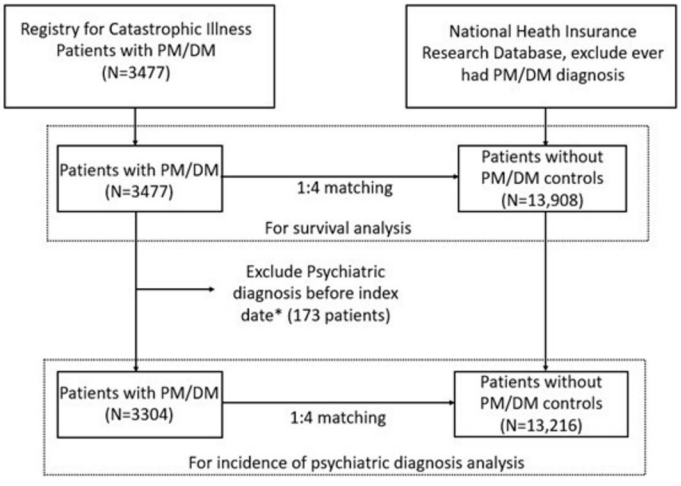

Figure 1 Flowchart of study population selection. *Index date=either the date of catastrophic illness certification or 1 January 2001, if the certification occurred prior to 2001. PM/DM, polymyositis and dermatomyositis.

(ICD-9-CM: 780.5, 307.4 (excluding 780.51, 780.53 and 780.57); ICD-10-CM: F51.01-F51.03, F51.09, F51.11, F51.12, F51.19, F51.3, F51.8, F51.9, G47.0–G47.2, G47.8 and G47.9). Diagnoses were confirmed by psychiatrists if and only if a positive diagnosis was given at least three follow-up assessments. The analysis of incidental psychiatric disorders was initiated 1 year after the diagnosis of PM/DM (1 year after the corresponding index date for the control group) to ensure that the initial psychological shock associated with the PM/DM diagnosis did not confound our analysis. The participants were followed from the index date to the development of psychiatric disorders, the discontinuation of insurance (including due to death) or the end of the follow-up period (31 December 2018), whichever came first.

Factors associated with the risk of psychiatric disorders

Patient characteristics, comorbidities and medication use were investigated as risk factors for psychiatric disorders in patients with PM/DM. The use of medication during follow-up, including hydroxychloroquine, methotrexate, azathioprine, mycophenolate mofetil, ciclosporin, cyclophosphamide and oral and intravenous steroids, was classified by dosage into low dose, medium dose and high dose. Because the composition of prescriptions varied over time, we analysed these medications as time-dependent covariates in a Cox proportional hazard model. The follow-up period for each patient was retrospectively divided into successive 60-day time blocks. For each time block, the prescription status of each medication was recorded and analysed to determine its association with psychiatric disorders occurring at the end of each block. Oral steroid use was analysed in terms of the average daily dose within each time block, with a cut-off of 7.5 mg of prednisolone or a corresponding dose of an equivalent drug.

Risk of suicidal death in patients with PM/DM

Mortality registry data were retrieved from the NHIRD, with causes of death categorised as illness-related, accidental or suicidal. The overall mortality risk and specific causes of death were compared between the PM/DM and control cohorts without PM/DM.

Statistical analysis

Continuous and categorical variables were compared using Student's t-test and the χ^2 test, respectively. Incidence rates per 10 000 person-years and incidence rate ratios (IRRs) were calculated for both PM/DM and control cohorts, including further stratified analyses by age (≤18, 19–50 and ≥51 years) and sex. The mortality rate and suicide rate were also calculated. The CIs for the IRRs between PM/DM and control cohorts were derived using the Poisson distribution. In the PM/DM cohort, the HR and 95% CI of potential risk factors associated with psychiatric disorders were estimated using univariate and multivariate Cox proportional hazard models. All statistical analyses were performed using SAS software, with p<0.05 indicating statistical significance.

RESULTS

Study population

Between 2000 and 2018, a total of 3477 patients with PM/DM and 13 908 age- and sex-matched control individuals without PM/DM were identified. Mortality rate and cause of death were analysed in both these cohorts (figure 1). Before investigating the risk of incidental psychological diseases, 173 patients with PM/DM were excluded because they had received psychiatric diagnoses prior to the index date. Consequently, a total of 3304 patients with PM/DM and 13 216 age- and sex-matched without PM/DM controls were included in the final analysis of the incidence of psychological diseases (table 1). The mean age of the participants in both cohorts was 48.31 years, and most of the participants were women (66.8%). The mean follow-up duration of the PM/DM cohort was significantly shorter than that of the control cohort (8.16 vs 10.27 years, p<0.001).

Table 1 Characteristics of patients with PM/DM and age- and sex-matched patients without PM/DM controls

Variables	Patients with PM/DM (n=3304)	Patients without PM/DM (n=13 216)	P value
Mean age, years (SD)	48.31 (17.39)	48.31 (17.39)	1
Female, n (%)	2207 (66.8%)	8828 (66.8%)	1
Mean follow-up, years (SD)	8.16 (6.43)	10.27 (5.96)	<0.001
Means of Charlson Comorbidity Index (SD)	1.44 (1.72)	0.3 (0.89)	<0.0001
Psychiatric diagnosis, n (%)	232 (7.26%)	719 (5.58%)	<0.0001
Depression	143 (4.33%)	319 (2.41%)	<0.0001
Anxiety	60 (1.82%)	259 (1.96%)	0.6214
Bipolar disorder	10 (0.3%)	28 (0.21%)	0.3136
Sleep disorder	19 (0.58%)	113 (0.86%)	0.1254

PM/DM, polymyositis and dermatomyositis.

Table 2 IR and IRR of psychiatric comorbidities in patients with PM/DM and patients without PM/DM controls

Variables	PM/DM	Non-PM/DM*	IRR (95% CI)	P value
Psychiatric diagnosis	86.06	52.98	1.62 (1.39 to 1.89)	<0.001
Sex strata				
Male	68.11	39.43	1.73 (1.26 to 2.34)	<0.001
Female	94.35	59.39	1.59 (1.33 to 1.89)	<0.001
Age strata				
18 years and under	40.75	37.74	1.08 (0.50 to 2.13)	0.7983
19–50 years	90.33	52.12	1.73 (1.40 to 2.14)	<0.001
51 years and above	92.08	56.74	1.62 (1.28 to 2.03)	<0.001
Specific psychiatric diagnosis				
Depression	51.99	23.13	2.25 (1.83 to 2.75)	<0.001
Anxiety	3.5	2	1.75 (0.76 to 3.71)	0.1431
Bipolar disorder	21.22	18.67	1.14 (0.84 to 1.51)	0.3717
Sleep disorder	6.66	8.1	0.82 (0.48 to 1.34)	0.4381

IR represents the number of events per 10 000 person-years.
*Non-PM/DM refers to patients without PM/DM.
IR, incidence rate; IRR, incidence rate ratio; PM/DM, polymyositis and dermatomyositis.

Risk of psychiatric disorders in patients with PM/DM

This study identified 232 cases (7.26%) of newly diagnosed psychiatric disorders in the PM/DM cohort, of which 143 (4.33%) were diagnosed as depressive disorder, 60 (1.82%) as anxiety disorder, 10 (0.3%) as bipolar disorder and 19 (0.58%) as sleep disorder (table 1). The percentage of psychiatric disorders and depression was significantly higher in the PM/DM cohort than in the control cohort (7.26% vs 5.58% and 4.33% vs 2.41%, respectively; p<0.001). The overall incidence rate of psychiatric disorders in the PM/DM cohort was 86.06 per 10 000 person-years, significantly higher than that in the control cohort, with an IRR of 1.62 (95% CI 1.39 to 1.89, p<0.001; table 2). The incidence rate of depression in the PM/DM cohort was 51.99 per 10 000 person-years, significantly higher than that in the control cohort, with an IRR of 2.25 (95% CI 1.83 to 2.75).

The risk of psychiatric disorders in patients with PM/DM was further stratified by age and sex (table 2). Patients of both sexes exhibited a significantly higher risk of developing psychiatric disorders compared with the respective control, with IRRs of 1.73 (95% CI 1.26 to 2.34, p<0.001) for male patients and 1.59 (95% CI 1.33 to 1.89, p<0.001) for female patients. Patients with PM/DM aged 19–50 years and ≥51 years faced a higher risk of developing psychiatric disorders compared with their age-matched controls, with IRRs of 1.73 (95% CI 1.4 to 2.14, p<0.001) and 1.62 (95% CI 1.28 to 2.03, p<0.001), respectively; conversely, the overall incidence of psychiatric disorders did not differ significantly between patients with PM/DM of age <18 years and their age-matched controls (table 2).

Risk factors for psychiatric disorders in patients with PM/DM

Univariate and multivariate Cox proportional hazards analyses showed that significant risk factors for developing psychiatric disorders were being female (HR 1.37, 95% CI 1.01 to 1.82, p=0.043), using intravenous steroids (HR 1.87, 95% CI 1.24 to 2.82, p=0.003) and having a daily dose of oral medication ≥30 mg (HR 1.40, 95% CI 1.02 to 1.93, p=0.039; table 3).

Risk of suicidal death in patients with PM/DM

The PM/DM cohort had a significantly higher mortality rate than the control cohort. The incidence rate of mortality in the PM/DM cohort was 364.4 per 10 000 person-years, significantly higher than the incidence rate of mortality of 107.26 per 10 000 person-years in the control cohort, with an IRR of 3.4 (95% CI 3.15 to 3.67, p<0.001). This higher mortality rate resulted in a shorter average follow-up duration for the PM/DM cohort (8.65 years) compared with the control cohort (11.24 years). Notably, in addition to the higher rate of illness-related deaths, the incidence rate of suicidal deaths was higher in the PM/DM cohort, with an IRR of 1.99 (95% CI 0.96 to 3.86), which contributed to the higher overall mortality in this cohort (table 4).

DISCUSSION

To the best of our knowledge, this is the first nationwide, population-based cohort study to assess the incidence and risk factors for psychiatric disorders and suicidal death in patients with PM/DM. Patients with PM/DM were at a higher risk of developing psychiatric disorders, primarily depression, which had an IRR of 2.25. Risk factors for psychiatric disorders in patients with PM/DM included being female, undergoing intravenous steroid therapy and receiving high-dose oral steroid therapy exceeding 30 mg of prednisolone per day or an equivalent dose of a similar drug. Additionally, patients with PM/DM exhibited a significantly elevated risk of suicidal mortality.

In this study, the risk of new-onset psychiatric diagnoses, particularly depression, was significantly higher in the PM/DM cohort than in the control cohort. Although previous retrospective studies have shown an increased risk of mental illness in patients with autoimmune disease (including polymyositis and dermatomyositis) using NHIRD, our research focuses specifically on patients with PM/DM, uses age- and sex-matched control groups for comparative analysis and identifies risk factors, including sex, age groups, steroid dosage, and survival outcomes

Table 3 Risk factors for psychiatric disorders in patients with PM/DM

Variable	Univariate analysis		Multivariate analysis	
	HR (95% CI)	P value	HR (95% CI)	P value
Female	1.39 (1.03 to 1.85)	0.0321	1.37 (1.01 to 1.82)	0.043
Age				
18 years and under	As reference		As reference	
19–50 years	2.22 (1.20 to 4.11)	0.0113	1.86 (1.00 to 3.47)	0.0513
51 years and above	2.27 (1.22 to 4.23)	0.0098	1.87 (1.24 to 2.82)	0.0591
Charlson Comorbidity Index (Comorbidity)	1.12 (1.03 to 1.22)	0.0057	1.08 (0.99 to 1.18)	0.0982
Medication				
Disease-modifying antirheumatic drugs				
Hydroxychloroquine	1.33 (1.00 to 1.77)	0.0477	1.10 (0.81 to 1.49)	0.5429
Methotrexate	1.4 (1.01 to 1.94)	0.0451	1.16 (0.81 to 1.65)	0.4148
Azathioprine	1.35 (0.98 to 1.86)	0.0643	1.19 (0.85 to 1.65)	0.307
Mycophenolate mofetil	2.47 (0.79 to 7.7)	0.1205	2.37 (0.75 to 7.45)	0.1397
Cyclosporine	1.17 (0.58 to 2.37)	0.66	1.03 (0.51 to 2.10)	0.9334
Cyclophosphamide	2.11 (1.21 to 3.69)	0.0089	1.52 (0.85 to 2.71)	0.1567
Rituximab	NA		NA	
Steroid				
Intravenous	2.35 (1.59 to 3.49)	<0.001	1.87 (1.24 to 2.82)	0.003
Oral				
Daily dose <7.5 mg	As reference		As reference	
Daily dose ≥7.5 mg <15 mg	0.59 (0.24 to 1.44)	0.2446	0.49 (0.20 to 1.20)	0.1196
Daily dose ≥15 mg ≤30 mg	1.18 (0.68 to 2.04)	0.5567	0.98 (0.56 to 1.71)	0.9418
Daily dose ≥30 mg	1.71 (1.27 to 2.31)	0.0005	1.40 (1.02 to 1.93)	0.0392

***p<0.001; **p<0.01; *p<0.05.
All factors in the univariate analysis were selected for Cox multivariate fixed model analysis.
Average dose was defined as the accumulated prednisolone or equivalent dose during the study period (in mg) divided by the time to index (psychiatric illnesses) or the end of the study (in days).
NA, not available; PM/DM, polymyositis and dermatomyositis.

including suicide risk.[5] Only a few studies have explored the incidence of comorbid depression in this patient population. One study investigating the psychological disease burden in 149 patients with idiopathic inflammatory myopathy (IIM) reported that 54.36% had depression that required treatment.[12] Although that study lacked a comparison group, the authors highlighted the notably high rate of depression as a crucial factor to be considered when managing patients with IIM. In contrast to the high depression rate of 54.36% reported in that study, the prevalence of depression in our study was a mere 4.33%. Given that both these studies have a comparable follow-up period, the lower rate of depression in our study likely stems from several factors. First, our definition

Table 4 Survival analysis of patients with PM/DM and age- and sex-matched patients without PM/DM controls*

Variables	Patients with PM/DM (n=3477)		Patients without PM/DM controls (n=13 908)			
	N (%)	IR	N (%)	IR	IRR (95% CI)	P value
Death, n (%)	1096 (31.32)	364.4	1677 (12.06)	107.26	3.4 (3.15 to 3.67)	<0.001
Illness-related	1073 (30.86)	356.75	1580 (11.36)	101.05	3.53 (3.26 to 3.82)	<0.001
Accidental	10 (0.29)	3.32	63 (0.45)	4.03	0.5936 (0.38 to 1.62)	0.1924
Suicide	13 (0.37%)	4.32	34 (0.24%)	2.17	1.99 (0.96 to 3.86)	0.0454

IR represents the number of events per 10 000 person-years.
*Without exclusion of patients with psychiatric diagnosis at the time of PM/DM diagnosis.
IR, incidence rate; IRR, incidence rate ratio; PM/DM, polymyositis and dermatomyositis.

of depression was more stringent, requiring confirmation by a psychiatrist after at least three consistent follow-up visits. Although this criterion ensures diagnostic accuracy, milder cases or cases managed by other specialties may have been overlooked. Second, we initiated our analysis for psychological comorbidities 1 year after the PM/DM diagnosis to minimise any influence from the acute phase of the disease or the psychological stress associated with the initial diagnosis and treatment of PM/DM. The incidence of psychiatric problems may likely peak within this first year or even prior to the confirmation of PM/DM diagnosis. These factors may explain the discrepancy in depression rates between the two studies.

Several mechanisms may account for the elevated prevalence of depression in patients with PM/DM. The chronic pain, disability and debilitating nature of the disease, coupled with its multisystem involvement, contribute significantly to psychological distress. Some studies have indicated that depression is associated with immune system dysregulation.[15 16] The production of proinflammatory cytokines (interleukin-1, interleukin-6 and tumour necrosis factor-α) induced in rheumatic diseases may contribute to the development of depressive symptoms.[17] Similar results were reported in a case of dermatomyositis where, during the course of the disease, elevated inflammatory markers were correlated with worsening depression.[18] Our study also revealed that age and sex significantly influenced the incidence of psychiatric disorders. Younger patients (aged 19–50 years) and those over 51 years exhibited higher incidence rates, suggesting that the disease burden affects individuals differently across age groups. Being female was one of the risk factors for depression, aligning with a previous study indicating that women are more likely than men to develop stress-related mental illnesses, including depression.[19]

In our study, high-dose corticosteroid treatment, including intravenous glucocorticoids and oral prednisolone (≥30 mg per day of prednisolone or an equivalent dose of a similar drug), was associated with new-onset psychiatric disorders in patients with PM/DM. Previous studies have linked these psychiatric disorders to pain, fatigue, disability and poor quality of life in patients with PM/DM.[2 20] Moreover, a study demonstrated that the chronic use of steroids at high doses could lead to emotional and cognitive disturbances.[21] This finding aligns with ours, highlighting that corticosteroid therapy increases the risk of psychiatric disorders in patients with PM/DM. The underlying mechanisms remain unclear but could include the effects of corticosteroids on the dopaminergic, cholinergic and serotonin systems.[22] Intravenous glucocorticoids and oral prednisolone doses exceeding 30 mg/day are often administered to patients with more severe PM/DM. The increased risk of psychological disorders may also be attributed to the underlying pathophysiology of PM/DM, high disease activity and related complications.

Another major finding of this study is that patients with PM/DM and comorbid psychiatric disorders had a higher mortality risk than patients without PM/DM. Previous studies have primarily focused on mortality due to physical comorbidities such as cancer, infection, cardiovascular disease, interstitial lung disease and pulmonary hypertension. In contrast, our research demonstrates that major psychiatric comorbidities can significantly worsen the prognosis of patients with PM/DM.[23–25] A possible explanation for this phenomenon lies in the established link between depression and increased risk of cardiovascular disease, including an elevated risk of cardiovascular disease-related mortality.[26 27] It is also well established that patients with PM/DM have an increased risk of malignancy, particularly within the first few years after diagnosis. The psychological burden of a cancer diagnosis may contribute to the elevated incidence of psychiatric disorders observed in this population. Although our study could not adjust for malignancy as a covariate due to data limitations, future research should explore the interplay between cancer, psychiatric morbidity and outcomes in PM/DM.

Additionally, our study revealed higher suicidal rates among patients with PM/DM than in the control group without PM/DM. Although this is based on a small number of suicides, it highlights the importance of early referral to psychiatric specialists for mental health assessment and appropriate treatment to improve patient outcomes. Future research should investigate whether actively treating psychiatric comorbidities in patients with PM/DM can reduce mortality rates.

This study has several strengths. First, it used data from Taiwan's NHIRD, a comprehensive nationwide dataset representing over 99% of the Taiwanese population. This broad coverage provides robust statistical power to analyse diseases with low prevalence rates and helps mitigate selection bias. Second, the diagnoses in this study were highly accurate. PM/DM was identified through catastrophic illness certification, which is rigorously reviewed by independent subspecialists based on supporting medical records and examinations. Stringent criteria were adopted for defining psychiatric disorders, requiring diagnoses to be confirmed by psychiatrists after a minimum of three consistent follow-up visits. Suicidal deaths were validated using the cause-of-death registry. These factors, combined with long-term follow-up, enhance the reliability and accuracy of our results.

However, this study has some limitations. Due to the time frame of the study, patients with PM/DM were identified using the Bohan and Peter classification criteria for PM/DM rather than the 2017 American College of Rheumatology/European League Against Rheumatism classification for IIM.[28] This may reduce the sensitivity for capturing the full spectrum of heterogeneous IIM subtypes, such as inclusion body myositis, antisynthetase syndrome or antimelanoma differentiation-associated gene five dermatomyositis. Second, this study lacks an investigation into associations with comorbidities such as interstitial lung disease and/or cancer, which were also known risk factors for depression. Third, the NHIRD is

a claims-based database that lacks detailed laboratory or examination data, as well as personal history. Consequently, potential confounders such as socioeconomic status, lifestyle factors (eg, smoking and alcohol use), disability and family history could not be accounted for. Additionally, data on specific indications for medication use are not available, and the dosage of intravenous steroids cannot be accurately identified in NHIRD, limiting our ability to infer causality or explore the underlying mechanisms beyond observed associations.

CONCLUSION

This study highlights the significant mental health burden faced by patients with PM/DM, particularly in terms of elevated risks of depression and suicidal mortality. The findings call for an integrated care approach that includes mental health screening and support as part of the standard management for patients with PM/DM. Addressing psychiatric comorbidities proactively can enhance patient well-being and potentially improve clinical outcomes.

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Contributors Y-TL and Y-SC conceived and designed the study. I-PL performed the literature search and drafted the manuscript. Y-SC and F-YW conducted data extraction, methodological quality assessments and performed the analysis. C-FS, J-HK and S-HL assisted in critical interpretation of data. I-PL and Y-SC performed critical revision of the manuscript for important intellectual content. Y-SC supervised the whole process of the study. All authors read and approved the final version of the submitted manuscript. Y-SC is the guarantor of this article.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

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